AIR UNIVERSITY

review

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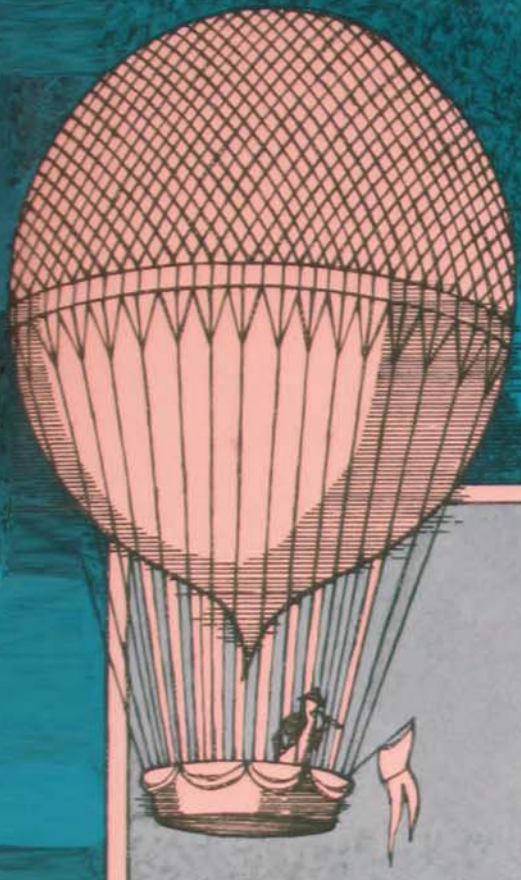

The Professional Journal of the United States Air Force

How the Army got its AirLand Battle concept—*page 4*

Who should control air assets in the AirLand Battle?—*page 16*

Clausewitz, Jomini, Douhet, and Brodie—How are they linked to our current nuclear posture? Should we move now to ballistic missile defense?—*page 54*

Attention

The *Air University Review* is the professional journal of the United States Air Force and serves as an open forum for exploratory discussion. Its purpose is to present innovative thinking concerning Air Force doctrine, strategy, tactics, and related national defense matters. The *Review* should not be construed as representing policies of the Department of Defense, the Air Force, or Air University. Rather, the contents reflect the authors' ideas and do not necessarily bear official sanction. Thoughtful and informed contributions are always welcomed.

AIR UNIVERSITY
review

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Differing views and provocative questions on the nuclear issues of the 1980s—page 81

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EDITORIAL

THE NEXT WAR

In my opinion it is in any case very difficult if not impossible, to picture now what form a modern war in Europe would take. We have at present a period of over thirty years of peace behind us and I believe that in our outlook we have become very unwarlike in many ways.

Colonel-General Helmuth Graf von Moltke to Kaiser Wilhelm II, circa 1905

AS THE younger von Moltke's words illustrate, preparing for the next war is a perennial challenge for the military profession. Traditionally, the best way to ensure military preparedness has been to see that one's forces are commanded by officers with combat experience, for such experience, according to Clausewitz, is the lubricant that best overcomes the friction of war (*On War*, Book I, Chapter 8). But experienced commanders are not always available to a nation. With the Vietnam conflict more than a decade behind us, combat-experienced officers are today a minority in the officer corps. This circumstance forces us back to what Clausewitz considered the next best preparation for war, the use of maneuvers—"a feeble substitute for the real thing: but even they can give an army an advantage over others whose training is confined to routine, mechanical drill." Maneuvers are important in peacetime, for only they can give commanders a "feel" for handling masses of troops and units in the field. Maneuvers offer the best possibility of surfacing the many manifestations of friction that cannot be anticipated by even the most imaginative planner.

However, today's high costs and other limitations force us to restrict the number of peacetime maneuvers and resort to other methods of preparing for war, methods not available in Clausewitz's time. Within the discipline of operations research, for example, we use analytical techniques to evaluate the effectiveness of new weapons and tactics. To prepare our armed forces for the next war, we construct and use computerized war games, which allow us to practice tactical and strategic decision making even though these games cannot recreate the panic and stress of war. And undergirding all of these preparations is the old standby: the thorough, systematic study of military history (from the first recorded battle at Meggido to the most recent engagements of the Iran-Iraq War), which aims to make us wise forever rather than clever for the next time, as Michael Howard reminds us.

What emerges from this ferment of physical and intellectual activity is a concept of the next war and an idea of how to fight it. These mental images are codified, in a sense, in operational doctrine, which will guide military operations in at least the opening engagements of a future war.

One thing that tends to be missing from the Air Force portion of this ferment is an active, excited debate of the issues involved in getting ready for the next war. What do I mean by active and excited? Look back through the *Marine Corps Gazette* and review the arguments over maneuver warfare. Pick up a few past issues of *Military Review* and look at some of the articles on AirLand Battle.

Military Review's articles on AirLand Battle are part of the "spirited doctrinal debate" that played an important role in the process the Army used in developing its new doctrine. This process is described in our lead article, where John Romjue discusses how command experience, expectations of battlefield conditions, and military history were folded into the Army's AirLand Battle doctrine.

While the process used by the Army to develop this doctrine is impressive, the process and its product have not, at least not yet, met with wholehearted approval in the Air Force. Major James Machos of TAC addresses this situation in the second article. Machos contends that the Army developed its new doctrine without adequate coordination with the Air Force. Moreover, he holds that the AirLand Battle concept invites greater control of air assets by ground commanders—an Army position in clear conflict with basic Air Force doctrine that calls for centralized control of air assets, a principle growing out of combat experience in the North African cam-

paign of World War II (the last campaign, incidentally, in which the U.S. Army faced combat without assured air superiority).

AirLand Battle is not the only challenge to traditional Air Force thinking on centralized control of air assets. Indeed, a failure within DOD to achieve centralized control of air assets seems to be a part of a larger challenge our armed services face—that of achieving truly unified command in theater operations. In our third article, Colonel Thomas Cardwell argues that although the concept of unified command has been more or less accepted since World War II and is incorporated in Joint Chiefs of Staff Publication 2, we still have not achieved an effective implementation of this concept. Cardwell concludes that unity of command must be based on a "theater perspective of war fighting" and will involve the control of all "air combat forces" by a "single air component commander."

There is little doubt that in the next war, no less than in World War II, the Air Force must be capable of winning control of the air. We must still be ready to contribute what only a professional Air Force can give: control of the airspace over an extended battlefield on which our Army fights victoriously. To be so prepared, we must not only refine our capabilities continuously but remain always open to new ideas.

D.R.B.

THE *REVIEW* INVITES COMMENTS

Open debates of strategic, tactical, doctrinal, and technical issues are vital in preparing for the next war. Such debates can come only from an officer corps made up of well-educated, well-informed, motivated officers who are free to express their views openly. We assume we have such an officer corps and such debates and that the Soviets do not.

Several recent articles in our professional literature raise doubts about these assumptions and make us wonder about the vitality of our own discussions of professional issues. We solicit your views on the following quotations:

The greatest danger we face from the Soviet Army is not its numerical superiority but the possibility that its officer corps is intellectually superior. The Soviet study of war is institutionalized and the bright Russian Army officers are educated in the operational art. What would happen to NATO in the next war if the Soviets indeed have operational superiority over the allies?

COLONEL WALLACE P. FRANZ
"The Art of War,"
U.S. Army War College Art of War Quarterly, September 1983, p. 123

For reasons that are not yet clear, Soviet military writings in 1982 and 1983 stressed the tactical use of nuclear weapons. First was the publication of *Tactical Maneuver*, which appeared in late 1982. The author, a faculty member of the Frunze Military Academy, took various forms of military engagements in World War II and then discussed the use of nuclear weapons in similar types of battles. Throughout the work is the impression that success in warfare today will go to the side that is better able to utilize the results of nuclear strikes.

Had *Tactical Maneuver* stood alone, without any followups by other Soviet spokesmen, it still would have been a most significant work. But an article in the January 1983 issue of *Military Herald*, the official journal of the Soviet Ground Forces, indicated that a high-level decision had been made to emphasize the role of nuclear weapons in a theater war. Under the general heading, "Theory and Practice of Combined Arms Battle" was an article entitled, "Swiftness and Continuousness of the Offensive." *A note by the journal's editor stated that not all readers would agree with the author's opinions, and a discussion of the article would be welcomed.* [Emphasis added.] (This is a favorite ploy when the leadership has not made up its mind on a particular issue.)

DR. WILLIAM F. SCOTT
"The Themes of Soviet Strategy,"
Air Force, March 1984, p. 70

Have USAF tactics continued to develop to meet the [Soviet] threat? Or are we in danger of becoming only "technicians," of resting on our laurels as tacticians?

Tactics development in the Soviet Air Forces is a dynamic and continual process that should receive our constant attention.

CAPTAIN RANA J. PENNINGTON
"Closing the Tactics Gap,"
Air Force, March 1984, p. 88

Commentaries should be typed, double-spaced, and three to five pages in length. Address them to: Editor, *AU Review*, Bldg 1211, Maxwell AFB AL 36112

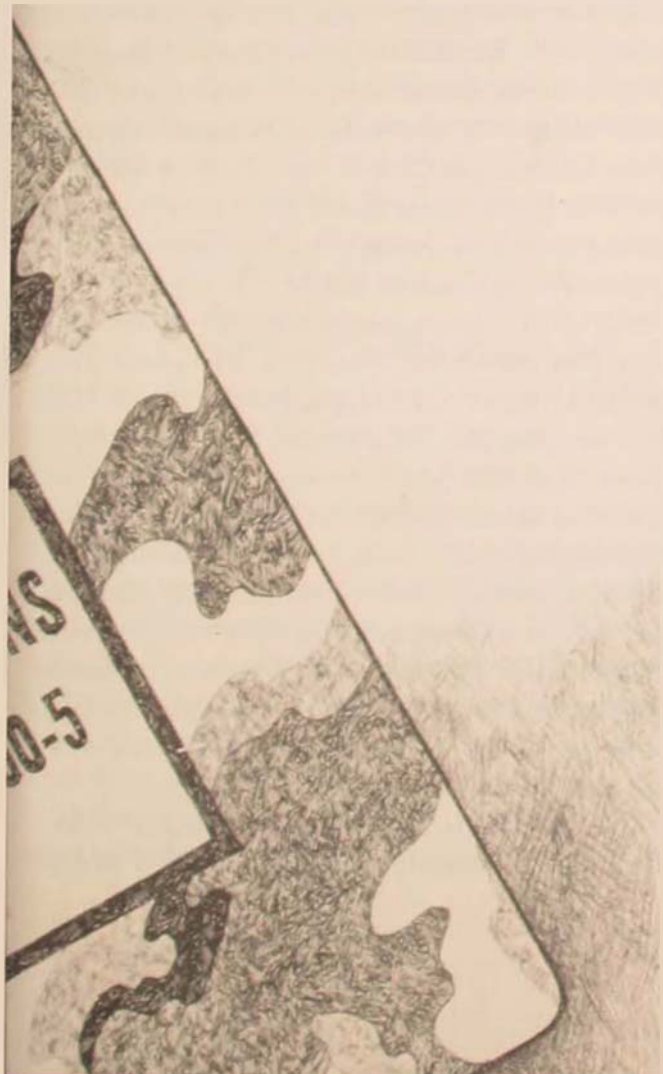
THE EVOLUTION OF THE AIRLAND BATTLE CONCEPT

JOHN L. ROMJUE

ANY review of U.S. Army tactical doctrine in the post-Vietnam era must focus on the Army project that went under the rubric of "the AirLand Battle." Contained in the fused syllables of this phrase were significant changes in battle doctrine. The changes were the culmination of several years of intensive doctrinal work by the U.S. Army Training and Doctrine Command (TRADOC) and were marked by considerable debate both within and outside the Army. This major project reflected the seriousness with which the Army, since the early 1970s, had regarded the technological edge that the Soviet Union was gaining in that decade in the tactical weaponry of its numerically stronger forces opposite NATO in Europe. In preliminary form, the new concept was first formally published in March 1981. After wide briefing throughout the defense establishment and to the highest levels of government, the AirLand Battle concept became official Army doctrine when further developed and infused into a revision of the key tactical manual, FM 100-5, *Operations*, published in August 1982.

In great part, the AirLand Battle concept sprang from the doctrinal perspective of General Donn A. Starry, who began a four-year tenure as the TRADOC commander at Fort Monroe, Virginia, in July 1977. Together with the major Army 86 Studies undertaken by Starry and his planners during 1978-80 to define new tactical field organization, AirLand Battle doctrine bid fair to be the dominant influence on the modernizing Army of the 1980s.

The development of the AirLand Battle concept and an explanation of the concept itself will be the focus of this article. Since the concept has roots that precede 1977, the contributions of General William E. DePuy, the first TRADOC commander, are worth considering first.



The DePuy Reforms

When General DePuy took over TRADOC in 1973, one of the most pressing problems that the Army faced was the need to update its weaponry. Fulfilling the immediate quantitative needs of the Vietnam War had interrupted the weapon development process for almost a decade, giving the Soviet Union nearly a generational gain in most categories of combat equipment. With little prospect of adequate funding, General DePuy, his staff, and his commanders set about defining and defending the engineering and development programs that would produce a much needed new generation of weapons.

In addition to his efforts in behalf of weapons development, DePuy had taken an intense interest in the reform of tactics and training, in line with tactical lessons drawn from the 1973 Arab-Israeli War. Out of this interest and attendant study had come the sharply revised Field Manual 100-5, *Operations*, of July 1976.[1] The new manual emphasized the critical de-

mands of "the first battle of the next war" on a battlefield where tempo and the destruction of materiel would dramatically surpass that of previous wars. The manual stressed better training, suppressive tactics, terrain use, and combined arms coordination to counter increased lethality of weapons of the 1970s. From the 1976 manual flowed a generation of practical "how-to-fight" tactical field manuals and training literature.

Finally, General DePuy initiated efforts to reorganize Army combat forces with the Division Restructuring Study and Evaluation of 1976-78. This project aimed at reorganizing the heavy divisions to harness the combat power of the oncoming new weaponry.[2]

These efforts, which DePuy led, were notable. Significant changes to modernize the Army were well along when General Starry replaced General DePuy as the commander of TRADOC in 1977. But there was still much to do. For one thing, the 1976 version of FM 100-5 had set in motion a pointed and lively doctrinal debate that raised important questions that needed to be answered. These doctrinal questions, along with issues associated with the Army's field organization, would consume much of General Starry's energy during his years as TRADOC commander.

The Early Starry Initiatives

In assuming command of TRADOC, General Starry brought with him a close interest in tactical doctrine that had been sharpened by his experience as a corps commander in Germany between 1976 and 1977. He saw the potential battle facing NATO forces as a structured "central battle" to be fought methodically and aggressively against attacking heavily armored forces of the Warsaw Pact. Based on the active-defense tactics outlined in the 1976 version of FM 100-5, this central battle would focus on a firepower battle along the forward edge of the battle area (FEBA). In General Starry's eyes, this concept still overlooked a crucial factor—the enemy's massive second-echelon forces, which, according to Soviet doctrine, would roll through the first echelon and exploit any advantages the first echelon might have gained.

In November 1978, through a major TRADOC planning document called the Battlefield Development Plan, General Starry depicted a battlefield view and weapon requirements concept based on fundamental components of the central battle, such as "target servicing," suppression and counterfire, and air defense. To the central battle and its tasks were added the concept of "force generation" and its various subordinate tasks, such as interdiction of enemy second-echelon forces at the commander's discretion and reconstitution of his forces as the battle progressed.[3] In force generation, the central battle commander had a responsibility at least as important as the initial assault. This responsibility involved "seeing deep" into the enemy's rear and concentrating combat power to attack the enemy second-echelon forces before they reached the battlefield. General Starry's aim in using the framework of the Battlefield Development Plan was to get division and corps commanders away from thinking in terms of branch organizations and capabilities. He wanted them to think instead in terms of new functions and concepts that he thought had become critically important in modern battle.

Starry also questioned features of the Division Restructuring Study of his predecessor and in October 1978 launched the major Division 86 project. This study, a commandwide effort, was based on the battlefield view and concepts of the Battlefield Development Plan. The Division 86 Study stimulated doctrinal thinking and was extended by the Chief of Staff of the Army, General Edward C. Meyer, in late 1979 into the larger Army 86 Study, encompassing not only the heavy division but the light division, corps, and echelons above corps organizations of the future Army.[4]

At the same time, a spirited doctrinal debate about the operations manual of 1976, FM 100-

5, was occurring both within and outside the Army.[4] Although critics generally liked and welcomed the 1976 manual for its clarity and stress on the tactical ramifications of the new lethality of modern weapons, they scored it on a number of important points. These included the manual's perceived defensive orientation, its dependence on tactics that appeared to emphasize firepower and attrition rather than maneuver, its apparent abandoning of the concept of a tactical reserve, and its emphasis on the Soviet breakthrough operational maneuver. As commander of the Armor Center at Fort Knox, Kentucky, during 1973-76, General Starry had contributed to the development of the 1976 manual. Now, several years later, he found himself in the position of defending and reconsidering different aspects of the manual.

The Extended Battlefield

Increasingly, the doctrinal inquiries of Army 86 had pursued the idea of a deeper battlefield or, as Starry and his planners began in 1980 to call it, the "extended battlefield." What they meant was that the battlefield had a deeper physical dimension, a time dimension, an air-land dimension now more critical than ever before, and a possible chemical and nuclear dimension. Brigade, division, and corps commanders had to see deep into the enemy's rear and to act to delay, disrupt, and destroy enemy second-echelon forces while simultaneously fighting the assaulting forces. A brigade commander looking beyond his forward line of own troops (FLOT) had to influence events up to 15 kilometers into the enemy's rear. A division commander had to influence events up to 70 kilometers beyond the FLOT, and the corps commander up to 150 kilometers. The commanders' areas of interest extended still deeper. But more important was the distance in *time* from the forward line to the oncoming enemy echelons, for this time governs the point when commanders must take action—12 hours away for the brigade, 24 for the division, and 72 for the corps. To handle this new depth of the modern battlefield, U.S. land and air forces had to wage a synchronized, fully integrated Air-Land Battle.

In the interest of improved clarity, General Starry chose "AirLand Battle" as the title for the new concept that involved such a close interaction between all air and ground capabilities.

The extended battlefield concept was much more offense-oriented than that of the central battle of two years earlier. It reflected the effects of the doctrinal debate that centered on the 1976 manual's alleged emphasis on the defense and on attrition warfare. But the extended battle view also encompassed a significant new element. In answer to the manifest readiness of Warsaw Pact forces to employ tactical nuclear and chemical weaponry, Army and TRADOC planners took steps during 1979-80 to include these aspects of what is known as the "integrated battlefield" into their tactical planning.

Noteworthy here were the results of the Army's tactical nuclear systems program review held at Fort Sill, Oklahoma, in December 1979. During the program review, Field Artillery Center planners had laid out analytical descriptions of the tactical nuclear battlefield for the Army to see. A targeting analysis by the Fort Sill planners showed that well-planned interdiction of the enemy's second or "follow-on" echelons not only could blunt the force of the attack but could critically interrupt its momentum. Interdiction could, in this way, create periods of U.S. tactical superiority. During these periods, the initiative could be seized for offensive action and the release authority for tactical nuclear strikes, if needed, could be secured. Thus, well-planned interdiction could create "time windows" for action that would not otherwise exist, given the enemy's great superior-

ity in numbers and firepower, thereby offering significantly wider opportunities for offensive action and maneuver.[6]

Still another doctrinal change occurred when, under the influence of the Soviet invasion of Afghanistan and the beginning of the Iranian hostage crisis in late 1979, Carter administration officials grew interested in the military demands for the non-NATO world. For the Army, the change was formally announced by General Meyer in a white paper of February 1980.[7] TRADOC's light division study of 1979-80 and the subsequent high-technology testbed project undertaken by the 9th Infantry Division at Fort Lewis, Washington, inaugurated doctrinal forays into the non-NATO arena. To these projects were added studies of a contingency corps and its higher command echelon and a 1983 effort to create a 10,000-man light division.

Introducing the New Doctrine

It was from these events of the 1970s that the extended battlefield concept emerged. TRADOC presented the concept at the Army Commanders Conference of October 1980, and General Meyer approved it at that time. A team headed by the U.S. Army Combined Arms Combat Developments Activity at Fort Leavenworth, Kansas, briefed the concept to all of the Army's major command headquarters in the ensuing months; and it was well received. Favorable responses also came from U.S. Air Force and Army units briefed in Germany and Korea. Meyer approved additional team visits to the corps and divisions during the early part of 1981. The team also took part in a 3d Armored Division test of a special fire support targeting cell concept, which was developed to select high-value targets for interdiction. In V Corps, the team demonstrated how tactical air control systems could support the targeting cells to press the deep attack.

The terminology of "extended" and "integrated" battlefields was awkward and, in part, overlapping in meaning. Even more awkward was the use of the two terms together to describe what TRADOC believed was emerging as a significant new doctrine. In the interest of improved clarity, General Starry chose "AirLand Battle" as the title for the new concept that involved such a close interaction between all air and ground capabilities.[8]

The development of the new doctrine was one thing; its acceptance by the Army and an influential cadre of civilian defense writers and critics was another.[9] Fresh in memory was the debate over the 1976 version of FM 100-5 with its active defense doctrine. In 1981, TRADOC Headquarters proceeded differently from the way it had with the 1976 concept. First, General Starry took pains to include the Army at large in the development of AirLand Battle, disseminating information through briefings and wide circulation of Fort Leavenworth's draft of the new FM 100-5 during 1981. The doctrine was well received. AirLand Battle was an offense-oriented doctrine that the Army found intellectually, as well as analytically, convincing.

The concept called for early offensive action, by air and land, to the full depth of enemy formations to defeat an enemy attack.

Second, after General Meyer approved the doctrine, TRADOC seized the initiative in presenting it to the military and civilian public. TRADOC personnel at Fort Leavenworth and Fort Monroe developed briefings about AirLand Battle, as well as a future battle concept for the 1995-2015 period (AirLand Battle 2000), and presented these briefings to Department of the Army action officers in the Pentagon and to the undersecretaries and assistant secretaries of DOD. The AirLand Battle presentation was also offered to members of the Congressional Reform Caucus and, subsequently, to still wider congressional

circles, where it was well received. Ultimately, the briefings were given to all principals of the Department of Army staff, to all the service chiefs and their deputies, and to Vice President George Bush.

These briefings stressed the importance of unfettered, imaginative doctrinal thinking. Against Soviet power, an attrition doctrine could not succeed. The U.S. Army had to rely on the strength of Western man, had to exploit his innovativeness, independent thinking, flexibility, and adaptability. According to these briefings, the AirLand Battle could not be adequately described by the traditional football metaphor with its terrain orientation. Rather, it should be seen in terms of a soccer game, where the orientation is on the enemy, the action is fluid, and independent action and maneuver could lead to collapse of the enemy's overloaded system.[10]

The AirLand Battle briefings thus informed influential Army, congressional, and administration officials about the doctrinal developments accompanying the transition to Army 86 and the new weaponry coming into production and deployment. The briefings of 1981-82 presented a doctrine that corrected the major problems of the 1976 FM 100-5 and appeared very sound.

The Operational Concept of AirLand Battle

The concept of the AirLand Battle published in March 1981 was explicit about the conditions of modern battle, and it was correspondingly candid about how Army units in combat had to deal with those conditions if they were to fight, survive, and win.[11] Topics that had previously been excluded from discussion because of prevailing national policies once again surfaced in the debate. Holding the heavily armored and far more numerous Warsaw Pact forces at risk by early continuous planning to employ tactical nuclear weapons if attacked and threatening to retaliate with chemical weapons should the Warsaw Pact employ its own large and well-trained chemical forces were ideas that could once more be discussed publicly, as they had been in the 1950s and 1960s.

The AirLand Battle dealt with the Army's major and most serious challenge—armored, mechanized, combined arms battle.

The concept called for early offensive action, by air and land, to the full depth of enemy formations to defeat an enemy attack. Mindful of the absence of clear and consistent American political aims in Vietnam and of the Clausewitzian maxim that "war is a continuation of policy by other means," the AirLand Battle concept stated:

> . . . once political authorities commit military forces in pursuit of political aims, military forces must win something—else there will be no basis from which political authorities can bargain to win politically. Therefore, the purpose of military operations cannot be simply to avert defeat—but rather it must be to win.[12]

These were forthright statements, clear in intent and disabusing the Soviet Union of any perception that shifting strategic power had opened for it a new freedom of action at theater levels. The AirLand Battle dealt with the Army's major and most serious challenge—armored, mechanized, combined arms battle. The new concept projected an explicitly offensive emphasis and had as its distinguishing feature an extended view of the modern battlefield—extended in both distance and time. The extended battlefield added emphasis on integrated attack by land and air forces and provided options embracing the tactical nuclear and chemical dimensions of modern war.

The authors of the concept did not see deep attack as a matter of choice but as an absolute

necessity for winning in an East-West confrontation in Europe. The great numerical superiority of the enemy's follow-on echelons, not the type of operational maneuver the Soviets might employ, was the significant factor that demanded it. The oncoming second echelon had to be slowed and broken up by a battle deep in the enemy's rear that would be fought simultaneously with the close-in contest. The deep attack required tight coordination with the close-in battle so that scarce means of attack would not be wasted. It required that planners not only anticipate enemy vulnerabilities but view this two-part battle as one engagement. With his second echelon disrupted, the enemy would find his operational scheme undermined; and, having lost the initiative, he would be forced to call off the attack.

The overall message conveyed by the AirLand Battle concept of 1981 was that the Army must leave behind the restricted notion of winning the fight only in the traditional "main battle area."

For effective implementation, the concept required sensors and surveillance systems to prevent surprise attack and to gain targeting and surveillance information. Also needed were dual-capable conventional and nuclear systems with the range and destructiveness to put enemy forces at risk, including forces in the second-echelon region. The concept also required command and control systems that operate automatedly and in near real time. When combined, these means make possible a defensive battle, part of which takes place far forward of one's main defensive position. Viewing the enemy far behind its forward line, commanders can begin early to delay and destroy follow-on echelons, while simultaneously engaging and defeating the first-echelon assault; then they can transition to attack and to finish the battle before the arrival of the enemy's remaining follow-on armies.

The concept delineated clearly how the time element figured into the deep battle. It detailed in hour-spans not only the time given to brigade, division, and corps commanders to attack their respective elements of the second-echelon formations but also the time given to see the enemy formations in the still more distant rear. Thus, each commander—brigade, division, and corps—has dual responsibilities under the concept: attack the enemy assault echelon and attack the follow-on echelon of the assaulting force.

The concept embodied a detailed scenario for the second-echelon attack. Critical here was what TRADOC writers called "intelligence preparation of the battlefield." Aided by a network of sophisticated sensor and communications systems, commanders would attack high-value targets to disrupt the enemy's forward momentum progressively. Three primary means of deep attack existed: interdiction (including air power, artillery, and special operating forces), offensive electronic warfare, and deception. The concept stressed an absolute need for an integrated plan of attack aimed at both the assault and the follow-on echelon. Because of the depth of the attack against the second echelon, the air aspect would dominate the early phase of the air and land battle.

The concept stressed that the Army's transition to the tactical ideas of the AirLand Battle had to begin at once. In line with the maxim "we must train as we will fight," commanders in the field had to begin immediately to practice the concepts by which they would fight in the 1980s. Above all, special cells for second-echelon targeting had to be established in all fire support elements. These cells had to be capable of nuclear, conventional, and chemical targeting. To make it all work, the corps had to have control of the requisite aerial sensors and intelligence processors.

The overall message conveyed by the AirLand Battle concept of 1981 was that the Army

must leave behind the restricted notion of winning the fight only in the traditional "main battle area." The Army was now "entering a new dimension of battle which permits the simultaneous engagement of forces throughout the corps and division areas of influence." It had to begin immediately to practice, learn, and refine the AirLand Battle concept.[13]

Concept to Doctrine: The New FM 100-5

At Fort Leavenworth, in the meantime, work was proceeding during 1981 on the revision of FM 100-5. Selected as principal author was Lieutenant Colonel Huba Wass de Czega, an officer assigned to the Command and General Staff College. General Starry met often with Wass de Czega and his assistants during the writing. Besides the wide staffing throughout the Army, TRADOC invited outside critics and writers to review and discuss the drafts and contribute their thoughts. TRADOC wanted the new FM 100-5 to embody fully the AirLand Battle. In September 1981, the manual was published in draft by Fort Leavenworth.[14] This draft was subjected to an extensive review by the Army prior to publication of the finished manual in August 1982.

In today's warfare, as in the past, the force that retains the initiative will win.

Like its predecessor, the new *Operations* was a significant doctrinal statement.[15] Not only did it embody important changes, but it reflected, in line with the shift in national strategic perceptions since the late 1970s, the more confident tone of an offense-oriented military operational doctrine.

In the 1980s, the new FM 100-5 notes, the U.S. Army could find itself in battle in any of a number of places against a variety of opponents: the modern mechanized armies of the Warsaw Pact, similarly organized Soviet "surrogates" in Southwest and Northeast Asia, or lighter well-equipped insurgents or terrorist groups in other parts of the world. However, the manual indicates that the land forces of the Soviet Union are the most serious challenge facing the modern Army.

Today, Soviet doctrine emphasizes the principles of mass and maneuver and seeks victory through a relentless prosecution of the offensive. If nuclear and chemical weapons are required to ensure operational success, the Soviets will use them. Indeed, their basic doctrine assumes such use, and their armies are equipped, armed, and trained to use nuclear and chemical weapons without need to pause for transition.

Against such an enemy, the manual notes, all available military force of all the services must be applied. In today's warfare, as in the past, the force that retains the initiative will win. On the integrated, air-land battlefield, the key to retaining the initiative is disrupting an enemy's fighting capability with deep attack, effective firepower, and decisive maneuver.[16] Furthermore, U.S. forces must plan to expect nuclear and chemical operations from the beginning of hostilities. First use of chemical and nuclear weapons by the enemy cannot be permitted to decide the conflict. On the modern battlefield, nuclear fires might well be "the predominant expression of combat power," with small tactical forces being used to exploit their effects. Such engagements would be short and violent. Decisive battles might last hours, instead of days or weeks.[17]

Modern electronic countermeasures could disrupt effective command and control severely, placing a premium on the initiative of subordinate commanders. Such initiative is a point of emphasis in the new manual, which adapts the German Army principle of *Auftragstaktik*, the ability of subordinate leaders in combat to act independently in the changing battle within the context of the overall plan. Airmobility, now a Soviet as well as U.S. capability, would, together with air power, extend the battlefield

to great depths. For the U.S. Army, logistical lines would be long and vulnerable. Rear areas would be subject as never before to attack and disruption by subversion and terrorist actions and by airmobile, amphibious, and airborne forces, as well as by air interdiction and long-range fires. Combat in built-up areas, including the extensive urbanized sections of West Germany, would be inevitable. All of this adds up to a battlefield situation that would be extremely fluid.

Under conditions such as these, battle would place a premium on leadership, unit cohesion, and effective independent operations. Leaders would need to be more skillful, more imaginative, and more flexible than ever before. Training, the manual writers affirm, is the cornerstone of success in battle, and training for war is the principal peacetime responsibility of all commanders: "On the day of battle, soldiers and units will fight as well or as poorly as they were trained before battle."[18] In the Army's units, training must concentrate on leaders and combat teams. Commanders must focus on building confidence and initiative in their subordinate leaders. Unit training must be realistic and as rigorous for support units as for combat units.

It is significant that the new manual again places the principles of war and their application at the center of Army thinking. The principles of war had been pointedly omitted from the operations manual of 1976 in a conscious attempt to avoid theory and to focus on the precise requirements of winning the defensive "first battle of the next war" in Central Europe. What the writers of the 1982 manual were striving for instead was a concept broad enough to encompass operations in all anticipated circumstances.[19]

The new FM 100-5 adds precision to earlier statements of the AirLand Battle concept. It is explicit about the intent of U.S. Army doctrine, and it conveys a vigorous offensive spirit. AirLand Battle doctrine "is based on securing or retaining the initiative and exercising it aggressively to defeat the enemy. . . . Army units will. . . . attack the enemy in depth with fire and maneuver and synchronize all efforts to attain the objective." It also notes that "our operations must be rapid, unpredictable, violent, and disorienting to the enemy."[20]

An increase in clarity has been added by inserting into the manual a new level of military art. Between tactics and strategy, the manual inserts the intermediate level traditionally recognized by the German and other armies as the operational level of large units (i.e., the operations of armies and corps that involve activities below the level of military strategy and above the level of tactics). Throughout the manual, the writers held to a clarifying distinction between circumstances and actions at the tactical level and those at the operational level.

Attacks that avoid the enemy's main strength but shatter his will or reduce his fighting capability are the fastest and cheapest way of winning.

The addition of the operational level resulted from a decision made by General Starry's successor at TRADOC, General Glenn K. Otis. This decision was made late in the writing of the manual. The addition of the operational level had been strongly urged by the Army War College and was discussed by German Army reviewers during the staff review process. Indeed, there was much doctrinal interaction with the German Army General Staff during the course of the Army's development of the new FM 100-5. General Starry favored a close doctrinal compatibility with German Army manual 100-100, *Command and Control in Battle.*

In outlining the dynamics of battle, FM 100-5 delineates the elements of combat power. Here, the manual departs from its predecessor in emphasizing maneuver as the dynamic element of combat. Maneuver is

> . . . the means of concentrating forces in critical areas to gain and use the advantages of surprise, psychological shock, position, and momentum which enable smaller forces to defeat larger ones. . . . It is the employment of forces through movement supported by fire to achieve a position of advantage from which to destroy or threaten destruction of the enemy.[21]

Firepower provides "the enabling, violent, destructive force essential to successful maneuver." Maneuver and firepower are "inseparable and complementary elements of combat."[22] Protection, the shielding of the fighting potential of the force in physical and morale terms, is another component of combat power.

The new manual places considerably more emphasis on leadership than had its predecessor. Although not measurable, leadership is an enduring military constant. "Leaders are the crucial element of combat power."[23]

Into its doctrine of the offense—the destruction of enemy forces—the new FM 100-5 introduces Clausewitz's idea that "when we speak of destroying the enemy's forces . . . nothing obliges us to limit this idea to physical forces: the moral element must also be considered."[24] Thus, attacks that avoid the enemy's main strength but shatter his will or reduce his fighting capability are the fastest and cheapest way of winning. Attack against enemy weakness (rather than force-on-force attrition battle) and maintaining the momentum of the initiative are the keynotes of the offensive doctrine. The authors of the manual drew freely on Clausewitz's emphasis on violent *effect*, combining it with Liddell Hart's doctrine of the "indirect approach," and joining these ideas to the AirLand Battle emphases on initiative, depth, agility, and synchronization. Five elements of offensive action are highlighted as the most fundamental: concentration of effort, surprise, speed of attack, flexibility, and audacity.

New emphases in defensive doctrine also are established in the new FM 100-5. The active defense, dependent on carefully concerted lateral movements by elements of the defending force, had been one of the most controversial elements of the 1976 doctrine. In the new edition, it gives way to a doctrine in which the defensive could vary from a static positional defense to a deeper, more dynamic force-oriented defense of maneuver, as the situation demanded. Defense might be forward or in depth and might rely heavily on strong points. As with the offense, the operational concept of the defense calls for engaging the enemy throughout the depth of his formation to disorganize him and create opportunities for offensive action.

The new manual is more explicit than its predecessor about the question of reserves. The 1976 manual had asserted that a division commander who spread two of his brigades thinly across a wide area, holding his third brigade in reserve, would be defeated by a breakthrough attack.[25] But the new manual returns to a more traditional reliance on reserves. Commanders down to brigade normally would retain about one-third of their maneuver strength in reserve.

The shifting of forces by lateral movement that had characterized the active defense is discouraged in the new manual. This movement is now seen to be an especially vulnerable operation that an enemy might easily disrupt or prevent by air or artillery interdiction. Moreover, vacating a sector to move laterally actually invites enemy penetration and is, in any case, psychologically difficult.[26]

The new FM 100-5 recognizes the inseparability of tactics and logistics: what cannot be supported logistically cannot be accomplished tactically.

Additional sections of the new FM 100-5 outline the problems of how to support a fighting force whose consumption of ammunition, fuel, repair parts, and other logistical supplies could be expected to be enormous. Emphasis is placed on fast forward resupply, foward maintenance, and, where possible, conservation.

The new FM 100-5 recognizes the inseparability of tactics and logistics: what cannot be supported logistically cannot be accomplished tactically. An addition in the new manual is a special section on joint and combined operations, since the U.S. Army in the most likely warfighting situations will be fighting alongside another service or as part of a combined force.

The new FM 100-5 reflects a pronounced sense of history by incorporating a number of germane military maxims. For example, one finds in the new manual the Clausewitzian concept of friction, which explains why in war even "the simplest things become difficult." Also included in the manual are examples from military history, such as General Patton's use of the Norman roads to gain surprise and avoid the heavily defended modern routes. There is also the injunction of Sun Tzu that "the worst policy of all is to besiege walled cities," as borne out, for the writers, at Stalingrad and Tobruk.[27] The manual also uses brief battle descriptions to illustrate doctrinal points. Two examples are the Vicksburg Campaign, used to illustrate the importance of speed and surprise in the indirect approach, and Tannenberg, as a demonstration of exploiting fluid conditions to transition from the defense to the attack.

Significantly, the new manual notes, as the 1976 manual had not, the political aspect of warfare. Defeating enemy forces in battle does not always ensure victory. "Other national instruments of power and persuasion will influence or even determine the results of wars. Wars cannot be won . . . without a national will and military forces equal to the task."[28]

Also of importance is the fact that the "air-land war" has changed in definition from its 1976 meaning. No longer simply cooperation and mutual support between the land and air arms, AirLand Battle in the 1980s refers to dual and simultaneous battles on the forward line and deep in the enemy's rear echelons, by air power and ground forces working in close concert.

Finally, and not least, the clear turn of phrase and apt metaphor that readers of the 1976 manual had found striking are not lost in the new FM 100-5. Conscious that clear ideas turn on cogent phrases and lucid writing, the manual's writers worked to avoid the pitfalls of jargon and specialty speech. In this aspect, they both borrowed and invented, employing, for example, the arresting Clausewitzian image of the defense as "a shield of blows," along with the AirLand Battle concepts of *deep battle* and of *collapsing* the enemy's fighting structure.

With publication of the revised FM 100-5 of August 1982, the concept of AirLand Battle was established as the Army's fighting doctrine for the decade ahead. Intimately bound up with the restoration of U.S. strategic capabilities in the early 1980s, the new doctrine provides a forthright intellectual basis for an army that is reassuming an explicitly offense-oriented readiness. Since it puts the Army in a much better position to defeat a Soviet attack, AirLand Battle is a notable contribution to deterrence as well.

Fort Monroe, Virginia

Notes

1. Field Manual 100-5, *Operations*, Headquarters Department of the Army, 1 July 1976.

2. See John L. Romjue, *A History of Army 86*, Vol. I, *Division 86: The Development of the Heavy Division*, Headquarters TRADOC, June 1982, pp. 1-10 and 42-48.

3. Letter ATCD-PD, TRADOC to distribution, 17 November 1978, subj: Battlefield Development Plan. Ten tasks were envisioned as encompassing all aspects of battle. The five critical tasks of the central battle were target servicing, air defense, suppression-counterfire, logistical support, and command-control-communications (C³)-electronic warfare. The commander's five critical task in force generation were interdiction, C³, force mobility (mine clearing and bridging), surveillance-fusion, and reconstitution. Several of the critical tasks were later revised.

4. Romjue, pp. 10 ff. and 124.

5. For a discussion of the early debate in the service and defense journals during 1976-78, see TRADOC Annual Historical Review Fiscal Year 1978, August 1979, pp. 139-54.

6. General Donn A. Starry, "Extending the Battlefield," *Military Review*, March 1981, pp. 31-50.

7. Chief of Staff, U. S. Army White Paper 1980, "A Framework for Molding the Army of the 1980s into a Disciplined, Well-Trained Fighting Force," 25 February 1980.

8. Message 291305Z January 1981, Commander TRADOC to distribution, subj: The AirLand Battle.

9. The record is clear that the major intellectual force behind the formulation of AirLand Battle was General Donn Starry. He was aided significantly by the TRADOC Deputy Commanding General, Lieutenant General William R. Richardson, who commanded the Combined Arms Center at Fort Leavenworth, and by Richardson's staff, in particular the author-designee for the revision of FM 100-5, Lieutenant Colonel Huba Wass de Czega. Major General Jack N. Merritt (Field Artillery Center Commander), Colonel Anthony G. Pokorny, and Lieutenant Colonel Steven Doerfel at Fort Sill helped develop the concept analytically from the central battle ideas of 1977 to AirLand Battle. Pokorny had had an earlier central role in the formulation of the Battlefield Development Plan. Brigadier General Don Morelli played an active role, especially in the briefing of AirLand Battle to DOD, congressional, and administration circles. Important also in the formulative work was Morelli's deputy, Colonel Edwin G. Scribner, and Colonel Frederick M. Franks of the TRADOC combat developments planning directorate. Authorship must be considered multiple and includes many planners not named here.

10. Memorandum for Record ATCS-H, TRADOC Historical Office, 30 January 1981, subj: Concepts and Doctrine Conference, 28-29 January 1981, Headquarters TRADOC.

11. TRADOC Pamphlet 525-5, *Military Operations: Operational Concepts for the AirLand Battle and Corps Operations—1986*, 25 March 1981.

12. Ibid., p. 2.

13. Ibid., p. 21.

14. Field Manual 100-5, *Operations* (final draft), 4 September 1981.

15. Field Manual 100-5, *Operations*, Headquarters Department of the Army, 20 August 1982.

16. Ibid., pp. 1-5 and 4-1.

17. Ibid., pp. 1-3 and 4-4.

18. Ibid., p. 1-4.

19. Ibid., pp. B-1 to B-5.

20. Ibid., p. 2-1.

21. Ibid., p. 2-4.

22. Ibid., pp. 2-4 and 7-7.

23. Ibid., p. 2-6.

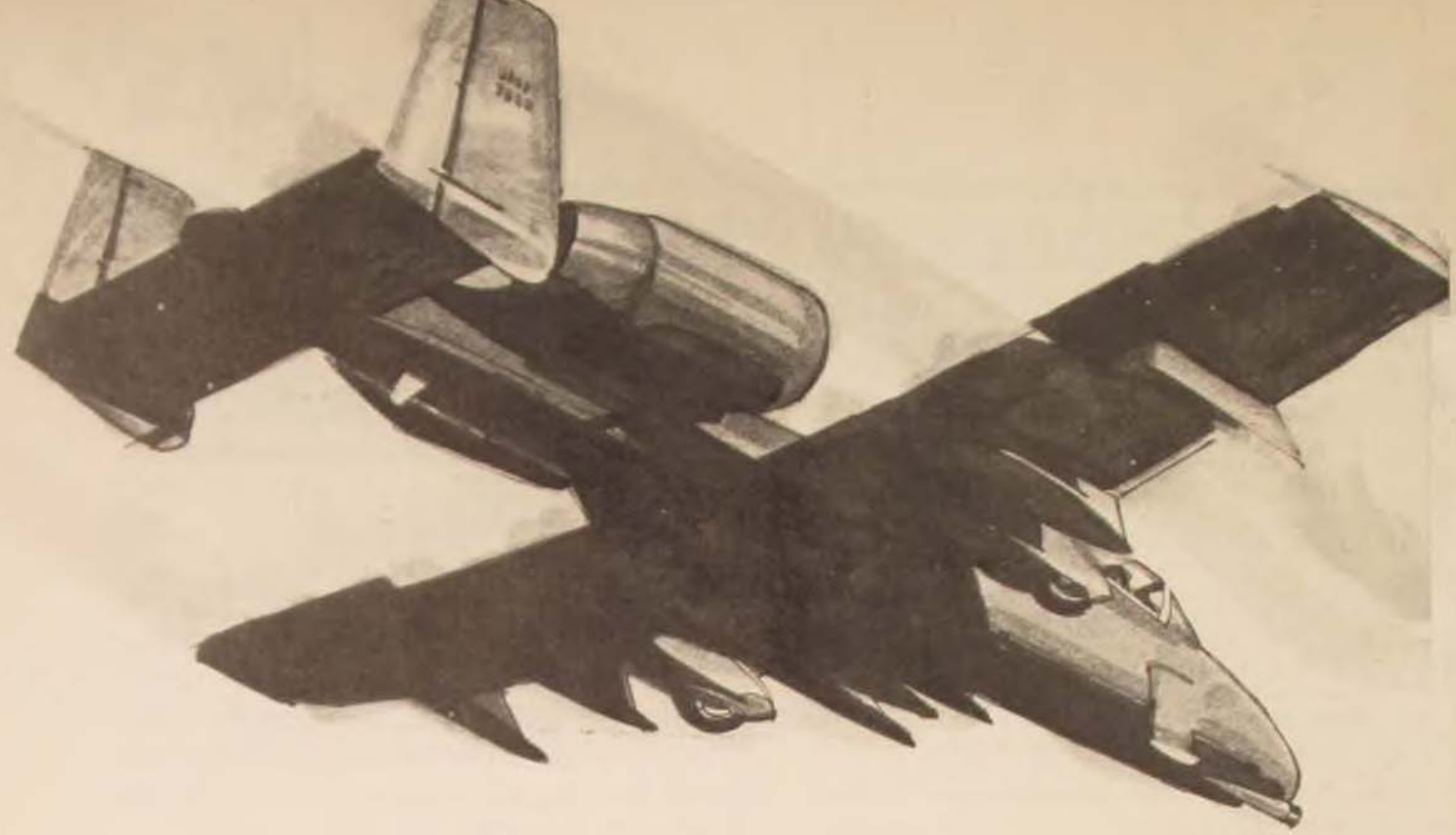
24. Ibid., p. 8-4.

25. Field Manual 100-5, *Operations*, 1 July 1976, p. 5-8.

26. Field Manual 100-5, *Operations*, 20 August 1982, pp. 11-8 and 11-9.

27. Ibid., pp. 4-1, 3-5, and 3-8.

28. Ibid., p. 1-1.



TACAIR SUPPORT FOR AIRLAND BATTLE

MAJOR JAMES A. MACHOS

AIRLAND Battle is the U.S. Army's new fighting doctrine. The name implies cooperation and agreement between the U.S. Army and Air Force, but, in fact, AirLand Battle doctrine has been a unilateral development of the U.S. Army. Only recently has the Air Force become actively involved with the doctrine. A Memorandum of Understanding, signed in April 1983 by Generals Edward C. Meyer and Charles A. Gabriel, has been hailed throughout much of the Army as full Air Force endorsement of AirLand Battle doctrine. However, to the more critical observer, the agreement represents only an official agreement for the Air Force and Army to cooperate in "joint tactical training and field exercises based on the AirLand Battle doctrine."[1] It does not acknowledge AirLand Battle doctrine as the sole governing principle for joint training and exercises, nor does it concede unequivocal primacy of AirLand Battle doctrine over established Air Force doctrine.

The advent of the U.S. Army's AirLand Battle doctrine has forced land commanders to broaden their battlefield perspective—which, in turn, has increased Army interest in the availability of tactical air (TACAIR) to support Army combat efforts. From the Army commander's viewpoint, *controlling* allocated TACAIR is the best way to ensure that TACAIR will be available to support his combat operations. On the other hand, the air forces required to support ground forces operate under Air Force doctrine that calls for centralized control of air assets to ensure their effective use. From the airman's viewpoint, air assets must be concentrated first to win the battle in the air and then to carry out strategic

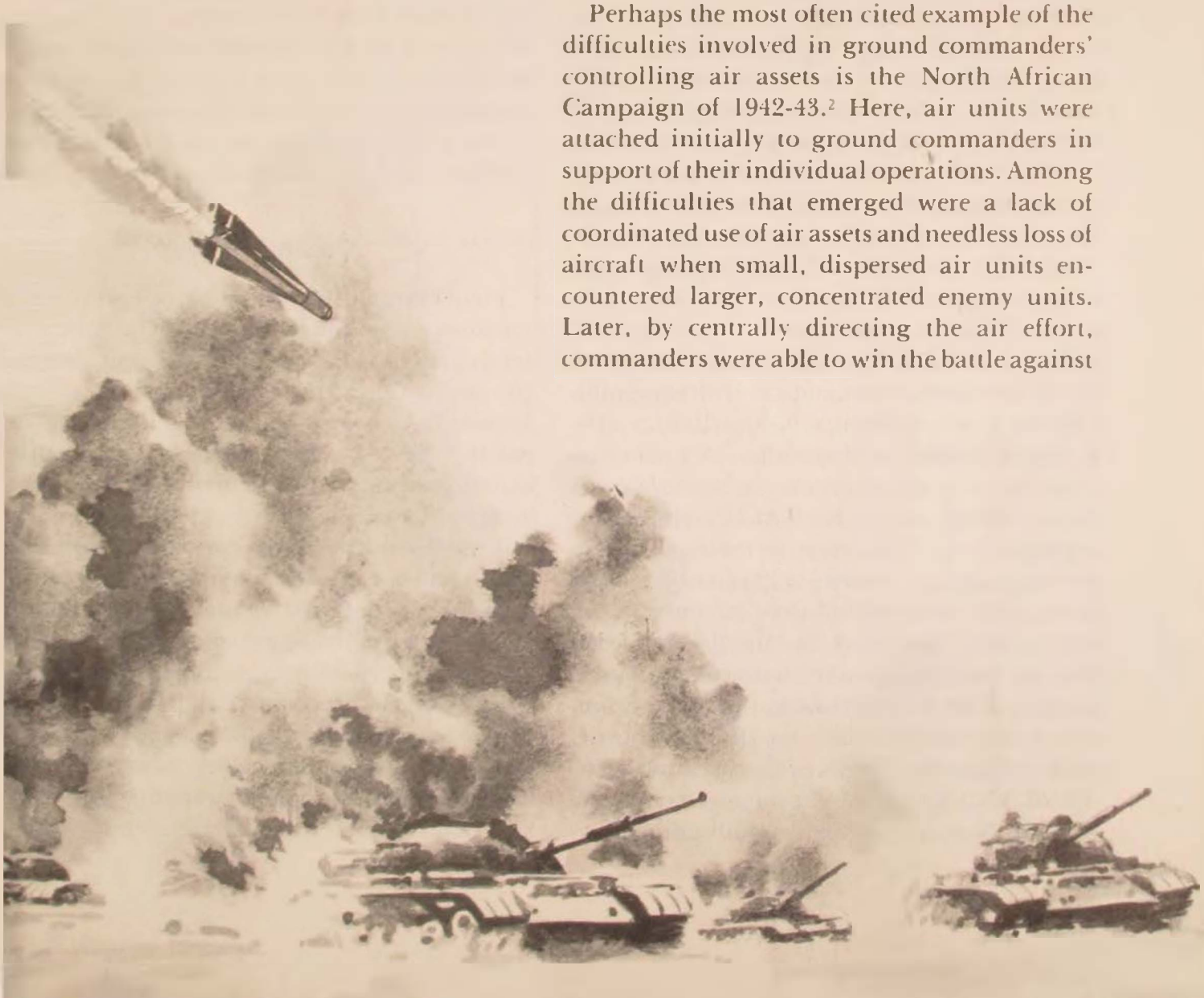
operations and operations in support of the land battle. Obviously, this divergence in outlook needs to be understood and reconciled.

Air Power Doctrine and the Tactical Air Control System

Basic Air Force doctrine is contained in Air Force Manual 1-1, *Functions and Basic Doctrine of the United States Air Force*, which describes the fundamental principles governing the application of air power. Among the more important of these principles are centralized control and decentralized execution. The exceptional flexibility of air power (its ability to transport personnel and equipment and to project firepower at greater ranges and speeds than traditional land- and sea-based systems) suggests that its application can best be viewed from a theater perspective. Centralized control allows the air component commander to employ air power effectively throughout the theater by focusing it on specific theater objectives when necessary. To accomplish the mission effectively, the air component commander delegates to his subordinate commanders responsibility for detailed mission tasking, planning, and execution.

Because of the capabilities arising from the air weapon's flexibility, air power has become a major factor in warfare. Often it has provided the extra shock and extra firepower that were vital to success in ground combat operations. Because air power has proved so valuable in supporting the ground battle, ground commanders frequently have sought greater control over air assets.

Perhaps the most often cited example of the difficulties involved in ground commanders' controlling air assets is the North African Campaign of 1942-43.[2] Here, air units were attached initially to ground commanders in support of their individual operations. Among the difficulties that emerged were a lack of coordinated use of air assets and needless loss of aircraft when small, dispersed air units encountered larger, concentrated enemy units. Later, by centrally directing the air effort, commanders were able to win the battle against



enemy air power *and* support the ground battle.

From the standpoint of air operations, the North African experience indicated that "there must be a command structure to control the assigned air power coherently and consistently and to ensure that . . . air power is not frittered away by dividing it among" various other commands.[3]

A point worth emphasizing is the battlefield perspective resulting from operations in North Africa: air power must be viewed and employed as a theater asset. It is the theater perspective, arising out of combat experience, that leads the Air Force to hold that air power must be centrally controlled to be effective. Thus, centralized control of air power is a basic element of Air Force doctrine; it reflects what combat experience indicates is fundamental to the success of theater air operations.

Air Force doctrine further identifies nine basic operational missions for air forces. Of these, three are the primary responsibility of tactical air forces: close air support, air interdiction, and counterair operations.[4] In conducting those three theater missions, the air component commander controls the employment of TACAIR forces through the tactical air control system (TACS).

The heart of the TACS is the tactical air control center (TACC), which is the focal point for all air-related command, control, communications, and intelligence (C^3I) activities. (Depending on the total number of forces employed in a theater, there may be more than one TACC.) Furthermore, the TACC's intelligence capabilities and its access to national intelligence-gathering systems make it the theater focal point for near-real-time information on the enemy. This access to intelligence data, plus the concentration of communications capabilities, makes the TACC the logical command and control center for effective theater-wide application of tactical air power. The TACC also includes liaison elements from other services in the theater, facilitating closer integration of air operations with the activities and operations of the other services.

In most established theaters, the Army liaison element in the TACC is the battlefield coordination element (BCE). As the land component representative, the BCE provides to tactical air planners a clear perception of the land component's plans, operations, and requirements for TACAIR support. Being collocated with the TACC, the BCE can provide feedback on the current ground situation and TACAIR support efforts and facilitate the crossflow of other operational data between land and air forces. It provides a means for the air component commander, through the TACC, to react, replan, reorganize, or redeploy air assets quickly and *correctly* to support ground operations.

Thus, Air Force insistence on centralized control of air resources rests on two key points: the necessity for a *theater* perspective in applying tactical air power to decisive points on the battlefield and the fact that the *established* communications and intelligence capabilities of the TACC facilitate the rapid and effective application of TACAIR to these decisive points.

AirLand Battle

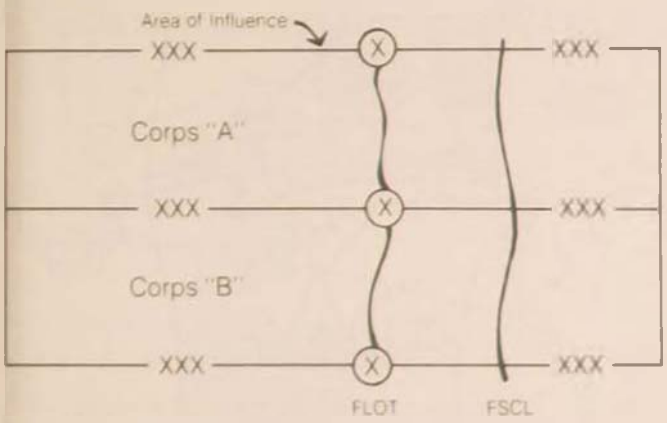
Field Manual 100-5, *Operations*, is the basic document describing how the U.S. Army intends to fight in future conflicts. The approach to combat outlined in this manual is what is known as AirLand Battle. "It emphasizes tactical flexibility and speed as well as mission orders, initiative among subordinates, and the spirit of the offense."[5] According to this manual, modern conflict presents the Army with these challenges: the nonlinearity of future battlefields, the development of imaginative and flexible leadership, maintenance of unit readiness, and unit and individual training. To operate on the modern battlefield, the Army must be ready to fight as a team in joint and combined operations, for only by coordinating all available military forces in pursuit of common objectives can the United States hope to win.

AirLand Battle doctrine relies on complementary actions by combat forces of all services. By carefully synchronizing the various organic and supporting fires, the ground commander can create the synergism necessary for him to engage and defeat numerically superior foes. TACAIR provides a large part of the ground commander's fire support and therefore has assumed a high priority in his planning for offensive actions.

AirLand Battle Focus: Corps Operations

For the Army, the corps is the focal point for AirLand Battle. To fight the battle and give coherence to overall control of battlefield operations, the corps will fight the enemy in an assigned "area of influence." (See Figure 1.)

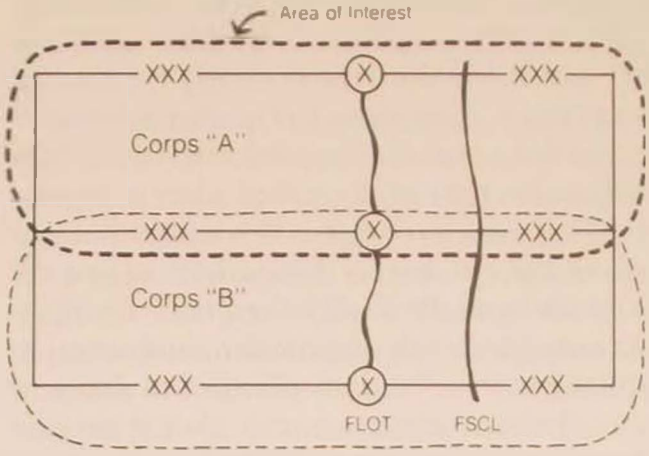
Figure 1 The Area of Influence



This area normally contains enemy forces whose actions can affect the corps' close-in battle; its boundaries are assigned by higher land headquarters. In a multicorps situation, these boundaries ensure that the operations of one corps will not interfere with those of an adjacent corps. Adjacent corps are required to coordinate on operations that cross or may cross into another corps' area of influence.

To acquire the necessary intelligence to support its attacks on the enemy, the corps monitors activities in an area called the "area of interest," which extends beyond the assigned area of influence. (See Figure 2.) Of special note is that while areas of influence do not overlap, areas of interest often do.

Figure 2 The Area of Interest



The actual geographical size of these areas is determined by various situational factors[6] and the reaction time that a particular unit needs to counter new battlefield developments. For a corps, the normal reaction time is 72 hours. Thus, the normal corps area of influence extends to 72 hours, while the area of interest ends at about 96 hours. These time guidelines are translated into distances based on enemy movement capability, terrain, etc., resulting in nominal corps boundaries of 150 kilometers beyond the forward line of own troops (FLOT) for the area of influence and 300 kilometers for the area of interest.

In executing AirLand Battle doctrine, corps commanders will integrate the actions of all organic and support combat elements to achieve their battlefield objectives. They will attempt to extend combat operations to the maximum depth of the opposing enemy formations. In so doing, they will be guided by several fundamentals of AirLand Battle doctrine. These fundamentals stress indirect approaches, speed and flexibility, offensive initiative, clearly defined objectives and operational concepts, a clearly designated main effort, rapid follow-up, and deep attack. The last of these fundamentals is perhaps the most controversial ele-

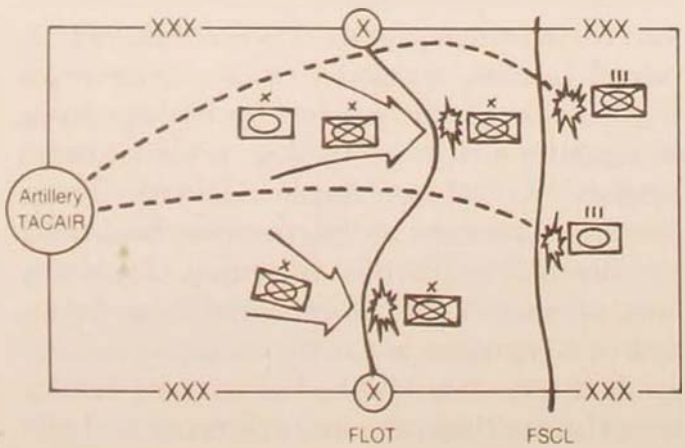
ment of the Army's new doctrine, for it is "deep attack" that many equate to AirLand Battle doctrine.

Deep Attack

The central importance of deep attack to AirLand Battle doctrine is clearly established in FM 100-5: "Deep attack is neither a sideshow nor an unimportant optional activity; it is an inseparable part of a unified plan of operation."[7] Deep attack refers not only to actual attacks against enemy formations at greater distances from the FLOT than that traditionally associated with organic fire support capabilities but to operations planned in depth of time, distance, and resources. To the ground commander, this means that he must carefully plan all of his actions (logistics, maneuver, fire support, etc.) as far in advance as possible. The corps commander's principal assets for deep attacks are artillery and TACAIR support.[8] He is expected to orchestrate the use of these and other available assets to delay, disrupt, divert, and, when possible, destroy selected enemy forces to accomplish specific goals in support of his operation.

Doctrinally, deep attacks are carried out for four basic reasons that give them slightly different forms.[9] In the first form, firepower is used to disrupt enemy forces and delay their entry into the main battle area. (See Figure 3.)

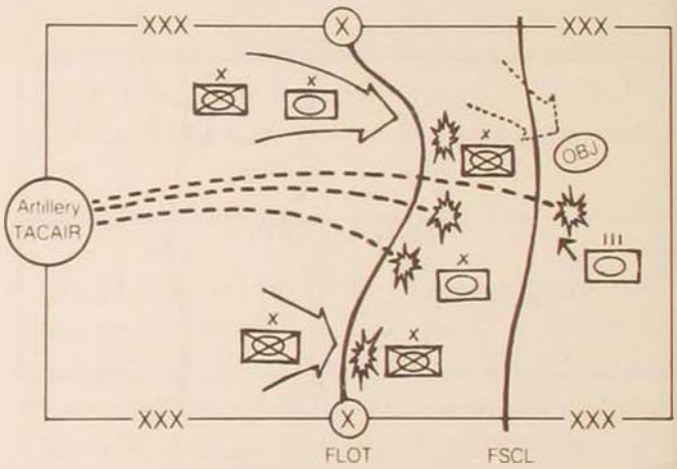
Figure 3. Deep Attack I



This firepower should permit the corps commander to isolate and defeat enemy forces in detail (i.e., to isolate small groups of enemy forces and attack them with locally superior friendly forces). An added benefit is the confusion, delay, and deterioration of command and control that should occur in the enemy formations because of the deep attacks. As shown in Figure 3, the corps commander conducts this form of deep attack with his own organic fire support in coordination with the TACAIR effort.

In the second form of deep attack, firepower is directed against enemy forces in depth not only to prevent them from reinforcing committed enemy units but also to prevent them from interfering with friendly offensive actions against the flank or the rear of close-in battle forces. (See Figure 4.)

Figure 4 Deep Attack II



The third form of deep attack is more complex and difficult to carry out. (See Figure 5.) It involves engaging enemy forces far to the rear, using both firepower and maneuver ground forces, while concurrently fighting the close-in battle. These operations prevent the enemy from massing his forces and destroy his combat momentum by subjecting his entire force to attacks by friendly firepower. This form of deep attack requires combined arms fighting in close coordination with supporting forces (i.e., the Air Force).

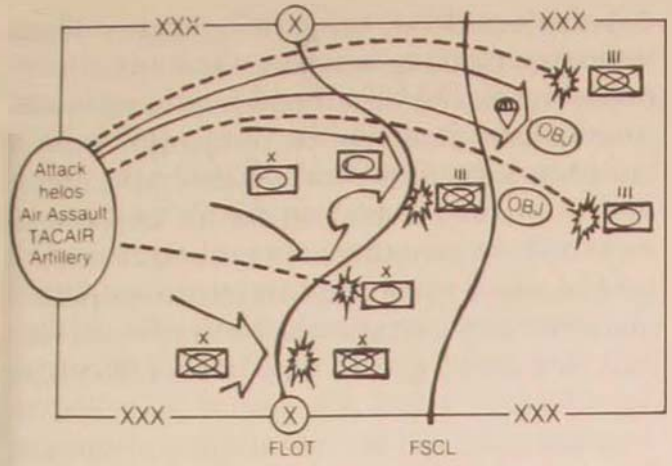
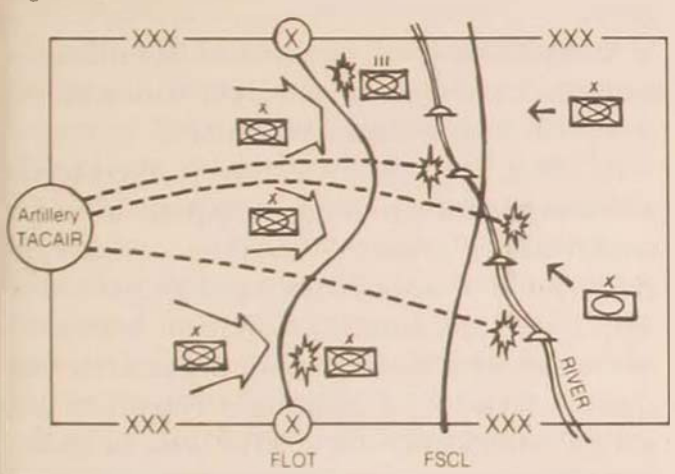


Figure 5. Deep Attack III

The fourth form of deep attack is carried out to destroy or neutralize particular enemy threats or advantages. (See Figure 6.) Examples of these might be enemy nuclear-capable weapons systems or enemy bridging units and

Figure 6. Deep Attack IV



equipment. Such deep attacks focus narrowly on the destruction of specific targets to achieve the stated objective.

Joint AirLand Battle?

AirLand Battle doctrine puts ground commanders, especially corps commanders, in the position of being extremely interested in the use and control of air interdiction to accomplish their deep attack objectives, for they have only limited organic assets with which to attack enemy forces far beyond the FLOT. Army doctrine requires that these commanders plan operations so as to anticipate and take advantage of opportunities that these deep attacks will create in the close-in battle. From their perspective, they can best do that by "calling the shots" themselves in the conduct of deep attacks.

However, to allow each corps commander the luxury of "calling his own shots" with air interdiction would fragment the *theater* air interdiction effort. The theater perspective would be replaced by several narrow, possibly competing, corps perspectives. The success of air interdiction missions in support of ground operations would rest heavily on personalities and the individual "bargaining" power of each corps commander. In at least some ways, such a situation constitutes a return to practices that proved unworkable during the North African campaign. The result? TACAIR's ability to mass forces to meet and defeat the enemy at the critical time and place would be eroded.

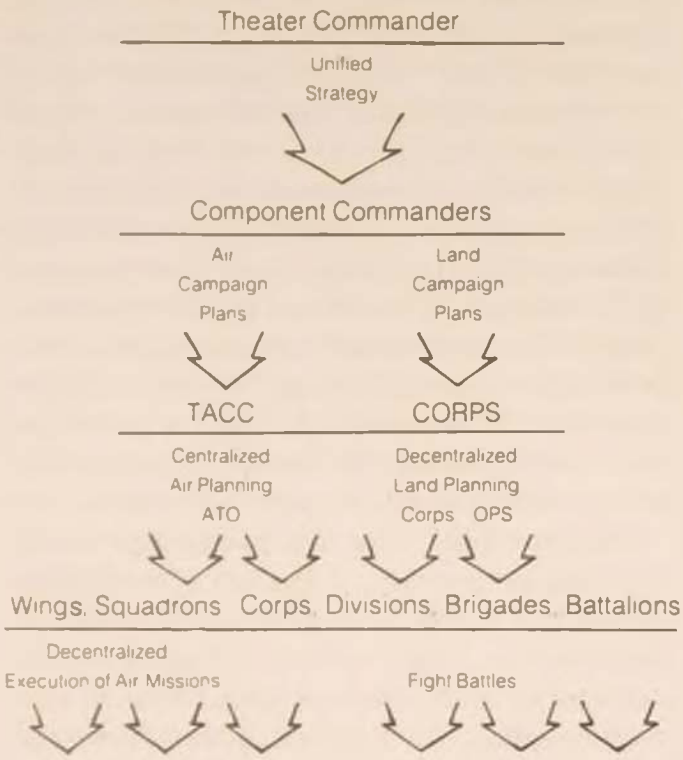
AirLand Battle doctrine has indeed broadened the perspective of ground commanders. However, FM 100-5's emphasis on corps operations and the Army's general reluctance to acknowledge more than logistical and support responsibilities for echelons above corps create an imbalance in perspective of the two major components of joint warfare. The air component commander concerns himself with air operations across the theater, while the Army's corps emphasis in ground operations tends to splinter the land perspective in the theater.

To remedy this situation, the Army needs to recognize an operational responsibility for Army echelons above corps (e.g., Field Army, Army Group) to function at the theater level, providing overall guidance and continuity to ground operations through planning and directing long-range land campaigns.[10] This approach would give the Army and the Air Force equivalent air and land command levels and permit planning campaigns from a common theater perspective. Such a common perspec-

tive would ensure that air and land efforts would complement one another.

How would such a conceptually balanced approach to theater warfare be applied in practice? To begin with, combat operations within a theater of operations would be viewed in terms of "stratified responsibilities." (See Figure 7.)

Figure 7 Stratified Responsibilities



Broadly speaking, the theater commander is responsible for developing a unified strategy involving achievable objectives, given available logistical support and political constraints applicable to his particular situation. Through the air apportionment process, the theater commander establishes priorities for the air effort. The air component commander then knows how he must distribute air assets among his different missions. In a process similar to air apportionment, the theater commander assigns available ground forces and logistical support for the land campaign. The land component commander then knows what resources he will have for his portion of the theater campaign.

At the next level, using the guidance of the theater commander's strategy and his allocation of resources, the air and land component commanders plan specific campaigns and establish priorities of effort for the forces under their command. Based on the air apportionment and the assignment of ground assets, the land component commander identifies specific objectives and sets priorities for available TACAIR, fire, and logistics support for each of his corps.

At the next level of responsibility, command and control elements monitor and direct day-to-day operations to achieve campaign objectives. Working within the priorities established by the land component commander, the corps commanders communicate directly with the BCE at the air component commander's TACC to coordinate their TACAIR support, ensuring that any newly developed targets are identified, prioritized, and integrated into the air support effort.

At the lowest level, tactical combat units execute specific missions and fight battles to accomplish their assigned objectives.

In effect, this model assigns to the theater and component commanders responsibility for establishing "priorities of effort," which include a list of approved targets/target types. The TACC and corps and division headquarters are responsible for developing and refining specific target lists. Combat elements of the wings, squadrons, corps, divisions, brigades, and battalions then attack selected targets.

TACAIR and Deep Attack

How might this "stratified responsibilities" model be applied in providing TACAIR support to AirLand Battle deep attacks? Again, the four forms of deep attack demand some variations.

In the first form of deep attack, TACAIR would assist in restricting the presentation rate of enemy forces primarily by air interdiction missions controlled and directed by the TACC.

(See Figure 3.) Targeting based on the broad objectives of the planned ground operation would be planned by the TACC, in consultation with the BCE. Although these objectives would stem initially from the land component commander's guidance, they would be refined subsequently by each corps. Corps objectives would then be transmitted to the BCE/TACC, and the corps could nominate targets for attack to the BCE/TACC when those targets appeared to be beyond the attack capability of organic systems and the corps' close air support sorties.

The execution of the second form of deep attack would be much like the first, with the added responsibility of flank/rear protection of friendly forces. (See Figure 4.) Again, this could be accomplished by broad objective guidance for air interdiction support (e.g., "protect 3rd Infantry Division's southern flank"), coupled with corps direction for specific close air support attacks when and where needed.

The fourth form of deep attack (Figure 6) is perhaps the least complicated. Operations to destroy specific enemy capabilities, by their very nature, could be orchestrated entirely at the component level, much as major air interdiction campaigns and joint suppression of enemy air defenses (J-SEAD) campaigns are structured now to be carried out.[11] They require only that the separate air and land attacks be coordinated in timing and purpose.

It is the third form of deep attack that requires the highest degree of air and land coordination for success. (See Figure 5.) The extent of such operations demands long lead-time coordination and planning by the staffs of the air and land forces involved. The broad spectrum of air and land operations to support such a battle plan may require rapid and effective shifts of emphasis in attacks both deep in the enemy's rear and close to the FLOT. Also, such jointly complementary operations may demand the expenditure of considerable additional air assets to establish *localized air superiority* over decisive areas of the battlefield and enable the corps to use close air support and attack helicopter assets in deep attack operations. Thus, the air component's major contribution to the deep attack may be in the air-to-air arena. At the same time, J-SEAD operations would be needed to support both the air interdiction effort and the close air support sorties flown in support of the maneuver ground forces.

FOR air and land forces to function together effectively in joint operations, it is imperative that the Air Force and Army have equivalent command levels and a common perception of objectives and the actions required to support those objectives.

If AirLand Battle doctrine is adhered to, each corps commander will have planned his operation well in advance. By providing land campaign plans to his BCE early in the planning stage, the land component commander can inform the air component commander of the future main ground effort, allowing him sufficient time to plan and apply air support for that effort *throughout the Army planning period*, as well as during the battle. Even if the main ground effort is known only in general terms, early knowledge of that effort allows TACAIR to disrupt, delay, divert, or destroy enemy forces as they move toward the objective area, while concurrently protecting or isolating friendly approach avenues to the battlefield area. By the time the operation begins, air interdiction missions will have already been flown to support the operation. Additional air-to-air sorties can be provided, if necessary, to allow Air Force CAS and Army attack helicopter assets to conduct operations free from the threat of enemy fighters. Thus, TACAIR will be supporting the ground operation from inception throughout execution.

During operations similar to the third form of deep attack, each corps undoubtedly will detect, identify, and select targets for attack that it feels are crucial to its battle plan. Providing the BCE with these targets will allow the

TACC, in consultation with the BCE, to adjust air interdiction (or battlefield air interdiction) missions effectively to support the main effort of a particular corps, a division, or other ground unit. Decisions on where to apply available air interdiction missions would be based on knowledge of each corps' operational plans, the current ground situation, and the priorities and objectives of the land component commander. At the same time, the corps will be employing their organic and other supporting assets against targets developing as the battle unfolds. Thus, the corps would have the flexibility to direct their more immediately available firepower assets (close air support, artillery, and attack helicopters) to decisive areas of the battlefield, if necessary under a "protective umbrella" provided by the Air Force.

Deep attack operations planned and conducted in such manner do not allow each individual corps commander to "bank" on a predetermined number of air interdiction sorties in support of his operation. However, this coordinated approach does ensure that the main ground effort in the theater will receive an appropriate weight of the theater air support effort. Likewise, should the need arise, the theater air support effort could be rapidly concentrated and redirected to support any individual corps operation, gaining the full advantages of the flexibility of air power. By sharing the responsibility for locating, identifying, and developing deep attack targets, corps can focus their intelligence collection efforts on those areas of the battlefield that are of immediate concern to their advancing, engaged, or forward deployed forces. Closer-in targets could be attacked with minimum delay by organic corps assets or close air support assets while air interdiction missions would attack deeper targets identified by the corps or the TACC/BCE, based on the corps' battlefield objectives. Thus, TACAIR would have the flexibility to concentrate forces effectively to meet decisive developments in the enemy disposition across the entire battle front.

IN SPITE OF the acknowledged need for close coordination between air and land forces on the modern battlefield, there is often considerable discord as each service tends to adhere to its own unique doctrinal position. But success in future wars demands that the U.S. Air Force and Army achieve procedural harmony on the battlefield. The "stratified responsibilities" model outlined here is one possible way to reconcile our differences to ensure battlefield success.

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Notes

1. Department of the Army, Department of the Air Force, *Memorandum of Understanding on Joint USA/USAF Efforts for Enhancement of Joint Employment of the AirLand Battle Doctrine*, 21 April 1983.

2. Arthur W. Tedder, *With Prejudice: The War Memoirs of Marshal of the Royal Air Force, Lord Tedder, G.C.B.* (Boston: Little, Brown and Co., 1966). The section "Middle East, November 1940-May 1943" contains an excellent account of the air power struggle in North Africa.

3. General William W. Momyer, USAF (Ret), *Air Power in Three Wars: WWII, Korea, Vietnam* (Washington: U.S. Government Printing Office, 1978), p. 39.

4. Department of the Air Force, Air Force Manual 1-1, *Functions and Basic Doctrine of the United States Air Force* (Washington: U.S. Government Printing Office, 1979). Chapter 2, "Functions and Missions of the United States Air Force," lists the nine basic operational missions as: strategic aerospace offense, strategic aerospace defense, space operations, airlift, close air support, air interdiction, counterair operations, surveillance and reconnaissance, and special operations.

5. Department of the Army, Field Manual 100-5, *Operations* (Washington: Headquarters Department of the Army, 1982). Preface, p. 1. Subsequent explanations of AirLand Battle doctrine and deep attack were developed from chapters 1, 2, and 7.

6. Ibid., p. 2-2. These factors are described as mission, enemy, terrain, troops, and time available (METT-T).

7. Ibid., p. 7-2.

8. Ibid., p. 7-13.

9. Ibid., pp. 7-16, 7-17.

10. In all fairness, the U.S. Army Training and Doctrine Command (TRADOC) and Army War College are presently working on a "Theater Operations Concept" to fill the doctrinal void for Army echelons above corps.

11. USREDCOM Pamphlet 525-3, Training and Doctrine Command Training Text 100-44-1, Tactical Air Command Pamphlet 50-23, *Joint Suppression of Enemy Air Defenses (J-SEAD) Operations*, 11 June 1983, contains details of the concept and procedures for J-SEAD operations.

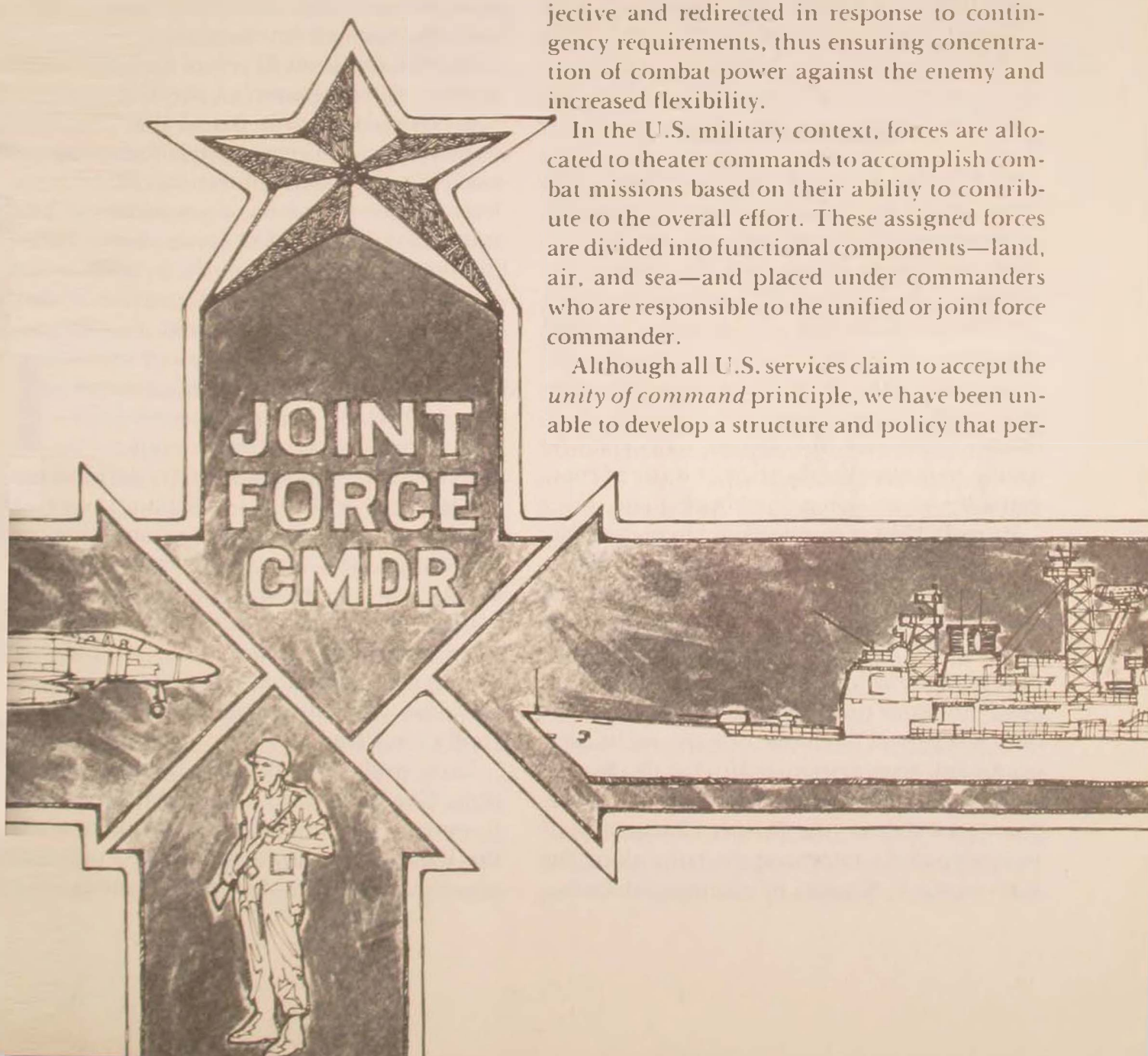
THE QUEST FOR UNITY OF COMMAND

COLONEL THOMAS A. CARDWELL III

TO ACCOMPLISH theater military objectives in support of national policy requires a coherent approach to war fighting. Such an approach involves a detailed knowledge of warfare that includes military history, service doctrine, tactics, and the capabilities of one's own forces. History suggests that an important aspect of this approach is a unified command structure in which a single commander controls all forces assigned to a theater for operations. So widely accepted is this concept of *unity of command* that it is often viewed as a *basic principle of war.* A unified command structure permits combat power to be effectively directed toward an objective and redirected in response to contingency requirements, thus ensuring concentration of combat power against the enemy and increased flexibility.

In the U.S. military context, forces are allocated to theater commands to accomplish combat missions based on their ability to contribute to the overall effort. These assigned forces are divided into functional components—land, air, and sea—and placed under commanders who are responsible to the unified or joint force commander.

Although all U.S. services claim to accept the *unity of command* principle, we have been unable to develop a structure and policy that per-



mit true unity of command. Since 1940, the concept underlying U.S. command structures has gradually evolved from a doctrine of cooperation to a doctrine of unified operations, and now, back to mutual cooperation. But mutual cooperation is not the doctrine in Joint Chiefs of Staff Publication (JCS Pub) 2, which outlines doctrine and principles formally accepted by all the military services.

In reviewing the evolution of the U.S. military's command structure and doctrine for joint and combined operations since 1940, I would argue that we have failed to achieve true *unity of command.* Furthermore, when one examines current service philosophies, it appears that these philosophies thwart efforts to achieve unity of command as required by JCS Pub 2.

Historical Review

World War II was a turning point in the development by the United States of a unified organization for theater war, as it was the first time the United States used the unified approach to war fighting.[1] When the war started, the United States did not possess a unified command structure. In the event of war, the services were expected to cooperate voluntarily; this was known as the doctrine of mutual cooperation.[2] However, the United States had the option to invoke the doctrine of unity of command if cooperation proved inadequate.[3]

By early 1942, it was apparent to many military leaders that the doctrine of mutual cooperation would not work under the pressure of war. Thus, in the spring of 1942, overall command of the Pacific Ocean area was vested in the Commander in Chief of the Pacific Fleet. At nearly the same time, General Douglas MacArthur was placed in charge of a second unified command, with responsibility for the Southwest Pacific area. Some months later, in the European theater, the British Chiefs of Staff recommended a command structure along the lines of the U.S. unity of command doctrine. The Combined Chiefs soon established a unified command arrangement for the 1942 Allied invasion of North Africa and approved a unified command structure for the European theater.[4]

The unified command structure that was developed in Europe during World War II placed the combined allied armies, navies, and air forces under a single commander in each of two European theaters. Within the combined armies structure, separate commanders were named for land and air forces. This structure became the foundation for three important developments in the U.S. command structure for theater warfare: it confirmed the unity of command doctrine, laid the groundwork for a separate air force, and established a model for the unified command structure.

In 1947, the Joint Chiefs of Staff (JCS) proposed a reorganization of the U.S. military. The National Security Act of 1947 embodied some of the JCS recommendations and provided for the unified direction of the armed forces and for their integration into an efficient team of land, sea, and air forces. Additionally, this act created three military departments (Department of the Army, Department of the Navy, and Department of the Air Force), established the Air Force as a separate service, and formally recognized the unified command structure. In 1949, the National Security Act of 1947 was amended to give the Secretary of Defense direct authority and control over the services.[5]

Associated with these developments in the postwar era were discussions of military command structures, as the newly created military departments attempted to develop a workable command arrangement for theater war. Each service had its own view of how to make the command organization function. Against this backdrop, the United States entered the Korean conflict in 1950.

Early in the war, General Douglas MacArthur, Commander in Chief, United Nations Command, did not organize his forces along the lines of the approved unified command structure.[6] Basically, the United Nations Com-

mand did not have a naval, land, or air component.[7] Soon General MacArthur recognized that the command arrangement he had developed was not operating as he desired; he then established a land component command and directed the other two components, Far East Air Forces and Naval Forces Far East, to provide the air and naval support that he, as theater commander, required.[8]

MacArthur's Korean structure set the stage for the first full-scale experiment with a true unified command structure having three components. There were problems, for the Navy would not put the naval air assets involved in supporting the land war under the control of a single air component commander, preferring instead to "coordinate" its air operations with those of the Air Force. However, on the whole, the unified command system proved an effective means to control theater-assigned assets.[9] The Korean War provided the conceptual foundation for the control of operational theater forces in Vietnam.

Between the Korean and Vietnam wars, there was relatively little discussion of command and control of theater-assigned assets. One major development during this time, however, was the Defense Reorganization Act of 1958, which separated the forces of the unified and specified commands from the military departments and stipulated that operational control over all combat-ready forces would be exercised by unified and specified commanders. When theater operations were required, the services were to provide forces to a theater organization that would be commanded by a single commander.

The Vietnam experience provided another opportunity to achieve a unified command structure. During the early stages of our Vietnam involvement, the structure used to control activities in Vietnam was the Military Advisory Group (MAG), which was established on 17 September 1950. In 1955, the MAG was redesignated the Military Assistance Advisory Group, Vietnam, which supervised U.S. military activity that was limited to organizing and training Vietnamese units. This organization lasted until the early 1960s.

In 1962, the Military Assistance Command, Vietnam, known as MACV, was formed. MACV was an operational headquarters and had the staff elements needed to direct military operations. Soon the Army and Air Force began to argue that MACV should be a theater unified command with land, sea, and air components. The Navy opposed such an arrangement and argued that the Pacific Command (PACOM) should provide the unified command structure for Vietnam, with the Commander in Chief, Pacific, controlling all forces assigned to Vietnam.[10]

The result of all this was an incredibly complex command structure in Vietnam. At the top of the structure was the Pacific Command, the unified command with three components: Pacific Air Forces; Pacific Fleet; and U.S. Army Pacific. The U.S. Military Assistance Command, Vietnam was a subunified command, subordinate to Pacific Command: the MACV commander was responsible for the U.S. war effort in Vietnam, yet PACOM controlled most of the air campaign against North Vietnam. Further, the MACV air component commander did not exercise operational control over B-52s taking part in the war, and during most of the conflict he had no authority over Marine air units based in South Vietnam. The commander, MACV, had no continuing operational control over 7th Fleet units operating off the coast of North and South Vietnam, and he had no authority over South Vietnamese forces.[11]

This command structure soon proved unworkable, and some senior military leaders began to argue for a single, simplified command structure to handle the expanding war. With the war spreading into Laos, new questions about command relations arose. In an effort to resolve these matters, the Army recommended that all forces in Vietnam and Thailand be placed under the commander of MACV. The Navy disagreed with this idea.[12] After four years of discussion, the Joint Chiefs of Staff decided not to change the command structure but

simply to realign some of the forces.

The issue of a single manager for air and questions about the command structure were raised in 1967. In 1968, the Deputy Secretary of Defense directed that Marine air assets based in South Vietnam would come under the control of the Air Deputy, MACV.[13]

In spite of considerable efforts to resolve command issues, numerous command problems remained until the Vietnam War officially ended in 1973. Since then, the services have confronted the issue of unified command in other situations, notably in the creation of the Rapid Deployment Joint Task Force and the debate over the control of tactical air assets in theaters of operations. But we still do not have a command structure reflecting the philosophy in JCS Pub 2. A major reason for this continuing failure is conflicting service philosophies.

Theater Command Structure: JCS Pub 2 versus Service Philosophies

JCS publications provide guidance for the U.S. conduct of theater war. The basic principle of these publications is unity of effort, the idea that effective military operations require the combined activities of land, sea, and air forces. This combination of activities is accomplished through unity of command, which is provided through a unified command structure. Thus, when two or more services are required to accomplish a specific military objective, they are employed as a team under the direction of a single commander. The unified commander has operational command of these forces and exercises this command through his component commanders.[14]

While all of the services formally acknowledge the principle of unity of effort, each service applies the principle in accordance with its own service perspective. A basic difference that surfaces centers on how one defines the components that are integrated into the unified command. The Army and Air Force believe that the functional components (air, land, and sea) should be the basic elements of a theater organization—land forces would come under the land component, air forces under the air component, and naval forces under the naval component. However, the Navy and Marine Corps believe that service components (USA, USN, USAF, USMC) should be the basic building blocks of the theater structure, which means that control of air assets would be divided among the Marines, the Navy, and the Air Force.

Another important area of disagreement concerns disposition of Marine Corps forces. The Army and the Air Force believe that the Marine force should come under the naval component when involved in amphibious operations or other operations in support of naval campaigns, but they assert that Marine combat forces should be assigned to the operational control of the land and air component commanders during sustained operations ashore. The Marine Corps agrees that when operating in amphibious or naval operations its forces should come under the naval unified or naval component commander; but during sustained operations ashore, the Marine Corps believes that its forces should come directly under the theater or joint task force commander. Thus the Marine Corps would operate as a *uniservice* command.[15]

In regard to control of naval air forces, the Navy has similar views to those of the Marines. According to the Navy, all naval assets, including naval aviation, should come under the naval component commander. Even when naval aviation assets are employed over the land, they should remain under the operational control of the naval component commander and operate in an in-support-of role.

THIS article began with the observation that unity of command is virtually a

principle of war. In reviewing forty years of U.S. military history, however, it is apparent that U.S. Armed Forces have failed to achieve full unity of command. While all four services in today's DOD establishment formally agree with the principles of war fighting and theater organization as specified in JCS publications, they apply the principles in different manners.

True unity of command will come only when all services accept a theater perspective of war fighting. Under such a perspective, all land combat forces are employed under a single land component commander, all naval forces are employed under a single naval commander, and all air combat forces are employed under a single air component commander—with each of these commanders responsive to the overall strategy mapped out by the theater commander. The doctrine guiding the operation of this theater command structure must be that of centralized control and decentralized execution. Centralized control permits combat power to be directed toward an objective and redirected in response to contingency requirements. On the other hand, decentralized execution gives to lower-command echelons the flexibility they need to take advantage of transient opportunities offered by a rapidly changing combat environment.

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I wish to thank Major Jeffrey W. Coyle, USAF, for providing editorial assistance in the preparation of this article.

Notes

1. *Command and Employment of Military Forces*, Vol. II, Part C, Air War College, Extension Program, Maxwell AFB, Alabama, 1952, p. 5. See also John L. Frisbee, "New Life for JCS at Forty," *Air Force*, February 1982, p. 86. Frisbee states that from the late 1700s until the early 1940s the direction of U.S. forces in wartime has been a loose process called mutual cooperation. From 1903 until 1942 the Joint Army-Navy Board operated under the doctrine of mutual cooperation. Thus, in the early forties, we in effect had two separate command structures—one for naval forces and one for land forces. The U.S. Chiefs of Staff did not approve the doctrine of command until April 1942.

2. Frisbee, p. 86.

3. *Command and Employment of Military Forces*, p. 5. The doctrine of unity of command could be placed in effect by agreement between the Secretaries of War and Navy, by the commanders of the service forces, or by the President.

4. Ibid.

5. John L. Frisbee, "Command Lines for Combat Forces," *Defense 81*, August 1981, p. 10.

6. It is interesting to note that as early as 1946, the Joint Chiefs of Staff had issued a directive (JCS 1259/27, 11 December 1946) to theater commanders which required unified commanders to establish a joint staff to provide the specialized knowledge and advice for the employment of land, naval, and air force forces. See Robert F. Futrell, *The United States Air Force in Korea, 1950-1953* (New York: Duel, Sloan and Pearce, 1961), p. 44.

7. Futrell, p. 44.

8. Ibid.

9. Ibid., p. 55. General Otto P. Weyland reached this same conclusion when, on 10 October 1950, he stated: "Whenever combination of Air Force, Army, and Navy are in a joint command it is essential that the Commander-in-Chief have a joint staff with proportionate representation of the services involved."

10. General William W. Momyer, USAF (Ret), *Air Power in Three Wars* (Washington: Government Printing Office, 1978), pp. 66-68.

11. Lieutenant Colonel John J. Land, Jr., *Command and Control and Communications Structure in Southeast Asia Area* (Maxwell AFB, Alabama: Airpower Research Institute, 1981).

12. Ibid., pp. 68-78. For a discussion on the Air Force point of view on unified command and the air component, see Colonel Thomas A. Cardwell III, "Managing Theater Air Assets," *Military Review*, May 1982, pp. 40-45. This article traces the Air Force view on single manager for air. See also General Momyer's book *Air Power in Three Wars*, pp. 20-68.

13. "The Single Manager Problem: The Creation of an Operational Control System for US Tactical Air in I Corps of South Vietnam during 1968," (Washington: JCS Historical Division, July 1976), pp. 1-25. Previously classified. Declassified by SM-197-81, 20 March 1981. See also General Momyer, *Air Power in Three Wars*, p. 82; and General William C. Westmoreland, *A Soldier Reports* (New York: Doubleday, 1967), pp. 335-40.

14. JCS Pub 2, *Unified Action Armed Forces (UNAAF)*, October 1974, pp. 9, 44, 46.

15. JCS Publication 1, *Dictionary of Military and Associated Terms*, September 1974, defines *uniservice* command as "a command comprised of forces of a single service."

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LEADERSHIP TO MATCH OUR TECHNOLOGY

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IN THE United States, military doctrine and planning are shaped by three forces: economic resources, political considerations, and, particularly since World War II, technology—both existing and potential. This last element has come to dominate the process of doctrinal development in this country and has overshadowed other aspects that are critical to overall military capability. In fact, America's affinity for and increasing reliance on technology as a mainstay for its military doctrine have led our nation into a dangerous approach to force employment. Command and control of combat forces today, specifically that of our NATO armies poised to fight in Western Europe, falls woefully behind our capability to bring mass destruction to the battlefield.

Command and control of Western armies today is heavily centralized at high levels and overwhelmingly dependent on electronic communication systems of varying sophistication. While these systems represent the best that our state-of-the-art technology and current budgets will permit, they are not hardened or capable of withstanding damage from attack or jamming without suffering significant losses in reliability. In short, our command and control is vulnerable to failure in a wartime environment. While we enjoy some system redundancy, our fallback solutions must look to the leadership ability of local commanders and, in some cases, other individuals to carry out critical actions at appropriate times. This means, of course, more delegation of authority to lower levels—a reversal of a 125-year trend. History sheds much light on how centralized command and control evolved by way of advancing technology.

AMERICANS have always prided themselves on their problem-solving ability. As colonials in a wilderness, they survived on common sense, innovation, and a reliance on individualism. Encountering chronic labor shortages, they found solutions in mechanical de-

vices and other technological advances; it is not surprising that the reaper and sewing machines were invented in the United States. The Franklins and the Edisons found a proper environment in our free-market society to develop their skills, register their patents, and earn profits. In the nineteenth century, Americans developed the habit of using machines wherever possible, instead of muscle or even capital; and this tendency spilled over into military operations. Rifles, weapons, railroads, and the telegraph represented significant technological advances in the world's first modern conflict, the American Civil War. Specifically, the telegraph soon found its way into the command and control of armies and the way Americans waged war.

Jefferson Davis, a West Point graduate and seasoned commander from the Mexican War, always held his own generalship in the highest regard. During the Civil War, as President of the Confederacy, he decided to control his military commanders through departmentalization, aided by the new communications marvel, the telegraph. At one point in 1864, he directed General Robert E. Lee, operating north of the James River in Virginia, to route his messages to General Pierre G. T. Beauregard, situated just a few miles away south of the river, via the War Office in Richmond. The telegraph made this arrangement possible—unfortunately for the Confederacy, as it turned out.

By World War I, improved communications and field telephones permitted even greater dispersal of field units and their headquarters. Because of the large numbers of soldiers fighting and the extended range of artillery, headquarters sat far behind the lines. As a result, commanders and staff officers often lacked personal knowledge of conditions at the front. After the Battle of the Somme in 1916, for example, the British Expeditionary Force's Chief of Staff finally toured the front and exclaimed: "Good God! Did we really send men to fight in that?" One can only speculate what difference this centralized control behind the lines may have made on the course of the war but, at the very least, it created a gap between the fighters and their commanders. Meanwhile, on the seas, the Allies countered the U-boat threat by using the convoy system. In this new approach, Admiral William S. Sims commanded vessels in three distant geographical locations, not from the quarterdeck of a warship, but from a desk in London.

Communication systems improved and became more widespread by World War II, and with the improvements came more evidence of centralized command and control. Twentieth Air Force, operating from the Marianas, came directly under the control of the Joint Chiefs of Staff in Washington, much to the chagrin of the theater commander, Admiral Chester Nimitz. Later, during the Korean War, the combination of command capabilities and military stalemate resulted in warfare in which battalion commanders often directed platoon movements. The Vietnam conflict was not such a stalemate, but helicopters prompted an even further increase in centralized control. Aloof from the ground conditions, higher commanders attempted to direct small units, to the frustration of their platoon and company leaders. The advent of satellites and sophisticated telecommunications accelerated the trend even further. President Lyndon B. Johnson and his staff controlled combat execution to an unprecedented degree during the war. Stories of targeting decisions made on Pennsylvania Avenue are well known to military officers; the resulting damage or value of the process remains open to speculation.

More recently, we know about the elaborate communications link between President Jimmy Carter in Washington and Colonel Charles Beckwith in southern Iran during the aborted hostage rescue mission in 1980. Beckwith decided to cancel the mission when preagreed conditions did not materialize.

Nonetheless, communication with the commander in chief was deemed necessary before the ill-fated return began.

Without belaboring the point, it is clear that technology over the past century and a half has permitted rapid communications between wartime commanders over increasingly greater distances. The result has been a growing reliance on technology for command and control, a promise of greater flexibility for using forces, and more centralized direction farther from the combat zone.

The effect of this trend, especially in the face of potential battlefield conditions in Europe, is certainly open to question. Given the vulnerability of NATO command, control, communications, and intelligence (C^3I) systems today, Western military leaders are gravely concerned. Not unexpectedly, their planners are looking toward technology for solutions. For example, a projected system of communication satellites designed solely for worldwide military use, called MILSTAR (military strategic tactical and relay system), will provide the minimum essential communications for strategic and tactical forces in combat. Great care has gone into the engineering of this new system to ensure its survivability, durability, and flexibility. Designers stress that MILSTAR will be virtually jam-proof because of its narrow operating band system and will be safe from hunter-killer satellites. On paper and in theory, MILSTAR should greatly enhance our total C^3I capability.

Despite our current optimism concerning such systems, it is wise to remember that other engineers in the past spoke glowingly about other systems, only to see unanticipated events upset their "apple carts." Repeatedly in the history of warfare, new inventions have appeared to give their holder an advantage but soon another system or tactic emerged to negate that edge. Tanks, for example, took much away from the machine gun; and when the British coupled radar with fighters, they disproved the early ideas of air pioneers about defense in the skies. Eventually, some effective defense system will emerge against MILSTAR, and so the battle in weapons technology will continue.

Meanwhile, we may be overlooking other elements that might be useful in our struggles to build the desired C^3I system in Western Europe. Specifically, military leaders may not be paying enough attention to the intangible human elements that translate into effective leadership. The fruits of technology can never ripen without them.

Here again, history can be instructive. Frederick the Great and generals of the Napoleonic era, for instance, placed great emphasis on coup d'oeil—the ability of a commander to observe the battle from above the fray and, with the sweep of his eye, assay the course of the battle and determine the action necessary to bring victory. Timing was central to success. After his classic victory at Austerlitz, Napoleon recalled that if he had prematurely committed or delayed the advance of his center and reserves, he would have suffered defeat.

The Prussians, unwilling to pin their hopes on such individual genius, took a new approach to battlefield command. Their officers, trained in the most advanced military schools of the time, clearly understood Prussian military doctrine and goals in a given conflict. Commanders at all levels enjoyed the confidence of their superiors to execute their part of a war plan in consonance with the overall objective. Von Moltke the Elder understood the "fog of war" and knew that the best answer to it lay with trained commanders capable of independent action directed toward a common objective. Prussia's impressive defeat of France in 1870-71 stemmed, in part, from the flexibility enjoyed by Prussian field commanders. When German generals executed the Schlieffen Plan forty-four years later, they still held freedom to command, but evidence suggests that centralized control from the general staff was developing.

One could argue, therefore, that a negative correlation exists between advances in communications technology and the level of reliance on independent command judgments. Over the years, some would contend, the U.S. military, wittingly or unwittingly, has moved steadily in this direction. If this tendency continues, at some point we may be placing our military in unnecessarily difficult and potentially disastrous positions. Are we there now?

As noted earlier, technology promises to advance the flexibility of force employment. But with sophisticated command and control, the converse more often proves true. If a superior commander enjoys instant access to his subordinates, there is great temptation for him to assume responsibilities more appropriately belonging to a lower level of leadership. Consequently, the on-scene commander may be unable to take advantage of opportunities that suddenly arise. The result is *rigidity* in command, control, and execution of forces, not *flexibility!*

SO WHAT needs to be done? Our military must pay more attention to developing independent decision-making and command-judgment ability in our officer corps in the likely event our highly developed technical systems sputter or fail us. Unfortunately, since World War II, we seem to be less concerned about whether our commanders possess this ability. Within the Air Force, Strategic Air Command probably started this trend. When General Curtis E. LeMay inherited the job of building SAC and fulfilling the awesome responsibilities given to him by the nation's leaders, he found it necessary to develop standard operating procedures for every task and for every officer serving in the command. In fairness to General LeMay, there was no other way of building this command efficiently for a variety of reasons. But the system carried within it some seeds of trouble: it inhibited the type of leadership development we need now. The SAC command post, for example, soon became the hub of control, approving aircraft takeoffs and landings and giving wide-ranging advice to aircrews facing problems in the air. The practice spread to other commands. Military Airlift Command, in particular, adopted and patterned many centralized control procedures after SAC. In the late 1970s, however, the commander of MAC undertook a deliberate effort to reverse this trend by directing that aircraft commanders be given back their exercise of command to the greatest possible extent. Whatever the results of this program, it acknowledged that we had not been doing all we could to develop command judgment among our officers.

If history is any indicator, the opening battles of the next conflict will not match expected scenarios and may well be won or lost by the judgments of a few key men—judgments made when established plans and procedures offer no answers. At the point where technology fails and unexpected events develop, our commanders will be stripped to their basic leadership skills—skills they began to develop as cadets and junior officers, skills they need to exercise and broaden continually as they become commanders. If our system does not permit this growth, it carries the seeds of eventual failure.

The 1970s gave us two interesting examples of the type of leadership we will need at the highest and lowest levels. During the *Mayaguez* rescue mission, poor intelligence and the initial absence of forward air controllers led to complete chaos in the air, exacerbated by everyone talking on the radio. A lieutenant, Donald Backlund, recognized that no one was taking charge. By force of his personality, he gained control of the radio and kept some semblance of order among the airborne helicopters until the forward air controllers arrived. His initiative and judgment prevented the mission from deteriorating further and gave it the chance for success. Three Air Force Crosses were awarded to fliers for actions

taken that day. Certainly, they were brave officers; but the margin for their success came from their ability to execute the necessary actions independently without direction from "above."

Similarly, when the Yom Kippur War erupted, existing plans and procedures failed to provide the Military Airlift Command with the execution authority and direction necessary for airlift across the Mediterranean to Israel. The commanders of MAC and the Sixth Fleet made telephone contact, worked out a deployment plan, and carried out the mission consistent with national policy. They knew what U.S. objectives were, understood the circumstances, and possessed the decisiveness to take the necessary action.

Whether at the company grade level or at star rank, decisive command judgment under fire is invaluable. In the area of command and control on a European battlefield, it may be equal to a MILSTAR or a well-organized command post back in Belgium. In the nineteenth century, the fog of war rolled gently onto European battlefields; in the 1980s, it would dash in with hurricane force. Will our current command and control system, heavily dependent on technology and greatly centralized, serve us well in an environment that we can only approximate, even in our most realistic exercises? How well will our officers function if systems fail or become disrupted? Would it be valuable for our commanders to have more training in independent battlefield action and to carry commensurate authority to pursue known objectives? Are there not clear gains to be realized in developing coup d'oeil within a twentieth-century framework or borrowing some training philosophies from the Prussians to complement a system which, by some professional judgments, is vulnerable to complete breakdown?

IN THE last analysis, command and control ultimately rests with human decision makers, advanced technology notwithstanding. Failure to develop that human skill and to equip our officers with the ability to execute independently may hinder our forces decisively in wars to come. In seeking solutions to C³I problems, military planners would do well to recognize that developed human capabilities are as important as technology. Command leadership needs to be a full-time player in the realm of C³I concepts.

USAF Academy, Colorado

Note

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EQUALITY IN THE COCKPIT

a brief history of women in aviation

LIEUTENANT COLONEL NANCY B. SAMUELSON

Someday, I dare say, women can be flyers and yet not be regarded as curiosities?[1]

Amelia Earhart

ARE women who fly aircraft in the 1980s still considered curiosities? Recent conversations and correspondence with Air Force female pilots and navigators indicate that many individuals in both the military and

"Fifinella," a Walt-Disney-designed gremlin (shown above), was the mascot of the Women's Airforce Service Pilots (WASP) during World War II. . . . Women have been active in aviation throughout its history.

civilian segments of society still consider them so. The *reentry* of women into military flight training programs in the 1970s provoked an excessive amount of publication, especially when one realizes how few women actually entered these programs and how limited their duties were to be. Even the *Air Force Times* was guilty of some sensationalism in its article titled, "Dangers to Female Pilots to be Checked on Planes," yet the only problem the article identified was that flight suits and boots (designed for men, of course) were too large for women![2] Surely not a very serious problem nor a difficult one to solve.

After the WASP (Women's Airforce Service Pilots) was disbanded in 1944, military aviation was virtually closed to women. The civilian sector of society did not encourage women to enter flying occupations in the post-World War II era either. A number of the WASP and other female pilots attempted to enter commercial aviation, but they were discouraged in a variety of ways. Not until 1973 did a female pilot fly as a regular crew member of a scheduled American airline.[3]

Since women have been involved in aviation from the days of the early balloon flights and have piloted everything from balloons to space vehicles, why are women who fly still regarded as exceptions and curiosities? One of the answers to that question is obvious. The "now society" of our modern era, concerned with "real-time" events, "state-of-the-art" technologies, and "future shock" scenarios, spends little time studying and contemplating past history. Even in such aviation-oriented communities as the Air Force, there is little knowledge of women's achievements in aviation. (The pioneering efforts of male pilots are not common knowledge either; however, documentation on male contributions is much easier to find than that covering female achievements.)

Another factor that has limited recognition of women's aviation contributions is a societal attitude that women in many other areas have encountered also. Simply put, women are discouraged in a variety of ways from entering nontraditional or hazardous jobs or careers. Certain views of the general population, statements and decisions of specific influential individuals, and many policies of institutions and government agencies have served to limit women's participation in aviation and other "manly" careers.

Yet the history of women in aviation is worth examining, and women's achievements in military aviation merit recognition. Similarly, in this era in which our nation needs the maximal benefits of its human potential, it may be helpful to explore the role that specific individuals and institutions have had in discouraging women from entering or fully participating in aviation careers.

The Beginning through World War I

According to early records, women's involvement in aviation seems to have begun less than seven months after the first manned balloon flight: Madame Thible of Lyons, France, went for a balloon ride on 4 June 1784. During that same year, the famous balloonist Jean Pierre Blanchard began his flights; and twenty years later, in 1804, his young second wife (Marie-Madeleine-Sophie Armant Blanchard) made her first flight. Madame Blanchard later was appointed as Chief of Napoleon's Air Service, replacing another great balloonist, M. Garnerin. Her primary duties seem to have been exhibition flying for the entertainment of crowds. Her career as the best-known woman aeronaut ended in July 1819, however, when her balloon caught fire from fireworks attached to it. She crashed near Tivoli Gardens and died of a broken neck.[4]

In 1903, about five months before the Wright Brothers made their first flight at Kitty Hawk, Aida de Acosta made a solo flight in a dirigible powered with a three-horsepower engine. Brazilian air pioneer Alberto Santos-Dumont built this craft. Miss De Acosta had expressed a great deal of curiosity about the machine, and Santos-

Dumont had answered her questions and shown her how to operate it. She was photographed by a newspaper reporter while flying the machine over the suburbs of Paris. Her family was horrified at the publicity, and her mother extracted a promise from Santos-Dumont that he would never mention the episode in any of his writings.[5]

By 1910, aviation was already flourishing in both Europe and North America. In Europe, several women were gaining recognition. On 8 March 1910, Baroness Raymonde de la Roche passed a qualifying test and was issued a license by the Aero Club of France. She is believed to be the first woman in the world to receive a pilot's license. A few months later, she was seriously injured in a crash, but, fully recovered, she was racing again within two years. In 1913, the baroness won the Coupe Femina, an award established to honor women fliers. She was killed in 1919 when flying an experimental plane that crashed.

Meanwhile, in 1909, Hélène Dutrieu of Belgium began flying, and in May 1911, she entered a race in Florence, Italy. She was the only woman in the group of fifteen fliers competing, and she outflew her rivals to win the coveted Italian King's Cup. Later, she set a new world nonstop flight record for women, and in 1913, she was awarded France's Legion of Honor.[6]

In the United States, women were very much part of the action in aviation. Blanche Scott and Bessica Raiche were the first two American women to solo. Scott soloed on 2 September 1910, but there was considerable doubt about whether she intended to do so. A gust of wind may have caused her to become unexpectedly airborne, or she may have talked a mechanic into speeding up the governor in order to solo before her instructor, Glen Curtiss, thought she was ready.[7] But there was no doubt about intent when Bessica Raiche flew solo on 16 September 1910. Subsequently, a month later, Raiche was honored by the Aeronautical Society of America (American Division of the Fédération Aeronautique International). Her award was a diamond-studded medal bearing the inscription, "First Woman Aviator in America." She and her husband designed and built aircraft and worked with the Wrights for a time. Later, she gave up flying and became a physician.[8]

Women who were not pilots supported aviation in other ways. Various stories about Katherine Wright's support of her brothers were reported. Some claimed that she contributed part of her salary as a school teacher to her brothers' aircraft business; others said that she actually assisted in various stages of construction of aircraft. Most of these accounts have been dismissed today as "fables," yet we do know that Miss Wright traveled with her brothers, was feted at parades and other celebrations, and flew as a passenger with her brothers on occasion. Another aviation supporter was Mrs. Alexander Graham Bell, who financed and named the Aerial Experiment Association. Other members of the group included Mr. Bell, Glen Curtiss, and Lieutenant Thomas E. Selfridge. Their objective was to advance the science of aviation.[9]

With the advent of World War I, a number of well-known female pilots volunteered for military service, but only a few were actually permitted to serve in the military. Hélène Dutrieu volunteered for war service with France's Air Patrol in 1914 and was accepted. She made flights from Paris to check on the location and movement of German troops.[10]

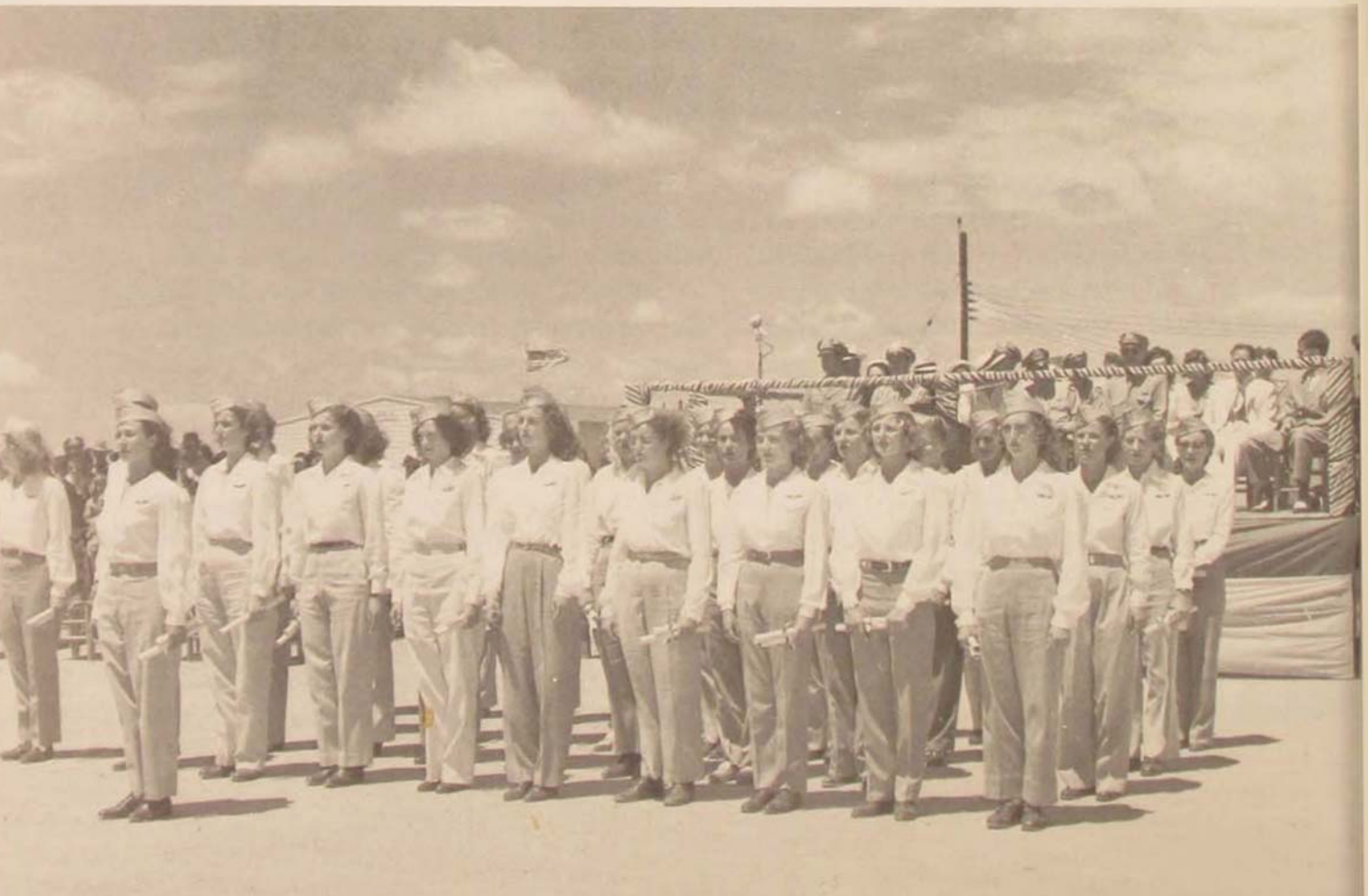
In Russia, Princess Eugenie M. Shakovskaya was assigned duty as an artillery and reconnaissance pilot; Lyubov A. Golanchikova, a test pilot, contributed her airplane to the czarist armies; Helen P. Samsonova was assigned to the 5th Corps Air Squadron as a reconnaissance pilot; Princess Sophie A. Dolgorukaya was a pilot and observer with the 26th Corps Air Squadron; and Nadeshda Degtereva was posted to the Galician Front, where she flew reconnaissance missions.[11]

In the United States, many women had established outstanding flying records, and several

During the Second World War, American women flew in a variety of support roles, which included ferrying aircraft, towing targets for Army artillery practice, testing repaired aircraft, and helping to train their male counterparts. The WASP candidate above is posed atop a Fairchild-125. One of the WASP graduating classes of 1943 is shown below.

volunteered repeatedly for duty as military pilots. Congressman Murray Hulbert of New York introduced a bill in Congress to permit women to join the Flying Corps and go to France; however, the bill did not pass. Women then found other ways to support the war effort.[12]

The famous Stinson family was very active in aviation. Katherine was a well-known stunt flier. By age nineteen, she had flown in England, China, Japan, and Canada. In 1917, she set a new world nonstop distance record for both men and women. Her sister Marjorie was a licensed pilot also. The girls taught their brothers, Eddie and Jack, to fly; and in 1915, the Stinsons established San Antonio's Stinson Field and began a flight training school. The brothers were later to found Stinson Aircraft Company, but in 1915, Katherine and Marjorie were the principal instructors at the school. Marjorie became known as the original "flying school marm." A number of Canadians trained at the school went on to England and received commissions in the Royal Naval Air Service.



In June 1944, these WASPs were headed for long cross-country flights (note the suitcases); by the end of that year, WASP was disbanded.

This group of students was referred to as the Texas Escadrille; all of its members were male.[13]

Katherine wanted to enlist as a fighter pilot but was turned down. She toured the country and collected pledges for nearly $2,000,000 for the Red Cross. Her nonstop distance record was established while she was touring the country on a Liberty Bond Drive. Later, she went to Europe as an ambulance driver. She became seriously ill as a result of her European service and never flew again after World War I.[14]

Other female pilots—Bernetta Miller, Alys McKey Bryant, and Helen Hodge—found other ways to serve. Miller joined the Women's Overseas Service League and went to the front as a canteen worker. She was awarded the Croix de Guerre and numerous American citations for her work. Bryant submitted repeated applications to fly in combat but ended up as a test pilot and instructor. For a time, she assisted the Goodyear Company in building military dirigibles. Hodge taught U.S. aviation cadets and made exhibition flights for the war effort.[15]

Ruth Law, another well-known stunt pilot, "bombed" American cities with circulars asking for Red Cross donations. She also made a 2500-mile cross-country flight to advertise Liberty Bonds. Air Corps officials decided that she would be of help in recruiting men to be pilots. She was authorized to wear a military uniform and posed for a number of recruiting posters. Although she was also authorized to teach military fliers, her fund-raising and recruiting activities left her little time for instructing.[16]

1920 to World War II

During the two decades following World War I, the field of aviation expanded by leaps and bounds. Records were set, only to be broken within weeks or days sometimes. Air races became popular, aviation clubs and associations were formed, oceans were crossed, transcontinental flights became common, and barnstormers and movie stunt pilots performed seemingly impossible feats of daring. Aviators went farther, faster, and higher than ever before—and women were a part of it all.

Ruth Law's name continued to be synonymous with stunt flying. Phoebe Fairgrave Omlie achieved similar fame as a stuntflier for the movies by her piloting in "The Perils of Pauline." Elinor Smith, at age seventeen, earned international acclaim and a reprimand from the Department of Commerce for flying under *all four* of the East River Bridges in New York City. Smith, Viola Gentry, and Bobbie Trout outdid each other in setting new endurance records for women. Trout and Smith were the first civilian pilots to refuel in midair. In January 1929, they stayed in the air for 45 hours and 5 minutes. In January 1931, Trout and Edna May Cooper set another refueling record of 122 hours and 20 minutes. In August 1932, Louise Thaden and Frances Marsalis stayed aloft for more than eight days.[17] (By contrast, on 1 January 1929, five pilots aboard the *Question Mark* set the first Air Corps refueling record of 150 hours and 40 minutes.)

One feminine name connected with aviation became a common household word—Amelia Earhart. Amelia was sponsored and financially backed by millionaire-publisher George Palmer Putnam. Putnam arranged for and financed many of her flights, exploiting her achievements through books written by "AE" (as he called her), lecture tours, product endorsements, and campaigns featuring Earhart in person. He marketed everything from sports clothes to luggage, using Amelia Earhart's name. Amelia married Putnam eventually, and he continued to exploit her achievements throughout her life. Yet, there is little doubt that her accomplishments in aviation were significant. She held private, industrial, commercial, and transport pilot licenses. She was the first person in the world to cross the Atlantic by air twice, first as a passenger and second as a solo pilot. She was active in aviation research and served as an advisor in aeronautics at Purdue University. She was the first person to fly nonstop from Newark, New Jersey, to Mexico City and to fly from Hawaii to California. She made the first continental flight in an autogyro (aircraft with a horizontal rotor, which was a forerunner of the helicopter). In 1932, Amelia was awarded both the Distinguished Flying Cross and the National Geographic Special Medal for her solo flight across the Atlantic. Additionally, she served as aviation editor for *Cosmopolitan* and wrote at least three books about her aviation experiences.

One of Earhart's most lasting contributions to aviation was the first organization of women fliers. It was named the Ninety-Nines for the number of charter members and, of course, Amelia Earhart served as the first president. Today, it is still a very active international organization of licensed women pilots, which continues to work for the advancement of women in aviation. The Ninety-Nines sponsor not only an Amelia Earhart Scholarship trust fund to prepare women for careers in aviation but also the All-Woman Transcontinental Air Race (better known as the Powder Puff Derby) and a number of other competitive and proficiency-building flying activities to encourage flying skills. They also are active in many air safety programs and charitable relief activities.[18]

Amelia Earhart's career ended when she disappeared in 1937 while attempting another first—a flight around the world at the equator. Her disappearance became and remains one of the greatest mysteries of aviation history. Yet, regardless of her fate in the South Pacific, her name and legend live on.

Another recipient of a National Geographic

Medal for achievement in aviation was Anne Lindbergh. Her husband, Charles, is still widely remembered for his history-making aviation achievements; however, few people today are aware of Anne's contributions to some of the famous Lindbergh flights. A pilot and an accomplished navigator and radio operator, Anne flew as copilot and radio operator with her husband over the Orient in 1931 and around the inner rim of the four continents that border the Atlantic in 1933. She was the first female recipient of the National Geographic Hubbard Medal in 1934. She was cited for greatly increasing public interest and support of an important industry and for encouraging millions of people to appreciate air travel as being safe, comfortable, and "enchanting."[19] Today, Anne Lindbergh is best known as an author. Two of her earliest books, *North to the Orient* and *Listen! The Wind*, are about the flights for which she received the Hubbard Medal in 1934.

One other very well-known aviatrix of the era was Jacqueline Cochran, who apparently thrived on adversity and challenges. She was reared by foster parents in sawmill camps in the rural South and went to work in the cotton mills at age ten or eleven. Determined to better her lot in life, she obtained work in a beauty shop and owned her own shop while still in her teens. She became interested in flying as a possible tool for marketing cosmetics. She received her license in 1932 and became the owner and manager of a very successful cosmetic firm. However, flying became her new and real vocation. Early in her flying career, she married financier Floyd Odlum. Like Earhart, she had extensive private financial backing from her husband for most of her aviation activities. By age thirty-five, she was acknowledged as the number-one female flier in the United States. In 1938, she won the Bendix race and, in the process, set a new west-east transcontinental record for women. In 1940, she set two speed records for men as well as women.[20]

Cochran played a vital role in World War II and continued to set records well into the 1960s. Before her life ended, she had accumulated an extremely impressive number of awards and honors, including the Distinguished Service Medal, the Legion of Merit, the Distinguished Flying Cross (three times), the Gold Medal of the Fédération Astronautique International, the International Harmon Trophy (fourteen times), the French Legion of Honor, and the Wings of the Spanish Air Force.[21]

World War II

Some of Cochran's most impressive achievements came while she was in the Women's Airforce Service Pilots in World War II. Indeed, Cochran was a driving force in getting this organization started. She made at least two unsuccessful attempts to get General Henry H. "Hap" Arnold, Chief of Staff of the Army Air Forces, to establish a group of women pilots in the Army Air Forces, with her as head of the group. Arnold later stated that he had doubts about "whether a slip of a young girl could fight the controls of a B-17."[22] Failing in her efforts to persuade U.S. military leaders, she turned her attention to England. Cochran knew that the British were using women pilots in their Air Transport Auxiliary (ATA), so in 1942 she recruited twenty-five seasoned American female pilots and took them to England to fly for the ATA. In the meanwhile, without any knowledge of Cochran's proposals to Arnold, Nancy Harkness Love activated a group of twenty-eight women pilots to ferry aircraft under the auspices of Air Transport Command. This group, originally based at New Castle Army Airfield in Wilmington, Delaware, was known as the Women's Auxiliary Ferrying Squadron (WAFS), and Love was appointed as its commander.

Cochran, always ambitious and determined to head any group of American women pilots, came back to the United States and again saw General Arnold. Apparently more convincing than she had been earlier, Cochran was appointed Director of the Women's Flying Train-

In 1953, President Dwight D. Eisenhower, with Secretary of Defense Charles E. Wilson and Secretary of the Air Force Harold E. Talbott, presented Jacqueline Cochran with one of her fourteen "Aviatrix" Harmon International trophies—this one for breaking the sound barrier and establishing a women's speed record in an F-86 Sabre jet. Major Charles E. "Chuck" Yeager, another aviation pioneer, received the "Aviator" Harmon International Trophy. Cochran continued to set records well into the 1960s.

ing Detachment (WFTD) at AAF Headquarters in Houston, Texas. Sometime later, the WAFS and WFTD were merged to become the WASP, headquartered at Avenger Field in Sweetwater, Texas. Love remained as executive officer, while Cochran became Director of Women Pilots.

As the WASP geared up for operations, over 25,000 applications were received. Of these, 1830 women were accepted and 1074 won wings. The primary mission of the WASP was to ferry aircraft from manufacturers or repair depots to operational bases in the CONUS. (It is a common misconception that the WASP

flew aircraft to Europe: they were never permitted to do this. On 17 June 1941, Cochran did fly a bomber to England. However, when male ferry pilots learned of this proposed flight, they threatened a strike. Thus, Cochran was permitted to make the flight only after she agreed to relinquish the controls of the aircraft to copilot Captain Grafton Carlisle during takeoff and landing. In September 1943, Nancy Love and Betty Gillies were scheduled to ferry a B-17 to Prestwick, Scotland, but when they reached Goose Bay, the flight was canceled by direction of General Arnold. Arnold had ordered that no women fly transoceanic planes until he had time to study and approve the matter; he never approved such flights.) The WASP also towed targets for Army units training new gunnery crews, did radio control flying, tested aircraft after repairs, gave instrument instruction to male pilots, and flew a variety of other missions. Thirty-eight (eleven training and twenty-seven operational) WASP died in service during the war.[23]

In August 1977, the first class of female Air Force officers graduated from the Air Force Undergraduate Pilot Training course. These ten women have been followed by others eager to be a vital part of the Air Force team in the 1980s.

The WASP lived under military rule and discipline but were not accorded military status and benefits until 1977, when Senator Barry Goldwater's bill "to provide recognition to the Women's Airforce Service Pilots for the service to their country during World War II" was finally approved. With the passage of this act, the WASP were assigned veteran status and issued honorable discharges.[24]

The WASP established an outstanding flying record. They flew everything in the Army Air Corps inventory, and their safety record was better than that of male pilots flying similar missions. They lost less time for reasons of physical disability than did their male colleagues.[25] (Several sources suggest that their lower time loss can be attributed to less drinking by female pilots and to the propensity of males to travel with "a little black book.")[26]

As the war began to wind down, many flight instructor programs phased down also, and a number of male instructor pilots who had been training cadets in civilian schools were looking for new jobs. These male pilots wanted to take over the ferrying missions that WASP had been performing. Without "required government job" status, these male pilots became subject to the draft as well as unemployment. The displaced male pilots were championed by Congressman Robert Ramspeck, and a bitter battle ensued. Ramspeck won, and in late 1944 the WASP was disbanded.[27]

In addition to the WASP, other female military pilots flew during World War II. They too established excellent records. The British ATA had more than 100 "ata girls," who accounted for about one-quarter of the total ATA pilot force. These women pilots flew every plane in the British inventory—120 different types of aircraft. Seventeen of them (fourteen pilots, one flight engineer, one nursing sister, and one cadet) forfeited their lives while flying with the ATA.[28]

While the accomplishments of the women of WASP and ATA were significant, the achievements of Soviet female pilots in World War II were even more impressive. Over a million Soviet women served in the Armed Forces, and many saw combat, including women pilots. The performance of these female pilots was outstanding. The Soviets had three all-female air regiments, and many other female pilots flew in other units. One female fighter regiment carried out 4419 combat missions and the women's 587th night bomber regiment flew 25,000 combat sorties. Flight Commander Irina Soodova flew 1008 operational sorties. Another woman commanded an otherwise all-male air regiment that flew bombing missions behind enemy lines.[29] In 1943, the 588th regiment was awarded elite status which was denoted by a new unit designation—46th Guards Regiment. By the end of the war, every woman in this regiment had been decorated, and twenty-three of them were honored with the coveted title "Hero of the Soviet Union."[30]

Hanna Reitsch and other women served as test pilots in Germany, and a few other women flew as military pilots in other countries. Clearly by the time World War II was over, women had proved that they were first-class pilots in both civilian and military roles, capable of flying any aircraft in the world.

DESPITE their experiences during World War II, women were forced into the fringes of aviation after the war, not uncommonly having to move into wholly unrelated career fields. Why the giant leap backward?

For countless generations, society as a whole has held strong attitudes about what women can and should be allowed to do—even in the sometimes flamboyant eras of invention and change. Thus, as early as 1795, the Chief of Police of Paris expressed his view that women could not possibly stand up to the strain of riding in balloons. He felt, for their own sakes, women must be protected from the temptation to fly.[31]

Similarly, more than a century later, in 1911, the sheriff of Nassau County, New York, de-

cided that he would curtail Mathilde Moisant's flying activities by arresting her for flying on Sunday. She avoided him by flying to another airfield. (Later, a court decided that flying on Sunday was no more immoral than driving a car on that day.)[32]

In 1938, the Civil Aeronautics Administration (CAA) established experimental flight training programs for men only. Later, one female was allowed to participate for every ten males. But in 1941, war seemed imminent and women were again eliminated from the training. These programs were viewed as training for fighting military pilots and as "no place for a woman." A comment by Al Williams, a navy pilot who set two world speed records, illustrates well the attitude toward women in aviation that prevailed in the United States on the eve of World War II:

> I admit I may be a bit old fashioned, but I don't believe we as a nation are ready to send women into combat. Woman is entitled to equal rights with man—even though she is something apart from and finer than man. The moral indices and real worth of any nation lies in the fitness of its women—as women.[33]

Other influential persons in aviation who were aware of women's accomplishments and might have helped to expand the roles of women in aviation were also surprisingly restrictive in their views. Eddie Rickenbacker took the executives of Boeing to task in 1930 for hiring the first airline stewardess. He argued that flying was a man's occupation and should stay that way. Ironically, Ellen Church, the first stewardess, was a pilot and was seeking employment as such when Boeing hired her to serve food and look after passengers.[34]

Charles Lindbergh also had ideas about "woman's place" in aviation:

> There is no reason why women should not fly, but they should not be encouraged in entering aviation as an occupation. Their greatest contribution to life can be made in other and less material ways. How can a civilization be classified as "high" when its women are moved from home to industry, when the material efficiency of life is considered first and the bearing of children second, if not third.[35]

Even female pilot Jackie Cochran expressed similar views:

> I've always assumed that we would never put women into combat. If for no other reason than because women are the bearers of children, they should not be in combat . . . A woman can do almost anything if she works hard enough. But there's something in me that says a battlefield is not the place for women.[36]

During the four decades since the WASP of World War II was disbanded, attitudes have changed very little. As a result, women today are still limited in what they are permitted to do in aviation, regardless of their aspirations or their talents. There are 185 female Air Force pilots; and while one or two are test pilots, these women are restricted, for the most part, to flying noncombat aircraft. NASA has admitted a few females into its astronaut program, yet only one American woman has flown in space. Furthermore, the female astronauts have all been designated "mission specialists;" none are mission pilots.

Few of today's women who would be fliers have the bankroll of a George Putnam or a Floyd Odlum to pay for their flight training and the purchase of high-performance aircraft. (Even very wealthy individuals could not afford to buy SR-71s, F-15s, and other sophisticated aircraft.) Modern state-of-the-art equipment is entirely in the hands of the military, other government agencies, or large civilian corporations—structures that still retain male-dominated decision-making processes. By law, policy, and practice, these agencies have limited the utilization of women. In the 1980s and beyond, significant advances in aviation research will be achieved, new flight records will be attained, and many missions will be flown to ensure the defense of our nation and the freedom of peoples elsewhere. Until they are admitted in more than token numbers to the circles accomplishing these acts, women who fly will continue to be regarded as curiosities,

and equality in the cockpit will remain little more than an abstract goal.

AFROTC Detachment 115
University of Connecticut, Storrs

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THE AIR FORCE WIFE—HER PERSPECTIVE

MAJOR MARK M. WARNER

Since the American wife first began to accept pay for work outside her home, she has been variously described. She's been compared with . . . Lizzie Borden, Florence Nightingale and Joan of Arc. She's been derided because she abdicated her traditional place in her home, applauded because she alternately toils in the halls of commerce and the walls of domesticity.[1]

AS THE world moves into the mid-1980s, the role of women in the family and home is undergoing significant changes. The women's liberation movement, an inflationary economy, and changing value systems are contributing factors in these changes. The Air Force community reflects these societal changes in a number of areas. For example, traditionally closed career fields, such as pilot utilization, are now open to women. More than twenty-five years ago Nancy Shea, in a book titled *The Air Force Wife*, concluded that military wives had three basic responsibilities: to create congenial homes, to rear quality families, and to strengthen their husbands' morale. And depending on the rank held by their husbands, they assumed additional responsibilities outside the home, such as setting good examples for airmen's wives, supporting Air Force activities, or promoting squadron morale and spirit. The idea was that wives had definite responsibilities in support of their husbands. If they fulfilled their "duties," they could claim half of every promotion, every success, and every medal earned by their husbands.[2] In other words, the traditional role of Air Force wives was to follow and support their husbands and maintain happy homes.

The purpose of this discussion is to examine the changing role and perspectives of Air Force wives in the light of ongoing trends in American society. Are Air Force wives still oriented to their traditional roles, or have other pursuits become more important? What do they want? What are their points of view? Should they have a role? Should they be required or expected to participate in Air Force activities? What do they want from life? Does the Air Force complement or conflict with their personal lives, jobs, families, husbands, or sense of selves? A number of studies reveal that few people have bothered to ask Air Force wives for their opinions of themselves and the Air Force. A survey conducted by the author asked Air Force wives to describe their

attitudes regarding social and recreational activities in the military, roles expected of them, and the impact of military policies on their personal lives.

The survey was conducted among wives of students and faculty members at the Senior Noncommissioned Officer Academy, Squadron Officer School, Air Command and Staff College, and Air War College, and wives of noncommissioned officers serving in the Headquarters Squadron at Maxwell Air Force Base. Altogether, 242 surveys were returned from a total sample of 480, a return rate of approximately 50 percent. While the sample is fairly representative of the participating organizations, no attempt was made to draw inferences concerning groups of wives representing specific organizations or ranks.

The survey asked wives to indicate agreement or disagreement with a series of statements and gave them the option of including written comments. It also required specific responses to a number of open-ended questions. The results were broken down into percentages of total responses for four groups by rank: noncommissioned officer, lieutenant/captain, major, and lieutenant colonel/colonel; a combined tabulation showed average percentages for all groups. Percentages discussed here do not include neutral responses, such as "neither agree nor disagree." They reflect either positive responses, "strongly agree" and "agree," or negative responses, "disagree" and strongly disagree." Although percentages between ranks varied somewhat, this discussion reflects combined total percentages only. Three major divisions of the survey investigated wives' perceptions of Air Force activities, their roles, and their personal needs and desires.

Air Force Activities

Air Force activities were defined in the survey as wives' clubs, volunteer work, projects, fund raisers, coffees, command performances, or other activities requiring wives to give freely of their time. In response to the statement, "I enjoy participating in Air Force activities," two-thirds or 66.1 percent of the wives stated that they enjoy these events. They qualified this statement with such comments as "I enjoy participating when it fits me; only if I am not expected to participate; it depends on the activity and the base; or I only enjoy them sometimes." When asked about the worth of Air Force activities, two-thirds or 66.4 percent of the wives again agreed that they are worthwhile (5.1 percent disagreed), and only 40 percent agreed that current involvement in these activities is reasonable. Approximately 58 percent of the total group did not desire any more activities, and 12.9 percent desired more involvement. Approximately one-third or 33.9 percent of the wives felt that Air Force activities should be more meaningful and responsive to their needs and desires. They felt that involvement in activities should be strictly voluntary and that many activities are overly organized, "busy work," expensive, inefficient, time-consuming, and somewhat purposeless. They stated further that the Air Force was not responsible for entertaining them. Wives seeking more varied activities suggested increased emphasis on current Air Force issues, personal development, and informational groups.

More than 60 percent of the wives agree that they should not be expected to participate in Air Force activities. They felt that participation should be strictly voluntary but that support for husbands is also important. Thirty-seven percent felt pressured to participate, and 47 percent felt no pressure. Twenty-seven percent thought their husbands had been pressured to have them participate, and 55 percent had detected no pressure. Comments in this area centered around the idea that the amount of pressure depended on the personality of the commander and his wife's attitude, their bases of assignment, and the nature of particular activities. Increased rank brought increased pressure. Some felt more pressure 10 years ago than today, and still others felt pressured by a sense of duty. In response to the statement, "I believe it is necessary for me to participate in Air Force activities for my hus-

band to be promoted," 62.9 percent disagreed, and 26.3 percent agreed. Again, many stated that the necessity to participate in activities to assist in promotion of their husbands increased with rank. Although most wives disagreed with the statement, they commented that participation is never detrimental and is generally helpful. Many wives thought that their husbands would be promoted regardless of their actions. In reflecting on the tone of Air Force activities, 35.7 percent of the wives felt that activities are not patronizing events, and 31.9 percent perceived that they are patronizing. The word *dependent* was viewed as irritating: many wives are not dependent, and some make more money than their husbands. More than two-thirds or 69.1 percent agreed that participation in other activities is more important to them than Air Force activities, and only 8.7 percent disagreed with the statement. The leading outside activity more important than all others is any event involving the family. Other more important activities are church, jobs, and school functions.

Wives were divided on two open-ended questions concerning Air Force activities. For example, the question, "Which Air Force activity do you like the most?" brought a variety of responses indicating the most significant preferences for volunteer work, ranging from Red Cross to thrift shop, and for activities involving the husband's squadron or immediate work area. Officers' wives club and small group get-togethers were also high on the list. Opportunities to meet new people, joint husband/wife functions, travel, dining outs, base open houses, youth programs, general socializing, and family activities were often mentioned. Interestingly, a similar number of wives reported that officers' wives clubs are high on their list of least liked activities. Other less desirable activities are cocktail parties, command performances, fund raisers, formal receptions, large gatherings, dining outs, and nonjoint husband/wife events.

The responses to questions and statements about Air Force activities seem to indicate that wives generally do not object to participating in these activities if they are voluntary, not expected, and freedom of choice is observed. Most wives feel that their participation in activities does not determine whether their husbands are promoted, but participation may be helpful, especially with increased rank. They stated that they need no more activities generated by the Air Force. Activities considered more important than Air Force activities centered around the family. The most liked activity was volunteer work, and the least liked was the officers' wives club. Apparently, some Air Force activities have more meaning and worth than others, and wives will continue to select activities that appeal to them as individuals.

Role of Air Force Wives

The next major area of the survey dealt with the role of Air Force wives. The survey revealed strong negative reaction to the statement, "I think the 'traditional role' (wife is expected to follow and support the husband in his profession and not work outside the home) of the military wife is important and should be the model for the future" (75.7 percent disagreement and 12.4 percent agreement). Most wives felt that they could follow and support their husbands and still work outside the home, but others also agreed that the economy has forced many women to work outside the home to finance family needs and desires. Some felt that traditional roles in this respect would become more important with increased rank or that the pressure would at least increase. Still others mentioned that either the individual or the couple should establish its own guidelines but that mutual support was important in any event. Finally, the matter of individual identity and total acceptance of working wives has become an Air Force issue.

More than 87 percent of the women surveyed felt that roles of Air Force wives are changing. The main idea was that many women are returning to work in search of additional money and personal fulfillment. Further, most of the

sample felt that their roles are changing too slowly. When asked whether wives should have roles in the Air Force, 54.0 percent agreed and 23.4 percent disagreed. Wives who agreed felt that their roles should be self-defined but supportive of their husbands. Those who disagreed stated that their husbands, not they, were paid for working and that the Air Force should no longer expect to get "two for one." Others stated that they were equal partners with their husbands and that mutual support centered on the family. More than 53 percent agreed and 22.9 percent disagreed when asked whether Air Force leaders expect wives to act in traditional roles. Generally, most wives felt that although some leaders favor traditional roles, wives' roles will change during the next 10 years to the point that work outside the home will be totally acceptable.

The survey showed mixed responses to the statement, "When my husband comes home and says that I am expected to attend an Air Force-related event, I am happy to participate regardless of my interest in the function or my other personal commitments" (53.3 percent disagreed and 28.7 percent agreed). Many wives explained that willingness to participate depends on the event. Others stated that their husbands would never expect such behavior and that they make joint decisions on such matters. Still others stated that they would attend events in support of their husbands. In responding to the statement, "The Air Force is a specialized profession; therefore, it requires more from me than might be expected in the civilian world," 53.3 percent of the sample agreed and 36.4 percent disagreed. For example, alerts required by the Strategic Air Command and periods of war definitely make the Air Force more specialized and require more of wives. But most comments indicated that certain types of civilian jobs are just as specialized as jobs in the Air Force.

One survey question concerning the roles of Air Force wives was open-ended: "I think the role(s) of the Air Force wife should be. . . ." By far the most frequent response was that Air Force wives should support their husbands not only in relation to the Air Force but also within the framework of a good marriage. Many wives stated that they understood their roles in support of their husbands but that they should also be able to pursue their own goals at the same time. Some felt that their roles should be a matter of individual choice—friend, lover, helpmate, mother, homemaker, or careerist apart from the husband. Still others felt that they are part of a joint support system; that is, husbands should support their wives just as wives support them. And some stated that they should have no role in Air Force affairs.

Regarding roles, the respondents felt that the traditional role of the Air Force wife is changing to the extent that today wives are more responsive to societal demands and the state of the economy than ever before. They believe that they should have a role, but that it should be self-defined, support-oriented, and compatible with individual desires.

Personal Needs and Desires

The last major area of the survey dealt with a variety of issues concerning the effects of official policies and programs on the personal needs and desires of Air Force wives. When asked to compare their needs and desires with those of their husbands, 93.7 percent of the wives felt strongly that their values are just as important as those of their husbands. Most wives felt that they live in partnership with their husbands and that together they function as family units. They expressed a somewhat different reaction to the statement, "Air Force leaders are sensitive to my needs and desires." In this instance, 38.1 percent disagreed and 31.6 percent agreed. Many wives stated that while some leaders are sensitive to their needs, others are insensitive; others felt that leaders need not be sensitive to their needs, since the Air Force mission comes first; and still others suggested that many leaders pay lip service to their needs and desires. Some of the wives stated that leaders are slowly becoming more sensitive in this area. Fifty-six percent of the sample

agreed and 17.5 percent disagreed that the Air Force should exert more effort in requesting and encouraging wives to assume supporting responsibilities rather than *expecting* them to play specified roles. Such comments as "You get more done if you ask," "no one likes to be told," and "*please* is a nice word" reflect attitudes in this area. Most wives felt that, after making requests of them, the Air Force should "graciously accept whatever answers they give" and thank them for their efforts.

The survey results were interesting in the important area of jobs. In describing their husbands' careers, 69.9 percent of the wives agreed that their husbands are solely responsible for their own progression. They qualified their agreement by stating that support and help from the family are beneficial, but at the other end of the spectrum, 55.1 percent agreed and 37.0 percent disagreed with the statement that wives should be free to "do their own thing" in life without any adverse effect on their husbands' careers. However, they also felt that wives should exercise this freedom "within moral limits" and never in conflict with husbands. The idea of mutual support and teamwork in the marriage is important. They indicated that wives should not bring embarrassment to their husbands and that they should keep their behavior "within the limits of good taste." More than 85 percent stated that their jobs are just as important as their husbands' jobs. The survey defined jobs as whatever the wives believed them to be: jobs as housewives or jobs outside the home. Again, the concept of mutual support and team effort was deemed the important issue in perceptions of jobs in either category. More than 55 percent of the wives disagreed with the statement that the Air Force "conflicts with my job." Most comments suggested that PCS moves handicap them in getting promoted or holding jobs.

The final area concerning the needs and desires of wives centered in the family. As to whether the Air Force conflicts with or enhances family life, 55 percent felt that it enhances family life and only 18.5 percent felt that it conflicts with the family. The wives cited traveling, meeting new people, broadening experiences, and promoting family closeness as the greatest enhancements, and long working hours and TDYs as major sources of disenchantment. The statement, "The Air Force conflicts with my personal life," brought 57.4 percent disagreement and 23.5 percent agreement. Some wives stated that the Air Force is "part of my personal life" and that it provides a wealth of valuable experience. Forty-nine percent of the wives disagreed and 42.4 percent agreed that the Air Force provides adequate compensation (money and benefits) for the quality of life desired for their families. Most women felt that the income was adequate but that Air Force jobs should be more closely aligned with their civilian counterparts. A major complaint focused on the lack of benefits for family dental care, routine moving expenses, and compensation for losses from the sale of homes required by PCS moves. Many wives perceive an erosion of benefits in the face of concurrent demands from the Air Force for more effort. The statement, "I enjoy the new opportunities, new friends, and changes in my environment (home, job, etc.) associated with Air Force PCS moves," brought 77.8 percent agreement and only 11 percent disagreement. Most wives felt that living in different areas of the country and the world is one of the most positive benefits offered by the Air Force. The only major concerns centered on the difficulties of leaving and finding jobs and the emotional shock for high school children forced to leave their friends at the peak of their teenage years.

One can draw a number of conclusions from this part of the survey.

- Air Force wives view their needs and desires as important as those of their husbands, and they perceive that Air Force leaders are sometimes insensitive to these concerns.

- Husbands are solely responsible for their careers, but some help from the family is beneficial.

• Wives should be free to "do their own thing," and the Air Force does not significantly conflict with their jobs, families, or personal lives.

Finally, when asked whether or not they were happy with Air Force life, 83.7 percent of the wives felt happiness, and only 6.3 percent felt unhappiness. This is a good testimony for the Air Force lifestyle.

The Air Force Wife in Perspective

What are the causes of these changing attitudes among Air Force wives? For one thing, American society as a whole is changing because people are demanding greater freedom in selecting their personal and family lifestyles. Certainly, the women's liberation movement has opened many doors formerly closed to women. Continuing problems with the national economy have forced many women into the job market and out of their traditional roles to provide funds for children of college age and to support a desired quality of life. In recent decades, the accelerated rate of change in technology, legal relationships, social behavior, education, and economic systems has created vastly diverse experiences in value programming between generations, and these shifts are reflected in the attitudes and lifestyles of today's Air Force families. Many men and women are seeking new balances between work and family responsibilities, and they are searching for greater meaning in leisure activities and family companionship. Work has declined as a central interest in life and as a primary determinant of self-images. Traditional family patterns have shifted to nontraditional patterns that sanction the employment of wives outside the home and give priority to the family over the husbands' careers.[3]

The impact of these changes on Air Force policies is significant. Since Air Force wives play central roles in the lives of military members and their families, they exercise a direct influence on the Air Force mission. The military mission and the military family now compete for the same resource, the service member's time and commitment. Mission requirements have traditionally demanded priority over the family, but many modern military families place their own needs above the mission.[4] With changes in the traditional roles of Air Force wives have come similar changes in the social activities that commit them as hostesses and participants. The Air Force must accept situations that do not require active participation of wives; commanders must fill gaps when wives are unable or unwilling to participate; and many activities involving wives must be reorganized, eliminated, or appropriated. The Office of Air Force Family Matters conducts continuing studies reflecting interest in these and other issues, such as dual-career families, spouse employment, retirement, retention, parenting, midlife crisis, and reluctance to move. And as American society continues to change, these and other issues will continue to receive emphasis.

Finally, the last portion of the survey asked for responses to the statement, "If I could change *one* thing in the Air Force, I would change. . . ." Here the wives offered some significant recommendations. They admit a sense of excitement in moving, but many felt that they move too often. They frequently asked "What is wrong with staying at the same job more than three to five years as long as their husbands are happy and productive?" They suggested that the Air Force could save millions of dollars by reducing the number and frequency of moves. But when it becomes necessary to move, they felt that military families should receive more compensation to offset major costs not reflected in current benefits. Many wives perceived a lack of quality in medical facilities, particularly mentioning irritating appointment systems, their sense of being treated like second-class citizens, and inadequate dental care. Others suggested improvements in base housing facilities and preference for lower-ranking families who cannot afford to live off-base. As a group, the wives desire fewer remote tours and TDYs for their husbands and

more emphasis on family needs and desires, with less pressure to join traditional organizations.

The wives indicated that they would raise many of these same issues if they "could tell the Chief of Staff of the Air Force *one* thing about Air Force life." Emphasis on the family, fewer PCS moves, more money when moves are necessary, and better medical and dental programs are recommendations that stand out. Some wives suggested that the Chief should explain to the civilian world the hardships of military life and the lack of comparable pay and benefits. Others desire more significant roles in selecting assignments, and many would tell the Chief that the Air Force is indeed "a great way of life." Responses included such typical comments as these: "It is a good life"; "I love it"; "Thank you . . . Sir"; "Godspeed."

THE RESPONSES to the survey apparently reflect three basic conclusions:

- Air Force wives do not object to participating in Air Force activities if they are strictly voluntary and if wives are free to choose preferred activities.
- Traditional roles of Air Force wives have changed allowing them more freedom to pursue individual interests and maintain support for husbands at the same time.
- Most wives are happy with Air Force life insofar as the military does *not* significantly conflict with their jobs, their families, or their personal lives.

As participants in Air Force life, we must all consider the implications of these views and, when appropriate, accept constructive changes consistent with the Air Force mission. Perhaps the following comment by one Air Force wife captures the essence of attitudes held by other wives toward military life: "Aside from being left alone to contend with broken cars, sick kids, blizzards, and heatwaves, it's a hell of a way of life."

Air Command and Staff College

Complete tabular data in rank percentages are available through the *Air University Review* office.

Notes

1. Mary Kay Murphy and Carol Bowles Parker, *Fitting in as a New Service Wife* (Harrisburg, Pennsylvania, 1966), p. 135.
2. Nancy Shea, *The Air Force Wife* (New York, 1966), pp. 9-12.
3. Chaplain (Maj. Gen.) Richard Carr, USAF, Dr. Dennis K. Orthner, and Chaplain (Maj.) Richard J. Brown III, USAFR, "Living and Family Patterns in the Air Force," *Air University Review*, January-February 1980, p. 76; Morris Massey, *The People Puzzle* (Reston, Virginia, 1979), p. 21; Dennis K. Orthner, *Families in Blue*, Office of the Chief of Chaplains, USAF, 1980, p. 9; Larry W. Black, "Changing Patterns of Air Force Families," student paper, Air Command and Staff College, 1982, p. iii.
4. Cecile S. Landrum, "The Conflicts Surrounding Family and Children versus Mission Responsibilities," Office of External Affairs, ACS/Studies and Analysis, Headquarters, United States Air Force, 1979, p. 3.

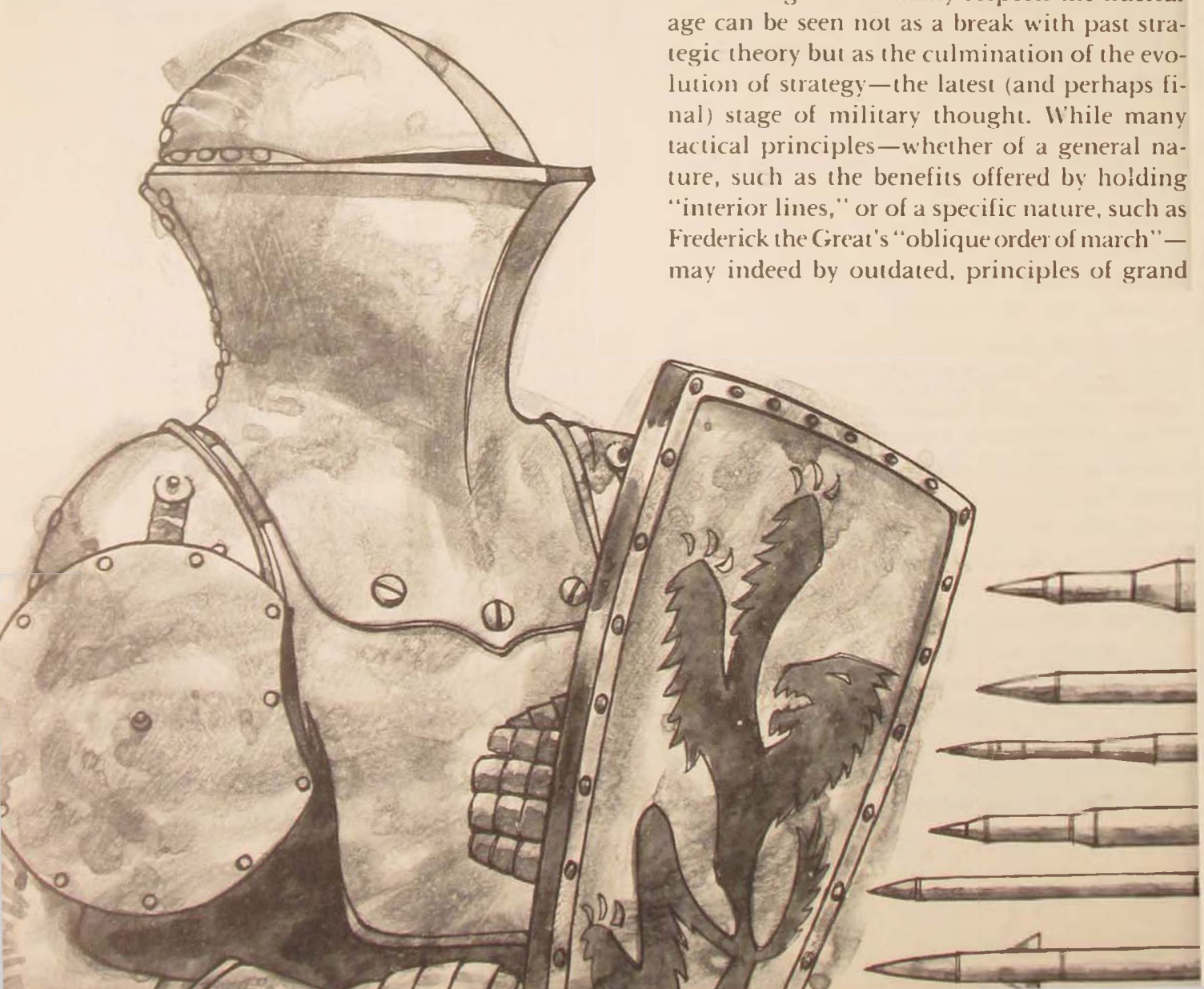
CLASSICAL MILITARY STRATEGY AND BALLISTIC MISSILE DEFENSE

MAJOR OWEN E. JENSEN

The application of lessons of the past to current and predicted military issues always required a proper appreciation of changed technological conditions, but not until the latter half of the nineteenth century did the problem of adjustment offer any difficulties. In the twentieth century it became increasingly critical, and with the advent of nuclear weapons the entire value of past military experience as a guide to the future was called basically into question.

Bernard Brodie[1]

THIS seems to be conventional wisdom: nuclear weapons have changed everything. Yet in many respects the nuclear age can be seen not as a break with past strategic theory but as the culmination of the evolution of strategy—the latest (and perhaps final) stage of military thought. While many tactical principles—whether of a general nature, such as the benefits offered by holding "interior lines," or of a specific nature, such as Frederick the Great's "oblique order of march"—may indeed by outdated, principles of grand



strategy have continued to evolve.

Military thinkers of the past were not necessarily wrong in their identification of underlying elements of grand strategy, but they may have been wrong in seeing those elements as constant and unchanging. Similar themes, ideas, and principles have seemed to recur in every conflict, but their recurrence over time was on a constantly ascending scale. In this article, I shall discuss specific instances to support this thesis, but at this point one other general thought needs to be considered. That is the idea that grand strategy developed differently in what we now call the Western nations (particularly in the United States) than it did in the Soviet Union. Although both are equally rooted in classical strategic theory and both are valid expressions of grand strategy, the strategies of today's East-West rivals, like races of men evolved from a single ancestor, gradually acquired distinctive features. With this in mind, let us examine the origins of U.S. nuclear strategy, then consider options to that strategy, and, finally, assess the impact of opposing choices on decisions for or against ballistic missile defense.

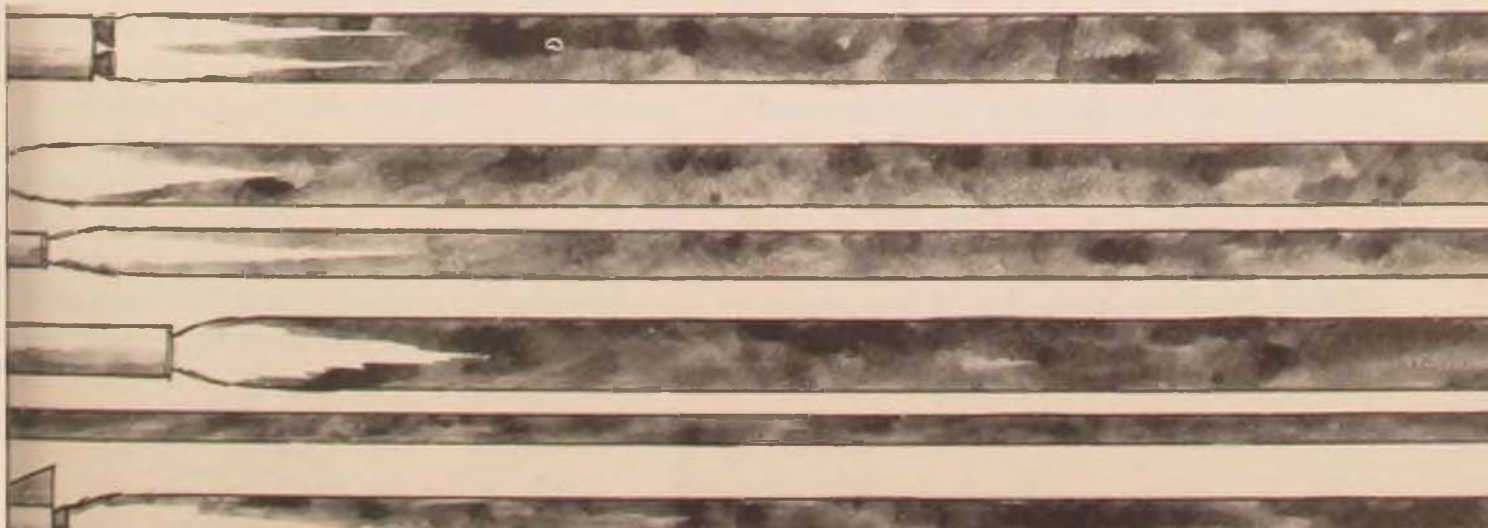
Nuclear Strategy: Links with the Past

As the magnitude of war increased, the need for political control over the initiation, the extent, and the cessation of hostilities also increased.

> Today . . . with truly cosmic forces harnessed to the machines of war, we have a situation for the first time in history where the opening event by which a great nation enters a war—an event which must reflect the preparations it has made or failed to make beforehand—can decide irretrievably whether or not it will continue to exist. Obviously, therefore, we cannot go on blithely letting one group of specialists decide how to wage war and another decide when and to what purpose, with only the most casual and spasmodic communication between them.[2]
>
> War . . . is an act of policy. Were it a complete, untrammeled, absolute manifestation of violence (as the pure concept would require), war would of its own independent will usurp the place of policy the moment policy had brought it into being; it would then drive policy out of office and rule by the laws of its own nature. . . . It is clear, consequently, that war is not a mere act of policy but a true political instrument, a continuation of political activity by other means.[3]

Clausewitz began his treatise *On War* with an exploration into the nature of war and examined it as a totally violent experience. To him, that was an abstract concept. With the present state of weapons evolution, it has become reality.

He then qualified his concept, however, and allowed that wars were not theory but reality, and in reality they are not fought merely for the sake of violence but to achieve political goals. Clausewitz also stressed that military aims had to be subjugated to political goals and that "this conception would be ineluctable even if war were total war."[4] Today, in an era in which a first strike may be the entire war, domination



of military aims by political goals is paramount not only in theory but in reality as well. In no nation today is the military given advance approval for first use of nuclear weapons. Historically (and even today regarding conventional weapons), military commanders have been authorized to fire back if fired upon. However, this authorization does not apply to nuclear weapons. For almost every contingency, advance approval for even second (or responsive) use of nuclear devices has been withheld. Because the destructive capacity of weaponry has increased to the point where policy controls military imperatives, Clausewitz's dictum has reached its purest form.

The main question, however, is whether there are any political goals that may be achieved by nuclear weapons. Hasn't the awesome power of such weapons canceled out any possibility that war can even be considered as a political instrument? That answer may also be found in Clausewitz and an examination of the *evolution* of military history, expressed as:

Political goals themselves must be realistic and not overreach military capabilities.

Clausewitz defined war as an "act of force to compel our enemy to do our will"[5] and pointed out that mere destruction of forces or occupation of territory was sometimes insufficient to accomplish that goal. He noted his own native Prussia as an example where complete defeat and occupation (by Napoleon) nevertheless failed to effect a *lasting* change of will. To the contrary, Napoleon's overambitious political goals eventually led to significant, permanent changes mostly for his own country, France. The lessons of this are twofold: If an *attacker* realizes that by prosecuting a total war (versus a limited war) it may be in danger of allowing political goals to exceed military capability and thereby risking the destruction of itself, the very society it is attempting to impose or protect, then the attacker would be foolish to initiate the war at all; and if a *defender* is faced with the complete uprooting of the essence of its society, then it has nothing to fear by fighting to the bitter end—accepting total war as having no worse consequences than surrender.

History is replete with examples. Athens had every prospect of maintaining its empire ad infinitum until it decided to attempt complete hegemony in the middle of the Peloponnesian War by invading Sicily. By thus overreaching its military capability, the empire was lost.[6] Likewise, Carthage had the strength to maintain its territory versus Rome, but by resorting to total war, it lost totally. When the third Punic War was over, "nine-tenths of the [Carthaginian] population had perished. . . . By order of the Roman Senate . . . [Carthage] was completely destroyed, and the survivors sold as slaves."[7] The reason why no decisive "Napoleonic" victories were achieved in the American Civil War while they were won in the Austro-Prussian and Franco-Prussian wars was not that weapons technology had given a decisive advantage to the defense (for the defending Europeans had weapons of equal destructive power), but that the North was attempting to impose a totally new order on the South, which caused an escalation to total war. In Europe, on the other hand, Bismarck and Moltke made it plain that their objectives were much more limited and not worth complete mutual destruction. In contrast, Napoleon and Hitler risked all and lost all by allowing political goals to exceed military capability in the face of adversaries who were fighting for the preservation of their very societies.

My point here is to suggest that because nuclear war today has evolved into what would be an act of total violence (a concept that for Clausewitz was merely abstract), it has crystallized the ultimate consequences, and therefore the choices, involved in total war. Where it was possible for Athens, Carthage, Napoleonic France, or Nazi Germany to mistakenly contemplate victory or at the worst (if defeated) a maintenance of the prewar status quo, such error in thought is no longer possible. By evolving to its pure form, war has identified its own consequences with absolute clarity. An

attacker today does risk total destruction if it attacks a defender that can retaliate massively.

Recall that Clausewitz held that if war were a "complete, untrammeled, absolute manifestation of violence (as the pure concept would require), war would of its own independent will usurp the place of policy the moment policy had brought it into being."[8] That is obviously true today and was equally true in the past. Certainly for Carthage and to a lesser extent for both Germany and Russia in World War II, the consequences of war rivaled the possible results of nuclear holocaust. The lesson is that war has not changed from being a practical political instrument into an impractical political instrument in the nuclear era, but that at its *extreme* it was always impractical. The difference is that as war's destructiveness has evolved in magnitude, this lesson has been made obvious where before it was obscured. The only way to use war as a policy instrument now (as before) is by limiting its application—either by restraining political objectives or by increasing the effectiveness of defense.

U.S. Strategy: A Preference for the Offensive

Bernard Brodie instructs that "military doctrine is universally, and has been since the time of Napoleon, imbued with the 'spirit of the offensive.' "[9] While the universality of his statement may be criticized, it has certainly held true with regard to U.S. strategic thought. At the beginning of the Civil War, "the image of Napoleonic war with its brief, climactic battles had impressed itself upon the popular mind as well as upon soldiers . . . and it stimulated the usual popular impatience [especially in America] to have wars over with promptly."[10] Nearly every one of the leading generals on both sides in the Civil War had been educated at West Point during an era when the strategic thought of Jomini, Napoleon's Swiss expositor, provided the bedrock of military instruction. Jomini made no secret of his preference for the offensive over the defensive and stressed that the whole purpose of strategy was to bring forces into battle with the object of destroying an enemy's army. Jomini called for boldness in warfare: "I would make [war] brisk, bold, impetuous, perhaps sometimes even audacious."[11]

As U.S. military strategy began to be employed beyond its own borders, it was embodied in the Navy; and naval thought at the time for all of the great naval powers focused almost exclusively on the ideas of Alfred Thayer Mahan.

> Mahan pored through the pages of Jomini in his effort to formulate a new science of naval strategy, and many of the principles of naval war which he suggested are naval applications of Jomini's precepts.[12]
>
> Jomini's dictum that the organized forces of the enemy are the chief objective pierces like a two-edged sword to the joints and marrow of many specious propositions. . . . the enemy's ships and fleets are the true objects to be assailed on all occasions.[13]

As air power entered into U.S. strategic thought it was borne in the writings of Italian Brigadier General Giulio Douhet, a total proponent of the offensive. "His basic argument is two-fold: first, the nature of airpower requires that 'command of the air' be won by aggressive bombing rather than by aerial fighting, and second, an air force which achieves command thereby ensures victory all down the line."[14] He saw no hope for air defenses and every likelihood of rapid, total victory through bombardment of an enemy's cities and resources. It may be safely stated that there was not an atom of support for defenses in all his work.

The connection of Douhet to U.S. strategy was direct, via members of the Bolling Commission, who were considerably influenced by his concepts on a fact-finding tour examining military aviation during 1917;[15] and indirect, in that Douhet merely expressed what was generally a consensus of knowledgeable Western opinion of that time. Subsequently, U.S. air doctrine "adopted Douhet's de-emphasis of

fighters, whether for defense or for escort of bombers, and a corresponding emphasis on destroying the enemy's air force at its bases."[16] Even General William "Billy" Mitchell's writing (although it is largely tactical and probably not derived from the Italian) is "pure Douhet"[17] where it discusses the strategic use of air power.

As the United States entered the nuclear era, its choices seemed almost preordained. Although at first, both air defense and strategic bombing progressed together under Eisenhower's New Look strategy, clearly it was the offensive side that received the primary emphasis; and whatever balance existed did not survive the transition to the missile age. It was not the balanced offensive and defensive force structure advocated by Bernard Brodie in his 1959 book, *Strategy in the Missile Age*, that was chosen, but rather the course advocated by Oskar Morgenstern in *The Question of National Defense* (also 1959), which advocated reliance on the creation of powerful strategic offensive forces.[18] During the Kennedy-Johnson-McNamara years, defenses against bombers were almost totally scrapped; and in the Nixon-Ford-Schlesinger years, antiballistic missile systems were given up as well.

As a result, the United States was left with an unnerving and rather absurd reliance on a strategy of mutual assured destruction (MAD), trusting the fate of American society to the rationality of nuclear adversaries. It was said to be in our U.S. interest to forgo defenses totally in favor of the offense, making the nation vulnerable so that the other side would not suspect it of planning a first strike. To many observers, however, the MAD strategy was shortsighted. It ignored the possibility of technological breakthroughs that could render offensive forces themselves vulnerable and lead to dangerous consequences. Only in North America, where the ravages of war were largely unknown, could vulnerability have been conceived as an asset. As Henry Kissinger observed:

> One reason [behind this strategy] was the growth of the school of thought to which I, myself, contributed . . . which considered that strategic stability was a military asset, and in which the historically amazing theory developed that vulnerability contributed to peace and invulnerability contributed to risks of war. Such a theory could develop and be widely accepted only in a country that had never addressed the problem of the balance of power as a historical phenomenon. And . . . only also on a continent which was looking for any excuse to avoid analysis of the perils it was facing and that was looking for an easy way out.[19]

Adopting the MAD strategy, the United States consciously and willingly entrusted the fate of the nation to the Kremlin's self-restraint. For other nations such a policy would truly be considered "mad." "Since emphasis on active defense was nearly nonexistent, official policy [also] considered civil defense almost pointless. In short, U.S. nuclear decision-makers strove to retain sharp swords, but defensive shields were foregone."[20]

Alternative Evolutionary Patterns

While U.S. strategic thought has focused almost entirely on the offensive over the past century, options recognizing the benefits of defensive strategy have evolved in other societies, most notably in the Soviet Union. These options were also rooted in past strategic theory and practice.

In the middle of the fourteenth century, the Battle of Crécy between forces under Edward III of England and Philip VI of France demonstrated the ability of the English longbow to penetrate armor and overcome the theretofore unassailable dominance of mounted knights. For the first time in nearly a thousand years, defensive infantry gained the upper hand against mounted troops.[21] Previously heavy cavalry, employed exclusively on the attack, had dominated warfare; and armies unfortunate enough to find themselves on the defensive had been forced to retreat inside fortresses and suffer the starvation and privation of siege. Thus, technological change opened a new era of military history; and since Crécy (with its verdict solidly reaffirmed 70 years later at Agin-

court), "infantry has remained the primary element of ground combat forces."[22]

Change indicated at Crécy, however, spread slowly to the armies of Europe. Decades passed before it began to impact military development in the Russian Empire, which at the time of Crécy was still being ravaged by mounted Mongolian armies. Nevertheless, the ascendancy of common infantry, emphasizing the strength of Russian numbers, along with defensive advantage offered by possession of vast territory for retreat and maneuver, was to have profound influence on the development of strategy in Russia.

In 1708-09, the tactical genius of Charles XII of Sweden took him into combat deep in the Ukraine, where Russian retreat, maneuver, and scorched-earth strategies brought the Swedish army to exhaustion and total defeat by a huge army under Peter the Great.[23] A pattern of Russian strategy was thereby established. It accepted severe sacrifices in territory and lives while maintaining a strategic defensive to exhaust an adversary until he could be overwhelmed. That strategy continues to this day.

Even the great Napoleon, on whose campaigns offensive doctrine rests, experienced defeat from this simple but effective Russian strategy when he marched to Moscow in 1812. Although his final defeat was averted for some time, the final demise of his empire began when he crossed the Russian frontier and began pouring the resources of France upon empty steppes. The implications of this lesson were largely ignored by one great Napoleonic interpreter, Jomini, who chose instead to emphasize the magnificence of Napoleon's conquests. However, another interpreter, Clausewitz, understood the inherent strength of defensive strategy and chose to stress heavily that "defense is a stronger form of fighting than attack."[24] Thus a divergence in strategic theory began that emphasized the differing geopolitical realities in East and West and evolved to the distinctly different military postures of today. These differences are particularly clear now that weapons for strategic defense are considered separately from those of strategic offense and conscious choices must be made regarding which type of system will receive budgetary allocations.

Defeat for Russia in World War I was inextricably intertwined with internal political collapse and revolution, but the civil war that followed found foreign expeditionary forces once more swallowed up by the vastness of the territory and the numerical superiority of a peasant army. In the Second World War, traditional Russian strategy was classically employed yet again as Hitler met a fate nearly identical to that of Charles XII and Napoleon. By accepting losses in both land and manpower that would have been disastrous for smaller nations, the Soviets absorbed the Nazi offensive thrust and husbanded its strength until a killing counterblow could be delivered. Clausewitz may not have approved of the crudity and inefficiency of the campaign, but he would have accepted the conclusion as inevitable.

In the nuclear age, the only change in fundamental Soviet strategy is that the counterblow will not be delayed. While great sacrifices undoubtedly will have to be made, this prospect is not a new idea. And at the same time that punishment is being accepted, it will be returned with overpowering force. However, aware that their nation has experienced the ravages of invasion many times in its history, the Soviets are not content to entrust their fate merely to the rationality of their adversary and the ability of their empire to accept and survive an onslaught. They intend to mount an active defense-in-depth and think it insane to do otherwise.

> In the mid- to late-1950s, when the Soviets were assessing what kind of strategy and matching capabilities were required for war in the nuclear age, an interlocking defense network composed of antiaircraft/antiballistic missile systems and adequate protection for the civilian population and industry was high on the list of priorities. . . . [A decade later, as Kosygin confessed to Lyndon

> Johnson, the Soviets were] palpably mystified by the lack, after more than two decades of strategic competition, of a coherent American doctrine and strategy for attaining a meaningful victory out of nuclear war.[25]
>
> . . . the U.S. must look at Soviet defensive capability in terms of ballistic missile defense, air defense, and civil defense. A recent Central Intelligence Agency Study determined that Soviet civil defense efforts cannot neutralize the U.S. response with nuclear weapons to a Soviet first strike. That study is absolutely correct as far as it goes . . . but it misses the whole point. If the Russians can achieve an antiballistic missile technology breakthrough and add that to their active air defense capability, then civil defense takes on an entirely different role. This is one reason why development of high-energy-laser and charged-particle-beam weapons has become so important. . . . The USSR does not have to have an air-tight defense but only the capability to limit damage to an acceptable level *as it perceives it.*[26]

Thus Soviet strategy has developed on historically sound experience, yet in a way different from U.S. strategy. The Soviets do not dismiss war and the huge loss it will bring as "unthinkable." They accept that it might occur, make plans to keep the damage to acceptable levels (by their standards), and build weaponry capable of delivering a killing blow to their opponent.

Prescriptions for Change

History seems to show that a balance between offensive and defensive capability is needed. As a Royal Air Force officer, reflecting on Douhet's theories after the Battle of Britain, commented: "If it is true that 'the bomber will always get through,' as it is popularly stated, it is equally true that 'not all the bombers will get through' against adequate defenses."[27] With proper emphasis and investment in research, the same observation could be made regarding strategic missiles. And as the various elements of both active and passive defense are brought together, the contribution of each will be multiplied. It is only by looking at the "whole" effect of defense along with the effects from offensive action that strategic possibilities can be examined realistically.

A second historical lesson applicable to today's choices between strategies and their associated specialized weapons systems is the realization that military means must be related to political ends. This fundamental Clausewitzian precept has often been forgotten at great cost in the past. In World War I, for example, "Foch gives little indications in his writings of having thought about the matter at all. . . . Yet if the total war of the future is fated to be one where victory is pursued blindly, and therefore at wholly incommensurate costs which destroy its meaning, it will be more akin to the first than the second of the two world wars."[28] Once a nation is equipped with sufficient offensive arms to obliterate its potential adversaries, further increases in offensive weaponry add little to security or the advancement of political goals. The cost of multiplying this offensive firepower is simply disproportionately high to the benefits derived.

But that is not true of defensive investment—particularly in the United States where so little defense exists. In fact, initial expenditures on defensive measures would probably bring the highest return for U.S. military dollars because there is so much room for investment before the onset of diminishing returns.

In the first place, active defenses could help protect U.S. strategic offensive weapons, hopefully destroying a portion of any Soviet attack capability launched against counterforce targets and preserving U.S. retaliatory might. Results following a Soviet first strike might therefore not reflect such a gross asymmetry in favor of the U.S.S.R. as is currently contemplated. To Bernard Brodie, this point constitutes a basic principle about defense in general:

> Known ability to defend our retaliatory force constitutes the only unilaterally attainable situation that provides potentially a perfect defense of our homeland. Conversely, a conspicuous inability or unreadiness to defend our retaliatory force

> must tend to provoke the opponent to destroy it; in other words, it tempts him to an aggression he might not otherwise contemplate.[29]

Second, active defense offers a realistic possibility—perhaps the only realistic possibility—of reducing or eliminating the frightening specter of nuclear holocaust that has haunted most of the world for over three decades. One approach might be for both sides to develop massive and highly effective defenses on a scale of both quantity and quality that could meet and destroy any combination of nuclear attack launched against them. By using various weapons and tactics, such defenses would reduce the effectiveness of offensive systems so drastically that a climate and a motive conducive to disarmament could result. Such a development, however, envisions a highly optimistic evolution of defensive versus offensive weaponry, which is historically and logically questionable. It would be better to assume that if both offensive and defensive weaponry continue to be developed, each will contain elements of strength and weakness with neither achieving total dominance. In such an event, defenses would contribute to deterrence only to the extent that greater uncertainty was introduced to offensive planning. Nuclear attack would be forestalled by eliminating certainty of destruction and replacing it with less quantifiable probabilities.

Another (more realistic) way of eliminating the specter of nuclear war would be for defensive strategies to be employed along with negotiated arms reductions. Assuming that reductions in strategic nuclear weapons will be approved eventually by both the United States and the Soviet Union, it is obvious that ballistic missile defense (BMD) systems would multiply the effect of such reductions. It is generally held that the primary problem with BMD is the sheer mass of incoming missiles that would have to be faced in a short time. If the numbers were reduced, associated defensive solutions would be more viable. Even first-generation ABMs (Sprint/Safeguard) were touted as possessing good capability against limited or Nth-country (China) attacks.[30] Eventually, if both sides drew down to, say, 200 launchers, defensive weapons might begin to achieve virtually certain protection. Furthermore, any reluctance to take the final step beyond reductions to total nuclear disarmament, stemming from a desire to retain at least limited options to employ weapons of mass destruction in times of crisis, might be overcome. Where without defenses there could be great misgivings about total nuclear disarmament, if it could be shown that small offensive weapons reserves were useless in the face of effective defenses, incentives would exist to continue the arms reduction process. In other words, defensive weapons would promote both a climate and a motive for disarmament by eliminating any threat of surprise. Such prospects however, depend on the development of defensive systems on both sides before they are needed. Obviously, the sooner development can begin, the better.

In summary, then, one can see that the fundamentals of current grand strategies are deeply rooted in past strategic theory and, in fact, represent the culmination of classical theory in its purest form. A distinct difference between U.S. and Soviet strategic doctrine exists, with the United States preferring to stress the offensive while the Soviets pursue a more balanced approach. To remove Soviet temptation to strike at vulnerable U.S. weapons and to serve as a "multiplier" to any arms reductions, U.S. adoption of some elements of defensive strategy and development of associated weaponry seem reasonable and worthwhile.

Admittedly, there are those who claim that BMD is destabilizing. They point out that if either nation perceives the other to be gaining a technological breakthrough—deploying defensive systems unilaterally and gaining protection that the other cannot obtain—it may feel

forced to launch a preemptive strike before such defenses could be set in place. Such arguments, however, do not militate against U.S. *development* of BMD but only against the manner and timing of *deploying* such systems.

If the United States finds itself facing a numerically superior nuclear force capable of destroying two legs of its triad (ICBMs and bombers), Soviet temptation to strike at this area of vulnerability, as pointed out by Bernard Brodie, might provide a motive for attack. If such a Soviet force were augmented by comprehensive antimissile defenses, that motive would be even stronger because the means of negating a substantial portion of the remaining U.S. weapons, the SLBMs, would be in hand. The United States would, in effect, face forceful cancellation of its strategic forces altogether by the offensive and defensive combination of Soviet arms.

If, on the other hand, the United States pushed ahead as rapidly as possible with research and development, then unilateral deployment of BMD systems by the Soviets would be obviated by U.S. ability to deploy similar systems apace. Once both nations have defensive systems in place, those systems will begin to produce the beneficial, stabilizing effects discussed earlier. The issue is how to get safely from here to there. Clearly, however, if the United States attains the capability to deploy effective BMD weapons, then it can set the pace for mutual deployment; if it is not in a position to keep up with the Soviets, however, the United States will be faced with the uncomfortable possibility that the Soviets may not be willing to modify or restrain their deployment schedule.

In the end, however, the debate could be moot. Given the present state of research and development of various forms of BMD on both sides and the investment emphasis placed on pushing those programs ahead, defensive systems for both of the superpowers could be developed at about the same time. If the United States accepts the importance and logic of strategic defenses as the Soviets have, it might only be necessary for each nation to pursue diplomatic contacts and intelligence gathering to ensure themselves that no short-term, unilateral disadvantages developed. Regardless of the likelihood of concurrent timing, it is clear that the United States should pursue antimissile defense as vigorously as possible, recognizing that it is the only type of strategic program still capable of matching political goals with military aims. The inertia of U.S. preference for offensive strategy, whether disguised as theories such as mutual assured destruction or pseudoscientific investigations such as cost-benefit analysis, must be overcome.

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23. Robert K. Massie, *Peter the Great: His Life and World* (New York: Alfred A. Knopf, 1981), Part Three: The Great Northern War, pp. 289-516.

24. Clausewitz, p. 84 and Book Six. It must be acknowledged, however, that his rationale on this point was derived primarily from the wars of Frederick the Great rather than the Russian defensive campaign of 1812.

25. Mark E. Miller, "Soviet Strategic Thought: The End of an Era?" *International Security Review*, Winter 1980-1981, pp. 8 and 2.

26. Clarence A. Robinson, "Missile Defense Gains Support," *Aviation Week & Space Technology*, 22 October 1979, p. 16. This quote was taken largely from remarks attributed to John M. Collins, senior researcher for the Library of Congress. Emphasis added.

27. Brodie, p. 105.

28. Ibid., pp. 53-55.

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30. Jerome H. Kahan, *Security in the Nuclear Age* (Washington: Brookings Institution, 1975), pp. 150-55.

Air University's Center for Aerospace Research, Doctrine, and Education (CADRE) held a workshop on "Low-Intensity Conflict and Modern Technology" on 22-23 March 1984. Sixty-one participants, including officers from all services, representatives from defense industries, and scholars gathered to analyze seventeen articles prepared for the workshop. The articles examined various policy, doctrinal, and technological questions relating to low-intensity conflict and were designed to raise questions on the role of military power in the "small wars" that are part of today's world. CADRE plans to publish the workshop proceedings at a future date. For further information on the conference and the publication of the proceedings, contact CADRE/RIC, AUTOVON 875-5307 or commercial (205) 293-5307.

air force review

BILLY MITCHELL AND THE GREAT TRANSCONTINENTAL AIR RACE OF 1919

DR. WILLIAM M. LEARY

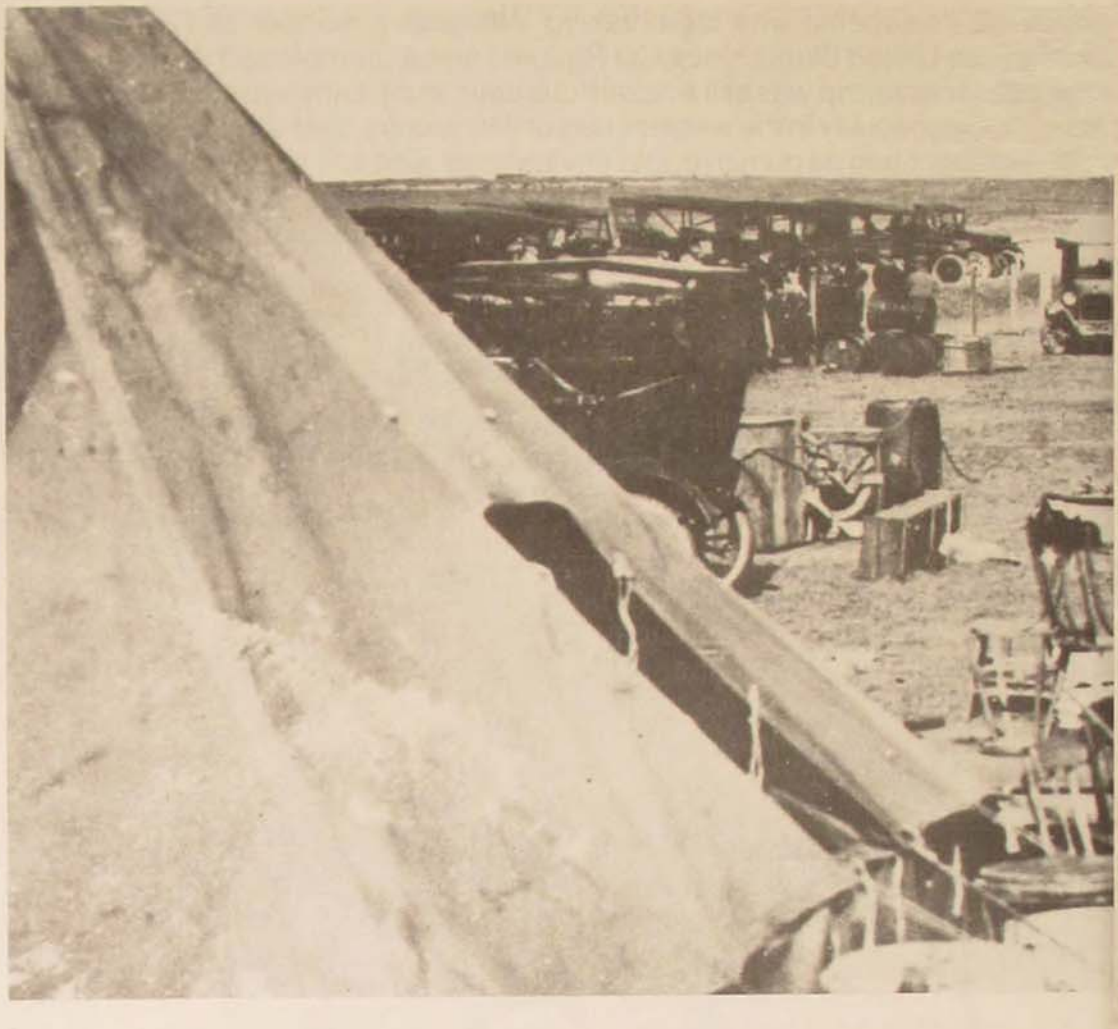
GENERAL William "Billy" Mitchell climbed to the top of the mountain during the Great War and saw the shape of the future. A new world opened before him, an age in which "the destinies of all people will be controlled through the air." The dawning of this "aeronautical era" (Mitchell came to believe, with the passion of an Old Testament prophet) meant that the security—and greatness—of the United States depended on the creation of an air force second to none. Returning from France in March 1919 to take charge of the Air Service's Training and Operations Group, the flamboyant airman set out to preach the gospel of air power to the unenlightened.[1]

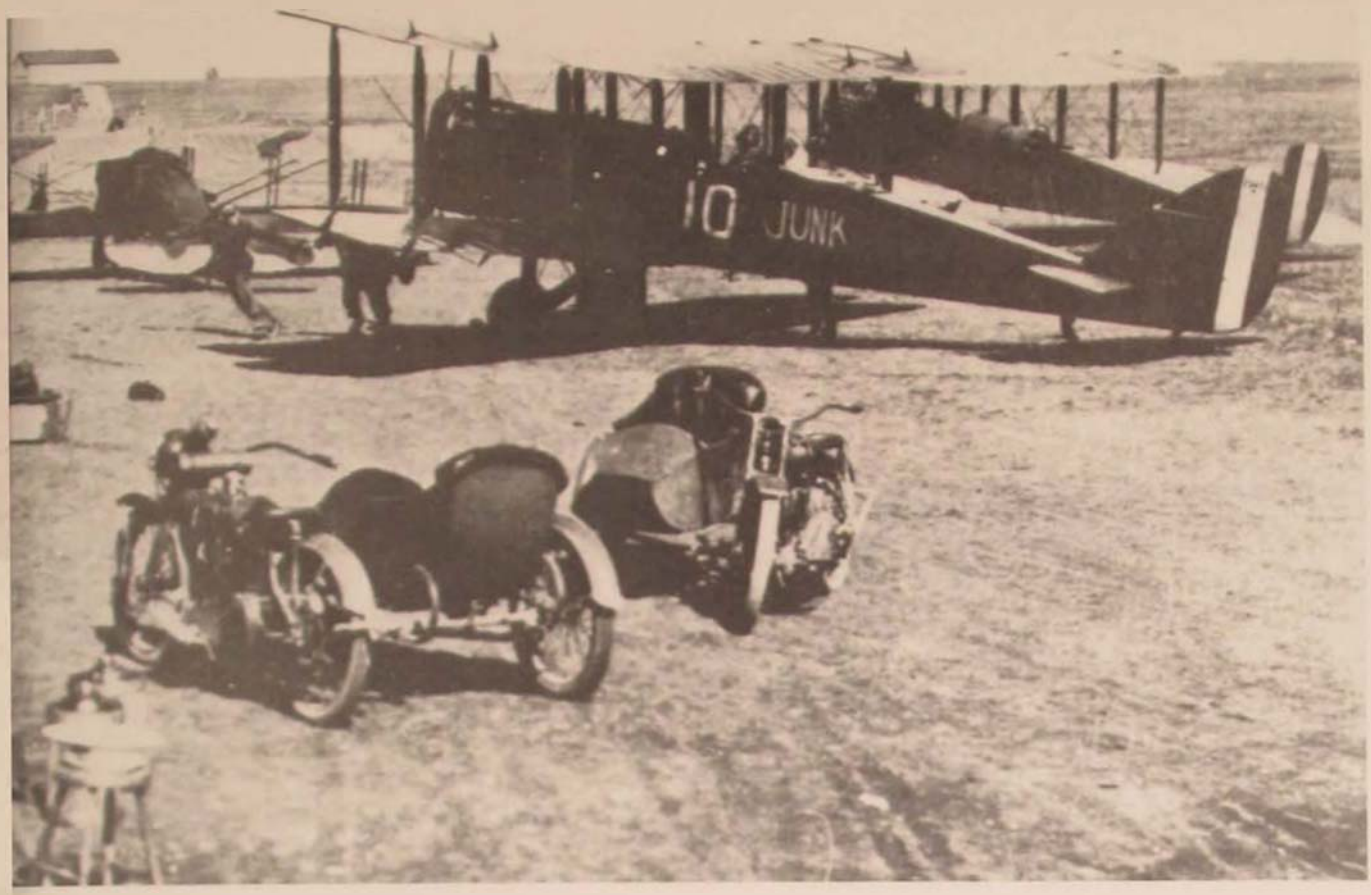
The essential first step along the road to aerial superiority, Mitchell argued, was an independent air force. At his urging, congressional supporters introduced legislation in midsummer 1919 to establish an expanded, unified air service modeled on Great Britain's Royal Air Force. But with powerful opponents arrayed against the scheme (Assistant Secretary of the Navy Franklin D. Roosevelt, Secretary of War Newton D. Baker, and President Woodrow Wilson all came out against independence), the reorganization bill seemed certain to fail.[2]

Undaunted by the dismal outlook on Capitol Hill, Mitchell counted on favorable public opinion to silence all opposition. With Congress scheduled to consider the unification proposal and military appropriations in the fall, he drew up an imaginative plan to focus national attention on aviation. To demonstrate the progress that aeronautics had made during the recent war, Mitchell announced that the Air Service would fly across the North American continent en masse.[3]

Mitchell's scheme was breathtaking. Although a number of aviators had flown across the United States since Cal Rodgers first accomplished the feat in 1911, the transcontinental trip was still a hazardous adventure. Landing areas were few and far between, especially in the western part of the country; aircraft instrumentation could be best described as primitive; and navigational aids and accurate weather information did not exist. Yet Mitchell wanted to *race* from New York to California. The Air Service insisted on the official designation of "Transcontinental Reliability and

General William "Billy" Mitchell, who masterminded the transcontinental race, is shown on the facing page giving advice to a pilot who will fly in the competition. . . . Below, Lieutenant Belvin W. Maynard, who will win the race, is about to begin the 150-mile leg across the Rockies. Maynard's dog Trixie accompanied him on the flight and can be seen in the rear of the plane.

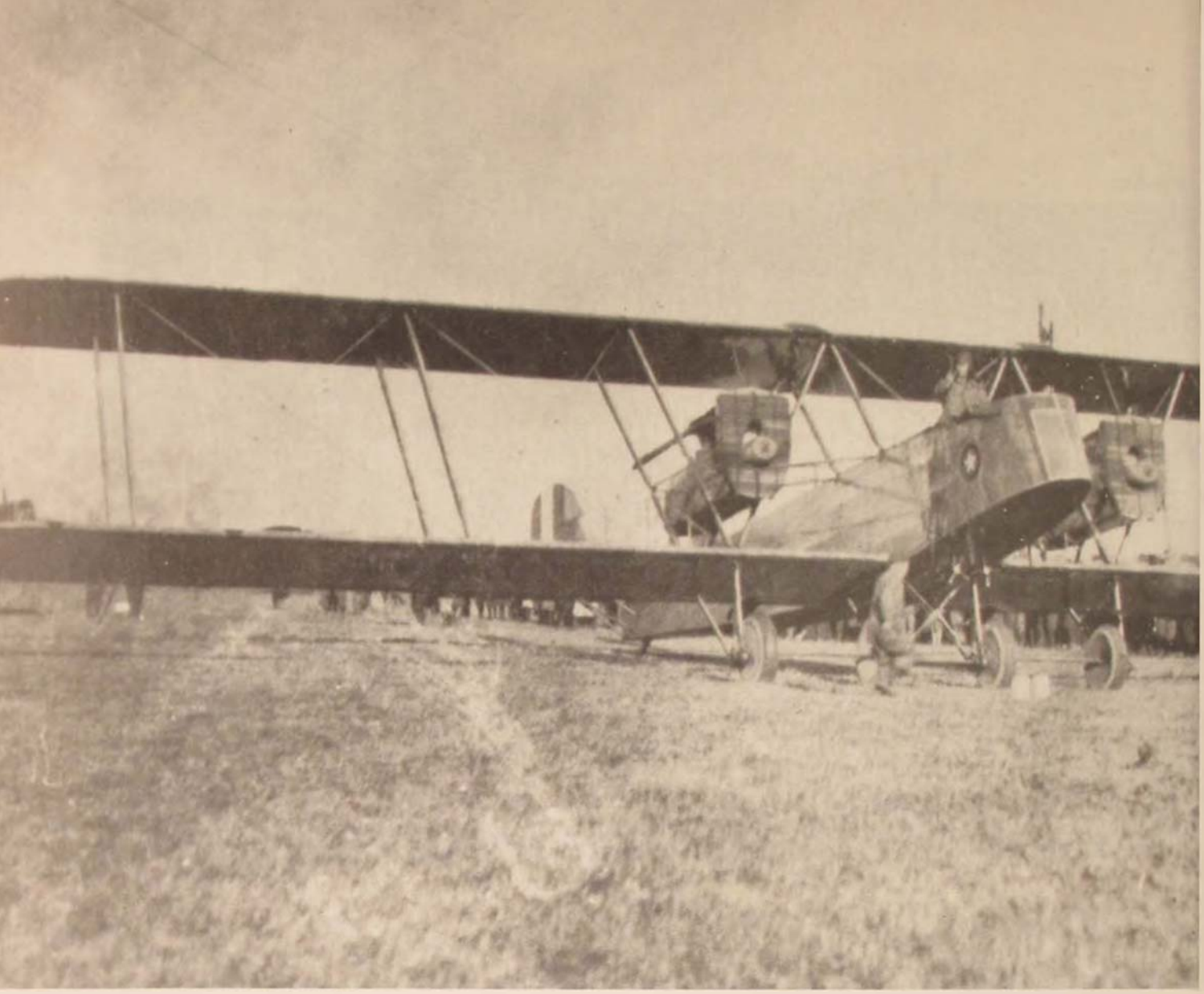




The airfields in 1919 lacked the many conveniences and the orderly appearance of today's airports. The DH-4 in the foreground is down for refueling during one of the 30-minute stopovers of the race. . . . Lieutenant Colonel Harold B. Hartley, commander of the 1st Pursuit Group in France during World War I and one of the prerace favorites, is shown (left, below) in the SE-5 single-seater pursuit plane that he flew in the race.

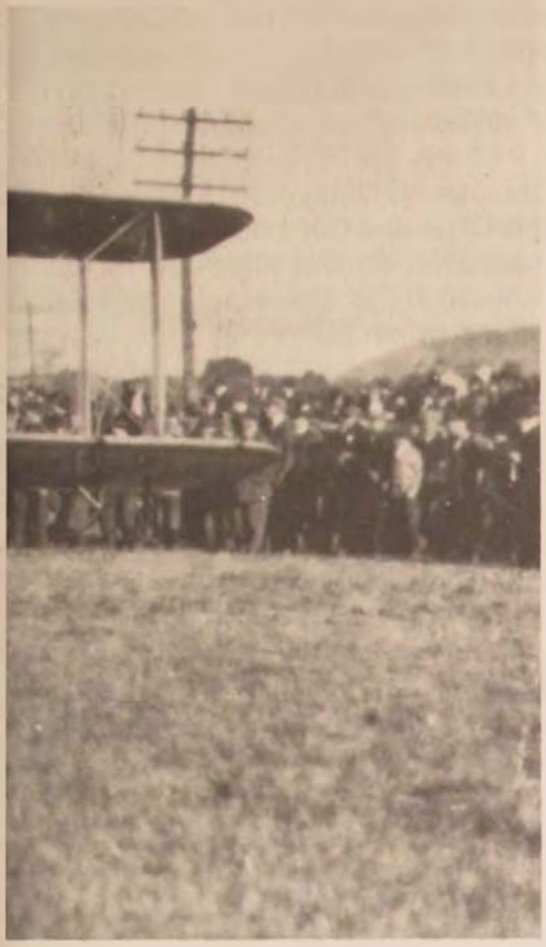
Endurance Test," but no one harbored illusions about the true nature of the event. As the *New York Times* announced, Americans were about to witness "the greatest air race ever attempted."[4]

Preparations went forward without delay. Air Service officers selected a route that would run from New York to Buffalo, skirting the Appalachian Mountains, then along Lake Erie to Cleveland before turning westward to Chicago and Omaha. Aviators would pick up the tracks of the Union Pacific Railroad at Omaha, continuing to San Francisco via Cheyenne, Salt Lake City, Reno, and Sacramento. The railroad route was compelling: it followed favorable terrain, supplies and equipment could be moved easily by rail to intermediate points, and the tracks—known to airmen as the "iron compass"—would serve as the primary navigational aid from Omaha to San Francisco.



In deference to the operational limitations of contemporary aircraft, which cruised at about 100 miles per hour and carried enough fuel to keep aloft for only two or three hours, Mitchell's planners established twenty refueling or control points along the 2701-mile route. Contest rules called for a minimum stop of thirty minutes at each point. Also, in the interests of safety, flying was restricted to daylight. Originally conceived as a one-way crossing, with contestants starting at New York and San Francisco, the Air Service responded to criticism and changed the event to a round-trip race—thus neutralizing the possible advantage of prevailing westerly winds.[5]

The starting date—8 October 1919—turned out to be opportune: Americans needed a diversion after a terrible summer of nationwide unrest and violence. Scattered racial incidents had culminated in a bloody Chicago race riot in late July, which left 36 dead. September saw the climax of postwar labor troubles, with a police strike in Boston and a bitter dispute in the steel industry. Two days before the air race was scheduled to begin, federal troops occupied Gary, Indiana, in an effort to quell mounting violence in the steel town. And all this came at a time when Woodrow



The twin-engine Martin bomber flown by Captain Roy Francis attracted a crowd at Binghamton, New York, on its westward journey. It later crashed near Omaha, Nebraska. (Both Captain Francis and his passenger, French Captain Paul de Lavergne, survived the crash.) One of the Martin's engines was used to replace Maynard's engine, which failed due to a broken crankshaft.

Wilson hovered near death: the President, in the midst of a raging national debate over ratification of the Versailles Treaty, had collapsed following a speech at Pueblo, Colorado, on 25 September.[6]

For a brief time, at least, people could put aside thoughts of the nation's ills and turn their attention to Roosevelt Field, Long Island. By early October, some 48 airplanes stood ready to start the great air race. A few esoteric models attracted considerable interest (a captured German Fokker and a twin-engined Martin bomber particularly stood out), but the bulk of the competing aircraft were staid DH-4s, a wartime biplane of British (de Havilland) design and American manufacture. The press speculated on the outcome of the contest. Prerace favorites included Lieutenant Colonel Harold E. Hartney, former commander of the 1st Pursuit Group in France; Captain Field K. Kindley, fifth-ranking American ace; and Lieutenant Belvin W. Maynard, recent winner of the New York-to-Toronto race.[7]

The morning of 8 October dawned clear and cool with a fresh northeasterly wind. More than 2000 spectators showed up for the day's festivities. The 22d Infantry Band provided music, while ladies of the War Camp Community Service passed out

sandwiches and coffee to contestants and guests. Assistant Secretary of War Benedict Crowell, a friend of the Air Service and supporter of unification, represented Secretary Baker, who tactfully had found better things to do. Billy Mitchell, of course, had come from Washington, where he had been testifying in support of a separate air force before House and Senate committees.

Shortly before 9:00, the throaty roar of a dozen engines caught the crowd's attention. Starting honors went to Commodore L. E. O. Charlton, British air attaché, who was participating as a courtesy. But Charlton's Bristol fighter developed engine trouble, and Lieutenant J. B. Machle, next in line, took off first at 9:13. Conforming to rules, Machle rose to 1000 feet and circled the field before setting course for the first control point at Binghamton, New York.

Departures were routine until it came time for Lieutenant Maynard to leave. As he prepared to start the 400-hp Liberty engine of his DH-4, the flier's dog, Trixie, ran up to the airplane, barking and jumping with excitement. Maynard climbed down, picked up the Belgian police dog, and hopped back on board. He took off with the obviously delighted Trixie hanging over the side of the open cockpit. The crowd cheered with pleasure.

Secretary Crowell took advantage of a lull in the proceeding to speak with the press. "It is beyond dispute," he said, "the greatest aerial contest in the world." Pointing out that the United States lagged sadly behind Europe in the development of aeronautics, Crowell voiced the hope that the race "will awaken people" to the need for increased American effort in this critical area.

The secretary then decided to get into the spirit of things and asked to be taken up for a ride. Mitchell promptly made the necessary arrangements. Sporting borrowed goggles and a leather coat, Crowell waved to the crowd as he clambered into the cockpit of a Curtiss biplane. The aircraft taxied to the edge of the field, turned into the wind, and began its takeoff run. Just as the wheels left the ground, the engine failed. The Curtiss stalled to the right, a wing tip struck the ground, and the aircraft turned over on its back. After a moment of stunned silence, the crowd rushed out onto the field. Crowell and pilot M. G. Cleary emerged from the wreck, shaken but uninjured. "That's the shortest flight on record," Crowell quipped to reporters. The secretary said that he was ready to go up again, but unfortunately, a "pressing appointment" in the city prevented his making another flight. Assuring Captain Cleary that the accident was not his fault, he posed for a photograph with the embarrassed aviator before hastily leaving the field.[8]

There was a good deal less excitement in San Francisco, where a small group of fifteen contestants stood ready to depart. Even the weather—seasonal low clouds and fog—seemed in keeping with the subdued mood. Although few in numbers, the West Coast contingent did boast several noted fliers, including Major Carl Spaatz, assistant air officer for the region; Major Dana Crissey, commander of Mather Field at Sacramento; and Captain Lowell H. Smith, who had flown for Pancho Villa in the early phases of the Mexican revolution. Colonel Henry H. "Hap" Arnold, destined to lead the Army Air Forces in World War II but at that time in charge of military aviation on the Pacific coast, joined a group of local officials to bid farewell to the airmen.[9]

The end of the first day saw Lieutenant Maynard—dubbed the "flying parson" by the press because he had left a Baptist seminary in 1917 to join the Air Service—clearly in front. Maynard reached Chicago by dark, a distance of 810 miles from New York, while his three nearest competitors spent the night in Bryan, Ohio. These were the fortunate ones. Eighteen fliers failed to get beyond Buffalo.

The eastern half of the transcontinental route was strewn with debris. Commodore

Charlton, who had departed after engine repairs, wrecked his Bristol fighter during an emergency landing near Ithaca, New York. Lieutenant George McDonald's DH-4 suffered a similar fate when he was forced down in Pennsylvania. Lieutenant D.G. Gish and his observer, Captain Paul de Lavergne, French air attaché, narrowly escaped death when their aircraft caught fire over Livingston County, New York. Neither had a parachute; Gish managed to crash the DH-4, his only alternative, before flames reached the cockpit. The intrepid de Lavergne transferred to a Martin bomber, piloted by Captain Roy Francis, and resumed his trip across the country.

Sergeant W. H. Nevitt, observer in a de Havilland flown by Colonel Joseph Brant, was not so lucky as Gish and de Lavergne. Engine trouble forced down Colonel Brant near Deposit, New York. The airplane crashed on landing, and Nevitt was killed.

Meanwhile, the racers eastbound from San Francisco managed to cross the treacherous Sierra Nevada Mountains without incident. Eleven of the fifteen fliers reached Salt Lake City by afternoon. There, due to poor field conditions at the next control point, they were held overnight. But the first day had brought tragedy to this group also. Major Crissey and his observer, Sergeant Virgil Thomas, arrived over Salt Lake City in late afternoon shortly after 5:00. Crissey circled the field, waving to the crowd that had gathered to greet the airmen. All seemed in order until the final approach. Crissey came in at an abnormally steep angle. The aircraft stalled and them plummeted to the ground. Both occupants were killed.

On Thursday, 9 October, Maynard left Chicago at first light. Encountering severe turbulence en route to Des Moines, he became airsick for the first time in his flying career. At North Platte, Nebraska, he met and exchanged greetings with the eastbound leader, Captain Lowell Smith. Maynard continued on to Cheyenne, while Smith spent the night in Omaha. The "flying parson" ended the day with a lead over Smith of 236 miles, or a little more than two hours' flying time.

Casualties continued to mount behind the leaders. Rainstorms east of the Mississippi caused numerous forced landings, and four aircraft suffered major damage. Lieutenant A. M. Roberts and his observer survived an especially close brush with death. In an effort to make up for lost time, Roberts chose the direct route, over Lake Erie, between Buffalo and Cleveland. His engine failed, and he had to ditch in the lake. Luckily, a passing freighter saw the crash and picked up the two men.

Snowstorms over Wyoming led to a fatality in the west. Lieutenants E. V. Wales and William Goldsborough were en route to Rawlins from Cheyenne, flying close to the ground below low clouds, when they encountered a snowstorm. Wales lost forward visibility. Suddenly, a mountain loomed ahead. Wales threw the aircraft into a violent turn, stalled, and dove into the ground. Lieutenant Goldsborough emerged from the wreck with serious injuries but managed to walk three painful miles for help. His effort was in vain. When rescuers returned to the aircraft, they found Wales dead.

The third day of the race began with problems for Lieutenant Maynard, who had hoped to arrive in San Francisco by sundown. Frosty overnight temperatures at Cheyenne resulted in an ice-clogged overflow pipe, which, in turn, caused the engine to overheat on starting, damaging the radiator. Sergeant William E. Kline, Maynard's observer-mechanic, made the necessary repairs, but the job took five hours. Maynard ended the day at Saldura, Utah, three control points and 518 miles from his final destination.

Meanwhile, Captain Smith continued to lead the eastbound contingent, with Major Spaatz and Lieutenant Emil Kiel in hot—and acrimonious—pursuit. Kiel arrived at Des Moines twenty-four minutes before Spaatz. When the major landed, he pro-

tested that Kiel had left Omaha, the previous control point, two minutes before the required thirty minutes for stopovers. The officer-in-charge honored Spaatz's complaint and forced Kiel to wait an additional two minutes at Des Moines. Shortly before nightfall, Spaatz and Kiel caught up with Smith at Bryan, Ohio. New York lay only 560 miles away, and they would have the advantage of the early rising sun. Maynard's lead in the west had vanished.

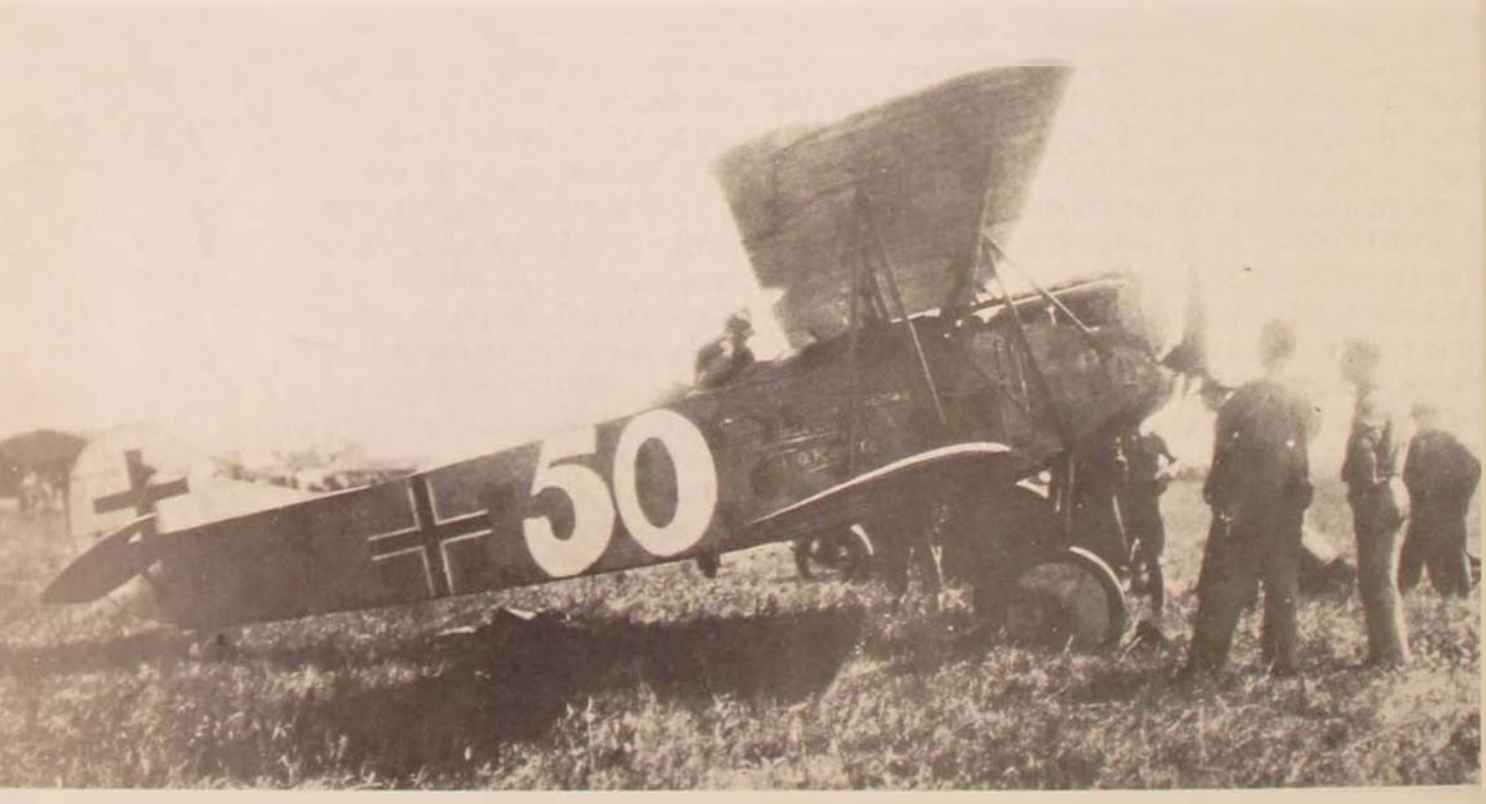
Unfortunately, the third day of the race also saw three serious accidents and one more fatality. Major A. L. Sneed, piloting a DH-4 short of fuel, made a very hard landing at Buffalo. The aircraft bounced high in the air and then smashed down on its nose. The observer, Sergeant Worth C. McClure, catapulted out of his seat, suffering a broken neck.

On Saturday, 11 October, the end of the first phase of the Transcontinental Air Race proved anticlimactic. Maynard left Saldura at first light, found ideal weather en route, and arrived in San Francisco without incident at 1:12 in the afternoon. On hand to greet the slender, bespectacled aviator, who had just set a new transcontinental speed record, was the chief of the Air Service, Major General C. T. Mehoher, who was accompanied by Colonel Arnold and a small group of officials and spectators.

Maynard had won because the eastbound fliers had run into trouble. Smith, Spaatz, and Kiel left Bryan at dawn, headed straight into threatening weather. Captain Smith, battling rainstorms, could not find the airfield at Cleveland. Coming down to ask directions, he damaged the landing gear and propeller of his de Havilland. Repairs took five hours, putting him out of contention.

Spaatz and Kiel located Cleveland without difficulty, but minor mechnical prob-

Several German Fokkers captured during World War I flew in the race. The Fokker shown here on the starting day of the contest still bore its German markings.



lems plagued their journey. In late afternoon, Spaatz arrived at Binghamton, where he encountered a brief delay. Kiel, who landed shortly after Spaatz, was asked to delay his departure until ten minutes after the major left, in deference to his senior. Kiel refused, and both men took off at the same time. Spaatz gained the lead en route to New York, but he landed by mistake at the Hazelhurst airport, adjacent to Roosevelt Field. Discovering his error, Spaatz took off immediately. It was too late. Kiel beat him to Roosevelt by twenty seconds.

Mercifully, the day had been free of serious accidents.

Sunday, 12 October, offered twenty-four hours of rest under contest rules and provided time to take stock of the past week's events. A majority of contestants had yet to complete the one-way crossing, and the race already had claimed five lives (seven, if the deaths of two fliers en route to the starting point were counted) and produced numerous injuries. The press tended to be philosophical about the losses. "Man," an editorial in the *New York Tribune* announced, "is compelled to pay the toll to a nature which is jealous of his progress." But some of the participants took a less detached view. Major Spaatz, destined to become the first chief of staff of the United States Air Force in 1947, opposed continuation of the race. No further useful purpose, he believed, could be served by going ahead. If the War Department insisted, then the fliers should return at a leisurely pace via a less hazardous southern route. Lieutenant Kiel was even more outspoken. "No one," he told a reporter, "can make me race back to California.... The train will be good enough for me." The American Flying Club urged Washington to call an end to the contest.

The War Department remained unmoved. The Army was the Army. Orders called

A camouflaged La Pere two-seater prepares to take off from one of the grassy airfields used in the race.

Accidents plagued the transcontinental race. Some accidents occurred even before the race started. This DH-4 crashed at Bustleton, Pennsylvania, as the pilot was en route to the start of the contest. Including two fliers who were killed en route to the starting point, seven fliers lost their lives as a result of the race.

for a double crossing of the continent, and orders *would* be obeyed.

Lieutenant Maynard resumed his flight in accordance with contest rules (not counting Sunday, forty-eight hours after his arrival) on Tuesday afternoon, 14 October. Spaatz got under way from New York the next morning, followed by Captain Smith. Lieutenant Kiel, who did not receive a train ticket from his superiors, complained that his aircraft needed extensive repairs and delayed his departure.

Monday and Tuesday had been marked by a number of accidents, as stragglers completed the first leg of the race. Wednesday, 15 October, however, brought fatalities. Lieutenants French Kirby and Stanley C. Miller experienced an engine failure near Evanston, Wyoming. Their aircraft stalled during an attempted deadstick landing, and both men died in the resultant crash.

The demise of Kirby and Miller produced the first severe public criticism of the air race. The *Chicago Daily Tribune* led the way, terming the contest "rank stupidity." Even Congressman Fiorello LaGuardia, one of the Air Service's staunchest supporters, spoke out in opposition The casualties, he noted, were out of all proportion to those that might be expected in cross-country flying.[10]

This growing hostility stung Billy Mitchell, architect of the contest, and he responded in testimony before Congress. The blame, he argued, lay with the de Havillands, aircraft that had been foisted on a reluctant Air Service by Washington officialdom. The DH-4 (all of the fatal accidents had involved this type) had an unprotected gasoline tank. Moreover, the tank was placed in a hazardous location behind the pilot; during crash landings, pilots were likely to be crushed between the tank and the engine. Mitchell left the distinct impression that the race would have been much safer if different aircraft had been used.[11]

Mitchell's attack on the favorite whipping boy of the Air Service, the "infamous flaming coffin" of World War I, did not pass unchallenged. As Lieutenant Maynard and others would later point out, the plane's record was a good deal better than its reputation. The DH-4 had a pressure-feed (rather than a gravity-feed) fuel tank that lacked the rubber covering of tanks in some other aircraft and could explode when hit by a bullet. But pressure-feed tanks were common in airplanes flown during the Great War, nor was the absence of a rubber coating unusual. Certainly, the placement of the tank was unfortunate, and the British corrected this in the DH-9. Yet,

again, this basic design was not remarkable. About half of the war's combat aircraft had tanks located behind the pilot, including the famous Spad and Sopwith Camel. Thus, although the DH-4, like the B-26 of World War II, did have detractors and skeptical critics, many fliers swore by the airplane.[12]

In any event, none of the five fatal accidents could be attributed to design problems. Modern accident investigators—perhaps too easily—would likely have singled out pilot error as a major factor. Two incidents (Crissey and Sneed) clearly were due to poor landing technique. Two others (Kirby and Brant) occurred on deadstick landings. Engine failure was an everyday event in 1919, and pilots were expected to come down safely in such circumstances. Lieutenant Wales's accident, if it happened today, would likely be blamed on poor judgment: the pilot had flown into weather conditions beyond his ability to handle.

Mitchell had wanted publicity but not the kind that followed the latest fatalities. Nevertheless, the race continued. It seemed almost like a matter of pride for Mitchell—perhaps not personal pride, but pride in the Air Service.

On 16 October, fate turned against Lieutenant Maynard. A broken crankshaft forced him down forty miles west of Omaha. The "flying parson" needed a new engine. Even if he could find one, normally it took about three days to make the necessary repairs. But Maynard was a resourceful and determined young man. He located a Liberty motor in Omaha, courtesy of Captain Roy Francis, whose Martin bomber had crashed earlier in the week. Although the airplane had been demolished, one of its engines had escaped damage. Francis had the engine trucked to Maynard and arranged for searchlights so that the repair crew could work through the night. Sergeant Kline, in charge of the engine change, performed a minor miracle: the airplane was ready to fly in eighteen hours.

Captain Lowell Smith, an equally determined individual who had become the westbound leader, ran into problems also. On the evening of 15 October, his aircraft was destroyed by fire in Buffalo when lanterns being used by mechanics ignited a wing. He received permission to continue the race if he could find a replacement aircraft. Prospects seemed dim until Major Spaatz arrived on the 17th. It took only a little pleading before Spaatz agreed to turn over his DH-4 to the eager captain. Happily, Spaatz bowed out of a race which he now considered pointless. Smith, who later would lead the first round-the-world flight in 1924, went on to conquer wind and weather, becoming the first West Coast flier to complete the round trip when he arrived in San Francisco on 21 October.

Maynard, however, had already won the race. The lieutenant had no serious problems after Omaha and landed at Roosevelt Field in the early afternoon of Saturday, 18 October. More than 1000 people turned out for the victory ceremony, including the aviator's wife and two young daughters. The girls seemed especially happy to see Trixie, surely the first dog to make the double crossing of the North American continent by air. When asked to explain his success, Maynard credited Sergeant Kline's mechanical feats, good luck, and the fact that he had relied extensively on his compass for point-to-point navigation. General Mitchell took the opportunity to announce that Maynard's arrival marked the end of America's isolation. The race, he said, amply demonstrated the capability of air power. Maynard, collecting his family and Trixie, headed for home. Three years later, on 7 September 1922, the young pilot would meet his death while stunt flying at a county fair in Rutland, Vermont.[13]

Although the Great Transcontinental Air Race disappeared from the front pages of the nation's newspapers with Maynard's arrival in New York, the contest continued.

By the time it officially ended on 31 October, thirty-three aircraft had completed a one-way crossing and eight had made the round trip. While accidents continued during the final stages of the race, there were no more fatalities.

The human cost—seven lives—had been high, even during a period when flying could be an extremely hazardous business. The Air Service lost seventy-four aviators in cross-country operations during 1919 at a rate of one man killed every 274 flying hours. But fatalities in the air race occurred at the rate of one per 180 hours. Put another way, losses in the race fell just one short of the number of Americans killed while serving in France with the Lafayette Escadrille during twenty-two months of combat.[14]

And what was accomplished?

The announced purpose of the contest was to test the reliability and endurance of Air Service equipment. The race certainly demonstrated that the aircraft of 1919 were far from reliable and that endurance was more human than mechanical. But these results could have been obtained in a far less costly manner.

Mitchell, of course, had had other motives. He had wanted to create a congenial climate of public opinion so that Congress would approve plans for unification and vote substantial appropriations. His scheme did not work. A separate air force remained years away; in 1920, Congress would slash Air Service funds to the bone.[15]

Mitchell failed to realize his objectives through the transcontinental race, and even more bitter disappointments lay ahead for the outspoken airman. Still, while historians may call into question the effectiveness of Mitchell's role in promoting the needs of the Air Service after World War I and during the 1020s,[16] his compelling vision of the future of aviation was vindicated in time. In the final analysis, General William "Billy" Mitchell proved to be the prophet of air power for the United States.

University of Georgia, Athens

Notes

1. See Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II*, 7 vols (Chicago, 1948-1958), I, pp. 24-25, and Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power* (New York, 1964), pp. 39-40. The quotation is from General Mitchell's *Winged Defense* (New York, 1925), p. 3.
2. Hurley, pp. 45-51.
3. Isaac Don Levine, *Mitchell: Pioneer of Air Power* (Cleveland, 1944), pp. 191-92.
4. *New York Times*, 8 October, 1919.
5. Details of preparation can be found in File 373, "Transcontinental Reliability Flight," Army Air Forces, Central Decimal File, 1917-38, Record Group, 18, National Archives, and Office of Director of Air Service, "Report on First Transcontinental Reliability and Endurance Test," 5 February 1920, *Air Service Information Circular*, vol. I. See also Ray L. Bowers's excellent article, "The Transcontinental Reliability Test," *Airpower Historian*, January 1961, pp. 45-54, and April 1961, pp. 88-100.
6. The turbulent postwar period is detailed by Burl Noggle, *Into the Twenties: The United States from Armistice to Normalcy* (Urbana, 1974).
7. *New York Times*, 8 October 1919.
8. Details of the race, except where notes, are taken from the *New York Times*, 9-31 October 1919.
9. *San Francisco Chronicle*, 9 October 1919.
10. *Chicago Daily Tribune*, 18 October 1919; *New York Times*, 18 October 1919.
11. U.S. House of Representatives, Subcommittee No. 1 (Aviation) of the Select Committee on Expenditures in the War Department, *Hearings*, 66th Congress, 1st Session (Washington, 1920), pp. 2644-50.
12. See testimony by Maynard and Major James A. Meissner, ibid., pp. 3657-64, 3773-78.
13. On Maynard's death, see the *New York Times*, 8 and 12 September 1922.
14. Bowers, pp. 97-98.
15. Despite claims by Levine (*Mitchell*, p. 192) and others, the air race did not make a major contribution to the later establishment of the Post Office's transcontinental air mail route.
16. For a sharply critical treatment of Mitchell's activities, see Thomas Worth Walterman, "Airpower and Private Enterprise: Federal-Industrial Relations in the Aeronautics Field, 1918-1926," doctoral dissertation, Washington University, 1970.

R in my opinion

CIVIL AIR PATROL AND THE TOTAL FORCE

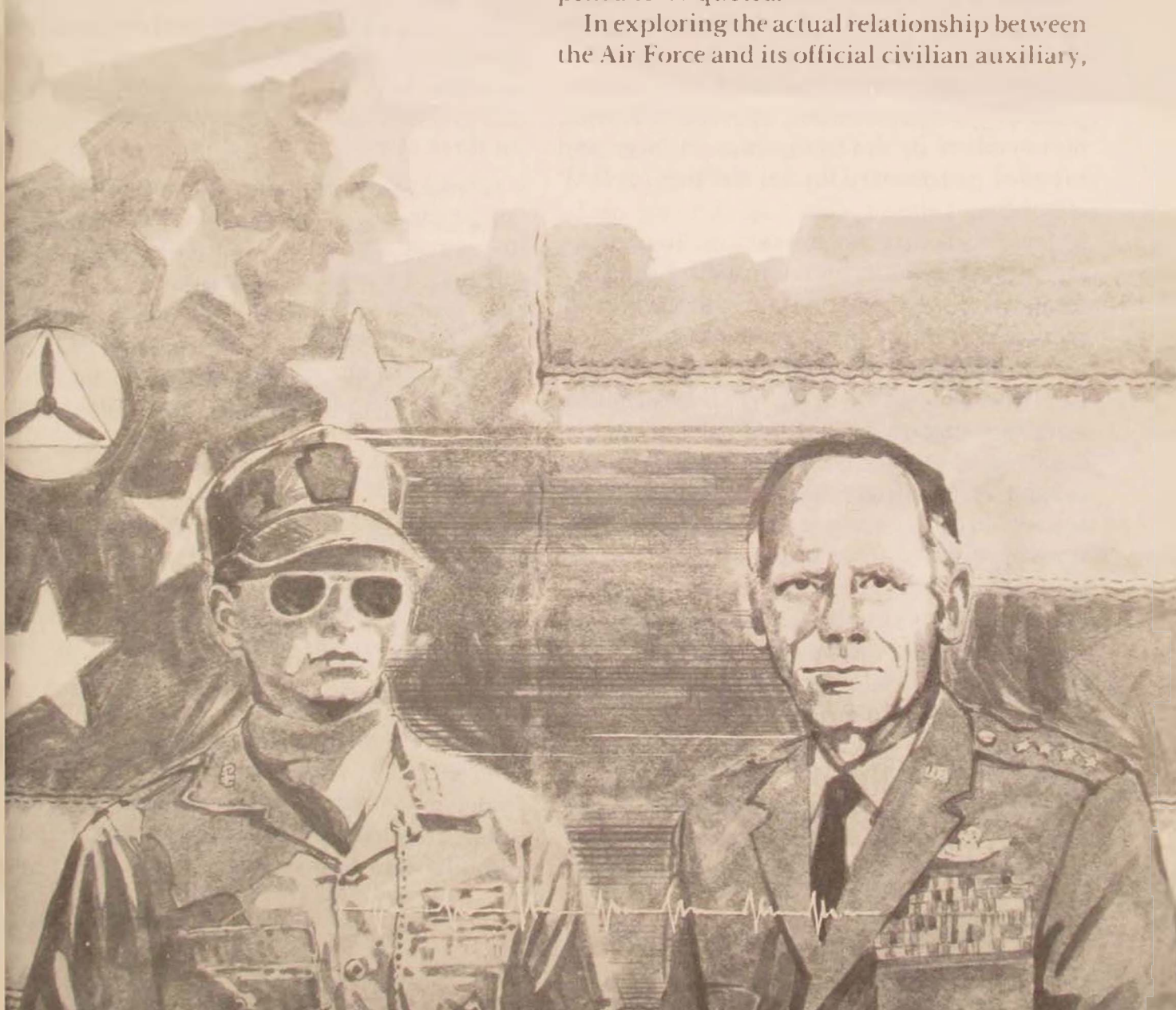
GLENN E. OVERBY II

The total force is an entity composed of active duty military and full-time civilian personnel, the reserve components of the United States, and allied forces.[1]

[Civil Air Patrol] is a vital part of the Total Force Policy.[2]

TWO statements from authoritative Air Force sources, yet obviously in contradiction? Does George Forschler's strikingly direct comment indicate an official shift of opinion, or is it simply an imprecise choice of words that happened to be quoted?

In exploring the actual relationship between the Air Force and its official civilian auxiliary,



I shall discuss the mission of the Civil Air Patrol (CAP), the relationship of that mission to the Air Force mission, and the current image that Air Force and the Civil Air Patrol have of one another. In so doing, I hope to point the way to where Air Force doctrine on the Civil Air Patrol should be.

The Civil Air Patrol has three coequal missions which, when accomplished together, fulfill the purposes that its congressional charter sets forth. These missions are *aerospace education*, the *cadet program*, and *emergency services*.

The *aerospace education* mission is "to provide an understanding of the nature of the earth's atmospheric and outer space environments, the vehicles which travel through these environments, and the social, political, economic, technical, and philosophical impacts of these environments and vehicles upon a global society."[3] This mission has two program subdivisions: *external* programs (workshops, seminars, demonstrations, etc.) for educating nonmembers in the community at large and *internal* programs of formal training for CAP members.

The *cadet program* mission is "to produce Dynamic Americans and Aerospace Leaders."[4] CAP cadets are young people who are 13 to 20 years old. Their training program involves five areas: aerospace education, leadership laboratory, moral leadership, physical fitness, and an activity program to reinforce these aspects. Cadets wear a modified Air Force uniform, participate in a military structure in their home squadrons, and earn cadet grades (with positions of commensurate responsibility) ranging from cadet airman through cadet colonel. Cadet training is sufficiently varied and demanding that only 600 cadets nationwide have risen all the way to the cadet colonel grade during CAP's history.

The *emergency services* mission is the aspect for which the Civil Air Patrol is best known. It is "to save lives and minimize disasters through its search and rescue, communication, and disaster relief facilities and Civil Defense affiliations."[5] Emergency services operations can be subdivided into *air search and rescue*, in support of the Aerospace Rescue and Recovery Service, and *disaster relief*, in support of various state and county agencies. When CAP units perform search and rescue on call from the Air Force, the Air Force reimburses the Civil Air Patrol and its members for certain fuel, oil, maintenance, and communications expenses.

These three missions are prosecuted by an all-volunteer force of some 65,000 members, of whom about 40,000 are senior (adult) members and the other 25,000 are teenage cadets. This is a force comparable in size to a numbered air force and equivalent also to nearly two-thirds of the entire Air National Guard roster.

ALL of this is well and good, but how does it affect the Air Force?

These CAP missions contribute directly to the success of Air Force functions and missions in three ways:

- The cadet program provides a *manpower base* for future enlisted and officer personnel.
- The entire CAP program provides *community outreach* for the Air Force.
- CAP operations under the Aerospace Rescue and Recovery Service in emergencies provide an expeditious, *cost-effective contribution* to an Air Force function important to the nation.

manpower base

The Civil Air Patrol cadet program takes thousands of aerospace- or military-minded teenagers each year and exposes them to the Air Force in miniature. The Air Force derives its greatest benefits from the Civil Air Patrol in this manner.

Among Air Force Academy nominees, AFROTC enrollees and scholarship winners, and service enlistees, CAP cadets and former cadets are found in far greater proportions than what they constitute in the overall teenage population. Furthermore, these cadets and

former cadets enter service life with knowledge of military customs and courtesies, familiarity with aerospace subject matter and terminology, and leadership experience—all of which place these former cadets "a cut above" their peers from the start.

Recognizing the benefits of cadet training, the Air Force has established a basic training bypass program and initial advancement as high as pay grade E-3 for qualified cadets.

community outreach

The Civil Air Patrol operates more than 1900 units disseminated through every state in the Union. Often these squadrons are in small towns or sparsely populated areas that are tens or hundreds of miles from Air Force installations. In many communities, the local CAP squadron is the area's only week-to-week contact with the Air Force. The presence of Civil Air Patrol around the country increases the amount of direct exposure that many of our citizens have to the Air Force.

Furthermore, most CAP units maintain a variety of contacts in their host cities and towns, often participating in all manner of community activities as well as supporting local relief efforts in emergencies. Such functions are readily seen by the citizenry as the "Air Force" reaching out to help and to work with the "man in the street" and the community at large.

cost-effectiveness

Air Force Manual 1-1, *Functions and Basic Doctrine of the United States Air Force*, the fundamental doctrine outlining what the Air Force is all about, identifies several Air Force functions that are sometimes far removed from the battlefield.

> Public confidence and stability are advanced by . . . providing emergency relief in time of natural disaster.[6]
>
> We must provide strategic defensive forces to . . . support a national civil defense system.[7]
>
> . . . our rescue and recovery units use their resources to help civilians in distress.[8]
>
> Our military training must provide a smooth transition from the civilian to the military way of life.
>
> Professional military education (PME) is designed to give our people the necessary skills and education to become effective leaders. . . . [PME] provides an in-depth view of the role of the military in a democratic society.[9]

What do these areas have in common? The Civil Air Patrol is involved in all of these functions.

The Civil Air Patrol flies 70-75 percent of all search and rescue hours flown under the Aerospace Rescue and Recovery Service. CAP members train on their own time, at their own expense. Even when the Civil Air Patrol is flying for the Air Force, the Air Force expends only a fraction of the actual cost for each CAP member involved in search duties. Also, CAP aircraft are smaller, more fuel-efficient, and better suited to low-altitude visual search than Air Force aircraft. The whole arrangement adds up to a tidy cost savings for the Air Force.

But the CAP-USAF relationship is not as clean and tidy as I have implied so far. The primary reason is *ignorance*—within both organizations. Many Air Force people have no idea or have erroneous ideas about what the Civil Air Patrol is and what it does. In particular, the ways in which CAP activities directly benefit the Air Force are not widely known.

On the other side of the balance sheet, many CAP members fail to realize the direct link to the "real" Air Force that most civilians impute to the Civil Air Patrol. CAP officers are sometimes "commissioned" with as little as eight hours of formal training. Many members are not even required to wear the uniform, and most will tolerate the most blatant violations of uniform regulations because these "are not important so long as we get the job done."

But underqualified officers and sloppy uniforms do not simply diminish the CAP reputation—*they reflect adversely on the Air Force.* It is no wonder that hostility exists in some quarters.

WHAT is Civil Air Patrol's relationship to the Total Force policy?

Civil Air Patrol, in my opinion, is a contributor to the Total Force and a part thereof, and I believe that Air Force doctrine should recognize this fact.

The tripartite mission of the Civil Air Patrol provides continuing, direct support to the Air Force in fulfilling necessary Air Force noncombatant missions. Furthermore, because this inexpensive support frees Air Force resources for better execution of other missions, the Civil Air Patrol supports indirectly the Air Force combat role as well.

While the minor doctrinal point I have proposed is little more than formal acknowledgment of a fait accompli, I also believe that both the Air Force and the Civil Air Patrol have some soul-searching to do in regard to the status and value of the Civil Air Patrol. This soul-searching is needed even if no formal doctrinal change is considered for adoption. Air Force personnel need to be more aware of their own auxiliary, to realize its contributions and its limitations, and to think about how mutual cooperation can best be achieved. Meanwhile, CAP members need to recognize their responsibility for upholding the Air Force image. The trend toward more training and professional education for CAP officers needs to be accelerated, and uniform standards must be adhered to. Furthermore, since all CAP missions contribute to the Air Force mission, all CAP members should concentrate on upholding all three missions.

Through this proposed educating of all concerned and through a belated official acknowledgment of the USAF-CAP relationship, I believe that the Civil Air Patrol—our "unnumbered air force"—will take its proper place as a minor but important part of the nation's Total Force.

Hq Michigan Wing
Civil Air Patrol, Westland

Notes

1. AFM 1-1, *Functions and Basic Doctrine of the United States Air Force*, 14 February 1979, p. 3-10.
2. George P. A. Forschler, Deputy Assistant Secretary of the Air Force for Reserve Affairs, quoted in *Civil Air Patrol News*, April 1982.
3. Civil Air Patrol National Headquarters, *The Relationships of the Purposes, Missions and Programs of Civil Air Patrol* (CAP Pamphlet 304), Maxwell AFB, Alabama, 18 May 1981, p. 2.
4. Ibid., p. 3.
5. Ibid.
6. AFM 1-1, pp. 1-1–1-5.
7. Ibid., p. 1-8.
8. Ibid., p. 2-30.
9. Ibid., p. 1-10.

books and ideas

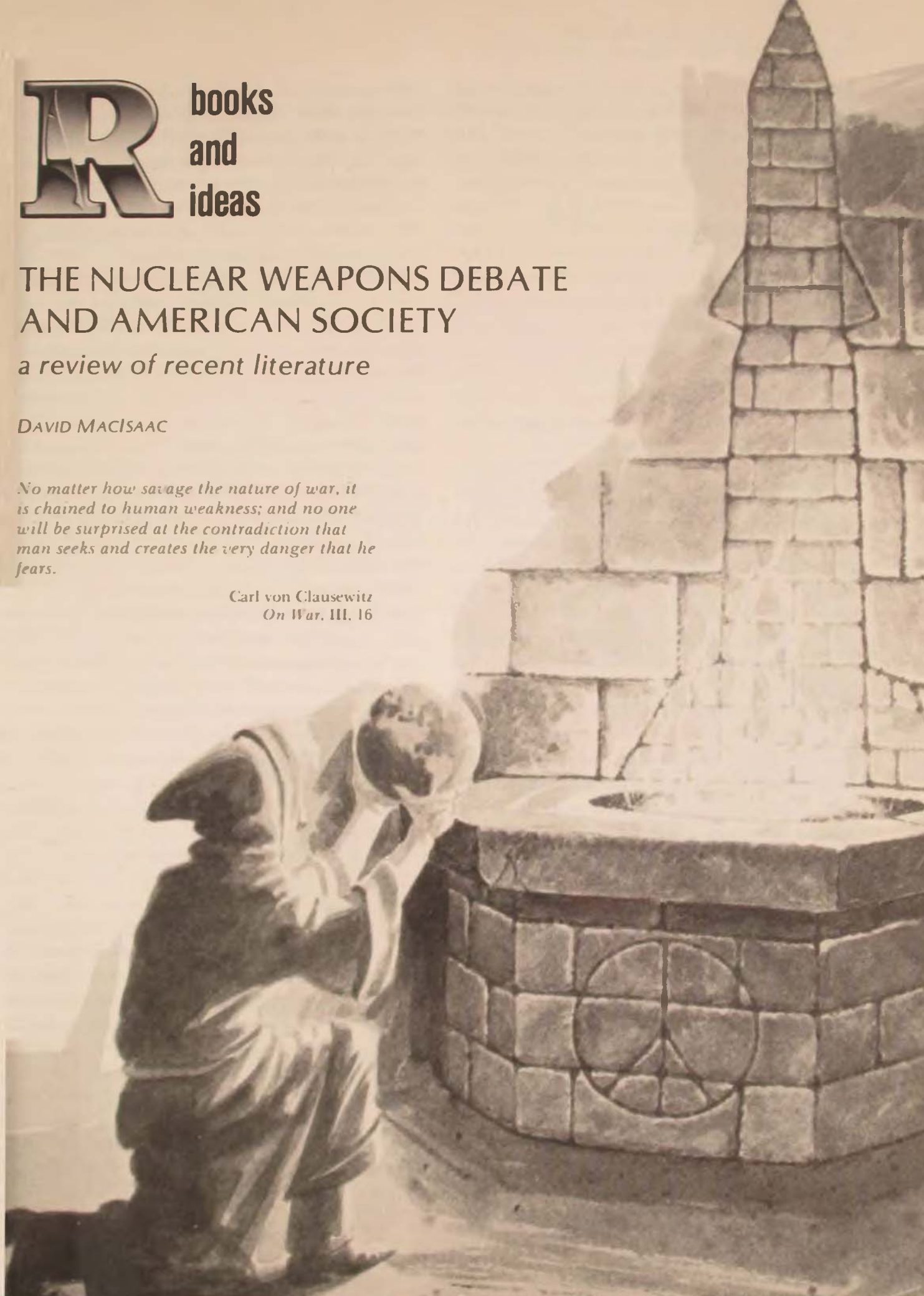
THE NUCLEAR WEAPONS DEBATE AND AMERICAN SOCIETY

a review of recent literature

DAVID MACISAAC

No matter how savage the nature of war, it is chained to human weakness; and no one will be surprised at the contradiction that man seeks and creates the very danger that he fears.

Carl von Clausewitz
On War, III, 16



IF ONE were to judge from the number and variety of recent articles, books, and speeches denouncing the present administration's plans for modernizing our nuclear forces, one could make the case that the consensus widely presumed to have been revealed by the 1980 election results was among the shortest-lived of any we have seen regarding defense policy. This review of some of the more strident examples from the recent antinuclear literature will include some speculations as to why that might be so. Perhaps it would be best to begin, however, by questioning the assumption that, where atomic and later nuclear weapons have been concerned, there has *ever* been wide agreement in the United States.

For most Americans, questions of nuclear weapons policy never became front-burner issues until October 1957, when the result of a Soviet technological experiment, Sputnik, was interpreted to signal our immediate vulnerability, the existence of a "missile gap," and the dire need to "do something" about both of these new and frightening situations. Earlier scares—like the Soviets' first atomic explosion announced in September 1949 and their first claimed thermonuclear test in August 1953—had been safely weathered, owing largely to a general feeling that we so outnumbered the Soviets in both weapons and the capability to deliver them that they would not dare challenge us "on the nuclear front." In a sense, then, it could be argued that a consensus view held generally firm to late 1957, at least among the public at large.

After Sputnik, consensus became harder to find and, where it could be located (or claimed), existed at a lesser level of general acceptance. The Kennedy administration decisions to expand both our conventional and nuclear capabilities did not meet with wide resistance and, for the prototypical man in the street, certainly seemed to have been prudent during the first flush of "victory" following the Cuban missile crisis. (Some objections were raised to the President's handling of that crisis, but most were soon quieted when the President managed to force through a limited test-ban treaty in 1963.) Nor was there any widespread criticism of our then recently announced declaratory policy of counterforce targeting; i.e., aiming our nuclear weapons at Soviet military forces and capabilities, both nuclear and conventional, as opposed to Soviet industry or cities.

By the midsixties, with a new U.S. President distracted by both Vietnam and his goals for the Great Society, the secretary of defense had abandoned counterforce and was talking about assured destruction, the ability to destroy, even if we were attacked first, 67-70 percent of enemy industry and 25-30 percent of enemy population. The goal of this policy shift, so far as the public was told, was to create a condition of mutually assured *deterrence* by assuring the Soviets that under any conditions of war initiation the result could be nothing other than their certain obliteration. Despite the horrific implications of this announced policy, the general public did little more than tune in (or out), watch (or turn away), and trust in the higher authorities. Until, that is, 1969 and the debate over whether to create, and if so where to base, an antiballistic missile system.

Shooting our bullet at their incoming bullet, both of them nuclear-tipped, with the encounter taking place over the United States, while technically challenging, proved politically unsaleable. When the idea was seemingly put to rest as a part of the SALT I agreements in 1972, the public relaxed once again, although listening and watching more closely now and holding out high hopes for future SALT agreements and a continuing relaxation of tensions with the Soviet Union (and, after 1972, China); *détente* was not yet a dirty word except among those who had opposed the idea from the beginning.

Then came 1976, the election of Mr. Carter, and the almost immediate perception—first brought on by his early and fumbling attempts to deal with the energy crisis—of a weakness in leadership ability in the person of the Presi-

dent. On the nuclear weapons issue, however, the President at first gave every indication of sharing the public's gut feeling that it was high time to put a cap on the competition in nuclear arms and take positive steps to reduce the weapons inventories on both sides. And yet, by the end of 1979, whatever hopes the President had originally entertained regarding limits on nuclear weapons had been dashed, brought down by a combination of Soviet brigades in Cuba, challenges to *both* his anti-B-1 decision and his pro-MX decision, the revolution in Iran, the hostage crisis, the Soviet invasion of Afghanistan, and, finally, the failure of the Tehran rescue mission. Held personally responsible for these setbacks by a goodly portion of the electorate and accosted by defense conservatives for whom any intimations of parity with the Soviet Union were anathema, President Carter by 1980 had lost any chance he might ever have had of influencing the public on issues affecting either nuclear weapons policy *or* dealing with the Soviet Union.

"In defense circles," as the journalists say, Mr. Reagan's election in November 1980 was widely perceived to reflect a new consensus, if not indeed a mandate, for increased defense spending, particularly in those areas needed to close an emerging "window of vulnerability" brought on by an "unprecedented" Soviet buildup of strategic forces during the 1970s, when the United States, lulled by "the false hopes of détente," sat idly by doing "nothing." Outside the so-called defense circles, among the general public, plenty of support was available at first. And yet, within months, the new administration found its views on nuclear weapons policy coming under fire. The rapidity with which this occurred will puzzle historians in the years to come. In struggling to find answers to why the years 1981 through 1983 spawned such a widespread and virulent antinuclear weapons movement, they will surely look for at least some hints in the books reviewed here.

HUGH SIDEY began a short essay on "Coming to Terms with Nukes" (*Time*, 5 December 1983) with a reminder that "it was Britian's Field Marshal Douglas Haig in World War I who confessed he never went to the front lest the squalid horror of trench warfare diminish his will to send armies to their death." He went on:

> There is in the current protests against our nuclear arsenals at least the faint echo of the question raised more than half a century ago about Haig. Are the men and women in the White House, Pentagon, and State Department grown so callous from their endless war games and box scores of missiles and megatonnage that the potential human tragedy has receded in their deliberations?

One man who answers Sidey's question in the affirmative is *Los Angeles Times* writer Robert Scheer in *With Enough Shovels: Reagan, Bush, and Nuclear War*.† The book has a three-part theme: (1) those in charge of arms control measures in the Reagan administration are and have long been inveterate foes of dealing with the Russians on anything, but especially on arms control; (2) these same men, virtually all civilians of an intellectual bent, believe that we can endlessly stockpile nuclear weapons and threaten to use them, without at the same time increasing the risks of war; and (3) these individuals reveal a curious gap between the bloodiness of their rhetoric, to which they have become hostage, and the apparent absence of any ability to visualize the physical consequences of what they advocate. Strong stuff this, suggesting something close to bias or perhaps even personal animus.[1] For this reason, the author's orientation and research me-

†Robert Scheer, ***With Enough Shovels: Reagan, Bush, and Nuclear War*** **(New York: Random House, 1982, $14.95), xx + 286 pages.**

thods immediately take on a singular importance.

Mr. Scheer is forty-seven, married, the father of three, and lives in California. A former editor of *Ramparts* magazine, he has taught at City College, Antioch, and Berkeley, and has published articles in *Esquire*, *Washington Post*, and *Playboy*. In 1976, he became a staff writer for the *Los Angeles Times*, where much of the material in this book first appeared under his by-line between 1980 and 1982.

The book's arrangement is unusual. Of its approximately 300 total pages, the text proper takes up only 124 pages and is divided into nine short chapters on topics such as "The Committee on the Present Danger," "Team B," "The Window of Vulnerability," and "Civil Defense." There follow some 90 pages of notes, which provide both his sources and commentary thereon (along with additional examples of the point in the text that is supported by the footnote). For example, one note runs a full seven pages (158-64) and another runs to five pages (190-94). The final 80 pages contain portions of eight interviews conducted between 1980 and 1982 with presidential candidates Ronald Reagan and George Bush (summer/fall 1980), then-Director of the Arms Control and Disarmament Agency Eugene Rostow and former director Paul Warnke (both in 1981), former Secretary of Defense Robert McNamara and former Secretary of State Cyrus Vance (both in 1982), and physicists Herbert York and Hans Bethe (both in 1982).

Scheer's title is lifted from the now notorious interview he conducted "very late one autumn night in 1981" with Thomas K. Jones, who works for the Undersecretary of Defense for Research and Engineering and whose duty title is Deputy Undersecretary for Strategic and Theater Nuclear Forces. Mr. Jones, a former Boeing engineer, had been quoted to the effect that Soviet civil defense measures were such that 98 percent of the people living in the Soviet Union would survive a major nuclear attack.[2] Scheer decided he'd like to get some details about this and arranged for an interview. In the course of their discussions, Mr. Jones is reported to have uttered the following thoughts (printed on the dust jacket of Scheer's book, separated by ellipses): "Dig a hole, cover it with a couple of doors and then throw three feet of dirt on top . . . . It's the dirt that does it . . . . If there are enough shovels to go around, everybody's going to make it."

When Scheer's report of this interview was published in the *Los Angeles Times* on 16 January 1982, it created a minor uproar. By March, the editorial writers for the *New York Times* were muttering about "The Dirt on T. K. Jones" and wondering aloud whether he was only a character in Doonesbury or perhaps the peace movement's mole inside the Reagan administration. A subcommittee of the Senate Foreign Relations Committee demanded that he appear for questioning, a demand parried three times until Senator Larry Pressler (R-South Dakota) threatened to send the sergeant-at-arms to round up Mr. Jones. The subcommittee refused to accept the assurances of Assistant Secretary of Defense Richard N. Perle that he, and not Mr. Jones, spoke for the administration on Soviet civil defense. Eventually, Jones appeared and backed away from some of his earlier statements.[3]

Although Mr. Jones thus takes a central role in Scheer's portrayal of what he sees as the "curious mind-set" affecting civilian policymakers in the Reagan administration, Jones does not stand alone. Others holding views that Scheer finds equally puzzling include Perle, Richard Burt (Director of Department of State's Bureau of Politico-Military Affairs), Richard Pipes (then a staff member of the National Security Council), Eugene V. Rostow, Paul H. Nitze, and Louis O. Giuffrida (Director of the Federal Emergency Management Agency). Scheer's particular concern, above all, seems to be with the world view of the Committee on the Present Danger, founded by Rostow and Nitze in 1976 and dedicated to "righting the balance" between the United States and Soviet strategic

forces. On pages 144-46, Scheer lists no fewer than fifty-one members of the committee's board of directors who have held positions in the present administration, a list headed by the President himself.

In sum, Mr. Scheer seems to have come away from his research and interviews thoroughly convinced that if it is *not* true that a bunch of "crazys" are too close to the nuclear button, there are nonetheless a few who now and then at least sound a bit eccentric. He would have been less surprised, perhaps, if he had known of this exchange that took place in September 1980 under a previous administration.

> Senator GLENN: I get lost in what is credible and not credible. This whole thing gets so incredible when you consider wiping out whole nations, it is difficult to establish credibility.
>
> Secretary [of Defense] BROWN: That is why we sound a little crazy when we talk about it.
>
> Senator GLENN: That is the best statement of the day. I agree with you.[4]

Nonetheless, Scheer perseveres, all the while acting the role of the offended virgin and all but luxuriating in the "lunatic hilarity" of some of the comments his questions elicited.[5] His saving grace, which readers will find sobering as well, is that he does more quoting than commenting. One thing is certain: there are some people in government who are not likely to invite Mr. Scheer and his tape recorder back for another interview.

THE Committee on the Present Danger, to which Scheer devoted a short chapter, is the subject of a book-length treatment by sociologist Jerry W. Sanders, whose *Peddlers of Crisis* "has passed through many seasons."† His investigations began in 1977, he writes, and grew into a dissertation for the University of California at Berkeley by 1980. His principal findings were first given wider circulation by Richard J. Barnet in a long piece on "The Search for National Security," which appeared in the *New Yorker* for 27 April 1981. Now we have the published book, one whose conclusions raise a question as to how Sanders presented himself to the key personalities of the CPD who cooperated with him, he avows, both willingly and graciously.[6]

Sanders begins in 1950 with NSC-68 and "the militarization of containment," which led to the establishment of "Containment Militarism," a doctrine which he says held sway in our government until at least 1968, when it began to give way to a new doctrine of détente. In doing so, he reminds us that the first Committee on the Present Danger was founded in 1950 by James B. Conant, Tracy Voorhees, and Vannevar Bush. CPD-I, as he calls it, was politically bipartisan, recruiting its members from the internationalist wing of both parties and dedicated to support of the Truman administration's rearmament program brought on by the outbreak of the war in Korea. Following that program's general acceptance and the election of General Dwight D. Eisenhower to the presidency, it disbanded in 1953.

CPD-II, cofounded in 1976 by Eugene Rostow and Paul Nitze (and consciously drawing its name from the earlier committee), was different in at least two major respects: first, it was established in opposition to government, initially to Gerald Ford and Henry Kissinger and shortly thereafter, with heightened vehemence, to Jimmy Carter; and second, it was distinctly partisan, drawing its membership exclusively from among so-called right-wing defense conservatives for whom the short-lived era of détente was seen to foreshadow America's decline coupled with the Soviet Union's rise to a posi-

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†**Jerry W. Sanders, *Peddlers of Crisis: The Committee on the Present Danger and the Politics of Containment* (Boston: South End Press, 1983, $20.00), xiv + 371 pages.**

tion of unassailable strength, a position from which it could then be relied upon to try to take over the world, by threat if not by force."

Sanders then recounts the major triumphs of the committee: the successful challenge to the early and midseventies CIA estimates of Soviet strengths and intentions (symbolized by the victory of the outside consultants, headed by Richard Pipes, who formed Team B in the fall of 1976); the "war" against the Senate confirmation of Paul Warnke, President Carter's nominee to head the Arms Control and Disarmament Agency; and the campaign to sink the SALT II treaty. Regarding the latter instance, Sanders describes a $2,000,000 campaign launched by the committee in September 1978, which came to involve the distribution of some 200,000 pamphlets, testimony before congressional committees by seventeen CPD members, and a total of 479 television and radio talk show appearances. Taken altogether, he sees the story of the committee as "an extraordinary tale of elite intrigue and mass manipulation, one with grave implications for this nation and the world." (p. 8)

Military members active and retired will have a tough time with this book if they are among the majority who have assumed all along that the committee was and is "on our side." Nonetheless, the detailed description of the committee's assumptions and accompanying zeal might give some pause to those who feel that the committee's conclusions and recommendations are both self-evident and unexaggerated. If so, one must ask, why all the frantic lobbying? Also, despite the sociologist's tendency to label things rather than simply describe them, Sanders's arguments are for the most part laid out in plain English.

In the end, as with Scheer, one is led to wonder whether Sanders is likely to be welcomed back for further interviews. Several pages after acknowledging Mr. Nitze's willing and gracious assistance, he describes him as "a veteran leader of apocryphal threats, gaps, and other assorted hysterias, [now in 1976] opening a new house of mirrors, this time featuring a 'window of vulnerability.' " (pp. xi, 9) In fact, on the very first page of his Introduction, directly after quoting Eugene Rostow and Nitze, he quotes the late C. Wright Mills: "Such men as these are crackpot realists: in the name of realism they have constructed a paranoid reality all their own." (The fact that the comment by Mills dates from 1956, whereas those of Rostow and Nitze are from 1981 and 1980, respectively, is buried in the end notes to the book; it is difficult not to infer devious intent in this accurate but nonetheless potentially misleading technique.)[8]

Scheer and Sanders are by no means alone in discerning an unbroken pattern of thinking regarding the Soviets that has long reigned supreme in the higher councils of government.[9] I shall return to this subject later but for the moment would point out one theme that thus far bodes only ill for all of us: the people on both sides of the nuclear weapons debate tend to start from diametrically opposed positions regarding the Soviet Union and its aspirations—and then talk right past one another.

ANOTHER recent book treating primarily civilian contributions to nuclear strategy is Fred Kaplan's *The Wizards of Armageddon*.† Kaplan is a young journalist for the *Boston Globe* who holds a Ph.D. in political science from Massachusetts Institute of Technology. His basic message is spelled out in boldface on the dust jacket: "For thirty years a small group inside the U.S. strategic community has devised the plans and shaped the policies on how to use the bomb. This is their

†Fred Kaplan, *The Wizards of Armageddon* (New York: Simon & Schuster, 1983, $18.95), 452 pages.

untold story." If we forgive the usual publisher's hype of "untold," we can find in these pages the story of the men, primarily of the Rand Corporation, who have elaborated the various theories of deterrence since 1945. Among the central players treated by Kaplan are the late Bernard Brodie and Herman Kahn, Robert S. McNamara, Henry Rowen, James R. Schlesinger, Albert J. Wohlstetter, and William Kaufmann (under whom Kaplan apparently studied at MIT).

While Kaplan's tale defies easy summary, owing to the number of players involved (and the complexities, real or contrived, of their thinking), it is nonetheless a sobering, even disturbing, account; one in which personal ambitions, jealousies, and severe second thoughts about the very nature of their work play larger roles than most people have realized. His portrayals of Brodie and Wohlstetter are particularly striking, the latter of the two seeming to emerge, although not labeled such, as the Dr. Strangelove of Kaplan's story.[10] Central to this analysis is the story of the Rand "vulnerability study" of 1953-54, spearheaded by Wohlstetter and addressing the emerging vulnerability of Strategic Air Command, both in the United States and at overseas bases, as the Soviets began to acquire an atomic striking capability.[11] With that report, Kaplan writes,

> Wohlstetter made the issue of calculated vulnerability the central focus of strategic analysis generally . . . . As the theory trickled down not just through the corridors of RAND but also in Washington and other sectors of the "strategic community," the concern about vulnerability grew into an infatuation, then an obsession and finally a fetish of sorts. Eventually, it would wend its way into the political realm and—apart from Wohlstetter's original intentions or logic—become entangled with claims of a "missile gap;" it would sit at the center of grisly scenarios about Soviet first-strikes and American weakness; it would provide the rationale for a host of new weapons that the military wanted to build; and it would serve as a powerful engine driving at least the American side of the nuclear arms race over the next quarter century and beyond (pp. 109-10).

It is this issue of "calculated vulnerability," leaping across the thirty years since 1954, that Kaplan sees as the central explanation for the present posture of those now in charge of nuclear weapons policy. Like Scheer and Sanders, Kaplan seems to view today's fears as illusory or at least exaggerated, but nonetheless compelling and probably impossible to ignore or simply deny, by those who feel obligated by their responsibilities to find some "perfect" answer to our problems.

Despite its many strong points, this book has one truly major failing that will lead many military readers to discount it. The author simply can't get the *military* parts of the story straight, committing a string of egregious errors that are all but mind-boggling. The U.S. Strategic Bombing survey was not "a group of economists" (p. 35); General George Kenney did not retire on leaving SAC in 1948 (p. 43); the occasion for Billy Mitchell's court-martial was not as Kaplan states (p. 54); it is not true that General Nathan Twining, commander of the Fifteenth Air Force from 1943 to 1945, did "tactical, not strategic, bombing during World War II" (p. 239); SAC in 1960 was not "merely one of several commands under the Air Staff's wings" (p. 245). Our various Berlin adventures seem to pose a particular problem for Kaplan. In 1948, he has us "dropping packages of aid into the city by parachute [!] for more than 300 days" (p. 291), and in 1958-59, he has the United States sending in "very-high-altitude transport planes, which Soviet fighters attempted but failed to intercept." (p. 292)

Errors of the kind cited here pose a difficult problem for a reviewer, who cannot help wondering whether they are matched by similar ones regarding the civilians on whom Kaplan concentrates. I suspect not but cannot be certain. Nevertheless, with this major caveat, I am led to recommend the book especially to those who have at one time or another played a part in the business of nuclear deterrence but have never before found the opportunity to study the associated problems and proposed or

adopted solutions over the long haul since 1945. Such readers, who will come equipped with their guard up, will find much that is new to them.

ANOTHER recent book on nuclear weapons and strategy that provides a perspective from inside the weapons industry is Robert Aldridge's *First Strike!*† From the late 1950s until the end of 1972, Aldridge was an engineer with the Lockheed Missiles and Space Company, where he led an advanced-designed group that worked on the Polaris and Poseidon missiles. On 2 January 1973 he quit, having become convinced that the work he was doing was immoral. Since then, he has been giving talks and writing articles. In his own words,

> I started gathering highly technical and isolated facts and putting them together using common language so people could understand what is happening. As I delved deeper into Pentagon activity I discovered a pattern more sinister than I had imagined. Evidence indicated that the Pentagon is looking far beyond what is needed for defense. It is developing the instruments which will allow the United States . . . . to launch a disabling and unanswerable first strike. (p. 19)

Hence this book and its title.

Aldridge opens with background chapters on "The First Strike Syndrome" and "The Strategic Nuclear Triad." Subsequent chapters treat the developmental history of both the Trident and MX missiles (both excellent chapters), as well as such other topics as penetrating bombers, cruise missiles, antisubmarine warfare, missile and bomber defense, space warfare, and command and control. A concluding chapter on "The Profit Imperative" makes it clear that the sinister Pentagon of his Prologue has plenty of outside help in formulating its designs. In fact, Aldridge is convinced that investment by "giant US corporations in the Third World has become the overriding consideration in US foreign policy," (p. 278) which he sees as nefariously interventionist. From this sweeping generalization, he goes on to conclude that the competition in nuclear arms is not the root problem we face. "The root problem, as I see it, is more basic. I can most succinctly describe it as personal selfishness and the urge to control." (p. 291) The first charge applies presumably to defense industry and the second to government, although this distinction must be inferred.

Such a serious indictment results in a story with too many villains to keep up with. But one need not accept Aldridge's entire argument to find some value in the author's insights and documented assertions. While a little less laying on of blame would have helped his case, he is obviously both serious-minded and knowledgeable. Aldridge seems to be saying that we need to be thinking seriously about matters of weapons acquisition and use, rather than letting industry run wild while we sit back accepting on faith whatever the government at any given moment sees fit to tell us.

He also has a gift for casual asides. The targeting of the enemy's governmental control apparatus (the so-called decapitation option) sounds to him "like international assassination plots gone nuclear." (p. 35) In discussing so-called counterforce targeting, he reminds us that when *we* seek the capability we label it "damage limitation" but when we see the *Soviets* doing it we call it "war-fighting doctrine." (Not everyone who writes on these matters has Aldridge's feel for the nuances of nuclear Newspeak.) In short, this is a valuable book, deserving of a larger audience than it is likely to get, especially from among those who become uncomfortable reading bareknuckled criticism of government policy. Perhaps most significant is that the book is symptomatic of a

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† **Robert C. Aldridge, *First Strike! The Pentagon's Strategy for Nuclear War* (Boston: South End Press, 1983, $20.00), x + 325 pages.**

growing feeling that the legitimate bounds for secrecy have been too long and too roughly overridden, sometimes for purposes, however well meant originally, that have little to recommend them any longer.

SEVERAL recent books must be giving nightmares to those in the Pentagon and elsewhere charged with keeping the secrets. Three that variously fit this category are Peter Pringle and William Arkin's *SIOP*;† Paul Bracken's *Command and Control of Nuclear Forces*;†† and the first volume of *The Nuclear Weapons Databook* by Thomas Cochran, William Arkin, and Milton Hoenig.†††

Peter Pringle is *The* [London] *Observer's* man in Washington, and William Arkin is Director of the Arms Race and Nuclear Weapons Project of the Institute for Policy Studies. (The IPS is widely regarded in the conservative press as "radical Left"; those associated with it pay that price but do not seem to let it bother them much.) In their book, it appears that Arkin crunched the numbers while Pringle wielded the pen.[12] One strong point up front for both authors: it is clear they have done more real world research than many writers. Apparently, they both accompanied a B-52 training mission with the 5th Bomb Wing at Minot (bouncing along at 400 feet and all). Furthermore, they seem to know more about launch-control procedures in Minuteman and Poseidon cockpits than some of us will feel comfortable with their spelling out.

Nonetheless, their title, *SIOP* (pronounced "sigh op" and standing for single integrated operational plan), is misleading, since the book's principal topic is not past and present operations plans for nuclear war but rather the command and control techniques and hardware designed for warning, release, and launch orders. In treating these matters, the authors go into detail in a number of sensitive areas such as SIGINT, ELINT, ERCS, the DSP, etc.[13] Many will find all this a bit unnerving, as did many of the officers with whom the authors discussed their project, but they will *not* find the actual details of any SIOP, past or present.

The real concern of the authors is whether the SIOP has become a mere symbol of presidential control over nuclear weapons, a control capability which they see as being eroded by the increasing elaboration of the so-called C³I networks. Their feeling is that presidential control in reality no longer exists in any but the most ideal circumstances. More important, they believe that in a worst-case scenario, "if the civilian authority is destroyed, the new system also ensures that the military is able to carry on to fight a nuclear war—on its own." (p. 225) Even in a less than worst-case scenario, they suggest that the net effect of current and programmed developments (specifically, the IONDS, or integrated operational nuclear detection system) might be "to increase the influence of the military in *any* decision to use nuclear weapons." In their words:

> It would work like this. The military, with their highly sophisticated sensors and computers giving them immediate information of events as they happen, would be able to present persuasive arguments to the president about what he should do next by asserting that their information has

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†Peter Pringle and William Arkin, ***SIOP: The Secret U.S. Plan for Nuclear War*** (New York: W. W. Norton, 1983, $16.95), 287 pages.

††Paul J. Bracken, ***The Command and Control of Nuclear Forces*** (New Haven: Yale University Press, 1983, $19.95), xii + 252 pages.

†††Thomas B. Cochran, William M. Arkin, and Milton M. Hoenig, ***The Nuclear Weapons Databook***, Volume I, ***U.S. Nuclear Forces and Capabilities*** (Cambridge, Massachusetts: Ballinger, 1984, $38.00; $19.95 paperback), xx + 340 pages.

> more relevance than any political considerations. (p. 239)

This concern is widely shared in the current literature[14] and can be expected to become a hotly debated matter in the months ahead. It will prove uncomfortable for the services, but neither wishing it away nor trying to squelch discussion will work in the end. The problems we now face are of our own making and, for an increasing segment of the public, unacceptable in their present form. As Pringle and Arkin point out (and this view is central to the rising chorus of criticism), "United States strategic nuclear policy was never 'approved' by any part of the democratic process . . . [but rather was] conceived and nurtured in the greatest secrecy." (pp. 244-45)

If a stated or implied sense of resentment regarding the record of secrecy in nuclear planning can be said to pervade all the books thus far mentioned—thereby rendering their arguments moot in the eyes of many long-accustomed to view secrecy in such matters as both necessary and good—no such argument can be raised against Paul Bracken's *Command and Control of Nuclear Forces.* Bracken, a young professor at the Yale School of Organization and Management, has no time for resentments or blame laying. His concern is with our warning, intelligence, and alerting systems and how they actually function in crisis or near-crisis situations. As *Air Force Magazine* was quick to note immediately on the book's publication in December, Bracken's is a "penetrating and often disturbing study of nuclear force management." My own feeling is that this is an understatement; that Bracken, in fact, has produced the single most important book on nuclear issues that has appeared in the last decade.[15]

Hardware (whether of weapons, delivery systems, or communications engineering) is not his concern. Neither are any of the various nuclear employment theories or the no-win debates that rage between the MADmen (those favoring mutually assured deterrence/destruction) and the NUTs (nuclear use theorists). His focus instead is on the management of forces at the moment they would go on alert and as they would perform during a war. His goal is to identify potential flashpoints and triggers that might lead to catastrophe. Some of these might be correctable, but, more important, a clear awareness of their existence might lead both sides to the realization that the arms controllers need to shift their emphasis from weapons to the establishment of what he calls nuclear "rules of the road" governing the *operation* of forces and alerts. As things now stand, *or* as they are likely to stand following *any* number of technical fixes to the C³I network,[16] the vertical integration of intelligence, warning, alerting, and command functions has led *both* sides to the point where we have, in effect, "institutionalized a nuclear showdown." He then shows in detail how, "at any moment these forces can be triggered into alert, and decades of sleepy, unexamined confidence that 'it can't happen here' would disappear." (pp. 1 and 239)

Bracken's approach is both historical and analytical. Following chapters on the evolution of the U.S. and Soviet warning and intelligence networks, he summarizes the history of U.S. nuclear war planning and then gets to the heart of his analysis in a chapter on "Problems of Assessment." Here he contrasts peacetime and wartime information regimes, the latter of which he convincingly shows will lead to "informationally decentralized nuclear wars" conducted by separate "islands" of disconnected forces. "The source of his insight," one reviewer writes, "is the recognition that the system involves organizations which turn any crisis into a series of discrete questions requiring human decisions and control."[17] "When time may be short, and when the danger in passivity seems great," another reviewer writes,

> who can tell what kind of alerting action a particular commander may urge *or what such action may call forth from others?* . . . Mr. Bracken persuasively argues that the kind of nuclear war

> we are least likely to have is the kind that is usually assumed by those who play war games—the kind in which centralized command and control persist, and each side is assumed to be able to assess the actions of the other. Even if command and control . . . remain complete into the depths of a crisis, no one can tell what particular action might cause the tightly coiled spring to snap [leading to] victory only for chaos.[18]

By far the scariest of Bracken's chapters is the one on "The Special Problems of War in Europe," the most informative chapter on nuclear weapons in Europe I have ever seen. Here he gives all the numbers and describes the types of systems (no less than nine), vulnerabilities, interacting effects of alerts on both sides, and improbabilities of *ever* resolving go/no-go decisions at political levels of the alliance. Almost teasingly, he shows that the hopelessly complicated command structure governing nuclear weapons in Europe is closely related to a political strategy that emphasizes deterrence above all. Theater nuclear war in the perspective of Europeans is not intended to be an intermediate substrategic war, nor is it designed to regain battlefield advantage—the ways in which Americans usually envisage it. Rather, in the European view, it is specifically intended to enforce deterrence by requiring *any* major war to be a nuclear one. His conclusion borders on the perverse.

> The NATO strategy of relying on nuclear weapons is politically and militarily credible because the governing command structure is so unstable and accident-prone that national leaders would exercise little practical control over it in wartime. What other command mechanism could possibly be built . . . that, for all practical purposes, is tantamount to a regional doomsday machine? (p. 164)

Again unlike a number of other writers, Bracken concludes with some suggestions for improving things. (pp. 238-47) These are worth serious consideration, but not more so than several of his en route warnings directed to those presently charged with improving our command and control mechanisms. They, even more than the rest of us, must force themselves at all times to:

- remain skeptical of purported technological solutions to problems that have deep organizational roots (p. 168),
- remember that the *real* problems are things like crossed lines of authority, confusion, inability of standard operating procedures to solve problems, and a less than confidence-inspiring integration of political and military decisionmaking (except on paper; witness, for example, the travails of the *Pueblo* and *Liberty*), and
- avoid at all costs the common infatuation with the communications engineering aspects of command and control, lest they become like the drunk who looks for his lost keys under the streetlight because that's where the light is. (p. 220)

THE final item in our trilogy of nightmare-producing books is the first volume of a projected eight-volume *Nuclear Weapons Databook*, already touted in the press as among the most unwelcome books the Pentagon has seen in many a season. The authors of this first volume, *U.S. Nuclear Forces and Capabilities*, are Thomas Cochran, a physicist currently with the National Resources Defense Council, Inc. (like the IPS, generally critical of current policies); William Arkin, coauthor of *SIOP;* and Milton Hoenig, a Cornell University physicist formerly associated with the Arms Control and Disarmament Agency. Future volumes in the series will treat, among other topics, Soviet nuclear forces, U.S. nuclear weapons production facilities, the history of U.S. nuclear weapons, and the inventories and capabilities of other nuclear-armed nations.

The book is essentially an encyclopedic presentation of nuclear weapons systems, ranging as far back as the Genie air defense missile of the 1950s (which the authors claim is still on line in some Air National Guard squadrons) and as far into the future as the Army's alleged

Continued on page 94

A Sampler from the Nuclear Bookshelf

Well over 200 books on nuclear weapons issues have been published in English during the last two years alone. The books, articles, essays, and papers listed here represent only a sampling from among the best literature I have seen. For reasons primarily of space, none of the books treated in the accompanying essay is included in this supplementary list.

Books

Michael Carver, *A Policy for Peace* (London: Faber & Faber, 1982). Field Marshal Lord Carver, former Chief of Defense Staff, United Kingdom, argues against *any* reliance on nuclear weapons.

Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin's Press, 1982). So far the best single-volume history; originally published in London, 1980.

Robert Jervis, *The Madness beyond MAD: The Illogic of American Nuclear Strategy* (forthcoming from Cornell University Press). A stinging critique of the so-called "countervailing strategy."

George Kennan, *The Nuclear Delusion* (New York: Pantheon, 1982). Kennan sadly reiterates what he has been preaching, primarily to deaf ears, for the past thirty years.

Michael Mandelbaum, *The Nuclear Question* (New York: Cambridge University Press, 1979); *The Nuclear Revolution* (Cambridge University Press, 1982); and *The Nuclear Future* (Ithaca, New York: Cornell University Press, 1983).

Laurence Martin, editor, *Strategic Thought in the Nuclear Age* (Baltimore, Maryland: Johns Hopkins Press, 1979). See especially Chapter 5, "The Evolution of Nuclear Doctrine," by Henry S. Rowen.

Thomas Powers, *Thinking about the Next War* (New York: Knopf, 1982). Nineteen provocative essays originally published in *Commonweal* between 1976 and 1982.

Jonathan Schell, *The Fate of the Earth* (New York: Avon Books, 1982). The manifesto of the antinuclear weapons movement, originally serialized in three consecutive issues of the *New Yorker* during February 1982.

David N. Schwartz, *NATO's Nuclear Dilemmas* (Washington: Brookings Institution, 1983). An unsettling history of the alliance's nuclear strategies that reads like a comedy of errors. For a shorter account, see J. Michael Legge, *Theater Nuclear Weapons and the NATO Strategy of Flexible Response*, Rand Report # R-2964-FF, April 1983.

Donald M. Snow, *The Nuclear Future: Toward a Strategy of Uncertainty* (Tuscaloosa: University of Alabama Press, 1983), urges a nuclear strategy based on and enhancing uncertainty, the "central reality" in the area of nuclear armaments.

George W. Tiller, Lieutenant Colonel, USAF, *Arguments of Anxiety: The Nuclear Debate and American Strategy* (Air War College Research Report No. AU-AWC-83-236, April 1983). Winner of the Commandant's Award, AWC Class of 1983.

Kosta Tsipis, *Arsenal: Understanding Weapons in the Nuclear Age* (New York: Simon & Schuster, 1984).

U.S. Congress Office of Technology Assessment, *The Effects of Nuclear War* (1979). In 1982, Cheshire Books released a jazzed-up version of this gloomy report under the title *The Day after Midnight.*

Leon Wieseltier, *Nuclear War, Nuclear Peace* (New York: Holt, Rinehart, & Winston, 1983). Originally appeared as a special issue of the *New Republic*, 10 and 17 January 1983. See also George W. Ball's review essay, "Sovietizing U.S. Policy," in the *New York Times Book Review*, 2 February 1984.

Harold Willens, *The Trimtab Factor: How Business Executives Can Help Solve the Nuclear Weapons Crisis* (New York: William Morrow, 1984).

Solly Zuckerman, *Nuclear Illusion and Reality* (New York: Viking Press, 1982). Lord Zuckerman's thesis is stated in a single sentence: "Once the numbers game took over, reason flew out the window."

Articles/Essays/Papers

Desmond Ball, "U.S. Strategic Forces: How Would They Be Used?" *International Security*, Winter 1982/83. See also his "Can Nuclear War Be Controlled?" *Adelphi Papers*, No. 169, Autumn 1981, and "Targeting for Strategic Deterrence," *Adelphi Papers*, No. 185, Summer 1983. While Gray (in his article listed on facing page) argues the need to at least *plan* for controlling nuclear war, Ball says that such planning is inevitably based on false assumptions.

Paul Bracken and Martin Shubik, "Strategic War: What Are the Questions and Who Should Ask Them?" *Technology in Society*, vol. 4, no. 3 (1982).

Bernard Brodie, "The Development of Nuclear Strategy," *International Security*, Spring 1978. The final statement from the late dean of U.S. nuclear strategists, whose *Strategy in the Missile Age* (Princeton, New Jersey: Princeton University Press, 1959) remains even today the best book ever written on its topic.

Theodore Draper, "How Not to Think about Nuclear War," *New York Times Book Review*, 15 July 1982, and the ensuing exchange in the issue of 23 September 1982. See also his "Dear Mr. Weinberger: An Open Reply to an Open Letter," and "On Nuclear War: An Exchange with the Secretary of Defense," same journal, issues for 4 November 1982 and 18 August 1983. Also see his "Nuclear Temptations," same journal, 19 January 1984.

Aaron L. Friedberg, "A History of the U.S. Strategic 'Doctrine,' 1945 to 1980," *Journal of Strategic Studies*, December 1980.

Nicholas H. Fritz, Jr. (Colonel, USAF), "Clausewitz and U.S. Nuclear Weapons Policy," *Air University Review*, November-December 1982.

Raymond L. Garthoff, "The NATO Decision on Theater Nuclear Forces," *Political Science Quarterly*, Summer 1983.

Leslie H. Gelb, "Is the Nuclear Threat Manageable?" *New York Times Magazine*, 4 March 1984.

Colin S. Gray, "Nuclear Strategy: The Case for a Theory of Victory," *International Security*, Summer 1979.

Michael Howard, "On Fighting a Nuclear War," *International Security*, Spring 1981. Originally presented at UCLA on 20 November 1980 as the first annual Bernard Brodie Distinguished Lecture on Politics and War. Mr. Howard is the Regius Professor of Modern History at Oxford and the author, more recently, of "Reassurance and Deterrence: Western Defense in the 1980s," *Foreign Affairs*, Winter 1982–1983.

Fred Charles Iklé, "Strategic Principles of the Reagan Administration," *Strategic Review*, Fall 1983. The official word from the undersecretary of defense for policy.

Benjamin S. Lambeth and Kevin N. Lewis, "Economic Targeting in Nuclear War: U.S. and Soviet Approaches," *Orbis*, Spring 1983.

Robert S. McNamara, "The Military Role of Nuclear Weapons: Perceptions and Misperceptions," *Foreign Affairs*, Fall 1983. Although the former secretary of defense still refuses to come out of the closet on matters related to Vietnam, he is now speaking and writing widely on nuclear weapons issues.

Michael Nacht, "Nuclear Deterrence to the End of the Century," *Naval War College Review*, November-December 1983.

Thomas Powers, "Choosing a Strategy for World War III," *Atlantic Monthly*, November 1982. The first detailed accounting of the origins of Presidential Directive-59 to appear in the open literature. See also his "What Is It About?" *Atlantic Monthly*, January 1984. The "it" of the title is the Soviet-American global competition, especially in nuclear weapons.

David Alan Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-60," *International Security*, Spring 1983. A truly ground-breaking essay by a young historian widely viewed as the leader in his field. See also his prize-winning "American Atomic Strategy and the Hydrogen Bomb Decision," *Journal of American History*, June 1979.

Carl Sagan, "Nuclear War and Climatic Catastrophe: Some Policy Implications," *Foreign Affairs*, Winter 1983–1984. The "Nuclear Winter" thesis in an article designed for lay readers; see the 23 December 1983 issue of *Science* for two articles on the details of the scientific analyses involved.

Jonathan Schell, "Abolition," *New Yorker*, 2 and 9 January 1984. Schell's answer to his critics who complained that he finished *The Fate of the Earth* without offering any solution to the problems he described.

Leon Sloss and Marc Dean Millot, "U.S. Nuclear Strategy in Evolution," *Strategic Review*, Winter 1984. Candid analysis of the evolution of the "countervailing strategy" by one of its authors [Sloss].

John Steinbruner, "Launch under Attack," *Scientific American*, January 1984, argues that the policy would actually endanger *our* missiles while they would be in flight.

Albert Wohlstetter, "Bishops, Statesmen, and Other Strategists on the Bombing of Innocents," *Commentary*, June 1983. See also the December 1983 issue (same journal) for the extended discussion engendered by this article.

plans for making the Assault Breaker missile "dual capable." The authors state that we presently have a stockpile of some 26,000 nuclear weapons, of twenty-four different types, ranging in explosive power from the equivalent of 200,000 to 18,000,000,000 pounds of TNT. They state that the total cost of nuclear weapons runs to some $35,000,000,000.00 a year; that, on average, five new weapons are manufactured each day (while three are withdrawn); and that current plans call for the production of nineteen new types (as against thirteen that will be retired or replaced), leading eventually to an inventory of 28,665 weapons. Along the way, they state that there are presently 114 naval vessels and 73 attack submarines that routinely carry nuclear weapons, that at least 15 types of tactical aircraft are dual-capable, and that a total of 722 U.S. "combat units," comprising 110,000 military personnel, are "certified" for nuclear warfare.

Unlike the annual military balance volumes of the International Institute for Strategic Studies in London (abbreviated each year in the December issue of *Air Force Magazine*) or the SIPRI (Stockholm International Peace Research Institute) yearbooks on *World Armaments and Disarmament*, this first volume of the *Databook* is impressively (if incompletely) documented. It contains literally hundreds of footnotes that provide the sources for the authors' numbers and projections (if not their meaning). Those sources are mainly technical journals, congressional hearings, and some 200-plus documents declassified following successful challenges under the Freedom of Information Act.

A major problem with this mix of sources involves the extraction therefrom of discrete items which, when placed together in a particular context, sometimes add up, in the figurative sense, to more than is warranted. Another is that the information is not always accurate. The authors, like many others caught up in the Washington maelstrom, often forget a cardinal rule: "Just because it is [or was] classified doesn't mean that it is [or was] true!"[19] They also must have short memories regarding the accuracy of unsworn testimony offered to congressional committees by special pleaders of all stripes. Their tendency is to take all advertised numbers and capabilities at face value. Here we have no mention whatever of the mixed record of cruise missile and Pershing II operational tests, nor anything on the now three-year-old debate over ICBM accuracy. The overall effect is to leave the impression that the authors have sought to present the most horrific possible picture of the power at our disposal. Unstated, but easily inferred, is the authors' apparent feeling that spilling the beans about our weapons capabilities is both necessary and good.

Not everyone will agree, and many in positions of authority and responsibility will be dismayed. Nonetheless, this effort—like Bracken's, but for different reasons—represents a delayed-fuze time bomb of sorts. No writer of consequence on these matters is likely to neglect it. And others will not refrain from quoting its figures as gospel (especially when they can be made to help support a conclusion already arrived at). In this sense, the authors have succeeded in what was perhaps their principal purpose: getting the numbers game out in the open, down to specifics, and open to debate.

THIS excursion into some of the recent literature on nuclear weapons and policies will have achieved its purpose if it no more than alerts those on active service that, where nuclear policy is concerned, there is something serious going on out there in American society. The freeze movement; films like *The Day After* and *Testament* (the first Hollywood productions in twenty years focused on the results of nuclear war); the formation of professional groups among lawyers, businessmen, and physicians committed to putting a cap on the arms competition; the reports of discontents in Europe regarding trends in U.S.-Soviet relations—these and other manifestations of a rising con-

cern are hard to miss, however ill-advised they may seem.

The general public is beginning to wonder whether something has gone amiss somewhere along the line. "The View from the Street Corner," as *Time* labeled it in its first issue for 1984, is tending in the direction of questioning whether things are quite right (or under control) regarding nuclear weapons. Stated in its starkest and least welcome form, what seems to be emerging is a more general feeling that there is not, nor has there ever been, a clearly logical set of guiding principles supporting U.S. nuclear strategy; that our policies and attendant strategies may not be well matched; that what we really have is a pile of capabilities and options that are likely to be employed, if deterrence appears to be failing, according to the attitudes and biases of those in charge at any given moment; that those attitudes are never fully formed (and, in fact, never can be until the moment of decision has arrived); and that the most far-reaching and long-lasting results of employing our capabilities will be those neither intended nor foreseen. And all this *despite* what "the other side" may have in mind.

So if any of this is true, where does a person go from here? *Not* into hiding, I would hope, and not into the readily available defensive mode that rejects all criticism as subversively intended (or, to coin a phrase, disinformationally wrought). The critics may be wrong, particularly regarding details to which they are not privy, but they are serious. Not only that, but they include among their number more than a few formerly *very* senior officials of the United States government, military as well as civilian. That fact alone should give pause to those who would dismiss the critics out of hand—often by citing the illogic of some of their arguments or the kooky (lunatic?) behavior of the fanatics among them. (Every viewpoint must live with fanatics on both sides of it.) None of us need fall into the trap that Major General Howard Estes decried in these pages in November 1982 when he observed that the most severe critics of seeking agreement with the Soviets regarding nuclear weapons are sometimes "totally uninformed" officers who don't know much about strategic arms limitation "but are quite sure they do not like" the idea. This was no put-down of anybody, but rather a plea, based primarily on his own experiences while still on active duty, for "the encouragement by top Air Force leadership of the frank expression of views that might not be universally popular, either within or without the Department of Defense." (To which line, we may be assured, the shades of all Air Corps Tactical School faculty members rose in applause!)

What General Estes was saying, in effect, was that the service could well be at the point where it could use more officers like those whom Major General I. B. Holley, Jr., has long sought to recruit in these pages—those who, once free from the daily responsibilities attendant to the cockpit or launch control facility, "will go out of their way to seek and welcome evidence that seems to confuse or contradict the received wisdom of their own, most cherished beliefs." A tall order, to be sure, and not the safest path on which to plot a career. But with that approach, previously hidden questions can surface, sometimes leading nowhere but at other times leading to new answers (or at least new approaches to problems shaped in circumstances of an earlier era). The bottom line in all this is that those on active duty bear a heavy responsibility to see that matters don't get out of hand and that unpopular or uncomfortable problems are not ignored. Change is more likely to be productive if driven from within rather than directed from without.

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Notes

1. See especially pages 13 and 120-21. If animosity is present, it is well disguised. Scheer gives every indication that he spent a great deal of time "bending over backwards" in his effort to be that which he could not be; i.e., impartial.

2. For the background and details of this assertion, see the following report, apparently not discovered by Scheer: *Industrial Survival and Recovery after Nuclear Attack: A Report to the Joint Committee on Defense Production, U.S. Congress*, prepared by the Boeing Aerospace Company, a division of the Boeing Company, Seattle, Washington, 18 November 1976 (available from the Defense Technical Information Center). See in particular pp. B-1 through B-10, where Mr. Jones replies to fourteen specific questions regarding the somewhat less than scientific basis for his calculations regarding population survival.

3. These events (not treated by Scheer in his book except tangentially in the notes on pp. 138-40) can be traced in: *Los Angeles Times*, 16 January 1982, p. 1, and 15 March 1982, Part II, p. 9 (where Mr. Jones, with unconscious irony, advised that "Civil Defense for America Is No Laughing Matter"); *Inquiry*, 15 March 1982, pp. 3-4 ("Gallows Humor at the Pentagon"); *Washington Post*, 17 March 1982, p. 1; *New York Times*, 17 March 1982, p. 16, and 19 March 1982 (for editorial referred to); *Time*, 29 March 1982, p. 24 ("Dig a Hole"); *Chicago Sun-Times*, 1 April 1982 editorial, "A Nest Egg for Doomsday"; *Washington Post*, 1 April 1982, p. 1, "Pentagon Official Retreats, Calls A-War Unwinnable," and p. 3, where Mary McGrory comments caustically on Jones's long-awaited testimony; *Baltimore Sun*, 2 April 1982, p. 15 for John L. Hess's comments, which conclude, "In the words of Mr. Reagan, let us pray;" and *Washington Post*, 12 May 1982, where Judy Mann promoted Mr. Jones to "Gen."

4. *Nuclear War Strategy*, Hearings before the Committee on Foreign Relations, U.S. Senate, 96th Congress, 2d session (Top Secret hearing held on 16 September 1980; sanitized and printed on 18 February 1981), p. 22.

5. The quoted phrase is borrowed from Anthony Lewis's comments on "Atoms and Politics," *New York Times*, 8 November 1982, p. 17.

6. *Peddlers of Crisis*, p. xi, for both the quoted words and the reference to the "quite willing, indeed gracious" cooperation the author received from, among others, Paul Nitze, Jeane Kirkpatrick, Richard Allen, Norman Podhoretz, Charles Tyroler II, Max Kampelman, Charles Burton Marshall, and Lieutenant General Daniel O. Graham, USA (Ret).

7. For a brief account of the connections between the two committees, see Samuel F. Wells, Jr., "The United States and the Present Danger," *The Journal of Strategic Studies*, March 1981, pp. 60-70.

8. *Peddlers of Crisis*, p. 7 and C. Wright Mills, *The Power Elite* (New York: Oxford University Press, 1956), p. 356.

9. The periodical literature (excluding *Commentary* and *The National Review*) and the Op-Ed pages are full of such pieces these days. For one of the best, see Robert H. Johnson, "Periods of Peril: The Window of Vulnerability and Other Myths," *Foreign Affairs*, Spring 1983, pp. 950-70. (Professor Johnson's "other myths" include NSC-68, the 1955 Killian Report, and the 1957 Gaither Report. Johnson writes from the experience of having worked on the NSC staff in the mid-1950s when the Killian and Gaither reports were presented.)

10. Strangelove is here used in its now almost generic sense. (Kaplan, by the way, seems unaware of Stanley Kubrick's often stated claim that he modeled Strangelove on a professor at Harvard named Kissinger. Like most writers, Kaplan seems to think Kubrick had Herman Kahn in mind.)

11. Originally Rand Report R-244-S (untitled), closely held but briefed at SAC and the Pentagon beginning in March of 1953; later incorporated as the summary at the beginning of A. J. Wohlstetter et al., *Selection and Use of Strategic Air Bases*, RAND R-266, April 1954, which was a massive, 424-page Top Secret study. The first that the public heard about the implications of these studies was in Wohlstetter's article "The Delicate Balance of Terror," *Foreign Affairs*, January 1959, pp. 211-34.

12. How else to account for the consistent misspelling of "MacNamara" throughout the book, a reference to Melvin Laird as a former "Senator," and the omission of Arkin's middle initial, which he elsewhere always uses?

13. Signals intelligence, electronic intelligence, Emergency Rocket Communications System, the Defense Support Program; all details regarding these remain highly classified, but Pringle and Arkin (and Bracken) provide general descriptions of each, including hardware involved, associated costs, and functional history.

14. John Steinbruner, for example, writes of the "potentially overwhelming pressures [on responsible military commanders] for outright preemption under intense crisis circumstances when the prospect of an unavoidable war would be facing them." See p. 44 of his article listed in the Sampler on p. 93 of this issue.

15. An extreme statement, to be sure, but offered without apologies. For knowledgeable if more restrained support, see the reviews by Lawrence Freedman (in *Book World*, 11 December 1983) and McGeorge Bundy (in the *New York Times Book Review*, 9 October 1983). Freedman calls the book "brilliant" and observes that "Bracken has succeeded in putting the nuclear debate on a new plane." Bundy says simply that there is nothing better in the open literature.

16. Regarding the C³I network, I cannot resist quoting here the first footnote in Bracken's book: "Some references in the past few years employ the phrase 'command, control, communications, and intelligence,' or even 'command, control, communications, computers, intelligence, and informational processing.' An understanding of the definition of command and control will show these additional terms to be redundant." (p. 3)

17. See the review by Lawrence Freedman, cited in note 15 above.

18. McGeorge Bundy in the review cited in note 15 above.

19. In its pure form, this "law" is stated as follows: "Just because it's classified don't mean it's true!" I am indebted to Don Oberdorfer, diplomatic correspondent of the *Washington Post* for pointing this out to me one day (using, to be sure, better grammar).

POTPOURRI

Fighting Armies: NATO and the Warsaw Pact (Volume 1), **Fighting Armies, Antagonists in the Middle East** (Volume 2), and **Fighting Armies, Nonaligned, Third World, and Other Ground Armies** (Volume 3) edited by Richard A. Gabriel. Westport, Connecticut: Greenwood Press, 1983, 250 pages, 173 pages, 273 pages, respectively, $95.00.

Making war is a unique mixture of men, machines, determination, training, skill, and luck that makes true combat capabilities difficult to assess. Yet this is the task that editor Richard A. Gabriel has set for himself and his contributors in his new trilogy *Fighting Armies: NATO and the Warsaw Pact; Fighting Armies: Antagonists in the Middle East;* and *Fighting Armies: Nonaligned, Third World, and Other Ground Armies.*

The three works are divided into chapters, each surveying the combat capabilities of a selected nation. Not all nations in a given category are covered: for example, only seven NATO powers and three Warsaw Pact powers are included in Volume 1. Throughout the three volumes, the chapters are fairly well standardized. There is the usual manpower and equipment tally, but the key sections of the chapters are assessments of recent combat experience, training and doctrine, the officer corps, the NCO corps, and conclusions drawn from the information presented. The latter make these volumes interesting reading, since the combat capabilities of men always are crucial in war.

We know what the contributors attempted to accomplish. The question now becomes: How well have they accomplished their objective? The answer is that although there is some variance in quality, for the most part, they have done their task very well.

The chapters on Greece and Turkey are excellent. Well documented, well written, and thoughtfully organized, they are as good an analysis of this sensitive and overlooked NATO flank as I have seen. The military, social, and political problems are woven carefully into a tapestry that portrays the combat capabilities of these two nations very clearly.

The chapter on Israel is also excellent, but the authors (two correspondents with *Time* magazine, one of whom had combat experience in the Israeli forces) managed it all without the use of a single footnote, so it reads somewhat like a *Time* article. The lack of documentation may annoy readers who like to know specific sources of information. The chapter on Iran may be more satisfying for scholars: it is well footnoted, informative, and well written.

Probably the most provocative chapters concern U.S. and Soviet combat capabilities. The U.S. section is written by Richard A. Gabriel and Paul L. Savage, who achieved fame with *Crisis in Command: Mismanagement in the Army* (1978). Much of that book is synopsized in the U.S. section. (I read *Crisis in Command* shortly after its publication and found it to be an excellent and insightful work. However, the book certainly could not have made the authors popular with the Department of the Army.) Their comments on the lack of a national strategic doctrine to guide the use of military forces, training, and the effects of careerism on the officer corps are well worth reading. Also, the overall section on the Total Force, especially problems with the Army Reserve component, track very well with other studies on the subject. On the other hand, the authors seem overly concerned about the size of the officer corps, setting 5 percent as the optimum percent of officers to enlisted men. It seems to me that rather than comparing the size of U.S. Army officer corps to some hard and fast percentage, it would be wise to examine the sophistication of the military force and the size and complexity of the logistical train. Such analysis seems to be beyond these authors.

Within the U.S. section is a long discussion of the quality of Army recruits, social alienation of the individual recruits, overrepresentation of minorities, and drug problems. The bottom line of the authors' analysis is that stupid, alienated, doped soldiers do not fight well—not exactly a shocking revelation to a military professional. Most of the source material that the authors used for this part of their study came from the 1978 to 1980 time period, a time when the disparity between civilian pay and military pay was at its highest and the services were unable to compete successfully with the civilian sector for quality people. This situation has since been remedied, so that in 1984 the services are having their best recruiting year ever and attracting high-quality recruits for both the enlisted force and the officer corps. The authors' concern about the high proportion of minorities and the low social class of recruits seems ill-founded. The problem is not that we have too many minorities in the military or that the services attract individuals in low social and income classes. Good pay, coupled with high standards, ensures a high-quality force. Thus the past two years have yielded increasingly promising recruits and a steadily improving overall force. Similarly, the lenient policy on drug abuse that the services adopted during the late 1970s has been adjusted, and the armed forces have made substantial progress on the drug abuse problem during the past three years.

While the U.S. Army can be judged to have been shorted in this trilogy of assessments, I believe, its Soviet counterpart has been treated very well. In the section on the Soviets, written by Richard A. Gabriel and William Martel, one notices the lack of any discussion of drug or alcohol abuse in the Soviet armed forces. Yet heavy use of alcohol in the Soviet Union is well documented by other analysts, and serious drug abuse is suspected. Furthermore, Gabriel and Martel do not mention the problem the Soviets have with social alienation and integration of their minorities into the army, although numerous sources indicate that the problem is significant and that the Russians are making little headway in relieving it. For an author of Gabriel's capabilities to highlight the alienation and drug problems of the U.S. Army and then to omit them from the analysis of the

Soviets is cause for concern. As far as covering the actual combat capability of the Soviet army, the section is thought-provoking and well done. Highlighted are the tremendous resources the Soviets expend for their armed forces, the doctrine of the offensive, the will to use military force, and the problems the Soviets have had in developing a professional NCO and officer corps. Most impressive is the discussion on the Soviets' use of reserves. The authors state that six of the eight divisions initially deployed in Afghanistan were reserves who were mobilized within ten days and deployed in the field for ninety days before being replaced by normal rotation. The Soviet capability in this area is unmatched and perhaps represents the greatest strength of the Red Army. However, if the reader relied on Gabriel's work only, I think he would get the impression that the Soviets stand ten feet tall and are virtually unbeatable. On the other hand, balanced with other viewpoints, this evaluation of the Soviet army would be helpful in attaining what is probably the true picture; that is, the Soviets have a military force with enormous capabilities saddled with a political and social system that stifles imagination and retards formation of trust and respect among ranks.

I was very favorably impressed with these three volumes and would recommend them as an excellent survey work, especially for officers who would like to broaden their knowledge about the armies of a large number of countries. They would be especially useful as a starting point for further research on the capabilities of the countries covered.

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Military Lessons of the Falkland Islands War: Views from the United States edited by Bruce B. Watson and Peter M. Dunn. Boulder, Colorado: Westview Press, 1983, 170 pages, $17.95.

The rush to learn lessons from the South Atlantic War of 1982 produced an abundance of forgettable commentary in the United States. *Military Lessons of the Falkland Islands War*, however, is an anthology of second-generation analysis, tempered by time and a firmer grasp of the war's facts. Although the selections are still too dependent on British sources, this book is a worthy companion to Max Hastings and Simon Jenkins's *The Battle for the Falklands* and may be the best single study for officers who have only enough time and interest to read one book.

Edited by two officials of the Defense Intelligence College, Commander Bruce Watson, USN, and Colonel Peter Dunn, USAF, *Military Lessons* includes essays by both military officers and civilian defense analysts of proven expertise. As a group, they might be characterized as the executive-branch wing of the military reform movement; that is, the authors are probably more temperate (yet no less committed) in their commentary than their congressional counterparts might be. Some of the writers—William J. Taylor, Jr., William J. Ruhe, Norman Friedman, Frank Uhlig, Jr., and Harry G. Summers, Jr.—are better known than others, but all of the contributors demonstrate analytic skill and deft writing. The only excessively academic essay is a piece on political and strategic warning, written by Gerald W. Hopple; but even it has its insights beneath the language of pseudoscientific international relations theory.

By and large, *Military Lessons* treats the salient areas of operational interest: submarine activity, operations of surface vessels and maritime aviation, the air war, amphibious operations, and ground warfare. Ruhe's short chapter on "smart weapons" is especially interesting, and coeditor Dunn provides a useful summary of the lessons, as does William Taylor in the introduction. These lessons are crafted especially for American readers. They focus on the demands of "out of theater" air-maritime operations, the perils of fighting even second-rate powers that have modern weapons and some men skilled and courageous enough to use them, and the likelihood that the Falklands War's quaint Victorian character has obscured its relevance to the development of warfare since 1945.

Although this book has rich material for military analysts, its usefulness might be greater if it contained separate chapters on the full range of electronic warfare, the conduct of operations at night and in foul weather, and the role of air-ground coordination in the land campaign. Some of the authors might also be slightly tainted with anglophilia, but the Argentines have not yet been very forthcoming in discussing *their* military lessons (except for those concerning the Argentine air forces).

As Colonel Dunn correctly observes in his conclusion, the key ingredient for military success is political resolve, however silly or purposeless a war may appear in retrospect. The basic British problem was that its armed forces had become NATO-centric in ways that the U.S. Armed Forces have not. A nation cannot easily wage war outside its self-defined regional sphere of influence if regional influence is all that national policymakers have wanted, for the armed forces (at least in a democracy) are soon shaped (in composition and readiness) to reflect policy goals. Luckily for Great Britian, her military transition had not been completed in 1982. For the United States, the Falklands War validates our current wide (and expensive) range of military capabilities. While in some situations the Falklands War became a "near-run" thing for the British, the same war fought by a U.S. joint task force would have been a "turkey shoot." Where military capability and political will work closely in common, of course, such a war should not occur in the first place.

Military Lessons of the Falkland Islands War makes an important contribution to the current debate on military reform, but its implicit message is that human action, political and military, still creates and then resolves international conflict.

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A Hero for Our Time: An Intimate Story of the Kennedy Years by Ralph G. Martin. New York: Macmillan, 1983, 596 pages, $19.95.

A Hero for Our Time is not scholarly in the customary sense, and its inspiration owes far more to journalism than to political science. Basically, it is a series of short and highly personal vignettes, chronologically arranged from John F. Kennedy's early years to his death and focusing on his presidency. Some of its "revelations" might better have appeared in the *National Enquirer*, but one supposes that the text was reviewed carefully by a libel lawyer before publication. The personal escapades that adorn its pages are generally in the form of quotations from Kennedy associates rather than assertions of fact by the author, Ralph Martin.

How many of the intimate details of Kennedy's life recorded here are accurate and how many are not is hard to determine. Certainly every rumor that I am aware of is discussed: Kennedy's love life, his Addison's disease, his severe back problems, his tempestuous relationship with Jacqueline, his cynicism, etc. Yet the book is not mean-spirited, and from its well-written pages emerges the figure of a privileged and complex man of great gifts who grew tremendously while in office and captured the imagination of a generation.

Readers interested in the Kennedy presidency will find this book hard to put down, but the account is not a substitute for more serious analyses. The Kennedy books by Sorensen, Schlesinger, and Halberstam, for example, put many of the events into clearer political and historical perspective. But a book like *A Hero for Our Time* provides a human dimension to the events of the era. The Kennedy mystique is still a force to be reckoned with in Democratic circles and national politics, and this volume describes how it began.

Most interesting are the speculations on the 1964 campaign and a possible second Kennedy term. A Kennedy-Goldwater contest would have been far more edifying than the character assassinations and the "Daisy Girl" commercials that occurred in 1964. Many possibilities for his second term were discussed: a rapprochement with China, social legislation on a more realistic scale than the Great Society, and a possible (but not at all certain) extraction of U.S. military elements from Vietnam. It is interesting to speculate, but part of the mystique is that we shall never know.

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Harrier: Ski-jump to Victory edited by John Godden. Oxford, England, and Washington: Pergamon-Brassey International Defence Publishers, 1983, 132 pages, $18.00 cloth, $9.00 paper.

John Godden is a public relations and marketing man with British Aerospace and has a professional background in journalism. *Harrier: Ski-jump to Victory* is copyrighted by British Aerospace and serves as a vehicle for advertising the Harrier. But the selling is far from heavy: the last three chapters are reserved for a résumé of the vertical short takeoff and landing (V/STOL) aircraft's development and deployment, as well as a survey of the Harrier's characteristics, operational advantages, and potential for further development. The opening chapter outlines the sequence of events that made up the British campaign in the South Atlantic. Ten subsequent chapters contain personal reminiscences. Basically, *Harrier* is another book on the Falklands War, seen through British eyes; but it is a good one and worth waiting for. Godden has obtained personal accounts from an interestingly broad cross-section of participants: Royal Navy squadron commanders, Royal Air Force pilots, and Navy Air Force engineers and technicians, including both officers and enlisted men. Revealed are insights into tactics, weapon delivery, escape and evasion, search and rescue, battle damage repair, and most other aspects of the human and technical challenges faced in war.

The stories are told with liberal helpings of British understatement, but the sheer satisfaction of a job well done and the level of excitement that operational combat generated shine through clearly. The underlying message from the accounts is that the highest possible standards of peacetime training will pay dividends when put to the test in war. To quote one of the Navy Harrier pilots, the commander of No. 809 Squadron, "It was to be my last operational flying appointment and it was my first continuous combat experience in twenty years of almost nonstop flying. . . . I think the most satisfying feature of my flying career was that the training and experience of those twenty years had proved to be right. There was little waste in those years . . . We did not fail."

This is a well-illustrated book, containing over 100 photographs—a good number of them published for the first time. But the personal accounts provide the real worth of the book: nearly all the previous book-length coverage of the war has been written by nonmilitary observers and analysts. These ten personal narratives by Harrier operators and maintainers offer a rich source of insight into the high-speed, complex demands of modern warfare.

Another point worth noting: the Harrier seems to be quite a good aircraft! Thus, British Aerospace may be forgiven for telling us so. Twenty-five years after the first design efforts toward it were initiated, the Harrier proved its worth in a unique demonstration of versatility and operational effectiveness. Godden's compilation explains in exciting detail how the aircraft went to war and "ski-jumped" to victory.

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Changing U.S. Military Manpower Realities edited by Franklin D. Margiotta, James Brown, and Michael J. Collins. Boulder, Colorado: Westview Press, 1983, 267 pages, $25.00.

This hardcover volume is a collection of essays derived from a conference of the Inter-University Seminar on Armed Forces and Society which was held in 1979 at Maxwell Air Force Base, Alabama. The original papers have been updated, but in the four years that it took to get the collection into print, the issue of military manpower ceased to

command the interest it still deserves. Furthermore, the results of more recent conferences or studies of the subject—notably, the Report of the Atlantic Council of the United States (which documented serious deficiencies in the military manpower system) and the Report of the President's Military Manpower Task Force (which essentially ratified existing policies)—have appeared already. So why bother with another book on the subject? There are several reasons.

First, despite the overwhelming success of the All Volunteer Force (AVF) since late-1980, serious problems remain unaddressed. Certainly, better pay, improved personnel management, and a much improved public image have combined to make military service attractive again. But the improvement in the AVF's fortunes coincided also with the longest, deepest recession since the end of World War II, leaving lingering doubts about the ability of the AVF to attract and retain quality and quantity in a healthy economy. Also unanswered by the AVF's current success are questions about its ability to maintain the strength of both the active and reserve components in a shrinking demographic pool. Yet another set of unanswered questions emerges from the dramatic increase of married enlisted members, single-parent military families, women in nontraditional military skills, etc. All of these issues are addressed in this volume.

Several essays in *Changing U.S. Military Manpower Realities*, written by some of the better-known scholars in the field (Coffey, Janowitz, Blair, and Segal), are restatements of familiar critiques. Essays addressing Air Force women in nontraditional jobs (by Robert Caldwell, David Hale, Frank J. Kane, and Patricia Dallenbach), Anne Hoiberg's essay on women in the Navy, and three essays probing the subject of the military family (by Edna Hunter, Richard Brown III, et al., and Sabra Woolley-Downs) are important additions that give this volume an unusual breadth for books of this genera. Too often, analyses of military personnel matters play numbers games with the quantity, quality, gender, and representativeness of the armed forces. Family issues receive almost no attention at all. The inclusion of women and families in this collection make it worthy of special consideration.

The introductory essay by Franklin D. Margiotta, which sets this book apart from most of the recent publications on the subject of military manpower, merits particular attention. Margiotta's thesis—essentially the message underlying the entire collection—is that "changing military manpower realities may be the single most critical and persistent issue impinging upon U.S. policy in the 1980s and 1990s." That position is not new, but I have not read a better single essay in support of that view in the half-dozen books on the subject that have appeared since 1980. Margiotta reviews the familiar facts and trends before reaching the same conclusion as others: "The sum of the evidence . . . suggests that legitimate questions remain about the ability of the [all volunteer] military to defend the United States adequately in the near future." Margiotta does not stop with the numbers game. He believes that the root cause of the military's people problems is social, not demographic or economic. During the decades since World War II, the United States has experienced a revolution in social norms and values. The result is a fundamental change in the way our society—especially youth—views and values military service and the way U.S. military services view themselves and society. "Today," Margiotta asserts, "it is increasingly difficult to convince young Americans to adopt the values, norms, and sacrifices of military service in a peacetime environment, and it is increasingly difficult to rationalize continued military sacrifice and service to quality military members." Furthermore, as the military has tried to adjust to changing social trends, "the self-image of the military as a macho, almost all-male, relatively white institution has been shattered." The result is "a sense of quiet doubt and frustration." This military identity crisis would exist regardless of what military manpower procurement and retention system the United States employed, Margiotta contends.

Thus, despite its clear shortcomings, Margiotta believes that the All Volunteer Force will continue for the foreseeable future "barring a major and threatening international crisis, or a significant shift in the U.S. political system and the Congress. . . ." His recommendations, which include a more systematic and integrated approach to manpower policy formulation, are worth reading, as are the other essays in this collection.

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Strategic Studies: A Critical Assessment by Colin S. Gray. Boulder, Colorado: Greenwood Press, 1982, 161 pages, $27.50.

Colin Gray boldly states that *Strategic Studies* is based on the following assumptions: because of state structure and geopolitics, the Soviet Union is a permanent adversary (not a "misguided friend"); since knowledge of nuclear-weapon technology is already widely dispersed, it cannot be removed as a permanent, important factor in world politics; international politics is a dynamic process wherein states rise and fall in relative influence, and nuclear weapons, though important, have not altered the basic nature of international political rivalry; and military power, even military nuclear power, remains the ultima ratio of security communications.

For Gray, there are no alternatives to strategy and strategic studies. They are a fact of life, and the bottom line for the United States is that we just don't have another option. It is, of course, regrettable that too often strategy has been "designed in error and executed without skill," but this circumstance does not change the essential situation. Soviet strategists are busy preparing to wage war efficiently. Gray believes, while, simultaneously and unfortunately, the strategists and politicians of the United States are more concerned with "the process of arms race and crisis" than with the actual conduct of war. Even the literature that pours out of the U.S. strategy think tanks is thin of actual operational analysis.

Gray's ability to distinguish between fair and unfair criticism of strategic studies is well illustrated in this interesting volume. Thus the author states that while it is easy to criticize the errors of the studies conducted in the 1950s and 1960s, most of that criticism is misdirected. Even critics can

miss the mark. The sensible thing to do, according to the author, is to criticize the vulgarization of strategic thinking that occurred during the second half of the 1960s in the McNamara Pentagon—an example of which is the policy of mutual assured destruction (MAD). Today, defense strategists are almost in consensus that the U.S. theory of nuclear deterrence of the 1960s was wrong (or inappropriate), that the theory of "limited war" does not work in the terms of domestic political viability, and, finally, that the U.S. approach to arms control in the 1970s was not appropriate for dealing with the Soviet Union. As for the future, "the several demonstrable weaknesses in strategic studies should be viewed not as discouragement, but rather as a challenge to do better in the future."

Strategic Studies is a valuable book worth reading and discussing by all students.

Dr. Robert H. Terry
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The GDR: Moscow's German Ally by David Childs. London: Allen and Unwin, 1983, 352 pages, $30.00 cloth, $14.50 paper.

The German Democratic Republic (GDR), with a rich heritage that is definitely and unmistakably Western, should offer an ideal case study of the applicability of Marxism-Leninism under highly favorable conditions. Yet David Childs of Nottingham University combines political history and structural analysis of the East German system to present a chronology of failure. He is embarrassingly reluctant to stress that fact. His book jacket summary refers to the GDR as "one of the most successful socialist experiments of our time." One hopes the irony was deliberate. Childs is at pains to show that the GDR began as an advanced industrial region. Its defense budget is hardly backbreaking. Its often-cited burdens of reparations and population loss—the latter checked by some of the most physically obvious barriers anywhere in the world—seem to be far in the past. On page after page, Childs establishes the burdens of irrelevant and incompetent planning. Still, he concludes that it is "a matter of judgment" as to why the GDR's alleged economic progress has provided so little of the good life for its ordinary citizens. Perhaps he is too victimized by British intellectual "goodthink" to state the obvious. What is wrong in the GDR is the fundamental approach of "scientific socialism": the mania for centralized control, the insistence on making every aspect of human life a political matter.

Childs is more effective in tracing the GDR's development from a zone of occupation to a client state that has become more Communist than the Soviet Union. The GDR's growing international legitimacy has involved other powers' abandonment or modification of positions rather than any significant initiatives or achievements of the GDR itself. Childs demonstrates clearly, albeit unwillingly, the fatuity of détente and *Ostpolitik* applied to a system more completely politicized, more dependent on the goodwill of the Soviet Union, than any other in Eastern Europe.

However, while the GDR has produced its own brand of ideologues working to make the system's control absolute, their success remains dubious. Childs does not probe deeply into the way things actually happen in the GDR, as opposed to the way they are supposed to happen. Nevertheless, he demonstrates that East Germans at all levels, intellectuals and workers alike, continue to question, to challenge, and to identify more with Germany as an entity than with the Democratic Republic under which they live. This enduring attitude, in turn, guarantees the GDR's survival as a police state—"liberal" by the standards of Heinrich Himmler or Lavrenti Beria perhaps, but a police state nonetheless, and far more deserving of characterization as such than Childs's soft-shoe approach allows.

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The First of the Few: Fighter Pilots of the First World War by Denis Winter. Athens: University of Georgia Press, 1983, 223 pages, $17.50.

Don't be fooled by this book's ambiguous and somewhat deceptive title. It is neither a "rehash" of the aerial campaigns of the Great War nor another set of biographies of the first aces. Author Denis Winter has adopted an altogether fresh approach. By examining a large number of pilot memoirs and important archival material, he has provided a composite picture of *how* the first British fighter pilots trained, fought, lived, and died.

Two motifs run through this volume and give it a freshness not always found in Great War monographs. The first is the terrible human price technological inferiority exacts in war. By 1909, Britain had spent £2500 on aircraft research and development as compared with £47,000 in France and £400,000 in Germany. (p. 18) This halting prewar aviation effort forced the Royal Flying Corps (RFC) to design or develop literally everything required to fly and fight—from aircraft to training programs to flight medicine. If the results were heroic and ultimately successful, the cost was horrifying. British losses were four times the German totals; and of the 14,166 RFC/RAF pilot deaths in the War, fully 8000 occurred in training accidents in the United Kingdom. (p. 36)

Winter's second recurring theme is the essential continuity of Great War combat flying with World War II and, by implication, with today. Despite the groundbreaking, at times groping, efforts of the early fighter pilots, the Great War aviators managed to develop the tactics, doctrines, and attitudes that formed the core of fighter pilot procedures in all air forces of the 1939-45 conflict and heavily influence us today—a remarkable achievement despite the fearsome cost.

First of the Few is a brilliant little book which told me more about air-to-air combat in the Great War than any other single volume. The author even managed to include a short chapter on aircraft maintenance and the peculiar problems and pitfalls of servicing the first fighters. For Great War aficionados, for the airman interested in his "roots," and even for the Project Warrior seminar or study group, this treatment of the development of Britain's fighter arm will prove informative and entertaining—while offering impor-

tant insights into the complex relationships of man, technology, and combat.

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Jet Planes of the Third Reich by J. Richard Smith and Eddie J. Creek. Boylston, Massachusetts: Monogram Aviation Publications, 1982. 400 pages, $69.95.

The qualities of this lavishly illustrated and beautifully produced book can be summed up in two words: magnificent and frustrating.

The intelligent organization, comprehensive scope, and—particularly—the effective use of pictorial material richly merit the "magnificent;" for the "frustrating," read on.

The hundreds of carefully selected photographs, many previously unpublished, plus judiciously chosen plans, perspective drawings, and full-color paintings illustrating the mind-boggling gamut of Nazi Germany's principal jet aircraft programs, explain the steep price and are at the heart of this book's appeal. The effective use of relevant pictorial material, well integrated with the smoothly written text and displayed to full advantage in the 9" x 1" format on high-quality paper, is arguably the book's strongest point. This is not simply a matter of visual attractiveness, for the photos are themselves a major source of evidence. The authors clearly know their photographic sources inside out. They have, moreover, intelligently defined the scope of their study and are to be commended for resisting the urge to depict scores of wild-eyed, pie-in-the-sky turbojet and ramjet proposals that never progressed beyond general arrangement drawings, concentrating instead on projects on which metal was actually cut. This still covers a lot of ground—rocket-boosted variants of the Messerschmitt Me 262 and alternate engine installations for the Arado Ar 234 are given full treatment, for example—but the study retains its focus.

The authors' research appears to have been exhaustive and has produced not only a balanced chronical but some surprises as well: the extent of efforts to make a night fighter out of the Ar 234 bomber, for instance, and the convoluted evolution of the Heinkel He 162 Volksjäger among them. The narrative is apparently accurate, at least within the limits of my ability to check and is more comprehensive than any other readily available source, seven of the nineteen chapters and two of the four appendixes being devoted to the operational record.

Frustration emerges with "appears" and "apparently" in the preceding paragraph, for the authors use no footnotes. Except where it is clear that they are relying on pictorial evidence or interviews with surviving participants, we can only guess at their sources. This is not a trivial matter, since, by implicit admission (p. 8), the authors are apparently limited in their ability to deal with original German texts. The value of the work to serious scholars is sharply reduced as a result and without benefit to the general reader. This is a point of particular frustration, since the addition of citations would have entailed negligible cost to the publisher and little additional effort by the authors, whose research, one suspects, was both thorough and sound.

The effects of this shortcoming are exacerbated by the absence of a comprehensive analytical overview. The point is most easily made by example: Three photographs show a late production Me 262 A-1a with an odd, checkerboard pattern, defense of the Reich tail marking. (pp. 350-51) This marking, the authors conclude, indicates the aircraft's probable assignment to an *Industrie Schutz Schwarm*, an industry protection unit. Both the marking and the assignment of first-line jet fighters to this type of unit were previously unknown to me, having encountered no reference to either in the secondary literature, and knowledge of them is certainly not commonplace. Yet we are not told how the authors arrived at their conclusion or on what evidence. They give us no hint of how widespread this practice may have been.

If, in fact, the Third Reich assigned numbers of its tactically most potent fighter to decentralized, ad hoc, local protection units—and the evidence of the photographs *is* persuasive—it helps to explain why such superior weapons were, in the aggregate, so ineffective. Certainly, clear evidence of a mind-set capable of producing the dysfunctional dispersion of operational assets as indicated is of major significance in itself; the point cries for documentation and amplification.

On a more general level, explicit reference is never made to the Third Reich's counterproductive fragmentation of developmental effort, to which this book offers eloquent, if inadvertent, testimony. Indeed, the Nazi regime's dispersion and dilution of some truly remarkable engineering talent is the major theme of the book; it is unfortunate that it remains an unstated one. We can only hope that Monogram, whose praiseworthy publishing efforts are unmatched in many important respects, will see fit to make use of historically trained editors for future offerings of this sort. The price they pay by not doing so is to reduce a potentially definitive work to a nicely packaged collection of source photographs for the specialist and an engaging narrative and tantalizing picture book for the general reader.

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The Miracle of Dunkirk by Walter Lord. New York: Viking Press, 1982. 323 pages, $17.95.

As a popular military author, Walter Lord generally approaches his subject from a "heroic perspective." His latest effort, a retelling of the Dunkirk evacuation of May-June 1940, is no exception. It combines his fast-paced writing style with an eye for the dramatic so that the role of the participants often comes alive for the reader. Especially well etched is his description of Vice-Admiral Sir Bertram Ramsay, "a resourceful, resilient man," who directed the evacuation effort from his headquarters in Dover and who later gained even greater renown as the naval commander for Overlord. Equally interesting are Lord's numerous vignettes of lesser-known persons such as Douglas Tough, a Teddington dock operator, who requested and at times commandeered boats on the Thames to assist in the evacuation. Lord was able to include similar sketches by contacting some 500 survivors, often with the help of the Dunkirk Veterans Asso-

ciation in Leeds, and the individual reports provide the backdrop for what those nine emotion-filled days were really like.

While the author concentrates on the British side of the story, the French ally and the German enemy are not altogether neglected. Hitler's famous "halt order" of 24 May, which allowed the Allies a three-day respite to establish an effective defensive perimeter around Dunkirk, is particularly well described as is the valor of the French soldiers during the final hours before the surrender. The book is further enhanced by clear, well-placed maps and excellent photographs, many of which have never been published before.

Nevertheless, despite its many positive features, Lord's account does have some disturbing aspects. For one thing, he overemphasizes the part played by the Stuka dive-bomber at the expense of the Me-109 and other Luftwaffe aircraft. In addition, though generally well researched, he does not seem to have consulted such standard works as Jacobsen, Bond, and volume two of the German official history. He has also failed to use the British War Cabinet and the Chiefs of Staff papers, and thus his treatment of Allied decision making at the highest levels is not as precise as it might have been. In fact, he seldom moves past the descriptive to the analytical level. As a result, the broader issues surrounding the Dunkirk operation—such as how it fits historically into World War II and the twentieth century and why it is important—these considerations make up only a small portion of the narrative. Yet it is good to keep in mind that Lord is not interested primarily in an analytical approach but rather in giving an accurate, yet vivid recreation of how 338,226 Allied soldiers managed to escape from almost certain captivity to fight another day. In this respect, *The Miracle of Dunkirk* is eminently successful.

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Fighter Pilot: The First American Ace of World War II by William R. Dunn. Lexington: University Press of Kentucky, 1982, 234 pages, $18.00.

As the title implies, William R. Dunn earned the distinction of becoming the first American ace of the Second World War. He accomplished that feat before the United States had entered the war, while serving in the British Royal Air Force's American-manned Eagle Squadron. Only twenty-five years old at the time, Dunn was already a veteran of both the Canadian and American armies. After service with the Eagle Squadron, he transferred to the American Army Air Forces in 1943 and saw action in the European and China-Burma-India theaters. After the war, Dunn advised and fought for the Chinese Nationalist Air Force and later became air consultant to the Shah of Iran, Mohammed Riza Pahlevi. He missed involvement in the Korean conflict but made up for it in Vietnam, where, although no longer on flying duty, he added to a vast collection of medals by earning a second Bronze Star during the Battle of Saigon.

Dunn outlines his tumultuous military career in straightforward prose. He does not reflect on the philosophical questions that war might present from the seat of a cockpit but instead vividly narrates the stirring, hard-living, sometimes riotous existence of the fighter pilot at war. Although Dunn offers a fatalistic account of the death and misery which was superimposed over the off-duty merriment, his tale, nevertheless, does not lack compassion. He is deeply moved by the sufferings of the maimed and by those who sacrifice their lives in combat. Still, on all occasions, Dunn is absolutely convinced that he is performing a necessary duty and that the cause he is fighting for is a noble one. Of course, that does not prevent him from venting his wrath at the desk-bound planners he considers responsible for sending so many young men to untimely deaths on poorly organized, futile missions.

Dunn had extensive experience flying the British Hurricane and Spitfire as well as the American P-47 Thunderbolt and P-51 Mustang. In a provocative appendix, he evaluates the leading Allied fighters of World War II and also offers insightful comments on the battle worthiness of an opponent he faced countless times in combat, the Messerschmitt 109. Dunn's opinions may surprise some veteran fighter pilots and students of air warfare, particularly his direct comparison of the Thunderbolt and Mustang.

Fighter Pilot is a true-life adventure story that can appeal to both the general reader and the military historian. It is highly recommended.

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Alexander of Russia: Napoleon's Conqueror by Henri Troyat. New York: E. P. Dutton, 1983, 335 pages, $17.95.

Here is a lively, popular biography of the czar of Russia who grew to maturity and ruled during the Enlightenment era of the French Revolution and Napoleon. The author, a Russian-born Frenchman, is very sympathetic to his subject, who by turns is shown as mystical and naive, cruel and calculating. As in his previous works on Tolstoy and on Catherine the Great, Henri Troyat is a fine storyteller; his writing is suspenseful and vivid, particularly on the private life of the czar. There is not much novelty in Troyat's interpretation of events, which takes little account of English and German works. His sources are primarily French and Russian memoirs of court life—testimonies to vanished gilded splendor.

In Troyat's account, we learn that Alexander did not wish to rule, at least not on the death of his grandmother Catherine; that he felt lifelong guilt about the murder of his father, the eccentric Paul I; and that despite his talk of reform, he was a firm believer in the autocracy of old Russia. Like Stalin later, Alexander understood the necessity of appealing to nationalism when his country was invaded. Believing that he had been chosen by God to destroy the evil Napoleon, Alexander readily proposed messianic plans; of course, he himself had fallen under Bonaparte's spell at Tilsit. After 1815, the peak of his European popularity, Alexander may well have suffered an identity crisis. His announced constitutional projects came to naught, always stopped short of

execution. Napoleon thought "something was always missing in the Czar"; Metternich found in him "a strange combination of masculine virtues and feminine weakness." For those who wish to learn something of Alexander and about Russian character in general, Henri Troyat has provided a most readable version.

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The Plot to Steal Florida: James Madison's Phony War by Joseph Burkholder Smith. New York: Arbor House, 1983, 314 pages, $16.95.

That one of the Founding Fathers, James Madison, could finance a shabby land-grab operation on the flimsiest of excuses and show how true was his dictum that governmental "power . . . will ever be liable to abuse" are the revelations with which Joseph B. Smith hopes to surprise us.

This sensationally titled book, *The Plot to Steal Florida: James Madison's Phony War*, has a double purpose. Smith explores a neglected and largely unsuccessful attempt by the U.S. government, through bullying, to acquire the Floridas cheaply from Spain when Spain was weak. The author then tries to make analogies between Madison's Floridian dabblings and U.S. covert operations elsewhere approximately 160 years later. Smith does better with his first aim than with his second.

The method of acquiring Florida was to persuade Anglos, so-called patriots living under Spanish rule, to revolt, declare an independent republic, and almost at once request its annexation by the United States. If resident Anglos were content under the Spanish flag, then spurious armed patriots (enlisted on promises of Floridian land) could be introduced from neighboring states of the American union. In 1810, this technique worked in that part of Spanish West Florida around Baton Rouge; and in 1812, in East Florida at Fernandina. However, then, at the onset of war with Britain, Madison withdrew his support for the East Florida patriots. Part of West Florida stayed American.

Smith recounts all of the events in an interesting, even exciting way. Sometimes, however, when he seems to be striving for literary effect, he strikes a wrong note—for example, describing seventeenth-century Indians as doing "the hard-hat work" in building a fort, or having the Founding Fathers "put on their togas one arm at a time." Smith errs, too, with such generalizations as "the War of 1812 and the Vietnam War are broadly analogous" and "James Madison was greatly like them [i.e., Nixon and Kissinger] but not entirely." Such strained comparisons spoil *The Plot to Steal Florida*.

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The Civil War Almanac edited by John S. Bowman. New York: Facts on File, 1983, 400 pages, $19.95 cloth.

The Civil War Almanac, edited by John S. Bowman, has pretensions of sitting on the same shelf as E. B. and Barbara Long's *The Civil War Day by Day*, Mark M. Boatner's *The Civil War Dictionary*, and Ezra J. Warner's two reliable source books, *Generals in Gray: Lives of the Confederate Commanders* and *Generals in Blue: Lives of the Union Commanders*. The inclusion of an introduction by distinguished historian Henry Steele Commager adds weight to the book. Probing the reasons why modern America continues to be fascinated with the Civil War, Commager concludes that while the war settled many issues, many more remain open and current.

Immediately following the introduction is a section on the chronological history of the causes of the war, the war itself, and reconstruction. Opening with a treatment of the introduction of black indentured servants into Virginia in 1619, what follows thereafter is largely a recapitulation of *The Civil War Day by Day* in condensed form. No mention or credit is given to the author(s) of this section.

The section on weapons of the war contributes nothing new or original. Indeed, it is introductory in nature, and material that is presented is often quite meager. For example, two excellent illustrations are captioned "Civil War cannons," with no attempt at more precise identification. Another illustration of a Napoleonic piece appears to be a crude line drawing pasted in as an afterthought.

The brief section on naval warfare is well written but without any identification of the contributor(s). It too lacks depth, and no citations are given.

The final section contains biographies of major leaders on both sides—political figures as well as military personnel. It seems useful and would be particularly helpful to those starting to study the Civil War. The information was complete; but again, no citations or author credits are provided.

Leaving much to be desired, the illustrations, in many instances, are either poorly captioned or fictitious. A color rendition of Union uniforms, taken from a well-known modern series of prints, is labeled as a Union recruiting poster.

For the uninitiated, *The Civil War Almanac* is an excellent introduction; for the scholar or the seasoned professional soldier, it leaves much to be desired. There is no bibliography and absolutely no indication of sources for the material within. Much of the information appears to have been culled from standard secondary works—mainly *The Civil War Day by Day*. Editors who may have worked with Bowman are not listed, and there is no hint to the authorship of the various sections. *The Civil War Almanac* fails as a reference, offering no new or significant contribution to the study of the American Civil War.

Dr. Robert D. England
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Jane's Airport Equipment edited by David F. Rider. London: Jane's; Boston: Science Books International, 1982, 471 pages, $140.00.

This is another first in the Jane's line of technical annuals. Obviously, it is not something that every *Review* reader will run right out and buy, but this particular volume will certainly prove valuable to some Air Force operations.

Following a short introduction by the editor, David Rider, and a glossary of specialized terms, the bulk of *Jane's Airport Equipment* covers every conceivable piece of equipment involved in both military and civilian airfield operations. The major areas covered are emergency and fuel services, passenger and cargo handling, as well as the principal pieces necessary for aircraft maintenance. Air traffic control equipment is also detailed, including airfield lighting, radar, navaids, and communications. Each item is thoroughly covered and well illustrated.

Who is likely to find this book helpful? Those flying out of Andrews to all varieties of airfields will find this informative as will USAF aerial port squadrons, logistics planners, and base operations personnel. Air Force civil engineering might also find it worthwhile, as well as Military Airlift Command crews flying into non-USAF airfields overseas.

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U.S. Commercial Aircraft by Kenneth Munson. London: Jane's, 1982, 223 pages, $19.95.

At first glance, this book appears to be just another illustrated history of American airliners; but, in fact, its scope is much broader than that. Kenneth Munson, the prolific author of *U.S. Commercial Aircraft*, has done an excellent job of presenting a chronology of domestic aircraft employed by the nation's airlines (large and small) and by private firms and individuals in a wide variety of commercial applications.

As might be expected, Munson's book is designed around a "Jane's" format. Each aircraft is presented in at least one excellent photograph, accompanied by a narrative indicating major technical and operational characteristics. With only one or two paragraphs available per plane, the author cannot describe every variant and model change; but he does include those that are significant. Munson covers everything from the earliest Benoist flying boats of 1913 to the Boeing 757 and 767 airliners of 1982. The famous planes of Fokker, Douglas, Lockheed, and others are there, as are such obscure creations as the Barnhart "Wampus Kat" and Budd "Conestoga." Lightplanes and helicopters used in commercial roles are included also.

As the publisher's dust jacket description indicates, the book does not really unfold the story of the airline industry that many of these aircraft were designed to serve. Nevertheless, because the presentation of each subject airplane is chronological, Munson presents sufficient background to give the reader some sense of continuity. In addition, Munson has written an introduction that does sketch the development of U.S. domestic and overseas commercial aviation before, during, and after the Second World War. He also includes a brief, alphabetically arranged listing of most U.S. airlines, together with their significant formation and operating dates. These help fill in the background to the aircraft subsequently described, as does his appended technical data chart, which expands on the information provided in the main body of the book.

The book should be helpful to those readers having a need for a well-organized, thorough, pictorial coverage of U.S. commercial aircraft that have been developed through the years.

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American Combat Planes by Ray Wagner. Garden City, New York: Doubleday, 1982, 565 pages, $29.95.

This is the third edition of this voluminous work, and it is a good start for anyone completing a reference library on American military aircraft. *American Combat Planes* covers the entire range of U.S. military *combat* aircraft from the very earliest days of the Wright fliers up to 1982. Although it makes no attempt to cover the cargo or liaison aircraft of the military, it is probably the best current source of quick reference material on U.S. combat planes. This is the type of book that you would use to look up that elusive aircraft you've heard of but never seen or to identify that strange-looking airplane you photographed at the last military open house.

The thirty-three chapters of the book are well organized into three major sections, with each chapter covering a major aircraft category. For example, in Part I: The Biplane Period, 1917-32, there are separate chapters on multiengine bombers, Army pursuits, Navy flying patrol boats, and a good introductory chapter on the role of the combat plane.

Ray Wagner includes virtually every type of military combat plane, whether it was a mainstay with thousands produced, a prototype, a limited production, or, in some cases, only a mockup (such as the mysterious Republic XF-103). The text is necessarily limited by the amount of information available on each type of aircraft, and it offers no combat information or tales about the exploits of particular aircraft or pilots. Instead, the book provides a wealth of information on power plants, performance characteristics, and armament.

The new third edition is up-to-date with the latest information on the F-16 and the F/A-18. The only source material possibly more current would be a weekly industry magazine, such as *Aviation Week & Space Technology*. Those interested in the high/low technology mix proposed by some defense experts can find some interesting parallels in the past by simply thumbing through this book. For example, in the U.S. quest to produce a cheap fighter out of nonstrategic materials during World War II, two Wooden Bell XP-77 fighter prototypes were built and tested. "The basic concept that a small, maneuverable fighter could be produced of nonstrategic materials at less than average cost and time was not borne out. Performance fell below the 350 mile per hour estimated, and a low-speed fighter that cannot force an enemy to do battle does not suit offensive tactics." This sounds remarkably like the results one could expect if the United States adopted the idea today that a "sky full of F-5s is better than a squadron of F-15s." Perhaps we can learn from history. As one experienced historian commented after reading the section on the XP-77,

"Here was an airplane that could do everything *less* well than its contemporaries, but at a lesser cost."

This work is not a book to curl up with and read by the fire. Rather, it is the perfect type of reference to use to research an individual aircraft quickly in its various modifications and models or to review a period of military aviation. With more than 1400 photographs and a well-written text, *American Combat Planes* is an excellent contribution to aviation history.

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Winged Wonders: The Story of the Flying Wings by E. T. Wooldridge. Washington: Smithsonian Institution Press, 1983, 185 pages, $25.00 cloth, $14.95 paper.

The central theme of E. T. Wooldridge's effort is the historical development of tailless aircraft from Alphonse Penaud's rubber-band-powered model (1871) to the graceful flights of John Northrop's winged bombers during the 1940s. *Winged Wonders* is developed in three parts. Part I is a history of tailless aircraft development from around the world prior to 1939. Part II, on the "Northrup Years," covers the development of the American flying wings from the early 1920s to the scrapping of the Northrup B-35 B49 bombers during the early 1950s. Part II also includes a section that discusses the application of tailless aircraft technology to both the military and general aviation markets from the early 1950s through the ultimate in tailless aircraft, the space shuttle *Columbia*. The third part, or Appendixes, provides a wealth of information for the aircraft buff. Included are details about the step-by-step restoration of the Northrop N-1M (Northrop's first true flying wing); the aircraft specifications for the XB-35, YB-35, and the YB-35A Flying Wings; the Flying Wing Bomber Record; and a Table of Early Tailless Aircraft.

This book started out to be the story of the restoration of the Northrop N-1M at the National Air and Space Museum's Paul E. Garber Facility. As the author gathered material for his account, he discovered that as significant as the Northrop contributions were, they were only a small part of the historical development of the concept of tailless aircraft. Thus, his study expanded in breadth in its present form.

Wooldridge has done an excellent job in presenting historical facts that he gathered not only from written sources but also from firsthand interviews of those people intimately involved in the development of the flying wings. His chapters are thoroughly footnoted and supported by an exhaustive bibliography, which contains sources found not only in the United States but also in other countries involved in the historical development of tailless aircraft, namely, Canada, Denmark, France, Germany, Japan, Switzerland, Turkey, the United Kingdom, and the Soviet Union.

While *Winged Wonders: The Story of the Flying Wings* is not the only book available on tailless aircraft, it can be labeled the first comprehensive history that covers their development in both the United States and Europe. Wooldridge provides both a pictorial history of tailless aircraft and the words to bring his subject to life. In doing so, he has done a service to the aircraft buff as well as those interested in aviation history.

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The Wildcat in World War II by Barrett Tillman. Annapolis, Maryland: Nautical and Aviation Publishing Company of America, 1983, 288 pages, $17.95.

The last in Barrett Tillman's series of aircraft "biographies," which he initiated with *The Dauntless Dive Bomber of World War II* in 1976, *The Wildcat in World War II* continues the same outstanding format as its predecessors. It is an authoritative, well-documented, flowing narrative of the Wildcat's history. Throughout the book, unimposing footnotes authenticate the lesser-known facts, while the documentation collectively appears at the end. The book does not cover every variation of engine, armament, or equipment employed by the Wildcat; instead, it concentrates on the operational phases of aircraft.

Tillman has included many outstanding operational photographs, personal insights of former Wildcat pilots and Grumman aircraft officials, and views of historians who are specialists in their fields of aviation history. His bibliography is divided conveniently into books and articles, followed by a lengthy and comprehensive index.

Wildcat has a remarkable personal quality often absent from operational histories; it is not drama documented with history, but historical fact presented as it happened, with all the frailties, mistakes, inconsistencies, and humor that make up life. While the readers do not witness the pilots more mundane routine, they can still feel the pain of broken bones caused by the whirling landing crank as the pilot sticks his knee in its path to keep it from totally unwinding! Although some of the nomenclature may be foreign to some readers, most is old hat to aviation enthusiasts, and tables are provided for the newer words. Tables also indicate total production rate, naval and marine aces, Wildcat model variants, and existing Wildcats for those who would like to get a bit closer to history.

Without question, Tillman's account of the Wildcat is a must for those who are interested in the aviation history of the Pacific theater during World War II.

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AWARD

The Air University Review Awards Committee has selected "The Inferno of People's War," by Major Thomas G. Waller, Jr., USA, as the outstanding article in the March-April 1984 issue of the *Review*.

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