APJ

The Professional Journal
of the United States Air Force

AU PRESS

AIRPOWER JOURNAL

Summer 1999

AIRPOWER JOURNAL

Summer 1999 Volume XIII, No. 2 AFRP 10-1

FEATURES

DEPARTMENTS

Flight Lines

MAJ M. J. PETERSEN, EDITOR

Hasta Luego, Até Logo, Good-Bye, Log Off

Loyalty to petrified opinion never yet broke a chain or freed a human soul.

—Mark Twain

Do what you can, with what you have, where you are.

—Theodore Roosevelt

TWENTY YEARS AGO, as I embarked upon my career, Lt Col Dave Mets, former caretaker of the professional dialogue as editor of the *Air University Review* and a gentleman I have come to know and value as a friend and advisor, wrote at the conclusion of his uniformed tenure in the Air Force, "I thank both readers and contributors for what I perceive to be a rising support of the *Review* and ask that you continue the trend for my successor." I could hardly say it better.

Looking back over both my own career and that of the professional journal, I am heartened by what I see. Although the title has changed to *Airpower Journal* and it boasts four-color covers (as do the Portuguese and Spanish editions), 128 pages, and electronic publication on the World Wide Web, the soul of the *Journal* really hasn't changed. It is still your journal. We editors are mere caretakers—facilitators of the dialogue. It is you, our readers, who shape not only the *Journal* but also the Air Force.

As my career wanes, coincidentally tracking both the decade and millennium, I glance at the table of contents of the June 1949 issue of the *Air University Quarterly Review.* The lead article, concerned with airpower, pondered whether the Air Force should "adopt intercontinental operations." Fifty years later, now concerned with aerospace power, *Airpower Journal* leads off with Frank Finelli's discussion about transforming its air aspects.

Ten years later, in the summer of 1959, the *Air University Quarterly Review* aimed to "stimulate professional thought concerning *aerospace* strategy, tactics, and related techniques" (emphasis added), and Maj Gen Henry Viccellio analyzed the "composite air strike force," an entity remarkably similar to today's "expeditionary air force."

By the summer of 1969, with the Air Force deeply embroiled in the Vietnam War, the *Air University Review* focused the professional discourse on what it called "limited war." Thirty years later, the Air Force finds itself entangled in a nasty matter in the Balkans, and its aircraft patrol exclusion zones over northern and southern Iraq. Instead of limited war, Dr. Abigail Gray-Briggs and Lt Col Michael MacIver explore the mental transition from war fighting to peacekeeping operations in "Bombs, Then Bandages."

In the summer of 1979, *Air University Review* occupied itself with conflict in Europe and concerns about leadership. These are hardly transient matters—witness the fact that 20 years later, the Soviet Union has collapsed, the cold war is over, NATO is involved in a shooting war in the Balkans, and the Luftwaffe is flying combat missions. So, in

1999, in the context of oftentimes perplexing interservice and interallied relationships, we turn to Col Thomas E. Griffith Jr. to sort out the sometimes tangled aspects of command in his article on Kenney, MacArthur, and Arnold.

The summer issue of 1989 sported both a new look and name. Reconstituted two years earlier as the *Airpower Journal,* the professional journal readjusted its focus to the operational level of war. Unsurprisingly, then, a perusal of this edition reveals an emphasis on doctrine and military thought. At that time, the sandy foundation of the Soviet Union had begun to wash away, and that house of cards would come tumbling down only a year later. After 10 years, we still feel the repercussions of that collapse; we and our coalition partners have fought a war with Iraq over its invasion and occupation of Kuwait; the Air Force is flying combat missions over both the Balkans and Iraq; and airpower has become the method of choice for responding to the world's hot spots. Recognizing our dependence upon computers, the current issue explores their role in information warfare in a piece by Col Carla D. Bass that touches on organizational structure and one by Maj David DiCenso that addresses legal issues.

Fittingly, my friend Dave Mets (who now appends the title *Dr.* to his name) circumscribes my career by appearing in this, my last issue with another of his incredibly popular discourses on "fodder" for the air professional's bookshelf. This time he returns to his roots (he is a graduate of the United States Naval Academy) to furnish shrewd insights into recent publications on airpower and naval warfare.

In the summer of 1999, the professional journals—the English, Portuguese, and Spanish versions of *Airpower Journal* as well as the two electronic versions (*Air Chronicles* and *Airpower Journal International*)—stand poised to spring into the new millennium. Our audience is continually growing: we now reach every Spanish- and Portuguese-speaking military service around the globe, and our electronic editions open the doors to a worldwide audience via the Internet. During my three years as associate editor, senior editor, and editor, *Air Chronicles, Airpower Journal International,* and the Spanish and Portuguese editions have become truly individual journals with their own editorial focus. Without you and your contributions, however, we never could have enjoyed such success. You have my heartfelt thanks for keeping the professional dialogue flowing!

The *Journal*'s new editor in chief is Lt Col Eric Ash, who should be in place by the time you read this. As Dr. Mets said of his successor, Colonel Ash strikes a near-perfect balance between academic and professional qualifications. He graduated from the Air Force Academy, earned a PhD in history, and authored a biographical work on Sir Frederick Sykes and the revolution in airpower. I bequeath to him a growing dialogue, one that has never been constrained by anyone in the chain of command. I thank each of them for their courage in having allowed me the editorial leeway to keep the professional dialogue flowing by publishing contentious, provocative articles and critical commentary. I was fortunate to inherit this happy state from my predecessor, Col Bill Spencer, and now I gladly (and with some small measure of pride) pass it on. □

Transforming Aerospace Power

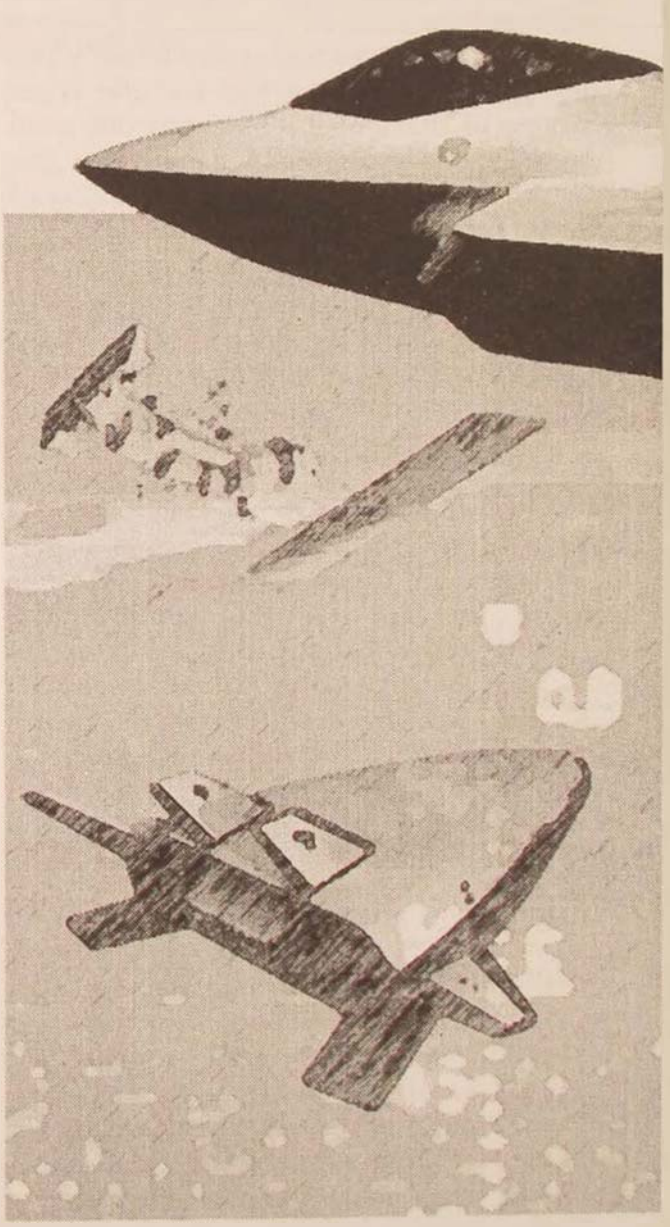
Frank Finelli*

Our Vision can be characterized in one word: Transformation.

—Secretary of Defense William S. Cohen

THE UNITED STATES is pursuing a defense strategy developed during the Quadrennial Defense Review (QDR), stated in terms of "shape, respond, and prepare now." The latter tenet of this strategy implies change in defense capabilities to leverage advances in technology and address operational challenges envisioned for the early twenty-first century. Certainly, aerospace power will have a key role in our future. But the real question to consider is whether this nation will develop the bureaucratic and political resolve to make the necessary investments and key decisions to truly transform aerospace power as Secretary Cohen indicates, or whether we will merely evolve the current state of aerospace affairs. To put the bottom line up front, the United States is destined merely to evolve aerospace power unless we demonstrate, in a joint setting, the capability to overcome vulnerabilities associated with technical shortfalls and operational challenges in areas such as anti-access, target identification, and force protection.

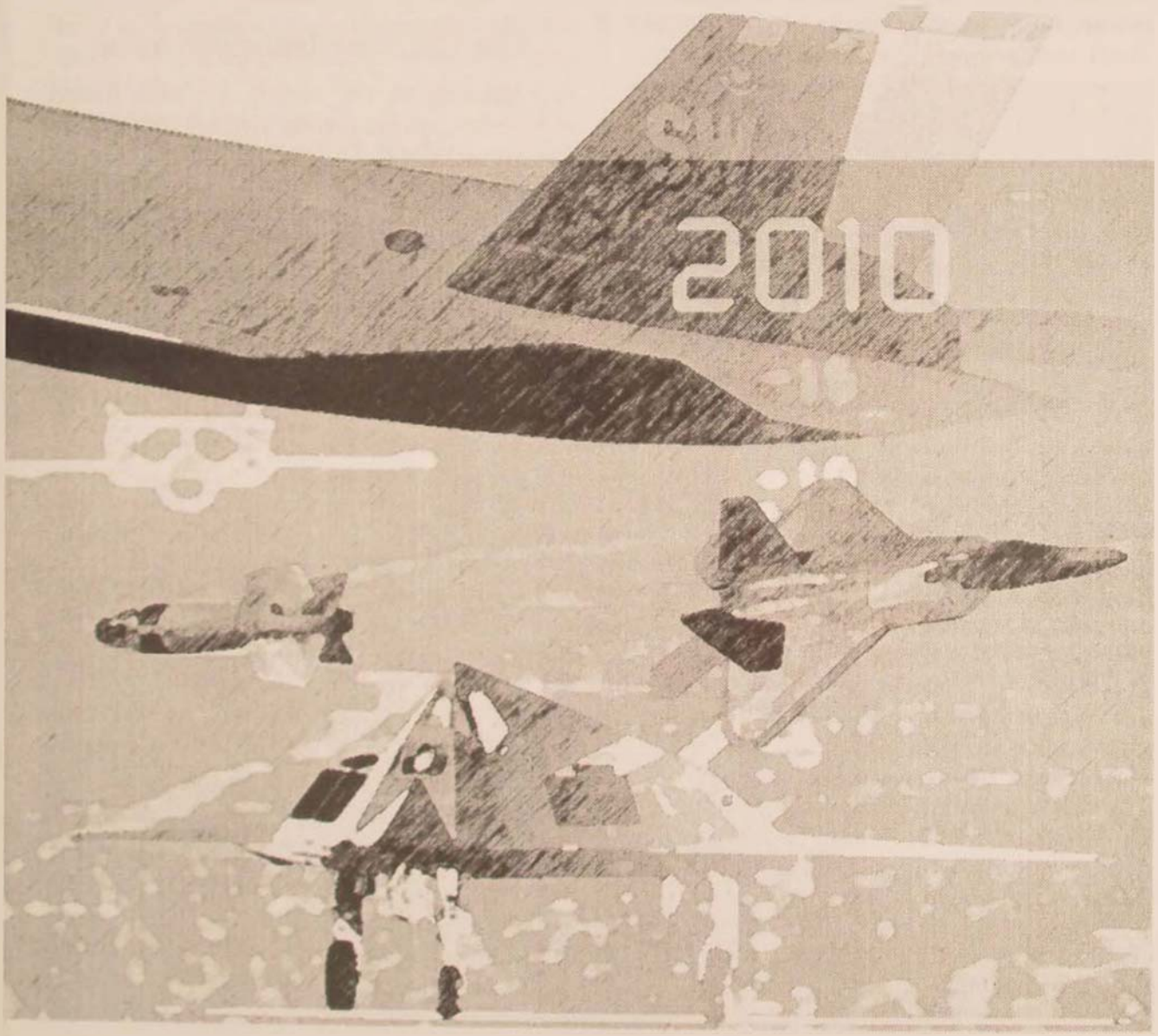
Before discussing the future of aerospace power, we need to define transformation in general and differentiate it from a mere evo-



*This article is adapted from a speech presented at the Institute for Foreign Policy Analysis Conference—"The United States as a Twenty-First-Century Aerospace Power"—in Boston on 19 November 1998.

lution of the status quo. In short, we can think of transformation as innovation on a scale sufficient to enable a discontinuous change in military affairs. Some people associate this notion of discontinuous change with a revolution in military affairs. The proposed transformation of aerospace power involves not only the pursuit of new technologies but also the adoption of new organizational structures and new operational concepts. The National Defense Panel (NDP) described some attributes of this transformation as it relates to aerospace power: fewer numbers of short-range aircraft; emphasis on short takeoff and landing; multispectral stealth; new approaches to long-range, precision strike; and distributed, survivable, and redundant satellite systems.[1] Others postulate that this transformation includes the increased migration of capabilities to space and unmanned platforms and the adoption of a decisive halt-and-containment paradigm.

Yet, we must address several key issues before increased aerospace investments will gain consensus support within the Pentagon



or on Capitol Hill. First, aerospace power must demonstrate the technical performance to be decisive. Second, the end-to-end operational architecture for the employment of aerospace power must address an adversary's asymmetric exploitation of its vulnerabilities. And third, these decision makers must be comfortable that increased aerospace investment, as opposed to a reallocation of resources across capabilities, is required.

With respect to this latter point, Sen. Bob Smith (R-N.H.), chairman of the Strategic Subcommittee of the Senate Armed Services Committee (SASC), has articulated a view that the US Air Force is shortchanging space power. In short, his assessment is that the technical and operational potential for space-based capabilities is so compelling that *space* should play a bigger role in aerospace power: "I do see an opportunity for us to exploit this period of unchallenged conventional superiority on Earth to shift substantial resources to space."[2] This article complements Senator Smith's views and primarily assesses technical and operational aspects of the *air* side of aerospace power. Correspondingly, it provides some background on the case for transformation, describes challenges for the aerospace paradigm, and assesses Congress's perspective on several aspects of an aerospace transformation.

The Case for Transformation

Previously in US history, we have found ourselves unprepared for threats we faced at the outset of war. Our nation rallied to overcome these threats eventually, but at a cost—not only in fiscal terms but also in lives cut short. Today, the United States stands as the sole global superpower in an era when no nation truly threatens our vital interests. But in the near future, technology will enable a different range of capabilities and threats that we must dominate to sustain this global posi-

Too many, too few, or just the wrong kinds of aircraft? Are there too many options and proponents for too little money? What risks are acceptable in fielding tomorrow's weapons while fighting today's wars?

tion. So the challenge for us is to transform defense through leveraging technology, changing organizations, and developing new operational concepts to combat these future threats successfully.

However, the United States has yet to gain a consensus about the future path of our military capabilities and the defense policy required to achieve it. The QDR concluded that "our future force will be different in character. . . . New operational concepts and organizational arrangements will enable our joint forces to achieve new levels of effectiveness."[3]

Unfortunately, the QDR did not touch the sticky issue of prioritizing capability initiatives to articulate how and when our future force would be different in character. Although Gen John Shalikashvili, former chairman of the Joint Chiefs of Staff (JCS), crafted *Joint Vision 2010* to guide such a quest, to date, this vision has failed to effectively focus the Pentagon's development efforts, largely because it is being vaguely interpreted to mean all things to all people.[4]

Consequently, Congress is confronted with numerous, competing approaches to future warfare. Some advocate aerospace power's precision strike; others argue for land power's positional advantage; still others argue for a new, rapid dominance that destroys an enemy's will to resist; and the list goes on. These disparate views bring several problems for Congress. First, these approaches require radically different investment policies, organizational structures, and doctrine. Second, these approaches, taken together, are unaffordable and unrequired. Third, we have today no unbiased way to test the effectiveness of these competing approaches. And fourth, all these approaches may not even address the real threats to our twenty-first-century national security.

The military services have already submitted a fiscal program for the years all the way out to 2005. The concern is that this program focuses too heavily on the here and now and imprudently chooses to postpone key investments in pursuit of transforming defense for the future. For example, the services are planning to replace many of their legacy strike systems on nearly a one-for-one basis, without recognizing the capabilities that other services bring to the joint war fight. The defense plan supports the procurement of nearly four thousand advanced tactical fighters, reported to be two to six times more effective than the aircraft they replace; over two thousand advanced attack and armed reconnaissance helicopters; and thousands upon thousands of new, long-range, precision-guided munitions as well as cannon and missile systems. But what is the aggregate joint requirement that justifies all this strike capability? Furthermore, even if we require the capabilities that each of these systems brings, what is the coherent, crosscutting assessment process that determines how many of each of these systems we should procure to support the national security strategy?

In short, one of the primary reasons the JCS testified before the SASC in September 1998 about an approximate $25 billion per year shortfall in the defense budget is that we have a crisis in joint requirements. Despite the Clinton administration's claims to have added over $110 billion to the defense program from fiscal year 2000 through fiscal year 2005, the joint chiefs continue to testify of double-digit annual shortfalls in the defense budget. In short, this requirements crisis fosters an environment wherein each of the services independently pursues a force structure and investment strategy that fields a far more effective conventional military. But we are doing so at a time when the conventional military capability of our adversaries is largely in decline. As it is, we estimate that US defense spending exceeds that of the next 10 nations in the world combined—and many of those nations are our allies.[5]

The demographics of international defense expenditures simply do not support a conclusion that our potential adversaries are investing their scarce defense resources to buy advanced tactical fighters and tanks by the thousands. Rather, they are pursuing asymmetric capabilities in areas such as anti-

access, distributed surface-to-surface strike, space degradation, information warfare, and what Secretary of the Navy Richard Danzig calls weapons of mass disruption. So the real growth in defense requirements most probably deals with combating asymmetric, as opposed to conventional, capabilities. But that is not where we are placing our effort, and this is a mistake.

From this perspective the NDP made a compelling argument that fundamental, not incremental, change is essential. Panel members concluded that we face greater risk in the future than we face today due to the nature, magnitude, and trend of envisioned operational challenges. Furthermore, they assessed that these challenges, when juxtaposed with opportunities driven largely by the revolution in information technology, may be so extraordinary that they could literally drive discontinuous change in the way antagonists will fight us—and the way we choose to fight them.

Consequently, the NDP questioned the course of existing policy and recommended instead that we pursue with priority a policy to transform today's post-cold-war force to tomorrow's information-age force. The panel's recommendation is direct and unmistakable: "The Department of Defense should accord the highest priority to executing a transformation strategy. . . . In the absence of additional defense funding, the transformation could be funded by infrastructure and acquisition reform, reducing the operational tempo associated with nonwarfighting activities, canceling acquisition programs, or reducing force structure and end strength."[6]

The panel's recommendation implies that we should reconsider decisions that commit enormous resources to forces and platforms which may be less relevant in the future. We do not need to focus on known and familiar threats we can already effectively deal with. Rather, we need to identify potential vulnerabilities across the spectrum of our joint-force capabilities and invest in areas that will minimize them or counter an adversary's response to them—either conventionally or asymmetrically.

The Aerospace Paradigm

Aerospace advocates propose that the employment of an increased array of air and space capabilities can leverage technology to address many operational vulnerabilities and ensure our national security with far less risk to forces and at less cost than alternative approaches. This paradigm asserts that the United States can rely primarily on aerospace assets to control an adversary through information superiority, global reach, and precision strike. At the high end of the operational spectrum, it argues that we can decisively halt and contain massive land assaults primarily with bombers, tactical aviation, and missiles. Furthermore, the aerospace approach contends that we can reduce an enemy so significantly that a large ground counteroffensive is never required. At the mid and lower ends, this paradigm advocates that we can employ aerospace power to coerce adversaries to adjust policy or deter them from taking actions in opposition to US and allied interests. This approach has huge implications: increased airpower investment; downsized land forces; and new, joint concepts in which land forces support decisive air operations by herding targets, securing the front, and mopping up the battlefield.

As supporters of aerospace power, we should challenge our thinking about the future viability of such an approach. We should also consider the tactics that our adversaries may employ to mitigate the effectiveness of aerospace power. Correspondingly, before we pursue investing in an aerospace transformation, we have to demonstrate the performance of this approach and understand its associated vulnerabilities. Critics have been suspicious of aerospace's claimed performance before and since Operation Desert Storm, and they continue to doubt whether airpower can decisively engage the broad range of targets we may face in the future.

Congress certainly heard the Department of Defense's (DOD) and manufacturers' claims of weapon system performance during the Gulf War. Nonetheless, Capitol Hill focused on the General Accounting Office's (GAO) assessment of airpower in the Gulf, which concluded that these claims "were overstated, misleading, inconsistent with best available data, or unverifiable."[7] But GAO's comments on the limitation of airpower drew the significant attention: "Air power was inhibited by the limited ability of aircraft sensors to identify and acquire targets, the failure to gather intelligence on critical targets, and the inability to collect and disseminate [bomb damage assessment] in a timely manner. Similarly, the contributions of guided weaponry incorporating advanced technologies and their delivery platforms were limited because the cooperative operating conditions they require were not consistently encountered."[8]

Critics acknowledge the finite availability of precision munitions during the Gulf War and the advances that have been made in munitions, sensors, and command and control processes since that time. Regardless, they still contend that employing aerospace power effectively on the open desert of Southwest Asia may be a far more elementary undertaking than destroying and containing disjointed, infiltrating forces in the terrain of Korea or Yugoslavia. More generally, they argue that aerospace power will never be decisive because our command, control, communications, and computers (C^4) and intelligence, surveillance, and reconnaissance (ISR) capabilities will remain unable to differentiate between friend, foe, noncombatant, and decoy in real time. This is the heart of the target-identification challenge.

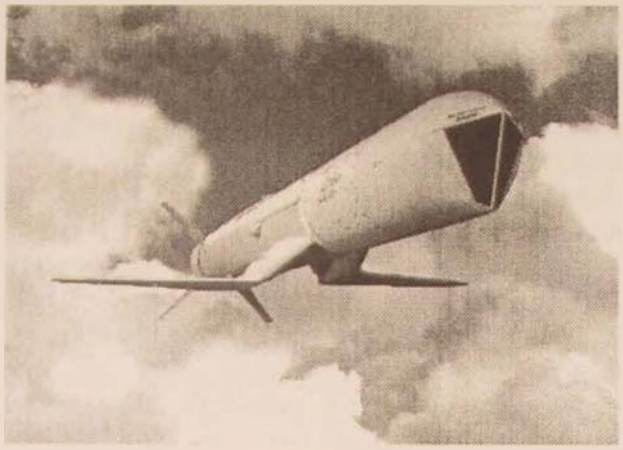
The United States either has in its possession or will soon possess the airpower platforms and munitions to hit any given point on the ground, virtually anytime and anywhere on this planet. But that is not the issue. The issue is ensuring that a viable target is at that location when the effects are delivered. Aircraft and ordnance are only a subset of the operational, end-to-end architecture associated with the employment of aerospace power. In short, until we demonstrate in a joint venue the technical capability to fuse information from the strategic, operational, and tactical sensors of all services and agencies; automatically recognize targets; and dynamically plan missions, we will never be able to defeat a theater-level set of fixed, fleeting, and moving targets with aerospace power.

If an adversary chooses to mass his military formations deep in the battle space and segregate them from his populace, then aerospace power may work wonders. However, an adversary is likely to disperse his force to make us employ our aircraft and precision munitions at uneconomic rates. Furthermore, adversaries may mix combatants and noncombatants within the effective radius of our weapons, thereby placing the United States in a position of causing unacceptable collateral damage. Military writings in nations that are our potential adversaries already emphasize similar tactics to exploit vulnerabilities associated with an aerospace approach.[9]

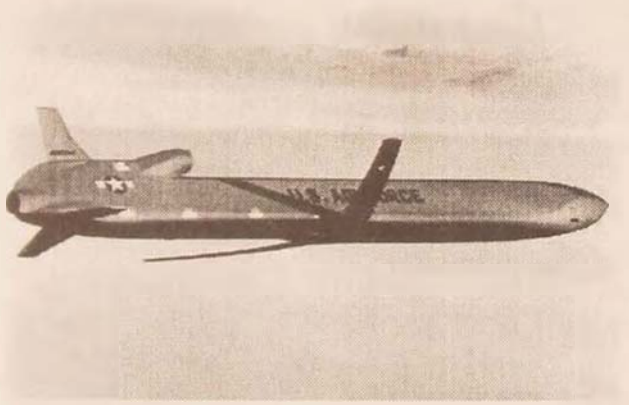
Yet, these current operational challenges do not even address a wide range of asymmetric tactics that limit the effectiveness of an aerospace approach, some of which have already been employed by Saddam Hussein and Slobodan Milosevic. These tactics include placing civilians within fixed targets, hiding high-value military assets in urban areas, employing multispectral countermeasures to disrupt terminal seekers, and attacking our in-theater air basing. In addition, within the last year, we have witnessed in Operation Desert Fox the anti-access problems described by the NDP that limit the employment of short-range, land-based tactical air (TACAIR). Interestingly, this access limitation originated with our allies and coalition partners—not our enemies.

Assessment

To date, we have demonstrated neither the required technologies nor the operational processes required to overcome vul-



Above: *The extended-range variant of the US Navy's standoff land attack missile (SLAM ER) and* (below) *a conventional air-launched cruise missile (CALCM). Do differences over guided-weapon design and employment result from reasonable, even prudent, interpretations of the services' expertise and experience or unnecessary concessions to service parochialism?*



nerabilities in the end-to-end architecture for the application of aerospace power. Therefore, it is imprudent to conclude that claims of decisive halt and containment are valid and that we should invest additional resources to pursue this approach. This is one of the reasons that the NDP concluded we should move toward fewer numbers of short-range aircraft and that Adm Bill Owens, US Navy, Retired, former vice chairman of the JCS, testified before the SASC that we have 40 percent too much TACAIR.[10] Furthermore, our experience in operations Desert Fox and Allied Force raises scrutiny on the premise that aerospace power, when employed without land power, can adequately influence the policy of our adversaries. This is not to argue that aerospace power is anything other than an absolutely essential element of US joint war-fighting capability. However, it does recognize that an aerospace paradigm has yet to demonstrate a comparative advantage over alternative joint war-fighting approaches in leveraging the opportunity of technology or addressing operational challenges envisioned for the early twenty-first century.

This concern over demonstrated performance and operational vulnerabilities, when coupled with an impression by many senators and representatives that Congress has already allocated sufficient funding to this broader mission area, results in slim prospects for asymmetric increases in investment to transform aerospace power. Therefore, it is appropriate to comment on investment balance across three pillars of aerospace power: TACAIR, global attack, and space capabilities.

Tactical Air

DOD is planning to invest well over $300 billion across the three tactical aircraft programs—the F/A-18E/F Super Hornet, F-22 Raptor, and Joint Strike Fighter (JSF)—despite concerns over the operational challenges addressed earlier. The consensus in Congress appears to be that the Pentagon's planned investment in nearly four thousand short-range aircraft exceeds the level required. But that is where the consensus ends because no simple prescription exists for cutting it back.

Simply put, the air forces of the US Air Force, Navy, and Marine Corps dominate the skies. Nonetheless, we are planning to replace our existing inventory with far more capable and far more expensive platforms on largely a one-for-one basis. Yet, our adversaries already hide their aircraft when facing a confrontation with US airpower rather than fight and risk them all. Although we see isolated news of foreign TACAIR-development efforts—the Eurofighter, the Gripen, and the Russian Fighter 2000—we have no competi-

tor with the defense resources to invest in an integrated aerospace system with advanced C^4 and ISR. Correspondingly, the valid assessment for military planners to make is not their aircraft against our aircraft but their aerospace system-of-systems against ours.

More fundamentally, however, it is exactly the combination of international defense resource shortfalls and US development of the three TACAIR programs, particularly the F-22, that will lock potential adversaries out from even pursuing an air-to-air or air-to-ground capability. Instead, US TACAIR investments could very well accelerate the development of surface-to-air or surface-to-surface regimes of missiles and lasers, as well as other asymmetric capabilities on the part of our potential adversaries. Therefore, the mere notion of air dominance could fundamentally change to decrease emphasis on air-to-air capabilities, while increasing capabilities against ground-launched effects. How do we even achieve air dominance against an enemy missile force?

Given this background on TACAIR, Congress had largely capped the cost of the Super Hornet and the Raptor to keep JSF development on schedule, particularly the short takeoff, vertical landing (STOVL) variant. But that intent is now challenged because the F-22 is experiencing cost overruns of approximately $700 million, which will break the statutory developmental-cost cap.[11] These overruns are in addition to the approximately $2 billion in cost overruns already absorbed by the F-22 program. Since the Super Hornet and the Raptor compete fiscally against the JSF for resources in the near term, the Navy, Air Force, and tactical-aircraft industrial base desire either to add funding for TACAIR programs or delay the JSF to cover these overruns. But the transformation of Marine Corps TACAIR absolutely requires the timely fielding of a STOVL JSF. Gen Chuck Krulak, commandant of the Marine Corps, testified that "STOVL capability is critical to the Corps and critical to the way we think we are going to be fighting in the 21st Century."[12] Consequently, before proposing to push JSF to the right, the Pentagon and Congress should prudently address the very thorny question of whether the Marine Corps's pursuit of transformation concepts in ship-to-objective maneuver should also be slowed and whether the service should retain a fixed-wing TACAIR capability.

Global Attack

Despite claims of power projection based in the continental United States (CONUS), global attack is still largely a one-punch phenomenon. Nonetheless, long-range capabilities could become a more relevant piece of aerospace power because they mitigate vulnerabilities in access and leverage an increasingly capable suite of precision munitions. Dr. Andrew Krepinevich, executive director of the Center for Strategic and Budgetary Assessment, testified on 10 March 1999 before SASC's Airland Subcommittee that even countries with austere military budgets could invest in missile capabilities that would hold US forward air bases at risk and jeopardize the employment of tactical aircraft.[13] Therefore, we must develop a balanced set of strike capabilities that can sustain the required volume and character of effects without relying on tactical aircraft from fixed, in-theater land bases.

Operations Desert Fox and Allied Force demonstrate that we do not presently have the capability to instantaneously conduct and sustain global attack. Simply put, long-range precision strike is limited by the capacity of our bomber force and naval fleet and the time associated with positioning naval forces. We can air-refuel critical assets projected from CONUS but have yet to develop concepts regarding aerial rearming or refitting of bombers and replenishing of at-sea missiles. Such concepts are central to addressing the extensive turnaround times associated with the potential lack of fixed, in-theater basing due to the anti-access problem.

Congress has undoubtedly enjoyed the respite from B-2 bomber debates since the defense authorization cycle of fiscal year 1998. However, many people remain con-

cerned about the absence of a follow-on development program for long-range strike capabilities besides conventional upgrades to bombers. In fact, we hear that the Air Force plans to wait 35 years before replacing its long-range bombers.[14] However, it may be prudent, given advances in weapon technology and the rapid development of anti-access capabilities by our potential adversaries, for US defense planners to take an entirely different approach that accelerates development of new, long-range, precision-engagement capabilities in terms of a B-3 bomber, an unmanned combat aerial vehicle, or some completely different means of strategic strike.

Space

During the Air Force posture hearing on 12 February 1998, Sen. Strom Thurmond (R-S.C.), SASC chairman, commented that with *Global Engagement*'s vision of a Space and Air Force, we expected to see a noticeable shift in Air Force resource allocation toward space capabilities. But no such shift has occurred. The senator asked the chief of staff of the Air Force whether this emphasis on space was rhetoric or whether we would see money put behind it. Gen Mike Ryan's response that *Global Engagement* is "a very long term vision of where the Air Force is going" speaks volumes of near-term commitment to space transformation.[15]

Some people criticize Congress for not doing more in terms of funding space capabilities, but several reasons exist for this state of relative legislative inaction. First, the revealed preference of the Pentagon—as assessed from the white side of the defense budget—is that air is more important than space. However, numerous members believe that DOD has the fiscal and requirements flexibility to take more risk in TACAIR and place a bigger emphasis and investment in space. Consequently, we should not anticipate that Congress will add much in the way of funding for space capabilities when shifting funds may be a more prudent approach. Far more likely, key congressional leaders will continue to push for the establishment of a Space Corps to enhance the bureaucratic position for space capabilities in the Pentagon's fight for resources.

Second, many members of Congress are uncertain what the mix of DOD versus commercial space investment should be. Industry projects the investment of a half-trillion dollars and the launch of between twelve hundred and seventeen hundred satellites over the next 10 years.[16] This level dwarfs military space activity and presents an opportunity for dual use or outsourcing. Hence, Congress may await insights on how successfully the military can use commercial space capabilities before dedicating a larger share of public-sector funding to military space activity.

Third, Congress remains concerned about our ability to protect and control assets in space. We need to learn more about asymmetric vulnerabilities to space and ways of mitigating an adversary's attempts to exploit them. Furthermore, we need to understand these vulnerabilities across the operational architecture for space capabilities—the space-based assets themselves, as well as launch facilities, ground control, downlinks, and so forth. For example, what are we doing to investigate the relative merits of hardened assets, rapid constellation reconstitution, and high-altitude-endurance unmanned aerial vehicles as satellite surrogates?

Global Engagement and *New World Vistas* clearly provide a vision for space's playing a key role in a revolution in military affairs, both as the home of joint enablers and a base of operations.[17] But now the rhetoric appears to have changed from an objective Space and Air Force to an objective Aerospace Force with integrated and seamless capabilities emphasizing space as a medium of enablers for the joint force commander and national-intelligence users. In and of itself, this change does not indicate that DOD is neglecting space. Regardless, many people are left with the impression that space capabilities are being relegated to an evolution of the status quo rather than being afforded an opportunity to genuinely compete against other aerospace programs for funding.

DOD should investigate how potential adversaries are changing their capabilities in response to our space developments and their access to commercial space products. We should also dedicate science and technology programs to address how we might employ space to do things differently, such as space-based laser or kinetic-energy antisatellite capabilities. Obviously, there are huge policy issues concerning the weaponization of space, but we should not allow them to become an imprudent constraint on research-and-development efforts. Rather, we must build the concepts and capabilities to protect both military and commercial space capabilities and investigate the potential for leveraging the access afforded by space to project power.

Concluding Joint Thoughts

The aerospace-power paradigm is a joint approach, leveraging capabilities provided by all services. But we see glaring inconsistencies in the development of aerospace capabilities in certain areas. For example, the Air Force wants the JSF to be its low-end fighter, while the Navy envisions the JSF as its high-end fighter. Alternatively, the Air Force insists on fire-and-forget long-range munitions such as the joint air-to-surface standoff missile (JASSM), based on concerns over aircraft and crew safety; yet, the Navy demands man-in-the-loop guidance from the cockpit for the standoff land-attack missile, extended range (SLAM-ER) over concerns of multispectral countermeasures. But, given the fact that these two air forces apply combat power in largely the same domain, how can two diametrically opposed approaches both be valid, independent of each other? If a genuine joint requirement exists for both approaches, then fine, well, and good. But if this diversity is merely the manifestation of long-held service prerogatives extrapolated into the twenty-first century, then we need to develop the joint resolve to declare winners and losers and move money where it is needed most to transform aerospace power.

Several key sets of questions remain unanswered concerning the transformation of aerospace power. First, what is the joint aerospace vision for 2010 and beyond, and who is responsible for developing it? Central to this issue is ensuring that the vision addresses the right operational challenges. Second, what roles do the Air Force, the other services, and the commander in chief (CINC) of US Space Command (SPACECOM) play in the development and application of space capabilities? For example, some people have recommended that SPACECOM have a Major Force Program (MFP 12) for space activities. Third, how effective will US Atlantic Command's (ACOM) joint experimentation be in assessing the demonstrated performance to achieve a relevant joint, common operational picture that mitigates the target-identification problem? This picture may be the key to understanding whether we can employ aerospace power to decisively halt and contain an advancing enemy.

If the Air Force has confidence in the potential of aerospace power, then it should lead the charge in supporting the joint experimentation initiative driven largely by the efforts of retired senator Dan Coats (R-Ind.) and Sen. Joe Lieberman (D-Conn.). Done correctly, joint experimentation can provide a consistent venue to demonstrate the effectiveness of an aerospace paradigm. As such, this venue may be an effective way to win support and silence critics.

The issue of whether airpower can be decisive in war fighting is so critical that it cannot be resolved through interservice bickering over the results of computer simulations. Congress will await the insights of CINC-ACOM before supporting interservice budget shifts. If DOD can jointly demonstrate that this aerospace paradigm is viable, then perhaps we should invest in more fighters, more bombers, and much more space capability, while divesting land power or naval force structure. But if these experiments demonstrate that we cannot employ aerospace power to decisively engage the broad array of fixed, fleeting, and moving targets

envisioned for a theater war fight, then perhaps we should divest aerospace capabilities.

Given anticipated funding levels, aerospace transformation will be a function of our ability to identify those capabilities that provide true leap-aheads and determine those that are of less value. This is absolutely critical, given the joint chiefs' continuing testimony of annual procurement shortfalls exceeding $10 billion. We must declare winners and losers across platforms, systems, and operational concepts. And we must be committed to accelerating the winners and terminating the losers. Some people will consider the cost of these failures wasteful. Quite the contrary! Continuing to invest in systems whose capabilities will depreciate quickly 10 to 20 years hence would be a true failure.

The real concern is that we will stay locked into a posture that closely resembles the aerospace status quo. These decisions, in turn, preclude us from having the resources and flexibility to make different investment decisions or to address different threats in transforming our force to be capable of dominating the full spectrum of operations in the twenty-first century. □

Notes

1. For a discussion of force characteristics, see *Transforming Defense: National Security in the 21st Century*, Report of the National Defense Panel (Arlington, Va.: National Defense Panel, December 1997), 43–48.

2. Sen. Bob Smith, "The Challenge of Space Power," *Airpower Journal* 13, no. 1 (Spring 1999): 33.

3. William S. Cohen, *Report of the Quadrennial Defense Review* (Washington, D.C.: Department of Defense, May 1997), v.

4. See *Joint Vision 2010* (Washington, D.C.: Joint Chiefs of Staff, 1995).

5. Calculated from Michael O'Hanlon, *How to Be a Cheap Hawk: The 1999 and 2000 Defense Budgets* (Washington, D.C.: Brookings Institution Press, 1998), 31.

6. *Transforming Defense*, iv and 59.

7. United States General Accounting Office, *Operation Desert Storm: Evaluation of the Air Campaign: Report to the Ranking Minority Member, Committee on Commerce, House of Representatives*, GAO/NSIAD-97-134 (Washington, D.C.: Government Printing Office, June 1997), 19.

8. Ibid.

9. See Robert H. Scales, "Adaptive Enemies: Dealing with the Strategic Threat after 2010," *Strategic Review*, Winter 1999, 4–13.

10. Senate, *Testimony of William A. Owens before the Senate Armed Services Committee Concerning the Report of the National Defense Panel*, 105th Cong., 2d sess., 28 January 1998, S. Hrg. 105-726 transcript, 112.

11. See Louis J. Rodrigues, *Progress of the F-22 and F/A-18E/F Engineering and Manufacturing Development Programs*, GAO/T-NSIAD-99-113 (Washington, D.C.: General Accounting Office, 17 March 1999).

12. Senate, *Testimony of General Charles C. Krulak before the Senate Armed Services Committee*, 105th Cong., 1st sess., 21 May 1997, S. Hrg. 105-197, 163.

13. Andrew F. Krepinevich provided testimony concerning future threats to theater land-basing of short-range tactical aircraft to the Airland Subcommittee, Senate Armed Services Committee on 10 March 1999. For excerpts, see Adam Hebert, "Senior Pentagon Official Denies Fighter Procurement Plans Are Misguided," *Inside the Air Force*, 12 March 1999, 1.

14. "Air Force to Wait 35 Years before Beginning New Bomber Production," *Inside the Pentagon*, 11 March 1999, 9.

15. Senate, *Testimony of General Michael E. Ryan before the Senate Armed Services Committee*, 105th Cong., 2d sess., 12 February 1998, S. Hrg. 105-605, pt. 1, p. 378.

16. Gen Thomas Moorman, USAF, Retired, remarks before the Institute for Foreign Policy Analysis Conference—"The United States as a Twenty-First-Century Aerospace Power"—Boston, 18 November 1998.

17. See *Global Engagement: A Vision for the 21st Century Air Force* (Washington, D.C.: Department of the Air Force, 1997); and *New World Vistas: Air and Space Power for the 21st Century*, 11 vols. (Washington, D.C.: United States Air Force Scientific Advisory Board, 1995).

Bombs, Then Bandages

Preparing the War Fighter for the Sojourn to Peacekeeping

DR. ABIGAIL GRAY-BRIGGS and
LT COL MICHAEL MACIVER, USAF

Henceforth the adequacy of any military establishment will be tested by its ability to preserve the peace.

—Henry Kissinger

IN 1787, attendees at the Constitutional Convention first defined the purpose of the United States armed forces. This definition has undergone significant clarification and redefinition over the course of history. What began as the requirement to "provide for the common Defence" has led, most recently, in the National Military Strategy of the United States of America to that of "fight[ing] and win[ning] our Nation's wars whenever and wherever called upon."[1]

To most people, that might not seem like such a large leap. There is little question that the writers of the Constitution foresaw that "Defence" would inevitably lead to fighting wars. But what they may not have envisioned is the ever-growing handful of noncombat actions that the United States armed forces are currently being called upon to undertake on shores far distant from those of the original 13 states.

In recent history, US military might has advanced in what some would argue is a direction diametrically opposed to that of war fighting. This new direction is known as "military operations other than war" (MOOTW).[2] Admittedly, the division between MOOTW and war becomes difficult to delineate at times; but generally speaking, such operations focus on deterring war and promoting peace, while war encompasses large-scale, sustained combat operations to achieve national objectives or to protect national interests.[3] MOOTW are more politically sensitive, the military may not be the primary player, and they are almost always conducted outside the United States.

In *The Professionalization of Peacekeeping: A Study Group Report,* David Wurmser and Nancy Dyke observe that although the end of the cold war has quelled our thoughts of military force against military force, the use of military forces in United Nations (UN) peacekeeping roles is growing significantly.[4] The current administration demonstrates selectivity[5] when determining whether or not to participate in UN peace operations; however, the fact remains that US forces do participate in more and more of these deployments.[6]

This participatory trend is indicative of an opportunistic society. During peacetime, why not exercise the opportunity to utilize the military instrument of power for military operations other than war?

It can be argued that this participatory trend reflects a further clarification of the role of the US military in the face of changing history. As early as 1976, Charles Moskos observed that "the very military establishments which are most liable for peacekeeping duties are often the same ones which are undergoing institutional redefinition in the wake of eroding traditional support of military legitimacy."[7] In light of the end of the cold war and ever-increasing budget pressures, his observation gains even more legitimacy.

It can also be argued that this participatory trend is indicative of an opportunistic society. During peacetime, why not exercise the opportunity to utilize the military instrument of power for military operations other than war? As noted in a recent Defense Analytical Study, "Our willingness to serve may have indeed created unreasonable expectations of those we serve . . . the increasing tempo of OOTW [operations other than war] clouds our individual and collective focus on fighting and winning our nation's wars—providing for her defense! . . . [and we succumb to the] temptation to use military operations as a means to at least 'do something.'"[8]

A healthy segment of defense commentators contends that war fighters lose their edge when called upon to perform operations that require a completely different set of behaviors. They argue that military organizations are formed for purposes other than peacekeeping and that those original purposes are not served while a nation's military units are deployed and engaged in peacekeeping tasks.[9] In remarks to the American Defense Preparedness Association Symposium in December 1994, the chief of staff of the United States Air Force cautioned that "operations other than war, if sustained without recognition that they do take a toll on the force, will begin to erode our ability to perform our fundamental mission."[10] As Maj Melissa A. Applegate suggests:

> One must consider the cost of using a warfighting organization in a benevolent role. Combat forces are just that: commanders concentrate most of those efforts toward instilling an offensive spirit in their soldiers. . . . Americans are quick to condemn involvement in complex situations where there is no clear sense of winning. . . . US actions in a given country can prove counterproductive by providing a focal point for opposition. If this occurs, US involvement can then begin to expand exponentially to solve new problems it may have created on its own.[11]

Despite the wishful rhetoric of service chiefs, the reality of the post-cold-war strategic environment demands more deployments of longer duration from fewer people. Senior Air Force officials recently announced that persons will be assigned temporary duty (TDY) no more than 120 days a year. This "allows sufficient time for our people to get the right amount of training at home station and to take 30 days of leave a year."[12] What was once viewed as the exception (i.e., lengthy overseas deployments) has now become the norm. Current trends indicate an inevitable transformation of the military's roles and missions and highlight the need to carefully examine what we are requiring of individual war fighters as we send them forth to conduct peace operations. As Lt Col Linda Brown suggests:

> The US military needs to step up to the fact that the Operations Other Than War will comprise the majority of the contingencies that are foreseen in the near future and be prepared for the challenges that these missions offer. . . . The services must build and train a force that understands and is proud of all the missions the military is tasked to accomplish.[13]

Preparing War Fighters to Serve as Peacekeepers

Doctrine for Joint Operations (Joint Pub 3-0) lists eight specific types of MOOTW ranging from "Arms Control" and "Noncombatant Evacuation Operations" to providing "Support to Insurgencies" and "Peace Operations." Closer examination of *Peace Operations* reveals that the term actually refers to three types of activities: peacemaking (which focuses on diplomatic actions), peace enforcement (which focuses on coercive use of military force), and peacekeeping (which focuses on noncombat military operations).[14]

War fighters have long been accustomed to and contented with leaving the practice of peacemaking to diplomatic persons and processes. Traditionally, war fighters have restricted their involvement to the conduct of peace-enforcement activities. The metaphorical lines in the sand are blurred philosophically, doctrinally, and literally, however, when combat forces are called upon to conduct the noncombat military operations characteristic of peacekeeping. As William Lewis observes in a recent National Defense University (NDU) paper:

> We learn in our United States [military] schools the need for overwhelming force for achieving decisive results. We have a cultural problem, I would submit, in terms of adjusting the manner in which we operate to be more effective in this sort of political-military [peacekeeping] environment.[15]

The dialogue of cross-cultural communication often includes the envisioning of foreign lands and distant shores. In this article, however, the authors examine the cross-cultural activity taking place intrapersonally when the trained war fighter assumes the role and responsibility of the peacekeeper, crossing into an unfamiliar cultural domain.

Traditionally, war fighters have restricted their involvement to the conduct of peace-enforcement activities. The metaphorical lines in the sand are blurred philosophically, doctrinally, and literally, however, when combat forces are called upon to conduct the noncombat military operations characteristic of peacekeeping.

Lt Col N. Winn Noyes, US Army, alluded to this cross-cultural movement, or paradigm shift, in "Peacekeepers and Warfighters: Same Force, Different Mindset" when he stated:

> The problem with using the same force for sequential combat and peace keeping operations is not one of tasks and subtasks. It is a problem of changing required mindsets, desired automatic reactions and conditioned responses, with insufficient time and training for reorientation of the soldier who must accomplish the tasks. The required mental transition is significant.[16]

This movement is officially addressed by the military in Joint Pub 3-07.3, *Doctrine for Joint Operations other than War,* as follows:

> Post-Peacekeeping Mission Training:
>
> a. Planning for mission specific training should be part of the force's predeployment activities. Before the peacekeeping mission, training is provided to transition the combat ready individual to one constrained in most if not all, actions. At the conclusion of the peacekeeping mission, certain actions are necessary to return the individual to a combat-oriented mind set.
>
> b. Unit commanders must allow sufficient time after a peacekeeping mis-

> sion for refresher training and for redeveloping skills and abilities that have unavoidably been affected by the nature of any PKO [peacekeeping operation]. This will require a training program to hone skills necessary to return the unit to combat ready status.[17]

Still, however, failure to properly prepare has unfortunately garnered US military forces less-than-desirable stays in the spotlight. On the 1994 fatal shoot down of two friendly Black Hawk helicopters, Noyes stated:

> OPC (Operation Provide Comfort) personnel did not receive consistent, comprehensive training to ensure they had a thorough understanding of the USEUCOM [US European Command] directed ROE [rules of engagement]. . . . The "if it flies, it dies" approach these two pilots took to this mission and their response to two unknown helicopters showed the mindset that had made them successful in their combat training and careers so far.[18]

The authors focus on the "cultural problem" of utilizing trained war fighters in the conduct of peacekeeping operations, suggesting that employing the military in peacekeeping or noncombat operations entails a cross-cultural movement at the individual level. This movement is characterized as a paradigmatic shift of mind-sets—from the military culture of the war fighter to the civil-military culture of the peacekeeper—with social, behavioral, philosophical, and even methodological implications.

To explain this shift from the war fighter to the peacekeeper mind-set, three operational variables (see table 1) defined in Brig Gen Morris J. Boyd's "Peace Operations: A Capstone Doctrine" will be utilized. These variables are force, consent, and impartiality.[19] These three variables characterize the mind-sets of the war fighter and the peacekeeper.

As we prepare war fighters to serve as peacekeepers, it is imperative that US military forces be trained for the specific requirements of peacekeeping. Commenting on the Black Hawk shoot down, Colonel Noyes said that soldiers must be given the time and opportunity to "make the mental transition required for their success and survival before they are committed to the mission. Failure to do so will be as irresponsible as sending untrained recruits to their death in a pitched and violent high intensity battle."[20]

Military Culture: War-Fighting and Peacekeeping Mind-Sets

The US Military [i.e., war fighters] and American Private Voluntary Organizations [i.e., peacekeepers] are unalike in every important way. Indeed, it's difficult to imagine two more dissimilar cultures. The former is highly disciplined, hierarchical, politically and culturally conservative, tough, with a

Table 1
Operational Variables

	Force	Consent	Impartiality
Peace Enforcement	Sufficient to compel/coerce	Low	Low
Peacekeeping	Low (self-defense/defense of mandate from interference)	High	High
Support to Diplomacy	Low	High	High

Source: Brig Gen Morris J. Boyd, "Peace Operations: A Capstone Doctrine," *Military Review* 75 (May–June 1995): 24.

mission to defeat the enemy. By and large, American PVOs are independent, resistant to authority, politically and culturally liberal, sensitive and understanding, with a mission to save lives.

—Andrew S. Natsios

In his seminal work *The Soldier and the State: The Theory and Politics of Civil-Military Relations*, Samuel P. Huntington convincingly argues the thesis that the military profession is a peculiar type of functional group with highly specialized characteristics of expertise, responsibility, and corporateness. The distinct sphere of military competence, common to officers independent of service, branch, or nationality, is the "management of violence," and the responsibility of the profession is to enhance the military security of the state. The very existence of the military profession depends upon the existence of competing nation-states and presupposes conflicting human interests and the use of violence to further those interests. Consequently, the military culture is embedded within a universal pattern of conflict that permeates nature and society.

The soldier's calling differs fundamentally from other professions. To be a soldier is to embrace a distinctively defined set of values, attitudes, and perspectives that inhere in the performance of the professional military function and that are deductible from the nature of that function. The military function is performed by a "public bureaucratized profession expert in the management of violence and responsible for the military security of the state."[21] Tradition, morale, esprit, discipline, unity, cohesion, integrity—these rate high in the military value system. At the same time, military organizations are highly centralized with multilevel hierarchical structures emphasizing logic, proof, linear organization, precision of definition, objective values, abstractive communication found in low contexts, and factual inductive or axiomatic inductive decision-making structures. As Huntington suggests, "For the profession to perform its function, each level within it must be able to command instantaneous and implicit obedience of subordinate levels,"[22] with loyalty and obedience being among the highest military virtues.

The military culture is, however, more than a system formulated around and for the "management of violence," and peace is more than the "prevention of war." This nonsummative, preventative posture is particularly relevant in light of the interrelationship between the mind-set of the war fighter and the mind-set of the peacekeeper.

The War-Fighting Mind-Set

The roots of armed conflict as far back as the Paleolithic era can be traced to culture. In his acclaimed book *A History of Warfare*, John Keegan defends the notion that the act of war is the basis for all that currently exists. As he explains:

> War is wholly unlike diplomacy or politics because it must be fought by men whose values and skills are not those of politicians or diplomats. They are those of a world apart, a very ancient world, which exists in parallel with the everyday world but does not belong to it . . . the culture of the warrior can never be that of civilisation itself. All civilisations owe their origins to the warrior; their cultures nurture the warriors who defend them, and the differences between them will make those of one very different in externals from those of another.[23]

History demonstrates that massive firepower and mobilization of preponderant resources, sustained by an engaged or aroused citizenry, have proved a consistent recipe for military success.[24] Humans have always lived under conditions of conflict. If they continue to pursue their individual interests by imposing their will on the enemy, they most likely always will.

For the war fighter, the idea of the imposition of will implies the use of force, the first of three operational variables identified earlier as mechanisms for identifying mind-sets. Continual employment as a "manager of violence" has engendered a military mind-set disposed towards the use of force.[25] This mind-set emphasizes timeliness and speed to overwhelm and disorient the enemy. It does

not waste time discussing feelings; it dispenses destruction.[26]

Second, for the war fighter, the imposition of one's will over another naturally implies a lack of consent. The very idea that violence is used is indicative of the fact that war fighting is conducted in the absence of consent. War fighters are never welcome individuals on the battlefield. They simply hope to make their journey to the battlefield, fight their fight, and return home. Finally, inherent in the act of forceful persuasion is the relinquishment of all semblance of impartiality, the third operational variable There is no such thing as neutrality on the battlefield. To the war fighter, identification of friend or foe is critical.

The Peacekeeping Mind-Set

Peacekeeping, on the other hand, is conducted with a different view of these operational variables. As explained in the *Joint Task Force Commander's Handbook for Peace Operations,* the

> critical variables of peace operations are the level of consent, the level of force, and the degree of impartiality. . . . These variables are not constant and may individually or collectively shift over the course of an operation. Success in peace operations often hinges on the ability to exercise situational dominance with respect to the variables; failure is often the result of losing control of one or more of them.[27]

The mind-set of the peacekeeper differs from that of the war fighter in two critical ways. First, the objective of a peace operation is settlement, not victory. "Peace-enforcement operations follow several constraints: the employment of force is always restrained; force may be used to compel but not necessarily to destroy; and settlement, not victory, remains the objective. Second, the conflict—not the belligerents—is the enemy."[28]

An examination of the three key variables as they apply to peace operations suggests that for the peacekeeper, force is a matter of last resort. Rather than seeking termination by force, peace operations are conducted to reach a resolution by conciliation among the competing parties.[29] In all peace operations, particularly peacekeeping operations, the peacekeeper must continually be cognizant of the goal—"to produce conditions which are conducive to peace and not to the destruction of an enemy."[30] As F. T. Liu suggests in *United Nations Peacekeeping and the Non-Use of Force:*

> The principle of non-use of force except in self-defense is central to the concept of United Nations peacekeeping . . . any problem between UN peacekeepers and [parties directly concerned] can be resolved peacefully by negotiation and suasion, and therefore the use of force becomes unnecessary and counterproductive.[31]

An examination of the second operational variable, consent, suggests that consent is a condition generally enjoyed by the peacekeeper. By the time the peacekeepers arrive, both sides have tired of war. Keegan points out that "the effort at peace-making is motivated not by calculation of political interest but by repulsion from the spectacle of what war does. The impulse is humanitarian."[32]

The peacekeeper comes with supplies to heal the wounds of war and, as a result, is generally welcome. A populace that has recently experienced the horrors of war generally consents to and accepts the presence of a peacekeeper armed not with bullets and bombs, but rather with bread and bandages.

Finally, an examination of the third operational variable, impartiality, confirms that peacekeeping demands impartiality. As a matter of necessity, military members conduct peacekeeping operations alongside civilian members of various nongovernmental organizations (NGO) or private voluntary organizations. NGOs and PVOs maintain their authority as peacekeepers only as long as they remain impartial. Once even the perception of favoritism leaks into an NGO or PVO, all credibility is lost, and the actions meant to serve the furtherance of conflict resolution may in fact act to stir the simmering coals of discontent. In an effort to retain

USAF C-130s airlifting Irish troops for UN peacekeeping duties in the Congo, July 1960. "The mind-set of the peacekeeper differs from that of the war fighter in two critical ways. First, the objective of a peace operation is settlement, not victory. 'Peace-enforcement operations follow several constraints: the employment of force is always restrained; force may be used to compel but not necessarily to destroy; and settlement, not victory, remains the objective. Second, the conflict—not the belligerents—is the enemy.'"

a visible separation from any particular government, particularly those that might not be agreeable to the peace-seeking parties,[33] PVOs are reluctant to accept money. It is imperative that peacekeepers remain impartial and avoid all possible perceptions of showing any predisposition towards one side or the other. Liu explains that

> military personnel must not take sides in the conflict that they are sent to contain. They must maintain friendly relations with both sides and act with complete impartiality. If the peacekeepers were to use force against one of the parties concerned, they would cease to be impartial and would become part of the problem and not its solution.[34]

It seems, therefore, that to be a war fighter is to use force in the absence of consent, relinquishing all semblance of favoritism. In contrast, to be a peacekeeper is to avoid the use of force at all costs in a consenting environment and maintain impartiality while executing the operation.

Crossing Cultures as a Sojourner

> *There are two things which will always be very difficult for a democratic nation: to start a war and to end it.*
>
> —Alexis de Tocqueville

The military war-fighting culture and the military peacekeeping culture represent distinct professional mind-sets. In this article, the authors address the sojourn being made by war fighters as they mindfully cross into the peacekeeping culture.

Scholars have long sought to describe the differing responses humans exhibit as they

come into contact with those from other cultures. German sociologist Georg Simmel first

To be a war fighter is to use force in the absence of consent, relinquishing all semblance of favoritism. In contrast, to be a peacekeeper is to avoid the use of force at all costs in a consenting environment and maintain impartiality while executing the operation.

established the concept of the "stranger" in 1908, suggesting that although some people may be physically near, the fact that their disposition and communications are rooted in another culture leaves them, socially speaking, far away.[35] According to Simmel, the removedness experienced by the stranger is completely acceptable; that is, the stranger desires no assimilation into the new culture. In 1928 Robert Park, influenced by Simmel's stranger, advanced the notion of the "marginal man."[36] This construct shed light on the experience of the growing number of ethnic minorities coming to reside in American cities at the time of his writing. According to Park, these individuals, unlike the stranger, desire assimilation into the new culture; however, this desired assimilation is unachievable.[37]

It is the sojourner social type, however, that offers perhaps the most interesting and compelling parallels as war fighters embark on their sojourn to peacekeeping. Paul C. P. Siu first introduced the concept in the early 1950s, defining the sojourner as "a stranger who spends many years of his lifetime in a foreign country without being assimilated by it."[38] In contrast to Park's marginal man, however, Siu's sojourner has no intention of remaining permanently in the new culture. Rather, he has three objectives: (1) he wants to do the job he has come to do, (2) he wants to remain tied to his own culture while he does it, and (3) he wants to get back "home" as soon as he can. These three defining aspects of the sojourner are central to understanding the sojourn of the war fighter.

Characteristics of the Sojourner. According to Siu, to understand the sojourner, one must first understand why the sojourner goes abroad. Simply put, "the sojourn is to do a job and do it in the shortest possible time."[39] Although the sojourner social type wants to return home soon, he generally wants to have done a good job and to have made a difference. He wants to return to his own culture but not without a sense of accomplishment from the culture he is leaving behind.[40] This desire for a sense of accomplishment does not include a desire to fully participate in the new culture. As a matter of fact, the sojourner is viewed by the people of the other culture only in terms of the job he has come to do and not as a separate and distinct person. As Siu put it, "He is a person only to the people of his own ethnic group or to a social circle related to his job."[41] Additionally, the job that the sojourner does is often "alien" to the culture in which he accomplishes it. In Siu's particular case, he was primarily referring to the role of the Chinese laundryman in America.[42]

To understand the sojourner, we must next understand the sojourner's in-group tendency. In other words, regardless of the distance from the home culture, the sojourner tends to live with his own kind. Rather than abide in and amongst the natives of the new culture, sojourners choose to live, eat, and play with their own "countrymen."[43] The underlying effort is to ease the stress associated with relating to a new culture by creating a home away from home.[44]

The last defining characteristic of Siu's sojourner is that of the movement back and forth between cultures. From the moment they arrive in the new culture, sojourners have every intention of returning home. Beyond the necessary linguistics required to survive, there is no perceived benefit to learning the language of the new culture. As long as the necessities of life can be acquired, the sojourner is satisfied. The ways of the new culture are viewed as having no long-term benefit; hence, there is no inducement to expend energy and effort in assimilating those ways. As Siu explains, "In his lifetime several

trips are made back and forth, and in some cases the career is terminated only by retirement or death. . . . Movement is characterized by ethnocentrism in the form of social isolation abroad and social expectation and status at home."[45]

The War Fighter to Peacekeeper Sojourn. Soldiers trained for war fighting, predisposed to killing and destroying, are increasingly being tasked to flip the switch and assume the roles, responsibilities, and mind-sets of peacekeepers—to change both behaviors and mind-sets. This military cross-cultural transformation requires education, training, and preparation. The sojourner social type offers an interesting perspective from which to view the dynamics between the war-fighting and peacekeeping mind-sets. The sojourn from the mind-set of the war fighter to the mind-set of the peacekeeper is one in which the individual journeys from a mind-set prone to using overwhelming force to one requiring restraint; from a mind-set predisposed to a presence of nonconsent to one of general consent and acceptance; from a mind-set that relinquishes all semblance of partiality to one of impartiality.

Central to this paradigmatic shift from the war-fighting mind-set to the peacekeeping mind-set are the sociological conflicts that accompany the sojourner experience. From the vantage point of Siu's sojourner description, we see the individual soldier operating within a dynamic military culture—wanting to complete the job in a timely manner and return home, having no desire to fully merge in the culture, live among the natives, or assimilate. However, within the military culture certain mind-sets prevail across services, branches, professions, and career fields. War fighters are reluctant to assume peacekeeping responsibilities; however, when directed, they strive to accomplish the peacekeeping job as quickly as possible and get back to war fighting. They have no desire to fully participate in the peacekeeping culture, live among peacekeepers, or become assimilated by peacekeepers. The behaviors change, but the mind-set does not. This is perhaps indicative of a military culture representative of the larger US culture:

> Serious points of friction exist between US participation in UN peacekeeping and peace enforcement operations and American strategic culture. . . . Americans have yet to internalize peacekeeping into their psyche and do not understand the peacekeeping mission.[46]

Numerous factors complicate the military cultural shift from the mind-set of the war fighter to the mind-set of the peacekeeper. "In our looking glass, we see two identities but only one image: one represents the dynamic approach required of our service members fighting and surviving at the farthest reaches of violence that humanity has the capacity to develop. The other is the one required when attempting to prevent and suppress violence."[47] The sojourn from the mind-set of the war fighter to that of the peacekeeper entails a paradox

> in which the military functions of peacekeeping—segregating the belligerents—conflict with the role of a third party in conflict resolution: bringing the parties together. . . . That peacekeepers should be responsible for both separation and rapprochement of belligerents is not such a strange idea: it is analogous to the dialectic of offensive and defensive action that underpins operations in war. The peacekeeper works with the opposing forces against the conflict. . . . The soldierly skills of patrolling, establishing observation posts, and mounting shows of force are well developed, but are not enough. The procedures for holding meetings, negotiating agreements, escalating problems, arbitrating disputes, shuttling between opposing forces, and conciliating when possible are evolving in today's mission. Research offers a choice of new contact skills that need to be developed by military leaders and practiced with civilian colleagues.[48]

Conclusion

Peacekeeping is not a soldier's job, but only a soldier can do it.

—Unnamed United Nations peacekeeper

A coalition forces briefing. Recent US military conflicts have placed a premium on coalition operations, carefully managed violence and avoidance of civilian casualties and collateral damage. Are skills such as diplomacy, once the realm of high command, now appreciated at lower levels? Have soldiers come to expect limitations on how they can fight and ambiguities as to who is a combatant? Given the practical realities of Kuwait or Kosovo, is the role of peacekeeping that different?

In his book *Preparing for Peace: Conflict Transformation across Cultures*, John Lederach argues that culture should not be viewed

> as a challenge to be mastered and overcome through technical recipes. Culture is rooted in social knowledge and represents a vast resource, a rich seedbed for producing a multitude of approaches and models in dealing with conflict. . . . Training across and in other cultures should seek methodologies that create an encounter between people in a given setting and their own rich but often implicit understandings about conflict and how to handle it.[49]

The evolving nature of our nation's armed forces requires a propensity for adaptation. "If strangers successfully overcome the multitude of challenges and frustrations that invariably accompany the process of cultural adaptation, they develop a mental and behavioral capacity more adaptable, flexible, and resilient than that of people who have limited exposure to the challenges of continuous intercultural encounters."[50]

War fighters cannot maintain the disposition of a sojourner and succeed in the military of the future. Indeed, "success in such operations will be determined by the degree to which all of the players can step outside of their individual cultures and value systems, surrender some of their autonomy, and seek the best, rather than the worst, in those with whom they must solve the problems they will confront."[51] War fighters must explore paths to more effectively make the sojourn. It may be that all that is required is little more than "the acquisition of culturally appropriate

skills."[52] Ambassador Howard Walker, vice president of National Defense University (NDU), said in his remarks as chair of a workshop sponsored by NDU's Institute for National Strategic Studies on Future Security Roles of the United Nations that "well trained units do not need a major reorientation of their training program in terms of predeployment training, but, they will need sensitivity training or cultural training to get them immersed in the social milieu into which they will deploy."[53]

Either way, the "problem of making the mental transition from the aggressive violence of midintensity war to the requirements for restraint and control of violence necessary for peacekeeping situational dominance [must be overcome]. Although all of our service members have the inherent skills to do both, they must be given the time and training to mentally transition to each of these different environments."[54]

The *National Security Strategy of Engagement and Enlargement* specifically states:

> First, the primary mission of our Armed Forces is not peace operations; it is to deter and, if necessary, to fight and win conflicts in which our most important interests are threatened. Second, while the international community can create conditions for peace, the responsibility for peace ultimately rests with the people of the country in question.[55]

As the future unfolds, the role of the war fighter broadens. We owe it to our Founding Fathers, to our soldiers, and to ourselves to sufficiently prepare our armed forces for whatever role they may be tasked to undertake and wherever they may be asked to journey for the "common defence." □

Notes

1. Joint Chiefs of Staff, *National Military Strategy of the United States of America* (Washington, D.C.: Government Printing Office, 1995).
2. Joint Publication (Joint Pub) 3-0, *Doctrine for Joint Operations*, 1 February 1995, V-1.
3. Joint Pub 3-07, *Doctrine for Joint Operations other than War*, April 1993, vii.
4. David Wurmser and Nancy Bearg Dyke, *The Professionalization of Peacekeeping: A Study Group Report* (Washington, D.C.: United States Institute for Peace, January 1994), v.
5. See Presidential Decision Directive 25, "US Policy on Reforming Multilateral Peace Operations," May 1994.
6. Field Manual 100-23, *Peace Operations*, December 1994, v.
7. Charles C. Moskos Jr., *Peace Soldiers* (Chicago: University of Chicago Press, 1976), 130.
8. Lt Col Dennis R. Lewis, USA, "Operations other than War: Limitations, Temptations, and Prescriptions," Defense Analytical Study (Maxwell AFB, Ala.: Air War College, 10 April 1995), 21, 29.
9. Col William W. Taylor, USA, *Peace Enforcement: Square Peg in a Round Hole*, Strategy Research Project (Carlisle Barracks, Pa.: Army War College, March 1996), 13.
10. Gen Ronald R. Fogleman, "Air Force in Operations other than War," *Defense Issues* 10 (December 1994): 5.
11. Maj Melissa A. Applegate, USA, "Military Power in Operations other than War" (master's thesis, US Army Command and General Staff College, 1994), 25–27.
12. Fogleman, 4.
13. Col Linda H. Brown, USAF, "Operations other than War: Mission or Mistake for the US Military?" research report (Maxwell AFB, Ala.: Air War College, 1995), 27.
14. Joint Pub 3-0, V-11.
15. William H. Lewis, ed., *Military Implications of United Nations Peacekeeping Operations*, McNair Paper 17 (Washington, D.C.: National Defense University, June 1993), 74.
16. Lt Col N. Winn Noyes, USA, "Peacekeepers and Warfighters: Same Force, Different Mindset," research report (Newport, R.I.: Naval War College, 1995), 1.
17. Joint Pub 3-07.3, *Joint Tactics, Techniques, and Procedures (JTTP) for Peacekeeping Operations*, August 1992, VI-7.
18. Noyes, 11.
19. Taylor, 5.
20. Noyes, 15.
21. Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Mass.: Harvard University Press, 1985), 61.
22. Ibid., 73.
23. John Keegan, *A History of Warfare* (New York: Alfred A. Knopf, Inc., 1993), xvi.
24. Martin P. Adams, "Peace Enforcement versus American Strategic Culture," *Strategic Review* 23, no. 1 (Winter 1995): 16.
25. Huntington, 63.
26. Ibid.
27. *Joint Task Force Commander's Handbook for Peace Operations* (Fort Monroe, Va.: Joint Warfighting Center, 28 February 1995), EX-3.
28. Lt Col John L. Clarke, USA, "Which Forces for What Peace Ops?" US Naval Institute *Proceedings* 121, no. 2 (February 1995): 47.
29. Brig Gen Morris J. Boyd, "Peace Operations: A Capstone Doctrine," *Military Review* 75 (May–June 1995): 22.
30. Ibid., 25.
31. F. T. Liu, *United Nations Peacekeeping and the Non-Use of Force*, Occasional Paper Series (New York: International Peace Academy, 1992), 11.
32. Keegan, 58.
33. Andrew S. Natsios, "The International Humanitarian Response System," *Parameters* 25 (Spring 1995): 68–81.
34. Liu, 12.

35. William B. Gudykunst and Young Yun Kim, *Communicating with Strangers: An Approach to Intercultural Communication* (Reading, Mass.: Addison-Wesley Publishing Co., 1984), 20.

36. Robert E. Park, "Human Migration and the Marginal Man," *The American Journal of Sociology* 33, no. 6 (May 1928): 888.

37. Donald N. Levine, "The Sociology of the Stranger," in *Readings on Communications with Strangers: An Approach to Intercultural Communication*, ed. William B. Gudykunst and Young Yun Kim (New York: McGraw-Hill, Inc., 1992), 34.

38. Paul C. P. Siu, "The Sojourner," *The American Journal of Sociology* 58 (July 1952–May 1953): 34.

39. Ibid., 35.

40. Ibid.

41. Ibid., 36.

42. Ibid.

43. Ibid.

44. Ibid., 37.

45. Ibid., 39.

46. Adams, 15.

47. Noyes, 2.

48. David M. Last, "Peacekeeping Doctrine and Conflict Resolution Techniques," *Armed Forces and Society* 22, no. 2 (Winter 1995): 187–210.

49. John Paul Lederach, *Preparing for Peace: Conflict Transformation across Cultures* (Syracuse, N.Y.: Syracuse University Press, 1995), 120.

50. Gudykunst and Kim, *Communicating with Strangers*, 229.

51. Natsios, 81.

52. Adrian Furnham and Stephen Bochner, *Culture Shock: Psychological Reactions to Unfamiliar Environments* (London: Methuen & Co., Ltd, 1986), 243.

53. Lewis, 83.

54. Noyes, 28.

55. The White House, *A National Security Strategy of Engagement and Enlargement* (Washington, D.C.: Government Printing Office, February 1996), 23.

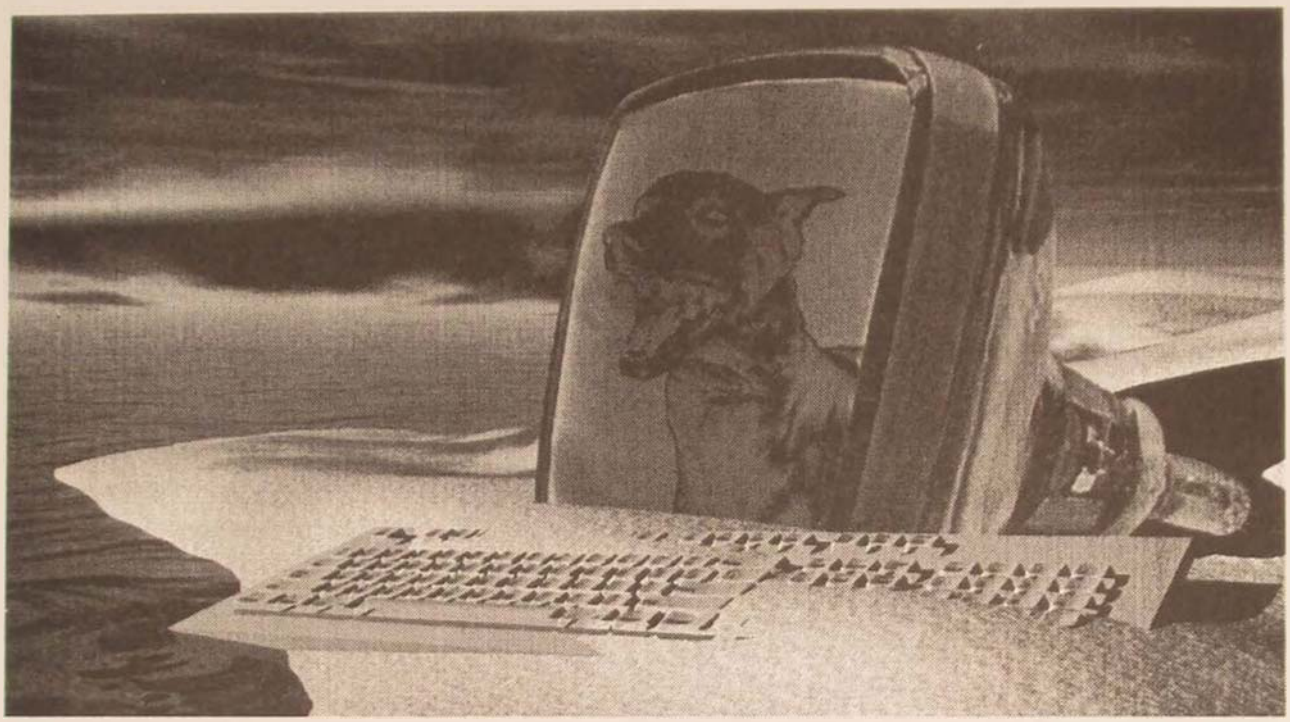
They have no lawyers among them, for they consider them as a sort of people whose profession it is to disguise matters.

—Sir Thomas More

Building Castles on Sand

Underestimating the Tide of Information Operations

COL CARLA D. BASS, USAF*



The state must make such disposition of its defenses as will put it in the best possible condition to sustain any future war. But . . . these dispositions for defense must provide means of warfare suited to the character and form future wars may assume.

—Giulio Douhet

Our national security policies and Department of Defense (DOD) doctrines—the "castles"—are based on an Industrial Age mind-set: they apply cold war mentality to a battlefield of the Information Age. Today, Air Force policy focuses on concepts such as full-spectrum dominance, dominant battle-space awareness, and the ability to "find, fix, track or target anything that moves on the surface of the earth."[1] *Joint Vision 2010* also sets lofty operational strategies, including dominant maneuver, precision engagement, focused logistics, and full-dimensional protection.[2] In a speech at the Armed Forces Communications and Electronics Association convention of 1997, Adm William A. Owens, US Navy, Retired, former vice chairman of the Joint

*This article is based in part on an earlier study of mine entitled *Building Castles on Sand? Ignoring the Riptide of Information Operations*, Maxwell Paper no. 15 (Maxwell AFB, Ala.: Air War College, August 1998).

Chiefs of Staff, envisioned all-encompassing sensors enabling the United States to view adversary movements in detail in any theater of battle.[3] Further, Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, notes that "recognizing improvements in technology and information systems, . . . full spectrum dominance allows joint forces to prevail across the range of national military strategy from peacetime engagement to deterrence and conflict prevention, to fighting and winning in combat."[4]

Because of our all-seeing sensors, the enemy presumably would acknowledge his fallibility and voluntarily acquiesce to US desires. The accompanying US strategy seems to entail intimidation by information. In addition to recklessly assuming inviolability of our reconnaissance and surveillance technology, this approach seriously underestimates the adversary's religious or revolutionary fervor. Admiral Owens demonstrates the failure of US war fighters to think like the enemy and the proclivity to expect the enemy to respond as would US commanders. Although we have found flaws in this strategy, it remains a lesson that US war fighters seem unable to learn.

Why the emphasis on technology, the foundation upon which these strategies depend? The global deployment of US forces, an increasing number of military operations other than war, a decreasing DOD budget, and a downsized military created a gap in US force projection and war-fighting capabilities. Technology *supposedly* will close that gap. But the absolutely fundamental underlying foundation is information—the assured availability of friendly data ("information assurance") and the knowledge of adversary intentions, movements, and status of forces (intelligence).

Strategies laid out in *Global Engagement: A Vision for the 21st Century Air Force* and *Joint Vision 2010* are based on several assumptions: (1) our command and control systems are interoperable and fully capable of transmitting data among US and allied forces; (2) the collection, production, application, and dissemination of intelligence are sufficiently robust to work against any target, employing both technical and human intelligence (HUMINT), as appropriate; (3) US wartime data flow will remain impervious to information warfare (IW) attacks; and (4) services will recognize, exploit, integrate, and apply information operations (IO) in future operations.

All four assumptions are flawed. First, our command and control systems are not yet interoperable among DOD forces—and certainly not with allied systems. Recognizing this shortfall, the National Defense Panel reports that "we must move rapidly to the next level of 'jointness' among uniformed services: full commonality of US military information systems. This commonality must be interoperable with the information systems of our allies as well, if we are to reap the advantages of coalition operations." The report further specifies that the United States should develop greater interoperability with allies in the areas of doctrine, training, operational techniques, and research and development (R&D).[5] Furthermore, we have not completed protocols for sharing information (what, with whom, and how)—and we are only beginning to view this matter from an IW perspective.

Second, although intelligence might provide data to find and target most items on the face of the Earth (but certainly not all, as we saw in Iraq and, more recently, in India), dummies and decoys can still deceive intelligence; thus, the issue becomes one of targeting the right item. Also, air- and space-based systems cannot supplant intelligence provided by someone on the ground. HUMINT adds a unique and essential dimension to the intelligence product and will play an even larger role in the Information Age. As such, DOD must certainly strengthen its HUMINT effort to better support both tactical and strategic applications. IO also introduces an entirely new paradigm affecting the entire intelligence cycle. The US intelligence community must identify and collect essential IO-related elements of information, generate and apply timely analytical products, and establish an indications-and-warning system to anticipate IO attacks. Finally, we must de-

velop the tools and methodology to detect penetration instantly, quickly move to block exploitation, and ascertain damage inflicted by an information attack (the equivalent of kinetic "bomb damage assessment") waged both against us and our adversaries. These efforts are only now beginning.

Third, the United States should assume neither a benign nor information-friendly environment when it plans combat operations. We must realize that technology can be deceptively and intoxicatingly disarming. For example, tensions in the Taiwan Strait during 1995 seemed to substantiate futurist projections of a "virtual" staff. Most command information exchanges between deployed US Navy forces during this crisis were based on video teleconferences and electronic mail. These capabilities enhanced the speed of command and situational awareness, making communication "light years better than phone calls and AUTODIN [Automatic Digital Network] messages that once took hours or days."[6] However, one must keep this situation in context; specifically, the US Navy enjoyed the benefits of Information Age technology because no adversary aggressively countered that technology. In actuality, tensions in the Taiwan Strait in 1995 demonstrated the need for a more balanced assessment of technology in the Information Age, recognizing its limitations as well as its capabilities.

Fourth, after just recently incorporating IO in their exercises, the military services have begun to experience and understand the results of IW attacks. Such exercises highlight the defensive aspect—the need to protect information. They do not yet address offensive IO weapons, which remain shrouded in limited-access programs. As in the early days of airpower, DOD's upcoming senior leadership includes some of IO's most stringent critics. Some of them even walk the halls of military academia. Lt Gen Douglas D. Buckholtz—director for command, control, communications, and computer systems, Joint Staff (J-6)—warns that "awareness [of the IW threat] is singularly the biggest problem we have. We've got to get folks up to speed on this. . . . The problem is getting warfighters to really understand that this is every bit as significant as some enemy bomber that comes in and does something to the United States. It's just that they've been raised on tanks and planes. Getting the warfighter who has been under fire many times to agree that networks are better than [weapons] that shoot is tough. There's a big mind-set you've got to overcome."[7]

The Riptide of Information Operations

To break away from the past is disturbing. . . . If we have a tendency to deviate as little as possible from the beaten path, we will find ourselves diverging from reality, and we will wind up far removed from the realities of our time.

—Giulio Douhet

The United States is at war. The cold war is dead, but an information war—the very same one that killed the cold war—still rages. Its principal characteristics of stealth, manipulation, deception, and subversion are so subtle that the American public remains manifestly and dangerously unaware of it. Information has never been more powerful. We must consider the vulnerability and susceptibility of the media, the American public, and our policy makers to IO in the forms of deception, psychological operations (PSYOP), and computer attack waged daily against the United States. Potential adversaries, plentiful as targets within our infrastructure, are multiplying: amateur computer hackers, "professional" nonstate actors (i.e., terrorists), organized crime (e.g., drug cartels or the Mafia), the traditional adversarial nation-state, and even disgruntled domestic employees. According to an estimate by the Department of Energy and National Security Agency, 120 countries are developing IO capabilities.[8]

These threats are real—they exist now. The American public as well as some senior

government officials remain totally unaware of the extent to which ignorance jeopardizes our American way of life. We must understand the extent of the threat (not just the computer variety); shore up our vulnerabilities; develop prerequisite, analytical IO expertise; and organize our own military to conduct IO. If we fail in these endeavors, one day in the not-too-distant future, American citizens will walk the streets with a dumbfounded, deer-in-the-headlights look, wondering what truck ran over them and who allowed it to happen. I don't think this is an alarmist's view. I believe this is pragmatic, given the current tempo and sophistication of IO attacks, the dearth of DOD personnel trained in PSYOP and other IO techniques, the vulnerability of DOD and the national infrastructure, and the lack of an effective DOD organization to structure and expedite our progress in these vital areas. In a recent study by the National Defense Panel, members concluded that "the defense of our commercial and military information architecture will be critical and will allow us to protect our forces and our platforms from the enemy's reconnaissance efforts. New means to protect information systems and identify the origin of cyber-attacks must be the highest priority. Today, we are vulnerable."[9]

A major precept of IO is the ability to think like a potential adversary. For example, what might be the strategic goals of the People's Republic of China (PRC) concerning America? How about a bold and clean sweep? Neutralize America on the global stage. Editorialist William Safire articulates his views of the PRC's strategy in his essays "Of Nukes and Spooks" and "US Security for Sale."[10] Like a magician waving his right hand, the PRC discusses economics and mesmerizes American leadership with thoughts of wealth to be made in the PRC economy. (Americans are savvy enough to recognize the PRC as a developing economic powerhouse and are eager to engage.) Meanwhile, using the left hand, the PRC improves its military posture by quietly stealing nuclear-weapons research and other sensitive data, and makes significant inroads in US government circles, all the while increasing the PRC's own military might and expanding its sphere of influence.

An aggressive PRC might undercut America with computer attacks, successfully amassing great amounts of sensitive data serving three purposes: (1) undermine America's military defense, (2) lay the foundation for future attacks against America's automated infrastructure, and (3) strengthen the PRC's offensive capabilities. The PRC would also buy US influence throughout the highest national-level circles. When it can't purchase influence outright, the PRC may target key people with liberal views and gently persuade them to expound its perspective. A clever adversary, the PRC would employ intermediaries so these targets don't realize they are being manipulated.

When America's military strength has been sufficiently eroded (operations tempo is up, while retention and recruiting are both down); when the PRC missile program is sufficiently robust (again, thanks to American inattention); and when dormant viruses have been planted throughout America's commercial and military automated infrastructure; then the PRC can hold America in check. No longer a superpower, America might default from NATO, which could well collapse, pleasing the PRC's Russian neighbors. The PRC might finally have its way with Taiwan because America would be in no position to interfere. American imperialism would no longer encumber the PRC's rogue allies in the Middle East. Perhaps North Korean neighbors could head south. The PRC's orchestrated IO campaign could checkmate America economically and militarily on all fronts, and she wouldn't even see it coming.

IW will become a prominent feature of future wars, a concept that continues to gain recognition globally. Maj Gen Wang Pufeng, former director of the Strategy Department of the Academy of Military Science at Beijing, China, makes this very point:

> In the near future, information warfare will control the form and future of war. We recognize this developmental trend of information warfare and see it as a driving force in the modernization of China's military and combat readiness. This trend will be highly critical to achieving victory in future wars. . . . The thrust of China's military construction and development of weapons and equipment will no longer be toward strengthening the "firepower antipersonnel system" of the industrial age, but toward the strengthening of information technology, information weapon systems, and information networking. Our sights must not be fixed on the firepower of the industrial age; rather, they must be trained on the information warfare of the information age.[11]

Adversaries expertly manipulate the media, leveraging them against our well-publicized lack of tolerance for American bloodshed or ill treatment of a "defenseless" people. They apply IO against the United States in the form of PSYOP, altering perceptions and the will of the American public with the aim of alienating America from allies and nonaligned governments, sowing seeds of suspicion and dissension within segments of the American public, and affecting American foreign policy. For decades, terrorists adroitly exploited the media to state their case to the general public or to amplify the terror of their attack. In the Information Age, adversaries have refined this stagecraft into a fine art, actively courting the power of the press to sway world opinion—and the press willingly obliges.

Examples abound. Yet, we fail to recognize psychological attacks for what they truly are—attacks upon our national security—and fail to respond accordingly. We fell victim to strategically orchestrated psychological attacks that helped undermine domestic support for the Vietnam War and eroded the morale and effectiveness of our military. We also failed to recognize a similar and extremely effective campaign, waged in-country, that targeted the indigenous Vietnamese, winning their loyalty and undermining efforts of US military and South Vietnamese forces. Slogans of the North Vietnamese and Vietcong highlighted their emphasis on PSYOP: "Fighting is less important than propaganda" and "Political activities are more important than military activities." The North Vietnamese took pains to apply the principle "Do not attempt to overthrow the enemy but try to win over and make use of him."[12]

The Russians, experts in IO, can claim operational experience dating back to the 1920s, when Felix Dzershinsky founded the Cheka (predecessor of the KGB). For some time they have employed active measures on a global scale. At one point during the cold war, the Soviet Union operated 13 international organizations whose sole purpose was to further Soviet policies while simultaneously undermining those of America. These organizations had the most benign (and deceptive) names, which increased their effectiveness in luring unsuspecting members: Christian Peace Conference, International Institute for Peace, International Union of Students, and World Peace Council, to name a few. The Soviets also pulled strings from a distance by operating fronts—organizations not so easily identified as Soviet-based. They employed agents-in-place, co-opted journalists on sympathetic newspapers, staged protests, applied blackmail and bribery, manipulated agents of influence who (knowingly or not) implanted Soviet perspectives into decisions made in the international arena, forged documents misrepresenting American positions, and told outright lies and saw that they were publicized—anything to distance America from other populations.[13] A key to these successful psychological operations is repetition. No matter how outlandish the lie, if one repeats it often and plays it to a receptive audience, the lie becomes truth, damage is done, and the operation is successful. This is happening today, but we are blind to it.

Some analysts estimate that during the height of the cold war, the Soviet Union spent $3–4 billion annually on active measures.[14] Stanislav Levchenko, a former major in the KGB who defected to the United States in 1979, warned the House Permanent Select Committee on Intelligence that "the size of

overt and covert active measures is massive. . . . The KGB receives all the resources and personnel needed to carry out this effort. There are never any shortages."[15] He also noted that "by weakening or destroying the consensus within a free country, active measures do much more harm than classical espionage. In the West, few people understand this concept."[16]

One example of the Soviets' media manipulation occurred in 1979 but bears repeating because of its contemporary relevance and its potential application by adversaries such as Iraq. French journalist Pierre-Charles Pathe served covertly as a media mouthpiece of the KGB for 19 years. During that time he became a highly respected member of the media and leveraged great influence in both governmental and industrial circles. Following the discovery of his complicity, he was tried, found guilty, and sentenced to five years in prison.[17]

Communist and totalitarian countries rely extensively on IO and place their experts at the highest government levels. Most Americans, blissfully unaware, associate Mikhail Gorbachev with the "democratization" of the Soviet Union and hail him as a hero. But most of them don't realize that while he courted the West (and while we paid him homage), he simultaneously reorganized the powerful Soviet propaganda machine—the International Department—increasing its sophistication and effectiveness to spin the Soviet tale. Levchenko characterized this organization as "the largest subversive mechanism in the world. The purpose . . . was not to enhance bilateral relations. . . . It was just the contrary. It is the department which, among many other functions, is disseminating disinformation in the interests of the politburo and running all sorts of operations in the field."[18] Gorbachev appointed Anatoliy Dobrynin, former Soviet ambassador to the United States, as head of the new department. His extensive insight into the American psyche made him the perfect selection.

Soviet active measures continued strong, even after President Ronald Reagan and Gorbachev held their summit in Geneva in 1985. Lies flowed from Moscow crediting the United States with assassinating Sweden's prime minister Olof Palme and India's Indira Gandhi, bombing Honduran peasants, developing the AIDS virus to eliminate the black population, masterminding the Jonestown massacre in Guyana, and more. In 1989 a Russian defector from Biopreparat, a covert facility for the research and production of biological weapons, brought evidence of Russia's continuing and advanced program. Unfortunately, the West was enamored with Gorbachev, who effectively applied disinformation to cover the program and undermine the defector's credibility. Reports fell on deaf ears. A second defector from the same facility finally revealed the lies in 1992. In a cooperative union, Western government officials and James Adams, a reporter for the *Sunday Times,* applied information warfare themselves, forcing Boris Yeltsin to admit the program's existence.[19] Thus, we have the intoxicating appeal of glasnost on the one hand and information attacks on the other. Once we learn such lessons, we should not forget them.

A recent case of possible media manipulation involved Gary Webb's publication of a series in the then-little-known *San Jose Mercury News* in August 1996 alleging links between Los Angeles's crack-cocaine epidemic and the Central Intelligence Agency (CIA). At best, that article was gray journalism; at worst, it was a psychological operation targeting America's poor black population. Little damage would have resulted had the story died there. But it didn't. Not only was the lie retold but also it hit every major, credible news media in the United States, thus gaining credence. The article generated rage throughout our Afro-American community and produced severe political fallout. Widespread coverage forced the CIA to launch a yearlong internal investigation that tied up tax dollars and manpower. The Justice Department launched its own independent investigation. Frederick Hitz, CIA inspector general, testified to the Senate Intelligence Committee that the CIA had no such dealings with drug traffickers, "but not everyone

was convinced. An angry audience reacted loudly to Hitz' claims and black lawmakers remained suspicious."[20]

Never mind that, ultimately, the *Washington Post, New York Times,* and *Los Angeles Times* discredited the article. Never mind that investigations found no evidence supporting the allegation. The lie had been repeatedly told, and it took root—a classic and very successful psychological operation. What boggles the mind, though, is that at no time did anyone in either the news media or DOD cry foul and even consider it as a staged psychological attack. Instead, we took the outlandish article at face value, responded, and gave it credence. In this respect, we are our own worst enemy. As bad as these psychological operations are, they are not the only types of IO attacks we experience in today's Information Age. Attacks on computer networks are rampant.

They're Here! (But Who Are They?)

The form of any war—and it is the form which is of primary interest to men of war—depends on the technical means of war available.

—Giulio Douhet

The Information Age is both a blessing and a curse. Information technologies are inexpensive and easily obtained, originating points of attack difficult to locate, perpetrators hard to identify, and damage often difficult to detect. Recognized as strategic targets, elements throughout our national information infrastructure and defense information infrastructure come under attack daily. Targets of the national information infrastructure include public switched telephone networks, financial institutions, and transportation control points, all obviously crucial to employment of our military forces. Attacks on the defense information infrastructure are also prevalent, the Government Accounting Office estimating that 250,000 attempted penetrations of unclassified DOD systems occurred during calendar year 1996.[21] The Defense Information Systems Agency (DISA) estimates that 65 percent of DOD unclassified systems are vulnerable to penetration.[22] Only a small fraction of penetrations are detected, and a smaller percentage actually reported. Unclassified systems, usually less stringently protected than classified counterparts, pose tempting and lucrative targets. However, disrupting, corrupting, or otherwise impeding the flow of unclassified data can severely hinder military operations.

In February 1998 DOD experienced a widespread, structured, and systematic attack on unclassified computer systems. Over at least a two-week period, perpetrators targeted 11 sites belonging to both the Air Force and Navy. Most of the attacks concentrated on domain-name servers, which transmit unclassified but sensitive defense information about matters such as logistics, personnel, and payroll. One report observes that "the electronic intrusions . . . serve as a stark reminder that despite its warfighting prowess, the nation remains highly vulnerable to assaults on its ever-growing information infrastructure."[23] Furthermore, Deputy Secretary of Defense John Hamre speculates that attacks seek to insert hidden trapdoors into the system for future surreptitious entry.[24]

One should note two abysmal footnotes to this attack, the first of which concerns the identification of the perpetrators. Some analysts initially speculated that this attack might have to do with the US buildup in the Middle East, while others assessed it as teenage hacking by highly skilled but amateur "cyberkids" since the probes lacked the intensity of a focused, professional attack. As it turns out, three teens were indeed the culprits: two Americans in California and their mentor, Enud Tennenbaum, an Israeli hacker also known as "the Analyzer." The second sobering observation involved DOD's inability to respond effectively and expeditiously. In the absence of a clearly delineated IO structure within DOD, the center of gravity for rallying a response fell to the Joint Staff/J-39, an or-

ganization charged with policy development—not operations.

Notwithstanding the cliché "If you can't stand the answer, don't ask the question," the United States does not have the luxury of avoiding a poignant question here: If two teenagers can singularly grip the attention of DOD and cause havoc regarding information defense, how will the United States respond to a covert, more insidious, and purposeful attack?

DOD apparently has an opportunity to respond to that question. According to *Defense Week,* US officials briefed House lawmakers in early March 1999 that military databases are "under siege" in yet another "coordinated, organized" attack. Rep. Curt Weldon (R-Pa.) stated that "it is of the highest priority that we solve this problem and protect those information systems, because we don't know who's causing the attacks, whether they are nation-states, rogue groups or individual hackers as we've seen in the past. There's a combined effort by the Justice Department, the FBI, and DoD in these cases to work together." Deputy Secretary Hamre briefed the situation, summarizing that "we are at war right now. We are in a cyber war."[25]

Sadly enough, even our susceptibility to PSYOP and computer penetrations does not represent the extent of our information vulnerabilities. The amount of data that we place on the World Wide Web demonstrates that we are our own worst enemy. Thinking only about communicating among ourselves, we fail to realize that the web is indeed worldwide. The amount of sensitive, non-password-protected information available to anyone who seeks it is simply staggering. One can find information on weapon systems, automated-data-processing architectures, communications connectivity, satellite paths, lessons learned from military exercises, and much more. Although we would not dream of handing paper copies of this data to operatives from nations such as Iraq, the PRC, Russia, and a host of other nations, we have no compunctions about placing it on the Internet, where these very nations access it!

Without exaggerating, one can state that in many instances, adversaries who surf the web can negate certain military operations with little trouble and can collect intelligence sitting safely at their own computer terminals! Examined from another perspective, one can argue that DOD wastes millions of tax dollars by developing and exercising military capabilities that we give away on the Internet. We need to wake up! Of course, the first step in solving a problem is recognizing it as such. DOD's seniormost leaders recognized this vulnerability in December 1998 and have taken steps to rectify it. But data on the Internet is like spilt milk or the genie—once spilt or let out of the bottle, it's hard to put back!

Who's on First? What's on Second?

In preparations for national defense we have to follow an entirely new course because the character of future wars is going to be entirely different from the character of past wars. . . . We had better get accustomed to this idea and prepare ourselves for the new conflicts to come.

—Giulio Douhet

Although the riptide of IO is a given, the US military faces a conundrum. On the one hand, DOD relies heavily on technological advances in the Information Age in response to defense challenges and global commitments of the twenty-first century. On the other hand, inherent vulnerabilities of global connectivity could be our nemesis. Although this dichotomy may seem incongruous, we can resolve differences. DOD can establish an information foundation firmer than sand but only with significant resource investment coupled with dedicated, bold, and concerted effort. Our best defense lies in shoring up our own information foundation (i.e., information assistance) and organizing smartly to conduct swift, effective, offensive IO.

The good news is that DOD elements are responding. The bad news is that it's the twenty-first-century version of the Keystone Cops! Like supercharged electrons, organizations throughout DOD are scrambling for IO-related projects, which, together with contracts and working groups, proliferate—but under no central guidance and with no set methodology to share lessons learned. The skeptics are correct, to a certain extent. IO is the political emphasis du jour because funding is available. But the threat is real, and organizations are reacting. The proliferation of organizational activity (table 1) raises the question of how DOD should organize for IO.

Who is investigating IO concepts and applications, strategizing IO-related R&D investment, sharing lessons learned, training and equipping for IO, and establishing a systematic approach to the current organizational chaos? Right now, no one. Brig Gen Wayne Hall astutely observes that "we have a . . . curious inability to position ourselves organizationally for the advent of IO as a dominant form of warfare."[26] Recognizing this significant shortfall, DOD is currently revising the Unified Command Plan to address the issue. What is the desired end state? The best solution is for IO to be elevated to the unified-command level. The issue then becomes whether to organize geographically or functionally. At first glance geographical organization seems most appropriate. This approach allocates to each service the responsibility for IO training and equipping and to

Table 1
Units with Information-Operations Functions

Land Information Warfare Agency	
Air Force Information Warfare Center	Joint Battle Center
Joint Command and Control Warfare Center	
Joint Communications Support Element	Air Intelligence Agency
Joint Spectrum Center	
Joint Communications Security Monitoring Activity	
Naval Information Warfare Agency	
Air Force Computer Emergency Response Team	
Joint Warfighting Analysis Center	
Air Force Information Warfare Battlelab	Air Combat Command
National Security Agency	Defense Information System Agency
Information Operations Technology Center	
unified commands	service headquarters

each combatant commander in chief (CINC) the responsibility for IO planning and execution. A geographical orientation, however, places IO-related resource requirements in direct conflict with all other weapon systems and training requirements competing for finite funds. It also allows each CINC to independently pursue avenues of information protection/attack, fosters duplication of effort, and complicates the process of sharing lessons learned. The geographical approach echoes early calls in World War II to divide air forces, subordinating them to individual ground components.

Organizing IO functionally at the unified-command level capitalizes on three long-held military principles. The first, unity of command, "ensures the concentration of effort for every objective under one responsible commander. . . . All efforts should be directed and coordinated toward a common objective . . . to gain most efficient application."[27] This is especially critical today when organizations throughout DOD recognize the vulnerability inherent in information infrastructures. Working groups and R&D efforts proliferate, due in large part to funds associated with IO efforts. To a great degree, efforts among organizations are uncoordinated and unevenly focused across the defensive and offensive facets of IO. Both time and funds are finite; they must be applied with concentrated intensity and coordinated among potential users. Vice Adm Arthur K. Cebrowski, the Navy's director of space and electronic warfare, agrees with this approach and likens it to nuclear warfare: "We created an environment in which the various disciplines that contribute to nuclear warfare could come together and be managed as a mass rather than as a collection of career stovepipes. We need to do similar work with information technology."[28]

The second principle, that of mass, "focuses combat power at a decisive time and place. . . . Mass is an effect that air and space forces achieve through efficiency of attack."[29] Functional organization under a single CINC allows focused identification of IO objectives for training, equipping, and R&D to develop tools for information protection and attack. It would also generate synergy and expedite IO-related advances by sharing lessons learned among projects. The third principle, economy of force, "selects the best mix of combat power. To ensure overwhelming combat power is available, minimal combat power should be devoted to secondary objectives."[30] One can systematically prioritize IO projects competing for funds, identify weak points, and effectively allocate funds. This also capitalizes on resident IO expertise. Individuals well versed in IO tactics will be able to recommend the most effective mix of IO assets for applications in military operations other than war or crisis situations. The critical question now becomes, Who will lead the IO charge?

When deciding where to place the IO mission, senior DOD leaders should keep in their sights the essence of IO—the ability to affect adversaries' decision-making process and indigenous civilian populations with the goal of attaining end states desired by the United States without applying conventional arms and risking American lives. The concept most fundamental to IO and central to this discussion is that the ultimate IO target is not the adversary's conventional military force but his mind. IO equates to playing chess—springing from unexpected quadrants and attacking adversaries from anywhere in the world. The objective is to keep the adversary off balance and provoke him into acting prematurely or unwisely. We want him to jump right into a well-placed trap or perhaps convince him not to act at all!

When one considers how to "mess with the mind" by using PSYOP, deception, and misinformation or by knowing the adversary and so forth, the human aspects (as opposed to the technical aspects) of IO become readily apparent. This philosophy comes straight from Sun Tzu—and he predates both computers and satellites! Adapting this approach is even more critical when one views it in the context of our current civilian leaders, most of whom have no firsthand experience with the horrors of war other than those portrayed in the movie *Saving Private Ryan*. The

fact that our policy makers tend to be shocked by death on the battlefield makes them and our foreign policy all the more susceptible to foreign manipulation.

DOD should assign the IO mission to people who know foreign cultures, who know what buttons to push, and who have a full sense of all facets of IO—not just the technical ones. To accomplish these objectives, Sun Tzu believed in knowing oneself and the enemy. But we Americans see the world from our own eyes, even when we try to anticipate a foreigner's response—whether across the diplomat's table or the battlefield. We always anticipate the response (and plan accordingly) based on how *we* would respond in the given situation. One might very well amend Sun Tzu to read, "Know yourself, know the enemy, and know the difference!"

To execute effective IO, our war fighters must apply the wisdom of Sun Tzu, whose principles, inculcated in disciples since 500 B.C., liberally apply techniques such as spies, rumors, deception, and operational security. Sun Tzu considered information essential to war. He sought to wage a war of perceptions, manipulating data and public opinion and targeting the mind of his enemy and the people surrounding him.[31] Military objectives included disrupting alliances; ascertaining enemy plans, strengths, and weaknesses; and attacking enemy strategy. The ultimate objective for Sun Tzu's army was to subdue the enemy without fighting. According to him, "those skilled in war subdue the enemy's army without battle. They capture his cities without assaulting them and overthrow his state without protracted operations"[32]—an approach tailor-made for the American public!

We have two fundamental choices at this juncture. The first involves creating a new IO unified command. Given the magnitude of that order, let's examine the second choice—assigning IO to an existing, functional unified command. The question becomes, Which one? Candidates include US Atlantic Command (ACOM), Air Force Space Command (SPACECOM), and US Special Operations Command (SOCOM). A year ago ACOM could have been a leading contender to nurture and develop the IO mission, and a number of people offered sound, favorable arguments. During that time the Joint Staff downloaded several missions to ACOM, adding to the momentum and validity of its assuming responsibility for IO. The opportunity passed, however, and today the momentum has shifted elsewhere.

Air Force doctrine, which recently—and correctly—recognized information as a "domain" on par with sea, land, and air, is inclined to delegate this domain (and the IO mission) to SPACECOM. Indeed, SPACECOM is currently the leading contender. The National Defense Panel also recommended giving the IO mission to SPACECOM and transferring DISA to SPACECOM as a subordinate command. SPACECOM would then manage DOD's global information infrastructure.[33] Also proposed for transfer to SPACECOM is DISA's recently formed computer network defense (CND) joint task force. At first glance this approach makes sense. The current, intense focus on CND and attack also promulgates such an approach. Proponents claim that assigning IO to SPACECOM also tracks partially with AFDD 2-5, *Information Operations*, which notes that IO consists of two major elements: information-in-war and information warfare (offensive and defensive operations). SPACECOM is closely affiliated with the former due to the magnitude of battle-related information transmitted through space and the growing dependence on space-based collection platforms (and some of their technical aspects). Moreover, assigning IO to SPACECOM reflects the technology-heavy orientation of our national policies and defense strategies. Remember the castles?

Given its technical orientation, however, SPACECOM is the least appropriate choice for the IO mission for two reasons. First, should SPACECOM take the IO mission, it will undoubtedly rise to the computer-related IO challenges but at the expense of the majority of the predominantly human-oriented aspects of the IO mission (e.g., PSYOP, deception, etc.). SPACECOM does not have the

prerequisite analytical knowledge of the adversary's religious, social, political, economic, and military predisposition to successfully manipulate his thinking. In other words SPACECOM does not know how to plan and help war-fighting CINCs conduct effective IO in the broadest and most objective sense of the term. Some people may argue that SPACECOM's joint intelligence center gives it such understanding. But products generated by that center support SPACECOM's technical mission, serving to protect space-based assets. Besides, that expertise exists elsewhere. Developing it now would entail a significant duplication of effort—anathema to the current fiscally constrained environment.

Second, the two most crucial areas warranting concerted attention in the coming decade are IO and space. Indeed, one of SPACECOM's primary concerns is establishing space as an independent area of responsibility. By definition, assigning the IO mission to SPACECOM would dilute the IO focus because of SPACECOM's competing challenges and extant missions at a crucial point in the evolution of both space and IO. We need to align IO correctly the first time, both functionally and organizationally. Giving SPACECOM the IO mission would court a major disconnect in effective IO application.

IO and Special Operations Command

Hopefully, the people who currently endorse assigning the IO mission to SPACECOM will reexamine that position and give consideration to SOCOM, by far the best-suited unified command in existence for the IO mission. Many parallels exist between special ops and IO. First, IO and special-ops missions apply to all war-fighting CINCs. Second, SOCOM has established special-ops elements with each war-fighting CINC to help plan/execute special-ops missions and to integrate these into the CINC's overall battle plan. IO must also establish such teams, much as the Joint Command and Control Warfare Center (JC^2WC) has already done. Third, special ops involve a truly integrated, joint effort—training and fighting purple to the lowest echelon. IO must be similar because each service brings with it a special expertise (e.g., Army PSYOP). Additionally, to conduct effective IO missions, we must know our adversary—his way of thinking, pressure points, inclinations, source of domestic support, cultural influences, and so forth. Each of our military services knows these aspects of its adversarial counterpart—another argument for joint integration at the outset. Fourth, SOCOM has the stick for developing special-ops tactics, techniques, and procedures and has the funding authority—Major Force Program—to back it up. DOD needs a much more structured and systematic approach to IO, including the Major Force Program, thus allowing IO to compete fairly in a fiscally constrained environment with other priorities such as force modernization.

As numerous as reflections in a house of mirrors are the mission parallels between special operations forces (SOF) and IO. However, to truly appreciate the expanse and fidelity of those parallels requires a line-by-line mission comparison, one in context of the other (tables 2 and 3). The results will show certainly not a perfect fit but an approximately 80 percent overlap—far greater than extant parallels between SPACECOM and IO.

At first glance, unconventional warfare and IO don't seem to overlap. However, the *Joint Special Operations Awareness Program (JSOAP) Reference Manual* shows some areas in which unconventional warfare could actually support IO objectives. Specifically, "when committed to accomplishing national unconventional objectives, Special Operations Forces . . . assets are primarily concerned with unconventional warfare, escape and evasion, subversion, sabotage, and the gathering of intelligence. These activities are conducted in response to high-priority intelligence requirements and information requirements of the strategic intelligence

Table 2
IO Missions in the Context of SOF

IO Missions	*SOF*
Operations Security (OPSEC)	Yes
PSYOP	Yes
Deception	Yes
Electronic Warfare	Yes
Physical Destruction	Yes
Information Attack	Yes

collection plan."[34] Subversion, sabotage, and intelligence gathering equate to IO.

Some direct action listed in the JSOAP manual coincides with IO, such as attack of strategic targets (depending on the target); disruption or neutralization of command, control, and communications nodes; some forward-air-controller missions; abduction of selected personnel; and liberation of captured personnel.[35] The latter two could have a psychological impact on the adversary that plays to the advantage of the United States. Clearing mines, taking airfields, coordinating fire support, performing combat search and rescue (although appropriately tasked primarily to service components), and providing aviation support to SOF probably comprise the 20 percent of special opera-

Table 3
SOF Missions in the Context of IO

SOF Missions	*IO*
Foreign Internal Defense (FID)	Yes
Civil Affairs	Yes
Unconventional Warfare	Yes
Special Reconnaissance	Yes
Direct Action	Yes
Counterterrorism	Yes
PSYOP	Yes

tions that do not neatly correlate to IO. Additionally, SOF missions falling within this 20 percent, although they do not perform IO missions, are actually IO customers (read intelligence users).

One can find additional parallels throughout the JSOAP manual. Substituting *IO* for *SOF* causes the parallels to shine through in brilliant detail. A few examples follow:

"Governments often view the use of SOF as a means to control escalation in situations where the use of conventional forces would be unwarranted or undesirable. . . . They operate to exploit enemy weaknesses, organize resistance forces, or collect intelligence that would not be otherwise available. . . . They have a high political and psychological component."[36] With the exception of the reference to resistance forces, this passage parallels IO applications.

"Downsizing and closure of overseas bases is increasing the need and programmed costs for SOF training and exercise deployments in regions of unit specialization and areas of concern to the [National Command Authorities]."[37] Any opportunity DOD has to interface with foreign nationals will assist in developing needed insights. Like SOCOM forces, IO teams also must be geographically focused to develop this regional understanding. The manual further notes that "each battalion has linguists and area specialists who continuously monitor events in the priority countries. This expertise is used . . . along with intelligence and psychological analysis, to develop ethnic, cultural, social, and country profiles of the population in the potential [area of operations]. The results of these analyses are combined to produce basic psychological studies of the key areas of concern."[38] This is IO—learning the mind-sets of other nations.

"Theater CINCs want all the FID training that SOF can provide. It is timely. It provides forward presence, access to foreign forces, influence, intelligence, and assists in conducting peacekeeping efforts."[39] These also are elements of IO. SOF offers unique IO advantages in its worldwide deployments.

"All military operations involving contact with civilians, domestic or foreign, designed to influence, control, or develop civilian organizations are classified as civil affairs operations. [Civil affairs] operations establish, maintain, influence, or exploit relations between military forces and civil authorities and the civilian population in the area of operations."[40] This is IO.

"SOF based or deployed in a theater of operations are placed under the combatant command of the theater combatant commander."[41] One must apply IO forces similarly—something easily accomplished if IO is integrated into the existing SOCOM structure.

"Historically, SOF have been employed in advance of conventional force lodgments and this coordination is crucial in the transition from special to conventional operations."[42] One should apply IO, which also spans the spectrum of conflict, in the earliest stages to prepare the battlefield with the objective of avoiding battle entirely.

"Special operations are of a political-military nature and are affected more directly by political considerations than conventional operations. Special operations encompass a wide range of activities conducted both unilaterally and in support of conventional operations. They are conducted by specially organized, trained, and equipped military forces to achieve military, political, economic, or psychological objectives by nonconventional military means in hostile, denied, or politically sensitive areas. They are conducted in peace, conflict, and war, independently or in coordination with operations of conventional forces."[43] This, too, is IO. Adversaries will become increasingly adept at leveraging the capabilities and vulnerabilities of the Information Age. Not mentioned here are the lucrative, soft targets of a nation's infrastructures made vulnerable by the Information Age. One should include a nation's psyche/national will in the overall concept of infrastructure. For example, holding an adversary's power grid hostage for a period of time or covertly manipulating the text of his media will certainly have an impact on the

national will. Asymmetrical warfare is here. The United States must develop skills to apply global media against our adversaries as effectively as they wield the media to affect US foreign policy.

Finally, the entire third section of the JSOAP manual, "SOF Concepts of Employment: Peacetime, Conflict, and War," addresses specifics of FID, recovery operations, PSYOP, show of force, civil affairs, regional employment, and more. Section six addresses OPSEC, deception, and psychological impact. The data in those sections is pure IO. Sun Tzu would have been proud!

One must now address one looming question. If SOCOM were to take the DOD lead on IO, could it do so without technical aspects totally eclipsing what is now considered special operations? Computers constitute only one instrument in the IO orchestra. By assuming the IO mission, SOCOM would provide badly needed balance by integrating the technical aspects of computers—a single element in the overall IO concept—into already existing SOF functions. A decade ago we discussed "fused intelligence" (signals intelligence, imagery intelligence, and HUMINT) as the desired intelligence product. We must now develop the capability to generate "fused" IO, integrating all aspects into a coherent, orchestrated campaign.

Using the same litmus test, we should compare SOCOM to the Air Force's IO doctrine (remember information-in-war and information warfare?). SOCOM scores high on the latter—much more so than SPACECOM for two reasons. First, it embodies the essence of Sun Tzu's approach to IO. Second, it is an operational as opposed to a supporting command. How does it fare when compared to information-in-war? Alas, not so well. SOCOM has little expertise and no management responsibility for the billions of dollars of intelligence, surveillance, and reconnaissance assets affiliated with information-in-war. Is this a showstopper? Maybe. We must now examine the first organizational solution proposed: establishment of a new IO unified command. If one truly accepts information as a new domain and recognizes the preeminent role IO will play in coming decades, this solution makes perfect sense.

Quick! Stem the Tide!

Establishing a new command is a bold and extreme solution. But it would afford DOD the unique opportunity to get it right the first time, preclude the necessity of retrofitting an existing but not perfectly aligned unified command, and send a strong message to Americans (a wake-up call?) and their opponents. Given the momentum and potency of IO attacks today, I'm firmly convinced that boldness is essential. We don't have time to evolve to the best solution. Just as adversaries will never again afford us the time to build up our deployed conventional forces as in Operation Desert Storm, so will they now decline to throttle back their attacks to allow us leisurely evolution of our IO organization and capabilities.

We should first identify DOD's center of gravity for IO to date and build around that core element. That organization is the Air Intelligence Agency (AIA), the IO leader for the Air Force and DOD. Headquarters for the new command should remain at the present location at San Antonio, Texas, and its commander should rise to the four-star level. Tremendous synergy occurs daily at "Security Hill" in San Antonio, with the collocation of several jewels in DOD's IO crown. For example, AIA brings with it the Air Force Information Warfare Center, Air Force Information Warfare Battlelab, Air Force Computer Emergency Response Team, and much more. AIA's assumption of IO also would require other organizational alignments. The Defense Reform Initiative realigned five joint activities to ACOM effective 1 October 1998: the Joint Warfighting Center, Joint Communications Support Element, Joint Battle Center, Joint Warfighting Analysis Center, and JC^{2}WC. DOD should resubordinate these to the IO command. JC^{2}WC is a natural here since its director also serves as the AIA commander. DOD should also consider realigning DISA, especially the CND joint task force.

Let's give this new command the IO litmus test by evaluating it according to the standards of AFDD 2-5. AIA soundly qualifies for the information-in-war element by having a complete operational grasp of the technical aspects of IO (offense and defense) and a strong conceptual and burgeoning operational grasp of the human elements. In this regard AIA incorporated PSYOP-qualified personnel on its staff and launched a concerted effort to train additional members. To complete the picture, we should also consider realigning the PSYOP mission from SOCOM to the new IO command. This move makes sense from the perspective of designing a fully rounded IO command and ensuring that PSYOP is thoroughly integrated into IO planning and execution.

In the early 1980s, PSYOP—like special operations—had deteriorated to the point that President Reagan attempted to revive it. This effort resulted in the creation of DOD's PSYOP master plan under the auspices of Secretary of Defense Caspar Weinberger. Briefly, the plan recommended the organizational separation of PSYOP from special operations and the establishment of a PSYOP analysis center to develop both skills in depth and numbers. Also during 1985–86, however, Congress passed the SOF reform package, which resulted in the establishment of SOCOM. PSYOP had a choice to make—try to implement DOD's master plan or throw in with the SOF legislation. The bad news was that PSYOP would still be closely affiliated with special operations, viewed by many members of the community as overly restrictive. The good news was that PSYOP—like special forces—could benefit from four-star advocacy, representation on the secretary of defense's staff via the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict, and a fund site designated for special forces. PSYOP chose the latter.

I suggest that as the art of warfare changes, so ought our organizational structures. Under the AIA-centered IO command, PSYOP would be fully integrated in heavily PSYOP-based operations. Moving PSYOP into this command affords it the same benefits it enjoys under SOCOM. Further, IO should also have its own fund site to eliminate redundant spending on IO initiatives and to enable fair competition against better understood initiatives such as modernizing the equipment of conventional, Industrial Age Forces. The IO command could help develop critical PSYOP skills and lead the effort to obtain additional resources so lacking in our contemporary force. Our current capabilities, most of which reside in the Army Reserve community, are minimal. Because many of our military leaders don't understand PSYOP or its application, it is not part of the standard curriculum in our professional military schools.

Under the IO command, DOD might finally see the development of a joint IO (in the broadest context) analysis center to which deployed commanders could turn in time of need with questions such as, "I'm in Ethiopia. How do I undermine local thugs and persuade local indigents to the US way of thinking? What are the buttons? What are their motivators?" The best we have now at the theater level is an overtaxed, small group of PSYOP experts. We do have joint intelligence centers, but their personnel, although critical to collecting and analyzing Industrial Age, force-on-force intelligence, have no training in IO and in targeting adversary mind-sets. As the expression goes, "That's a hell of a way to run a war!"

Of course, one should not establish organizations in a vacuum without considering proposed concepts in the context of doctrine. The above recommendation fits Air Force IO doctrine. But does it fit published joint doctrine? The good news is that DOD published a joint doctrine in October 1998 (previously, none existed). The document accurately describes vulnerabilities and interconnectivity of the global, national, and US defense information infrastructures. The bad news is that Joint Publication (Pub) 3-13, *Joint Doctrine for Information Warfare,* misses the mark in several key areas by overly focusing on technology/automated infrastructure at the expense of the human elements of IO. It fails to emphasize that the fundamental IO

target is the enemy's mind—that the driving principle is to know the enemy in order to manipulate, neutralize, and defeat him. Joint doctrine sadly underrepresents the IO role of HUMINT and PSYOP, again favoring technology—a lesson we failed to learn in Vietnam and again when the Middle East began to crumble in the early 1980s. To prosecute effective IO, analysts must understand ethnic hatred from the target's perspective. Overhead collection cannot help much here. Other than using HUMINT or other face-to-face contact, how can we develop such an intimate understanding of the psychological bent? Technology has serious limitations, and joint doctrine fails to recognize that.

Joint doctrine displays a less-than-comprehensive grasp of IO by relegating public affairs, civil affairs, and intelligence only as activities related to IO. If we examined the experts of mental manipulation (the Russians and Vietnamese), I believe they would be incredulous at how much the United States has *not* learned after decades of being victimized by such operations. Intelligence, public affairs, and civil affairs should occupy front-row seats in an IO cell. The authors of joint doctrine misunderstand the IO role of public affairs when they assign PSYOP the responsibility to publicize the existence or success of civil-military operations in generating positive opinion of the United States and earning the confidence of the target population. Assuming the truthfulness of these positive accomplishments, one can point to this as a bona fide public-affairs story about the good guys. Winning the hearts and minds of the indigenous population is smart journalism—and that *is* IO! Likewise, civil affairs is a first-string player in understanding the dynamics of the indigenous population and winning it over. Integral and fundamental to all these efforts is intelligence. Joint Pub 3-13 should emulate AFDD 2-5 and employ a holistic view of "information" that includes intelligence not as a supporter of but as the heart of IO.

Authors of this joint publication incorporate an insightful quote from Capt Sir Basil Liddell Hart: "The real target in war is the mind of the enemy commander, not the bodies of his troops."[44] Although that thought was on target in 1944 and holds true today, technology has changed the context and, hence, the lesson to be learned from his comment. Command and control is no longer our primary IO weakness. Due to the immediate reach of global media, the target nowadays is not the mind of the singular commander but a country's national will (in our case, Congress and those who base America's policy on public-opinion polls).

Should not DOD also be on the alert for PSYOP and information deception waged against the American public during peacetime? It is happening daily. Who is charged with determining the source and calling that country or individual to task? Who alerts Americans to the fact that we are not, in fact, at peace? How do we protect our Congress from IO attacks? But first, whom do we train to recognize such an attack in progress? Who, and in which organization, is charged with indications and warning for this type of attack? To accomplish these alerts, we must thoroughly school the defensive force in all aspects of IO offensive techniques. How else will our analysts recognize when the United States is effectively and subtly victimized—again? The joint authors should have made these concepts the doctrine's opening premise, yet some are barely mentioned and others are not mentioned at all.

Every person developing IO doctrine—action officers and senior leaders alike—should be schooled in all aspects of IO principles. They must understand how adversaries have masterfully waged IO against us in the past. Why? So they can develop powerful doctrine based on proven models. Why is understanding this so critical to doctrine? If correctly applied, joint doctrine will significantly affect IO organization and operations in all services and throughout the spectrum of conflict. If, however, these individuals have no sense for the nuances, depth, and breadth of Soviet active measures, for example, our doctrine will be ineffective and directly responsible for wheel spinning, wasted effort, and a weakened military posture for both offensive and

defensive IO. If they have not read debriefings of Soviet defectors with such expertise, then we are operating blind. This is self-inflicted shortsightedness because those insights are available. Right now, AFDD 2-5 provides a sounder foundation upon which to develop our IO capabilities. Air Force doctrine promotes a much more thorough grasp of IO, its component parts, and its potential applications than does joint doctrine. This observation is not based on service parochialism but on an understanding of IO as it is applied today and on a study of how it was applied in the past.

Conclusion: Tides Wait for No Man!

Reorganizing to incorporate evolving operational capabilities is not unique. One need only recall Douhet and other progenitors of airpower in the first decades of the twentieth century and then fast-forward through both world wars, when Billy Mitchell, Hap Arnold, and others championed airpower theory. It took the United States nearly five decades to fully understand the potential of airpower and, most importantly, to properly organize to maximize its application. In short, airpower was such a revolution in military affairs that US doctrine and tactics actually evolved into the ultimate organizational solution with the birth of the United States Air Force in September of 1947.

Although the analogy of the evolution of airpower is rock solid (indeed, Douhet's words seem more prophetic than he realized), a few stark contrasts exist. First, airpower evolved relatively slowly, while the Information Age exploded onto the global stage like impatient actors refusing to wait their cue. Second, even in its infancy, the magnitude and destructive potential of the Information Age dwarf those of airpower. Third, the United States does not enjoy a strong lead in the global application of IO. Many other entities are serious rivals. In short, DOD does not have five decades to establish and implement the most effective organization to prosecute IO. Our learning curve must be as explosive as the Information Age—we must quickly appreciate the human element of IO (which, thus far, has received little attention) and incorporate it into decisions about organizing for IO.

We are sitting on the cusp of a new millennium and a new manner of waging war. We must become prolific in planning and executing information operations and fully appreciate our adversaries' approaches to IO, as well as our own vulnerabilities. We should intently study the lessons from Vietnam that show how the strategic IO campaigns of the Soviets and North Vietnamese totally and quietly duped us. We should read with great interest reports from Soviet defectors that shed light on the Soviet—now Russian—mentality. We should school our information warriors in the philosophy of the Far East and make them chess players. They should be educated in psychological operations, which have great relevance in today's operations, especially during peacetime. They should read doctrinal papers of other nations likewise honed in on IO (the PRC, for example), understand how other nations intend to wage war, and posture this country to respond appropriately. A crash course in the works of Sun Tzu and other Chinese tacticians would certainly improve our understanding of the battlefield for the next millennium. We should incorporate these topics in our professional schoolhouses and teach them to both the officer and enlisted corps. This core IO curriculum should be joint, and the Air Force, which has led the way thus far, should be designated as the DOD executive agent for IO training.

DOD correctly decided to raise IO to the unified-command level. If it takes the evolutionary approach, DOD now has the opportunity to align IO properly by choosing SOCOM—by far the best interim solution because its missions most closely parallel those of IO. If the nod goes to SPACECOM, however, we must have the courage to admit in the (hopefully) not-too-distant future that that might have been a mistake and rapidly

evolve to a more suitable organization. The best solution is to create a new IO unified command—specifically, AIA—that can expedite the IO developments we so badly need. This would give us a credible IO deterrence, enabling senior DOD leaders to build their castles—our national security policy—on a foundation much firmer than sand. As Douhet insightfully observed, "victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur. . . . Those nations who are caught unprepared for the coming war will find, when war breaks out, not only that it is too late for them to get ready for it, but that they cannot even get the drift of it."[45] □

Notes

1. *Global Engagement: A Vision for the 21st Century Air Force* (Washington, D.C.: Department of the Air Force, 1996), 1.
2. See *Joint Vision 2010* (Washington, D.C.: Joint Chiefs of Staff, 1995).
3. Quoted in "Military, Industry Partners Grab Information Systems' Brass Ring," *Signals Magazine*, September 1997, 91.
4. AFDD 1, *Air Force Basic Doctrine*, 1 September 1997, 36.
5. *Transforming Defense: National Security in the 21st Century*, Report by the National Defense Panel (Arlington, Va.: National Defense Panel, December 1997), 14, 32.
6. "Military, Industry Partners," 91.
7. Quoted in Jason Sherman, "Infowar? What Kind of a Defense?" *Armed Forces Journal*, August 1997.
8. *Information Warfare: Legal, Regulatory, Policy and Organizational Considerations for Assurance*, 2d ed. (Washington, D.C.: Joint Staff, July 1996), 2-111.
9. *Transforming Defense*, 44.
10. William Safire, "Of Nukes and Spooks," *New York Times*, 15 March 1999; and idem, "US Security for Sale," *Oakland County Republicans Conservative Commentaries*, n.d.; on-line, Internet, 16 March 1999, available from http://www.oaklandgop.com/cmt518.htm.
11. Maj Gen Wang Pufeng, "The Challenge of Information Warfare," *China Military Science*, Spring 1995.
12. Lt Col Philip P. Katz, Ronald D. McLaurin, and Preston S. Abbot, "A Critical Analysis of US PSYOP," in *Psychological Operations: Principles and Case Studies*, ed. Col Frank L. Goldstein and Col Benjamin F. Findley Jr. (Maxwell AFB, Ala.: Air University Press, September 1996), 133.
13. DeWitt S. Copp, "Soviet Active Measures," in ibid., 154–85.
14. "Active Measures Key to Soviet Discrediting Campaign," *Washington Times*, 23 May 1985.
15. Quoted in Copp, 154.
16. Quoted in "Active Measures Key."
17. Ibid.
18. Quoted in Copp, 173.
19. James Adams, *The Next World War: Computers Are the Weapons and the Front Line Is Everywhere* (New York: Simon & Schuster, 1998), 243.
20. Kathleen Koch, "CIA Disavows Crack Connection: Many Skeptical," CNN Interactive, 23 October 1996; on-line, Internet, 2 March 1999, available from http://europe.cnn.com/US/9610/23/cia.crack/index.html.
21. Stevan Mitchell, commissioner, President's Commission on Critical Infrastructure Protection, remarks at the John F. Kennedy School of Government, Harvard University, 20 September 1997.
22. "Report of the Defense Science Board Task Force on Information Warfare-Defense" (Washington, D.C.: Office of the Undersecretary of Defense for Acquisition and Technology, November 1996), sec. 2.3; on-line, Internet, available from http://www.jya.com/iwd.htm.
23. Richard Lardner and Pamela Hess, "Pentagon Looks for Answers to Massive Computer Attack," Defense Information and Electronics Report, 13 February 1998; on-line, Internet, available from http://www.newdimensions.net/headlines/pentagon.htm.
24. Quoted in Suzanne M. Schafer, "Hackers Invade Pentagon Computers," Associated Press, 26 February 1998.
25. John Donnelly and Vince Crawley, "Hamre to Hill: 'We're in a Cyberwar,' " *Defense Week*, 1 March 1999.
26. Brig Gen Wayne M. Hall, "Reflections on 21st Century Information Operations," 2 January 1999.
27. AFDD 1, page 12.
28. Quoted in Sherman.
29. AFDD 1, page 16.
30. Ibid., 18.
31. Sun Tzu, *The Art of War*, ed. and trans. Samuel B. Griffith (New York: Oxford University Press, 1971), 78.
32. Ibid., 79.
33. *Transforming Defense*, 72.
34. US Special Operations Command, *Joint Special Operations Awareness Program (JSOAP) Reference Manual*, 4th rev. (MacDill AFB, Fla.: US Special Operations Command, 7 April 1994), 3-9.
35. Ibid.
36. Ibid., 1-1.
37. Ibid., 1-7.
38. Ibid., 2-7.
39. Ibid., 1-8.
40. Ibid., 2-7 through 2-8.
41. Ibid., 2-17.
42. Ibid., 2-19.
43. Ibid., 3-1.
44. Joint Publication 3-13, *Joint Doctrine for Information Warfare*, 9 October 1998, II-4.
45. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (1942; new imprint, Washington, D.C.: Office of Air Force History, 1983), 30.

The CSAF Reading List

THE CHIEF of staff of the Air Force's Professional Reading Program began in March 1997. After the initial success of the program, Gen Michael E. Ryan released a slightly revised version of the list in May of this year:

Enlisted and Civilian Grades One to Eight

Basic—Airman Basic to Senior Airman

The Passing of the Night: My Seven Years as a Prisoner of the North Vietnamese
by Brig Gen Robinson Risner

10 Propositions Regarding Air Power
by Col Phillip Meilinger

Intermediate—Staff Sergeant to Technical Sergeant

Lincoln on Leadership: Executive Strategies for Tough Times
by Donald Phillips

10 Propositions Regarding Air Power
by Col Phillip Meilinger

They Also Flew: The Enlisted Pilot Legacy, 1912–1942
by Lee Arbon

Advanced—Master Sergeant to Chief Master Sergeant

The Killer Angels
by Michael Shaara

Makers of the United States Air Force
by John Frisbee

This Kind of War: A Study in Unpreparedness
by T. R. Fehrenbach

Winged Victory: The Army Air Forces in World War II
by Geoffrey Perret

Officers and Civilian Grades Nine and Above

Basic—Second Lieutenant to Captain and GS-9 to GS-12

A Few Great Captains: The Men and Events That Shaped the Development of U.S. Air Power
by DeWitt Copp

Heart of the Storm: The Genesis of the Air Campaign against Iraq
by Col Richard Reynolds

Hostile Skies: A Combat History of the American Air Service in World War I
by James Hudson

Lincoln on Leadership: Executive Strategies for Tough Times
by Donald Phillips

Officers in Flight Suits: The Story of American Air Force Fighter Pilots in the Korean War
by John Sherwood

The Right Stuff
by Tom Wolfe

10 Propositions Regarding Air Power
by Col Phillip Meilinger

This Kind of War: A Study in Unpreparedness
by T. R. Fehrenbach

Thud Ridge
by Col Jack Broughton

Winged Shield, Winged Sword: A History of the United States Air Force
edited by Bernard Nalty

Winged Victory: The Army Air Forces in World War II
by Geoffrey Perret

Intermediate—Major to Lieutenant Colonel and GS-13 to GS-14

Air Power: A Centennial Appraisal
by Air Vice Marshal Tony Mason

Beyond Horizons: A Half Century of Air Force Space Leadership
by David Spires

The First Air War, 1914–1918
by Lee Kennett

General Kenney Reports: A Personal History of the Pacific War
by Gen George Kenney

Makers of Modern Strategy: From Machiavelli to the Nuclear Age
edited by Peter Paret

Over Lord: General Pete Quesada and the Triumph of Tactical Air Power in World War II
by Thomas Hughes

Rise of the Fighter Generals: The Problem of Air Force Leadership, 1945–1982
by Col R. Michael Worden

Storm over Iraq: Air Power and the Gulf War
by Richard Hallion

The United States Air Force in Korea, 1950–1953
by Robert Futrell

Advanced—Colonel through General Officer and GS-15 and Above

The Air Campaign: Planning for Combat
by Col John Warden

Airpower against an Army: Challenge and Response in CENTAF's Duel with the Republican Guard
by Lt Col William Andrews

Dereliction of Duty: Lyndon Johnson, Robert McNamara, the Joint Chiefs of Staff, and the Lies That Led to Vietnam
by H. R. McMaster

Flight of the Buffalo: Soaring to Excellence, Learning to Let Employees Lead
by James Belasco and Ralph Stayer

The Heavens and the Earth: A Political History of the Space Age
by Walter McDougall

Hoyt S. Vandenberg: The Life of a General
by Col Phillip Meilinger

Ideas and Weapons
by Maj Gen I. B. Holley Jr.

Joint Air Operations: Pursuit of Unity in Command and Control, 1942–1991
by James Winnefeld and Dana Johnson

The Sky on Fire: The First Battle of Britain, 1917–1918, and the Birth of the Royal Air Force
by Raymond Fredette

Strategy for Defeat: Vietnam in Retrospect
by Adm U. S. Grant Sharp

Why the Allies Won
by Richard Overy

On War
by Carl von Clausewitz

Changes to the list were based on the availability and price of books, as well as the availability of new publications. As before, new books were chosen because of their readability. This revised list includes new books written by serving Air Force individuals, signifying the growing interest in the Air Force and knowledge about the institution and an airpower way of life.

"The books on our professional reading list provide insight into how and why aerospace power has become so important," General Ryan said. "Many of the books are also a window into the rich heritage of the US Air Force." The general went on to emphasize the value of this reading list: "Engaging in professional reading can help Air Force members of all grades articulate the historical significance of aerospace power."

In addition to stocking three to five copies of each title in more than one hundred Air Force libraries, these libraries will sponsor a "book-of-the-quarter" program, offering resources for squadrons, groups, and wings to establish their own book-discussion groups. Such groups allow airmen and civilians to read one of the books and get together to discuss and critique it. According to Capt J. R. Riddell, program manager from Air Staff History, books on the list will be located in a special area in the libraries. Interested readers can also go to their local base library or military-clothing sales stores to pick up a new brochure that highlights the changes.

In addition to base libraries' involvement, beginning this month Air Force readers will also be able to purchase their own copies of reading-list titles at a discount from select Army and Air Force Exchange Service military-clothing sales stores or through the AAFES web site at http://www.aafes.com. Also, by accessing the reading-list web site at http://www.af.mil/readinglist, readers can find a list of the military-clothing sales stores that keep the books in stock. The site also contains reviews of books, answers to frequently asked questions, and materials for discussion groups, among other interactive features.

Divided into three levels—basic, intermediate, and advanced—the list aligns closely with professional military education. Personnel who attend Airman Leadership School, the Noncommissioned Officer Academy, or the Senior Noncommissioned Officer Academy receive appropriate books from their instructors. Captains on active duty receive a shipment of the officers' basic list shortly after their promotion. All others are encouraged to borrow books from the library or purchase personal copies. The program offers novice and experienced readers a common point of reference with their peers, subordinates, and superiors.

"Regardless of your functional specialty, I think Air Force personnel should be familiar with the development of aerospace power," Captain Riddell said. "The chief's list can either help you launch a career-long reading program or supplement your current and previous readings." □

Command Relations at the Operational Level of War

Kenney, MacArthur, and Arnold

COL THOMAS E. GRIFFITH JR., USAF*

AS GEN DOUGLAS MACARTHUR'S air commander in the Southwest Pacific theater during World War II, Gen George C. Kenney applied operational insights, intellectual acumen, and innovative drive that made airpower a vital part of the Allied victory. An important, indeed critical, part of Kenney's success was his ability to juggle the demands placed on him by the theater commander, MacArthur, with those imposed by Gen Henry H. "Hap" Arnold, commanding general of the Army Air Forces. Establishing MacArthur's trust and confidence proved essential to gaining the flexibility and authority Kenney needed to employ airpower effectively, but he re-

*I presented this article as a paper at the annual meeting of the Society of Military History in Montgomery, Alabama, in 1997. The comments of many individuals made this article better, but I would especially like to thank Dik Daso, Steven McFarland, and Tom Hughes for their suggestions. I have also benefited from the work and advice of Herman Wolk. For efforts that illuminate General Kenney's contributions, see Herman S. Wolk, "George C. Kenney: The Great Innovator," in *Makers of the United States Air Force*, ed. John L. Frisbee (Washington, D.C.: Office of Air Force History, 1987), 127–50; and Herman S. Wolk, "George C. Kenney: MacArthur's Premier Airman," in *We Shall Return! MacArthur's Commanders and the Defeat of Japan, 1942–1945*, ed. William M. Leary (Lexington: University Press of Kentucky, 1988), 88–114. The latter concentrates on Kenney's role in World War II.

mained dependent on Arnold for the supplies, people, and planes necessary to fight the war, making his association with the commanding general equally important. Balancing the demands levied by officers with very different perspectives and goals created a source of tension and conflict for Kenney throughout the war. In the end he decided that he owed his primary loyalty to MacArthur, a decision highlighted in Kenney's debates with fellow airmen over the use of B-29s in the Pacific.

The fact that personal relationships among commanders are important and have an impact on military affairs in both peace and war is not new. Although the armed forces spend a great deal of time and energy designing organizational relationships and arrangements that will ensure success, harmonious relationships among commanders and other senior leaders often provide the necessary lubrication for making the military machine run smoothly. In the face of less-than-optimum circumstances, good working relations can make a military operation effective. Conversely, even the best-designed organization cannot overcome problems created by personal friction. Although Kenney's dilemma is important for understanding the war in the Pacific, it also points out a more enduring lesson: the considerable weight that personal relationships bear in any theater of war.

Kenney and MacArthur

When, as a newcomer, Kenney assumed command of Allied Air Forces in the Southwest Pacific in August 1942, gaining MacArthur's backing was his top priority as well as his greatest challenge. During meetings in Washington, D.C., before leaving for the Pacific, Kenney heard plenty about the considerable friction between MacArthur and Lt Gen George Brett, the incumbent air commander.

Although many problems in Australia—such as the lack of supplies, a paucity of trained staff officers, and ill-equipped aircraft—were not entirely Brett's fault, as the commander of the American air units, he bore the brunt of the blame. MacArthur's reports to Washington made his unhappiness with Brett clear. In May 1942 President Franklin Roosevelt sent a three-man team to investigate conditions in Australia. When Lt Col Samuel Anderson returned to Washington at the end of June, he told Gen George C. Marshall, Army chief of staff, that Brett had to be relieved: "As long as Brett is there, you won't have any cooperation between ground and air, and I don't think you plan to relieve General MacArthur."[1] In early July Marshall offered either Brig Gen James H. Doolittle, "who had impressed all of us as an organizer, as a leader and as a dependable type," or Maj Gen George Kenney, "who is rated tops by General [John L.] DeWitt [Kenney's immediate superior officer],"[2] as a replacement for Brett. MacArthur opted for Kenney because, he said, "It would be difficult to convince the Australians of Doolittle's acceptability."[3] MacArthur claimed that the Tokyo Raider's break in service during the 1930s would be viewed "unfavorably" by the Australians. More likely, MacArthur did not want Doolittle because he would take publicity away from MacArthur.

Extenuating circumstances might have explained the problems in Australia, but Arnold clearly blamed Brett, telling Kenney that "Brett should have done the 'getting along' since he was the junior."[4] In addition to the problems between MacArthur and Brett, Marshall cryptically warned Kenney about some "personality clashes" in the headquarters that were causing problems.[5] In short, when Kenney landed in Australia, he was thoroughly convinced of the need to get along with MacArthur. He knew that "his life would be very unhappy" if he did not.[6]

Kenney's initial meeting with MacArthur was not an auspicious beginning for forming a partnership. MacArthur began by delivering a lecture on the wretched state of air units in his command and ticked off a number of complaints: the poor bombing accuracy of the aircrews, the lack of discipline among the air units, and—most damning to MacArthur—disloyalty from the airmen. As

Kenney (left) and Arnold. Arnold was undoubtedly annoyed by a perception of excessive parochialism in some of Kenney's actions. Nevertheless, Kenney's ability to make things happen with the resources he was given made him indispensable as a senior Air Force commander.

far as he was concerned, the accomplishments he had seen to date did not "justify all the boasting the Air Force had been indulging in for years."[7] After listening to MacArthur vent his displeasure for nearly an hour, Kenney finally broke in, bluntly promising that he would straighten things out because "he knew how to run an Air Force as well or better than anyone else."[8] Kenney clearly saw that he had "two important bits of salesmanship that had to be put over if the Air Force was to play the role it was capable of. I had to sell myself to the General and I had to sell him to the kids."[9]

An indirect but important part of Kenney's effort to "sell himself" involved confronting the personality clashes that Marshall had warned of. The Army chief of staff directed his admonition primarily at the struggles between previous air commanders and Maj Gen Richard K. Sutherland, MacArthur's chief of staff. Acknowledged as a brilliant though arrogant staff officer, Sutherland was known both for his intense loyalty to MacArthur and his ability to antagonize people through vindictive and unscrupulous behavior.[10]

Prior to Kenney's arrival, Sutherland had frequently interfered with air matters and kept Kenney's predecessors isolated, making it almost impossible for the air commanders to communicate with MacArthur or provide advice on using airpower. Maj Gen Lewis Brereton, air commander in the Philippines, rarely spoke with MacArthur and had to deal almost exclusively with Sutherland.[11] Likewise, Brett complained that "he had so much trouble getting past Sutherland to see MacArthur that he hadn't seen the General for weeks." The chief of staff so irritated Brett that he "just talked to Sutherland on the telephone when he had to." In his parting words, Brett described Sutherland as a man with a limited knowledge of air matters and "a bully, who, should he lose the ability to say 'by order of General MacArthur' would be . . . a nobody." The departing airman recommended a "show-down early in the game with Sutherland."[12]

Kenney had at least one advantage over his predecessors in dealing with Sutherland. The two officers had been classmates at the Army War College almost 10 years earlier. Although it is unclear how friendly the two became over the year, they did work together on one project for several weeks, and the exposure undoubtedly gave Kenney an edge over the other air commanders in understanding Sutherland's personality.[13]

Armed with his own knowledge of Sutherland and Brett's advice about an early showdown, Kenney looked for an opportunity to confront the chief of staff. He didn't have long to wait. On 4 August 1942, the day Kenney officially took command, he received orders for upcoming air operations. Rather than broad mission guidance, Sutherland sent detailed instructions, directing takeoff times, weapons, and even tactics. Kenney was furious. He immediately marched into Sutherland's office, arguing, in typical Kenney fashion, that he was the "most competent airman in the Pacific" and that he had the responsibility to decide how the air units should operate—not Sutherland. Kenney shot down Sutherland's rebuttal by suggesting that they "go into the next room, see General MacArthur, and get this thing straight. I want to find out who is supposed to run this Air Force."[14] According to Kenney, Sutherland backed down, rescinded the or-

ders, and then apologized, claiming that he had been forced to write the detailed instructions prior to Kenney's arrival.

Although this was not the final disagreement between the two, it was the last time Sutherland directly interfered with Kenney's combat operations. Perhaps the showdown vindicated Brett's analysis of Sutherland as a bully who backed down when someone stood up to him. More likely, both Sutherland and Kenney knew that the chief of staff should not have issued detailed orders to the air component commander and realized that MacArthur would back Kenney in this situation. In Kenney's words, Sutherland "knew he was going to lose."[15]

Adding to Kenney's self-confidence in this confrontation was the knowledge that he was already hard at work establishing a close personal and professional relationship with MacArthur. Although the two had had little contact before the war, the working and living arrangements in Australia aided Kenney's efforts in this regard.[16] Both Kenney and MacArthur had their headquarters offices in the Australian Mutual Provident (AMP) Insurance building on the corner of Queen and Edward Streets in Brisbane. MacArthur's office was on the eighth floor, and Kenney's was on the fifth, making it convenient for the airman to see the theater commander at any time. Kenney took full advantage of the proximity, visiting MacArthur at least once a day, often timing his call so that they could eat lunch together. Also, since both men lived in the same hotel, Kenney began visiting MacArthur "quite often" in the evenings. During these occasions, the two discussed both personal and professional matters.[17]

Kenney's efforts quickly paid off. Whether due to a fortuitous blending of personalities, the improved performance of Kenney's airmen, or a combination of factors, Kenney earned MacArthur's trust and confidence. In early September MacArthur told Kenney that "it has been little more than a month since you assumed command of the air component in this area. The improvement in its performance has been marked and is directly attributable to your splendid and effective leadership."[18] MacArthur was equally laudatory in a message to the Army chief of staff a week later: "General Kenney with splendid efficiency has vitalized the Air Force and with the energetic support of his two fine field commanders, [Maj Gen Ennis] Whitehead and [Brig Gen Kenneth] Walker, is making remarkable progress. From unsatisfactory, the Air Force has already progressed to very good and soon will be excellent. In comparatively few weeks I confidently expect it to be superior."[19] Not surprisingly, two weeks later MacArthur recommended Kenney for promotion to lieutenant general.[20]

Kenney's credibility with the theater commander helped him convince MacArthur of the advantages that airpower offered in the theater. At the same time, MacArthur's support provided the air commander the opportunity to implement his ideas with little interference.

Other officers who served in the Southwest Pacific clearly recognized the close relationship between Kenney and MacArthur, which proved instrumental in establishing Kenney's independence as an air commander. Kenney's chief of staff judged that his boss and MacArthur got along "very well" and that the theater commander "seemed to have a pretty poor opinion of the air business and what it could do before Kenney got there."[21] One ground officer said Kenney was the "only one who could tell MacArthur off,"[22] and Sutherland warned another never to get into a dispute with the Army Air Forces because MacArthur would always rule in favor of Kenney.[23]

Kenney's relationship with MacArthur was important in exploiting the capabilities that airpower offered in the Southwest Pacific. Not long after he arrived in the region, Kenney told Arnold that victory in the

MacArthur (seated) *and Kenney* (far right, front row, looking to his right). *The formal Japanese surrender was conducted aboard the USS* Missouri, *Tokyo Bay, 2 September 1945. MacArthur credited Kenney above all others for the victory in the Pacific.*

Southwest Pacific depended on the ability to control islands that could be used as air bases to cut off air and sea lines of supply. In some cases these were true islands, but the inability to move into the interior of large land areas in the Southwest Pacific, such as New Guinea, converted airfields and garrisons along the coast into "islands" as well.[24] Kenney's credibility with the theater commander helped him convince MacArthur of the advantages that airpower offered in the theater. At the same time, MacArthur's support provided the air commander the opportunity to implement his ideas with little interference. A very pleased General Arnold summed up the importance of Kenney's efforts by telling him, "I don't believe the units could possibly perform the missions in the manner that they are doing without the most sympathetic support from General MacArthur. It requires complete understanding between General MacArthur and you."[25]

Near the end of the war, MacArthur summed up his thoughts on Kenney's contribution, leaving little doubt about his admiration: "I believe that no, repeat, no officer suggested for promotion to General has rendered more outstanding and brilliant service than Kenney. . . . Nothing that [Gen Carl] Spaatz or any other air officer has accomplished in the war compares to what Kenney has contributed and none in my opinion is his equal in ability."[26] This was fitting testimony to Kenney's service as an air component commander.

Kenney and Arnold

In contrast to the generally smooth rapport that Kenney established and maintained with MacArthur throughout the war, his dealings with Hap Arnold were more troubled. Kenney's meetings in Washington before leaving for the Southwest Pacific in the summer of 1942 established the tone of their relationship. At that time America was still

gearing up to produce the large numbers of troops and supplies needed to fight a world war. In keeping with the "Europe first" strategy of the United States, Arnold was determined to pit the maximum number of aircraft against Germany, despite impassioned pleas from every commander. He told Kenney that he could expect no more than the six hundred aircraft already in the Pacific and pointedly commented that Brett "kept yelling for equipment all the time, although he should have enough already."[27] The message for Kenney was clear: make do with what you have.

Although warned not to expect any more aircraft and aware that the national strategic priority called for defeating Germany before Japan, Kenney—after seeing the situation in the Pacific firsthand—began pestering Arnold for more planes, people, and supplies. Arnold firmly told Kenney that he could count on having enough aircraft to defend against Japanese attacks and "carry out a limited offensive" but nothing more.[28]

Despite the cordial and professional nature of this exchange, the discussion points out that the two airmen saw the war through very different lenses. As commanding general of the Army Air Forces and a member of the Joint Chiefs of Staff, Arnold focused on the entire global struggle. He had to balance strategic guidance with the current situation and upcoming operations in order to have the right number of airplanes and people in the appropriate areas. In addition he had to continually assess the costs and benefits of producing existing aircraft and equipment against the need to start research-and-development work on newer types. All the while he worried about the image of the Army Air Forces and the debates about service independence that would follow the war. Fittingly, Arnold emphasized this expansive view of the war in his postwar memoir, symbolically entitled *Global Mission*.[29]

At the theater level, things looked quite different. Kenney viewed the war from a much narrower focus and devoted his attention to more immediate decisions. He concentrated on the near term and what he had to fight with each day, giving little consideration to the broader and more long-term problems that Arnold faced. Not surprisingly, his book about the war, *General Kenney Reports: A Personal History of the Pacific War,* captures this perspective.

The tension between these dissimilar outlooks surfaced over many issues during the war—some important, others almost trivial. Kenney complained frequently about aircraft arriving with unneeded equipment, such as heaters (not used by aircrews flying at low altitude in the tropics), or unwanted modifications, such as the installation of a bottom gun turret on B-24s to defend against fighters attacking from below (unnecessary since most of the B-24 attacks in Kenney's command took place from low altitude). The removal of the copilot's position in one bomber incensed Kenney because of the importance of this airman in combat operations. He told Arnold, "I emphatically want [the] provision for the copilot left in the airplane."[30]

These complaints highlight Kenney's outlook, while Arnold's responses provide a glimpse of the wider view of the war. Arnold agreed that heating equipment might have little value in Kenney's theater but pointed out that other commanders needed it and that production lines lacked the flexibility to make aircraft without heaters. Similarly, he noted that other places needed bottom gun turrets and that building planes slated for Kenney's use without them would entail excessive delays and costs. Finally, the commands in the Army Air Forces had thoroughly debated and tested the elimination of the copilot's position, concluding that the advantages outweighed the drawbacks.[31]

Kenney matched his imprudent demands for equipment changes in aircraft production with a lack of appreciation for the tactical differences between his area of operations and others. Based on his previous experience and observations in the Southwest Pacific, Kenney believed in low-altitude attacks, using the tactics of what was then called attack aviation. Although such tactics might have been valid for the enemy he faced, Kenney argued that they were "in evi-

dence every day all over the world."[32] Arnold informed Kenney that he was flat wrong: "Attack tactics have *definitely not* . . . proven sound 'every day all over the world' " (emphasis in original).[33] Arnold realized, as Kenney evidently did not, that antiaircraft guns were causing heavy losses to low-flying aircraft. When the Army Air Forces had attempted such low-altitude tactics in Europe, the results were disastrous. On one mission all 11 aircraft in a formation that used these tactics were lost.[34]

In his efforts to control the B-29s, Kenney found himself not only working to carry out the theater commander's wishes but also going so far as to work against the desires of his service.

One can excuse Kenney for not knowing everything that occurred in other theaters, but his comments reflect an attitude that ignored the wider realities of the war and the implications of his suggestions. He may not have known the conditions in other theaters, but this should have made him cautious in proposing tactics. Similarly, his background in aircraft production should have given him more insight into the problems that his proposed modifications would cause. At times Kenney displayed an attitude that melded arrogance with ignorance—a dangerous combination.

Kenney's provincial attitude extended to personnel matters. As commanding general of the Army Air Forces, Arnold believed in rotating officers between his staff in Washington and the combat areas. Arnold was especially sensitive to this issue and gave it his personal attention because during World War I, he had been stuck in Washington and missed out on combat duty. To him, moving people boosted morale and benefited the service. Although this approach proved successful in most theaters, Arnold had difficulty convincing Kenney of its importance. Kenney preferred to promote officers who had proven themselves in combat under his command and distrusted senior officers with no combat experience. Although Arnold eventually managed to send some officers to the Southwest Pacific, Kenney felt he was getting Arnold's castoffs and quickly ended the experiment.[35] Kenney dispatched one officer back to Washington with a comment that he probably applied to many other senior officers sent out: "His mind is not flexible enough and he does not think clearly or fast enough."[36] In keeping with his attitude of going against Arnold's wishes in this area, when asked to send his deputy back to Washington, Kenney howled in protest.[37]

Kenney's prodding for more planes, supplies, and people—although often conducted with a lack of grace and tact—does not suggest that he had no knowledge of the pressures Arnold faced. Indeed, Kenney realized that Arnold must have found his attitude exasperating. At one point he even apologized for his incessant complaining: "I know you are harassed to the point of exhaustion and that you are doing your damnedest to keep me quiet, but I will trust to your continued good nature and keep on telling you my troubles."[38]

No doubt Kenney's grumbling was a source of friction, but throughout most of 1942 and 1943, Arnold overlooked much of the griping, realizing—as did Kenney—that many of the requests were part of the normal give-and-take between commander and subordinate. Arnold expected Kenney to solve the problems that he could but knew that Kenney would sometimes need assistance. In a very real sense, Kenney competed with the other theater air commanders for people and equipment. A B-24 sent to England or the Mediterranean for combat was one fewer aircraft that would see action in the Southwest Pacific. As Kenney put it, his complaints were "about the only way I can present the picture as it confronts me."[39] In short, Arnold expected Kenney's requests, and his position required him to weigh the demands put forward by various air commanders. For his part

B-29s on Guam, 1945. More than any other issue, Kenney's attempts to gain operational control over the B-29s strained his relationship with Arnold.

Kenney had to "lobby" for the things he needed.

The record of Kenney's command—a bright spot for the Army Air Forces during this time—also underlay the commanding general's forgiving mood: "You are doing great things," Arnold told him.[40] Perhaps the strongest evidence of Arnold's esteem came in October 1943, when he asked Kenney for advice on using airpower in the cross-channel invasion of Europe. This was a particularly bad time in the European air campaign, and a troubled Arnold turned to Kenney because "there has probably been more ingenuity displayed in your operations than in any other theater."[41]

In a letter to Arnold, Kenney gave a straightforward reply about his views on air warfare: "I stick to one principle—get control of the air situation before you try anything else."[42] The best way to accomplish that end was to strike aircraft while they were on the ground or "entice the enemy fighters into combat and destroy them in the air" by selecting targets that the opposing air force would have to defend. The primary objective during these latter attacks was not the target per se, although that might be important too, but the hostile fighters. Kenney admitted that the plan sounded deceptively simple, but in reality it made for "a long and difficult job."[43]

Arnold appreciated the advice and forwarded the letter to several officers on his staff, General Marshall, and General Brereton—the senior American air officer in England planning the cross-channel invasion. In addition, Arnold arranged for Kenney to meet with Gen Dwight D. Eisenhower to explain his thoughts further. Arnold even sent one of Kenney's deputies, Brig Gen Freddie Smith, to Europe to help implement the ideas.[44]

Even as Arnold approached Kenney for advice on the air war in Europe, however, their relationship had started to sour and

would actually deteriorate over the coming months. Although differing perspectives between the service headquarters and the theater air commander account for some of the strain between the two, the debate over the B-29 highlights the fact that the source of the tension was Kenney's loyalty. Although Kenney identified with Arnold as an airman, he felt that he owed his primary loyalty to his immediate commander, General MacArthur. As Kenney argued, "Every once in a while Arnold would get sore at me about something or other. He thought I was still working for him, but I wasn't. I was working for MacArthur."[45] Kenney felt that Arnold exerted a great deal of influence over air operations in Europe and wanted to do the same in the Pacific. Kenney realized that MacArthur resented any interference from Washington and would never have agreed to the level of control over theater air operations that he thought Arnold hoped to exert. Although Kenney believed that he acted as a buffer between the two, he clearly went beyond this neutral role.[46] In his efforts to control the B-29s, Kenney found himself not only working to carry out the theater commander's wishes but also going so far as to work against the desires of his service.

Kenney had started pushing for the B-29 soon after his arrival in Australia. Although the bomber was then in the earliest stages of its development, he proposed using it to eliminate or neutralize oil refineries and petroleum-production sites.[47] Perhaps prompted by reports of B-29 test flights, Kenney queried Washington for information a year later under the assumption that he would "get the first B-29 unit."[48] Arnold cautioned against putting too much hope in acquiring the aircraft in the near future, pointing out that "no units are scheduled for your theater prior to June of next year."[49]

Although the commanding general held out some hope that Kenney would receive these aircraft, Arnold and his staff viewed the B-29s as weapons that would contribute the most to the war if the Army Air Forces used them against the home islands of Japan—not the peripheral areas Kenney mentioned. Even before Kenney's request, Arnold had initiated a study of possible bases in China from which to use them against Japan itself. The Chinese locations, however, would serve only as an interim solution. Arnold's real hope for using the B-29s to defeat Japan lay in acquiring bases in the Mariana Islands.

Even after hearing about the plans for the Chinese bases, Kenney continued to lobby for the aircraft, asking to "borrow" them as they flew from the United States to China. Arnold told Kenney he would think about the proposal but "could not commit himself to routing any B-29s via Australia." Even this ambiguous response buoyed Kenney's spirits, and he told engineers to give immediate priority to building an air depot and lengthening the runways at Darwin, Australia, to handle 50 of the new bombers.[50]

The dispute between Kenney and Arnold over the B-29s grew more divisive in early 1944, when it became clear that the bombers would never fly in the Southwest Pacific. In January Kenney attended a conference at Pearl Harbor to coordinate plans for the coming year, a meeting that pitted him squarely against Arnold's ideas for deploying the B-29s. On the one hand, the offensive through the Central Pacific under the direction of Adm Chester Nimitz would attack the Mariana Islands and Formosa en route to Tokyo. MacArthur, on the other hand, would continue his advance through New Guinea, move north, and liberate the Philippines before invading Japan. Although both options would eventually defeat the Japanese, combining forces along one axis of attack might end the war sooner.[51]

An important consideration behind the Central Pacific thrust was the desire to capture the Mariana Islands and base the B-29s there. Kenney disagreed with the logic behind the plan, asserting that the bombing missions against Japan—a "series of costly stunts"—would accomplish little.[52] Although Kenney's opinion was just one factor in the discussions, it must have carried a great deal of weight. Ultimately, the planners agreed to recommend to Washington that they bypass the Mariana Islands and consolidate forces

under MacArthur—a significant change from the proposed plans. The recommendation obviously displeased Arnold, and he likely did not receive Kenney's comments well. In arguing against the Central Pacific drive, Kenney set himself directly against Arnold's plans. Without bases in the Marianas, the Army Air Forces could not use the B-29s in great numbers against the Japanese homeland. Likely, the Air Staff thought that denying the bombers this strategic role would endanger the arguments for an independent air force.

Despite the unanimity of opinion in the Pacific, the plan would be a tough sell in Washington. Arnold and Adm Ernest King, chief of naval operations, strongly supported the Central Pacific advance. General Sutherland flew to Washington to present the option worked out in Hawaii. Throughout Sutherland's visit, Kenney kept hammering on the appeal of the B-29 raids on Japan. Citing the supply problems involved with basing the aircraft in the Mariana Islands, he called the whole plan "absurd." He also predicted that the attacks would prove to be little more than "nuisance raids."[53]

Kenney's fervent pleas fell on deaf ears. The joint chiefs rejected the option presented by Sutherland, and planning for the attack on the Marianas continued. Although disgusted with the decision, Kenney did not give up. Shortly before the first mission from the Marianas, he predicted that "the Japs would shoot [the B-29s] out of the air" and that losses would drastically lower morale.[54] Such remarks infuriated Arnold. He warned Kenney to stop his "agitation" about the B-29s or risk being relieved of his command.[55] Although the strength of Kenney's relationship with MacArthur would have made it difficult for Arnold to make good on the threat, the comment reveals the level of discord between the two airmen. Although Kenney's loyalty to MacArthur benefited combat operations, when the same trait ran counter to Arnold's plans, the service chief disparaged it.

The press of combat operations in 1944 largely overshadowed the acrimony between Kenney and Arnold, but the underlying tension remained. At this stage in the war, however, the dispute seems to have had little impact on Kenney's ability to carry out his missions. But by early 1945, the situation had changed. With Germany close to defeat and the end of the war with Japan on the horizon, both Kenney and Arnold began focusing on the future. If Kenney wanted to advance in the postwar Air Force, he needed to repair the damage with Arnold. Similarly, in preparing for the upcoming battles in Washington over an independent Air Force, Arnold no doubt realized that Kenney could play an important role in these debates. Although vaguely aware of Arnold's displeasure with him, Kenney became concerned when he heard about derogatory remarks making the rounds in Washington. At the urging of General Smith, who had heard the rumblings, Kenney flew to the United States to "make peace with Arnold."[56]

The two officers met in Florida, where Arnold was recuperating from a massive heart attack. They met in private and had a cordial, amicable talk. According to Kenney, they "agreed to bury the hatchet." Although Kenney remained loyal to MacArthur, he stopped his outspoken comments and closed ranks with his fellow airmen in preparation for the impending interservice disputes sure to follow the war. When General Spaatz arrived in the Pacific to take command of the strategic air forces in June 1945, Kenney—undoubtedly disappointed that Spaatz had received the job—privately complained about "another needless complication" in the command structure. Publicly though, he supported Spaatz and persuaded MacArthur of the merits of the command arrangements. In fact, Kenney pledged to "present a unified front" to all parties.[57]

Conclusion

The problem of dual loyalty that Kenney faced during the war was never entirely resolved; rather, its importance ebbed and flowed, depending on the situation. Establishing a good relationship with MacArthur

proved essential to meeting the war aims in the theater and employing airpower effectively—in Kenney's words, mentioned above, it allowed "the Air Force . . . to play the role it was capable of." At the same time, he needed Arnold's help to meet the demands of combat through a constant flow of people and equipment. Kenney's position demanded that he constantly negotiate a satisfactory course between two very different perspectives throughout the war.

Early on, Kenney worked hard to establish a satisfactory professional and personal relationship with MacArthur. Realizing the importance of doing this before he left for the Southwest Pacific, Kenney made it a top priority. By working well with MacArthur, he could explain the benefits of airpower to the theater commander and gain the freedom and flexibility to employ his forces to their fullest. Although Kenney's loyalty to MacArthur proved important for the conduct of the war in the theater, it also became a source of tension and conflict in dealing with the priorities of Hap Arnold.

Kenney might have mitigated the problems with Arnold by taking a broader view of the war. A better understanding on Kenney's part would have allowed him to realize the implications of his ideas and the fact that many of them, when applied across the entire service, were impractical. Although one can accuse Kenney of failing to understand the problems facing other air commanders, had he not remained so insistent in putting his demands before Arnold, he ran the risk of not getting what he needed to carry out his assigned tasks.

Ultimately, though, Kenney's loyalty to MacArthur made his dealings with Arnold difficult. During most of the war, Kenney tended to put aside his service loyalty, even to the point of angering Arnold and alienating other officers in his service in the competition for the B-29. With the end of the war in sight by early 1945, however, loyalty to service started to assume more importance, given the more enduring tensions between the branches of the armed forces in the United States military.

No one should suggest that Kenney's actions represent the ideal recipe for a commander or officer caught between the conflicting demands of a theater commander and a service chief. Indeed, an investigation of the relationships between other air commanders and their theater chiefs might reveal other patterns. The combination of situational variables, personalities, and organizational differences makes it problematic to develop one template for all circumstances, let alone posit that Kenney was a role model worthy of emulation. Nevertheless, Kenney's experience does teach something. Most importantly, it points out the significance of the personal relationship and trust between the air commander and the theater commander in meeting military aims, while at the same time negotiating a satisfactory resolution to demands put forth by the service chief. At the very least, Kenney's predicament offers a view of the problems and pitfalls for officers serving in World War II and some insight into the problems of current command relationships. Recognizing the inherent nature of the conflict and perhaps managing the tension with more tact and finesse than Kenney displayed would allow officers to handle the invariable tensions present at the operational level of war. □

Notes

1. Samuel E. Anderson, transcript of oral history interview by Hugh N. Ahmann, Santa Monica, Calif., 28 June to 1 July 1976, 186, file 239.0512-905, United States Air Force Historical Research Agency (hereinafter AFHRA), Maxwell AFB, Ala.; and Thomas M. Coffey, *Hap: The Story of the U.S. Air Force and the Man Who Built It, General Henry "Hap" Arnold* (New York: Viking Press, 1982), 271. The other members of the three-man team were Lt Col Francis R. Stevens and Lt Comdr Lyndon B. Johnson. Stevens was killed on a bombing mission on 9 June, and Johnson and Anderson left for Washington on 18 June. See Robert A. Caro, *The Years of Lyndon Johnson*, vol. 2, *Means of Ascent* (New York: Alfred A. Knopf, 1990), 33–45.

2. Message, Marshall to MacArthur, 6 July 1942, Record Group 4, Douglas MacArthur Memorial Museum and Archives (hereinafter MMMA), Norfolk, Va.

3. Message, MacArthur to Marshall, 7 July 1942, Record Group 4, MMMA; and diary of Gen George C. Kenney, 11 July 1942, Gen George C. Kenney Papers (hereinafter KP), Center for Air Force History, Bolling AFB, Washington, D.C.

4. H. H. Arnold, *Global Mission* (New York: Harper & Brothers, 1949), 331.

5. Diary of Gen George C. Kenney, 12 July 1942, KP; and George C. Kenney, *General Kenney Reports: A Personal History of the Pacific War* (1949; reprint, Washington, D.C.: Office of Air Force History, 1987), 11.

6. George H. Brett, "The MacArthur I Know," *True*, October 1947, 149.

7. Diary of Gen George C. Kenney, 29 July 1942, KP; and *General Kenney Reports*, 28–29.

8. *General Kenney Reports*, 29.

9. Gen George C. Kenney, transcript of oral history interview by James C. Hasdorff, Bay Harbor Islands, Fla., 10–21 August 1974, 88, file K239.0512-806, AFHRA.

10. D. Clayton James, *The Years of MacArthur*, vol. 1, *1880–1941* (Boston: Houghton Mifflin, 1970–1985), 565–67; idem, *The Years of MacArthur*, vol. 2, *1941–1945* (Boston: Houghton Mifflin, 1970–1985), 77–78; and Paul P. Rogers, *The Good Years: MacArthur and Sutherland* (New York: Praeger, 1990), 36–40, 231–32.

11. Lewis H. Brereton, *The Brereton Diaries: The War in the Air in the Pacific, Middle East and Europe, 3 October 1941–8 May 1945* (New York: William Morrow & Co., 1946), 17–34.

12. For all comments of Lt Gen George H. Brett, see "Comments of Gen. Brett re: Personnel, Etc.," 2 August 1942, KP.

13. Report of committee no. 3, "Tactical Doctrines," 26 September 1932, Curricular Archives of the Army War College, Military History Institute, Carlisle Barracks, Pa.

14. Diary of Gen George C. Kenney, 4 August 1942, KP.

15. Kenney interview with Hasdorff, 62; and Gen George C. Kenney, interviewed by D. Clayton James, New York, N.Y., 16 July 1971, 5–6, file 168.7103-24, AFHRA.

16. Geoffrey Perret's accounts suggest a close relationship between Kenney and MacArthur prior to the war, but the two did not have frequent contact. Geoffrey Perret, *Winged Victory: The Army Air Forces in World War II* (New York: Random House, 1993), 170; and idem, *Old Soldiers Never Die: The Life of Douglas MacArthur* (New York: Random House, 1996), 302.

17. *General Kenney Reports*, 91; Diary of Gen George C. Kenney, 28 July and 3 August 1942, KP; George C. Kenney, *The MacArthur I Know* (New York: Duell, Sloan and Pearce, 1951), 57; David Horner, "Strategy and High Command," in *The RAAF* [Royal Australian Air Force] *in the Southwest Pacific Area, 1942–1945* (Canberra: RAAF Air Power Studies Centre, 1993), 58; Donald Wilson, *Wooing Peponi: My Odyssey thru Many Years* (Monterey, Calif.: Angel Press, 1974), 254–60; James, *The Years of MacArthur*, vol. 2, 246; and Clare Stevenson and Honor Darlings, eds., *The WAAF Book* (Sydney: Hale and Iremonger, 1984), 135–36.

18. MacArthur to Kenney, letter, 6 September 1942, KP.

19. Message, MacArthur to Marshall, 16 September 1942, Record Group 4, MMMA.

20. Draft message, chief of staff, Southwest Pacific Area, to War Department, 30 September 1942, KP.

21. Donald Wilson, transcript of oral history interview by Hugh N. Ahmann, Carmel, Calif., 10–11 December 1975, 203, file K239.0512-878, AFHRA.

22. Gen Clyde D. Eddleman, interviewed by D. Clayton James, Washington, D.C., 29 June 1971, 8, Record Group 49, MMMA.

23. Lt Gen Clovis E. Byers, interviewed by D. Clayton James, Washington, D.C., 24 June 1971, 6, Record Group 4, MMMA.

24. "Notes to Discuss with General Arnold," 24 September 1942, KP; Kenney to Arnold, letter, quoted in Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 4, *The Pacific: Guadalcanal to Saipan, August 1942 to July 1944* (1950; new imprint, Washington, D.C.: Office of Air Force History, 1983), 119; Kenney to Arnold, letter, 10 December 1942, KP; and diary of Gen George C. Kenney, 16 December 1942, KP.

25. Arnold to Kenney, letter, 23 September 1943, KP.

26. Message, MacArthur to Marshall, 17 January 1945, Record Group 4, MMMA.

27. *General Kenney Reports*, 11; Grace P. Hayes, *The History of the Joint Chiefs of Staff in World War II: The War against Japan* (Annapolis: Naval Institute Press, 1982), 118–20; and Craven and Cate, vol. 4, x, xi–xii.

28. Arnold to Kenney, letter, 6 December 1942, 1, KP.

29. Gerhard L. Weinberg, *A World at Arms: A Global History of World War II* (Cambridge: Cambridge University Press, 1994), 919.

30. Kenney to Arnold, letter, 19 June 1943, 2–3, KP; and Kenney to Arnold, letter, 7 September 1943, 2, KP.

31. Arnold to Kenney, letter, 16 July 1943, 2, KP; and Arnold to Kenney, letter, 8 October 1943, 2, KP.

32. Kenney to Arnold, letter, 19 June 1943, 3, KP.

33. Arnold to Kenney, letter, 5 July 1943, KP.

34. Ibid.

35. Message, Kenney to Arnold, 6 March 1944, KP; diary of Gen George C. Kenney, 17 March 1945, KP; and Maj Gen John H. McCormick, interviewed by Murray Green, San Antonio, Tex., 3 May 1970, Murray Green Collection, United States Air Force Academy Library, Colorado Springs, Colo.

36. Message, Kenney to Arnold, 6 March 1944, KP.

37. *General Kenney Reports*, 365.

38. Kenney to Arnold, letter, 19 June 1943, 5, KP.

39. Ibid.

40. Arnold to Kenney, letter, 5 July 1943, KP; Arnold to Kenney, letter, 31 August 1943, KP; Arnold to Kenney, letter, 8 October 1943, KP.

41. Arnold to Kenney, letter, 11 October 1943, KP.

42. Kenney to Arnold, letter, 21 October 1943, 1, KP.

43. Ibid., 2.

44. Arnold to Kenney, letter, 26 October 1943, 1, KP; diary of Gen George C. Kenney, 5 January 1944; transcript of teleconference between Kenney and Sutherland, 6 January 1944, KP; and Arnold to Brereton, letter, 19 January 1944, H. H. Arnold Papers, Library of Congress, Washington, D.C.

45. Kenney interview with Hasdorff, 54.

46. Ibid., 57.

47. For a thorough account of the B-29s in the Southwest Pacific, see Stanley Falk, "General Kenney: The Indirect Approach and the B-29s," *Aerospace Historian* 27 (September 1981): 147–55.

48. Kenney to Arnold, letter, 28 July 1943, 3, KP.

49. Arnold to Kenney, letter, 31 August 1943, KP.

50. Col William L. Ritchie, memorandum to Gen George Kenney, subject: Notes on Conference in General Arnold's Office, 14 January 1945, KP; Falk, 153; and Office of the Chief Engineer, General Headquarters Army Forces, Pacific, *Engineers of the Southwest Pacific, 1941–1945*, vol. 6 (Washington, D.C.: Government Printing Office, 1950), 18–19.

51. For more details on the conference, see Maurice Matloff, *Strategic Planning for Coalition Warfare, 1943–1944* (Washington, D.C.: Office of the Chief of Military History, 1959), 457–59; Craven and Cate, vol. 4, 551–52; and Hayes, 545–47.

52. Kenney to Arnold, letter, 19 February 1944, box 46, Green Collection; and diary of Gen George C. Kenney, 27 January 1944, KP. Hayes, 547, uses a slightly different quotation.

53. Diary of Gen George C. Kenney, 19 February 1944, KP; and message, MacArthur to Sutherland, 16 February 1944, Richard K. Sutherland Papers, Record Group 200, National Archives, Washington, D.C.

54. Haywood S. Hansell to Maj James M. Boyle, letter, December 1964, file 168.7004-64, AFHRA, cited in Alexus Gregory Grynkewich, "'Advisable in the National Interest?' The Relief of General George C. Kenney" (master's thesis, University of Georgia, 1994), 63; Kenneth P. Werrell, *Blankets of Fire: U.S. Bombers over Japan during World War II* (Washington, D.C.: Smithsonian Institution Press, 1996), 131; and Kenney to Arnold, letter, 19 February 1944, 4, box 46, Green Collection.

55. Gen Frederic H. Smith, interviewed by Murray Green, Washington, D.C., 24 April 1970, 11, Green Collection.

56. Diary of Gen George C. Kenney, 23 February 1945, 8, KP.

57. Ibid., 10, 16, 17 June and 5 July 1945, KP; and Craven and Cate, vol. 5, *The Pacific: Matterhorn to Nagasaki, June 1944 to August 1945* (1953; new imprint, Washington, D.C.: Office of Air Force History, 1983), 648–88, 701.

Do what you can, with what you have, where you are.

—Theodore Roosevelt

The Mystique of Airpower

The Airpower Professional's Book Club

MAJ M. J. PETERSEN, USAF
Editor, *Airpower Journal*

There is no List with a capital L. *The great books are simply the books which deal most incisively, most eloquently, most universally, and most timelessly with man and his world.*

—Milton Mayer

IN THE WINTER 1998 issue of *Airpower Journal,* we introduced the Airpower Professional's Book Club. We've had an encouraging response so far and hope to keep hearing from you, our readers. Although it's still too early to publish our top-10 list, in this update we again identify some of the titles that you have suggested. Perhaps this will help those of you who are still thinking about your own lists.

- *The Air Campaign: Planning for Combat* by Col John A. Warden III.
- *Airpower: Theory and Practice* edited by John Gooch.
- *A Bright Shining Lie: John Paul Vann and America in Vietnam* by Neil Sheehan.
- *The Changing Face of War: Learning from History* edited by Allan D. English.
- *Chemical and Biological Weapons: A Survey of Proliferation* by Edward M. Spiers.
- *The Clash of Civilizations and the Remaking of World Order* by Samuel P. Huntington.
- *Command Arrangements for Peace Operations* by David S. Alberts and Richard E. Hayes.
- *Command Decision* by William Wister Haines.
- *For the Common Defense: A Military History of the United States of America* by Allan R. Millett and Peter Maslowski.

- *Complexity, Global Politics, and National Security* edited by David S. Alberts and Thomas J. Czerwinski.
- *Control of Joint Forces: A New Perspective* by Clarence E. McKnight.
- *Coup d'État: A Practical Handbook* by Edward Luttwak.
- *Covert German Rearmament, 1919–1939: Deception and Misperception* by Barton Whaley.
- *Critical Mass: The Dangerous Race for Superweapons in a Fragmenting World* by William E. Burrows and Robert Windrem.
- *The Defense Policies of Nations: A Comparative Study* edited by Douglas J. Murray and Paul R. Viotti.
- *The General* by C. S. Forester.
- *International Peacekeeping* by Paul F. Diehl.
- *Joint Air Operations: Pursuit of Unity in Command and Control, 1942–1991* by James A. Winnefeld and Dana J. Johnson.
- *The Killer Angels* by Michael Shaara.
- *Makers of Modern Strategy: From Machiavelli to the Nuclear Age* edited by Peter Paret.
- *The Making of Strategy: Rulers, States, and War* edited by Williamson Murray, MacGregor Knox, and Alvin Bernstein.
- *Masters of War: Classical Strategic Thought,* 2d ed., by Michael I. Handel.
- *Military Innovation in the Interwar Period* edited by Williamson Murray and Allan R. Millett.
- *Military Space* by Lyn Dutton.
- *Nuclear Ambitions: The Spread of Nuclear Weapons, 1989–1990* by Leonard S. Spector and Jacqueline R. Smith.
- *Once an Eagle* by Anton Myrer.
- *The Patterns of War since the Eighteenth Century,* 2d ed., by Larry H. Addington.
- *The Profession of Arms* by Gen Sir John Hackett.
- *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* by Paul M. Kennedy.
- *The Sword and the Pen: Selections from the World's Greatest Military Writings* prepared by Sir Basil Liddell Hart, edited by Adrian Liddell Hart.
- *Thinking in Time: The Uses of History for Decision-Makers* by Richard E. Neustadt and Ernest R. May.
- *The United Nations and Peacekeeping: Results, Limitations, and Prospects: The Lessons of 40 Years of Experience* edited by Indar Jit Rikhye and Kjell Skjelsbaek.
- *War in the Modern World* by Theodore Ropp.

Remember to send your list by E-mail to editor@cadre.maxwell.af.mil or mail it to *Airpower Journal,* Attn: Book Club, 401 Chennault Circle, Maxwell AFB AL 36112-6428.

Although we don't yet have the consolidated list, it will be out soon. For those of you with Internet connections, keep your eye on the *Air Chronicles* home page (http://www.airpower.maxwell.af.mil). We'll publish it there first.

If you missed our announcements in the Winter and Spring issues and wonder what is going on, *APJ* has inaugurated a new, continuing section—the Airpower Professional's Book Club. In addition to soliciting titles from the "names" in the airpower arena, we also invited *APJ* readers to submit their own lists of the top-10 books for the airpower professional. Based on the lists we receive, we will develop our own. We hope you will read these books and E-mail (or write) a paragraph or two describing what you thought of the book, its permanence, its importance, and its overall value in the development of an airpower professional. We will publish all appropriate submissions in a section of *Air*

Chronicles and will print selected responses in *Airpower Journal*.

To stimulate discussion both on-line and in the quarterly editions, we suggest that as you read one of these books, jot down ideas or comments that come to mind. After reading it, reflect on the central theme or subject and determine how the overall content of the work relates to that theme. Also reflect on any critical observations that you can make about the book. Again, write down your ideas as they occur to you. Then let the project lie fallow in your mind. After several days, peruse the book once again and draft your comments. Use your own words as much as possible. If you choose to quote from the book you are critiquing, do so sparingly. Lay aside your first draft for two or three days and then revise it for proper English and clarity.

A book-club review is composed of a critical evaluation. Always remember that we are looking for a critique of the book—not simply a description of its contents. So, when you write your paragraph or two, try to address these four key questions:

1. *What is the book about?* This question leads to other questions. Does the book have a central theme? Does it argue a thesis? What is the author's purpose? (The latter may be stated explicitly in the preface or conclusion, or it may be implied within the book itself.) Did the author achieve that purpose? Early on, try to summarize the theme, thesis, or subject in a sentence or two. Strenuously resist any temptation to describe the full contents of the book; as noted above, your critical *analysis* of the book is what really counts.

2. *Is the book reliable?* The first question to ask about a work of nonfiction is, Is it true? Again, this question prompts other questions:

    a. *Who is the author?* What are his or her qualifications for writing a book on this particular subject? Has the author written other books? If so, are those other works about a related subject?

    b. *Where did the author obtain information for the book?* Is the book based on the author's personal observations of events? Is it based on primary sources—letters, diaries, speeches, manuscripts, and archival records—that were contemporary or nearly contemporary with the period or subject about which the author is writing? Or is the book based on secondary sources—that is, on works written after the time of the event using the primary sources? As a related matter, be sure to include some mention of how the author identifies the sources upon which the book is based—by a bibliography, by notes, in the preface or introduction, or simply by casual references within the text.

    c. *Are the sources reliable?* If the book is based on primary materials, are those materials credible? If based on secondary authorities, are those accounts reputable? Briefly but precisely identify some representative examples of the sources employed.

    d. *Does the author use evidence with care and discrimination?* Does the author read into the evidence ideas or facts that are not there? Is the author fair to all parties, or is he or she swayed by bias or prejudice? Cite specific examples of bias or prejudice or of fairness. Also consider the following questions: Are the facts correct? Do you consider the interpretations valid? Is the thesis well supported by evidence and logical reasoning? Have you been persuaded to accept the author's conclusions? Whatever your answers to the last four questions, explain your reasons for answering them as you did.

3. *Is the material well presented?* Is the book understandable? Are the contents well organized? Does the author introduce the subject in clear and simple terms, or does he or she presuppose the reader possesses general knowledge of the subject?
4. *Does the book make a contribution to the field?* What, if anything, did the book contribute to your knowledge and understanding of the subject? Would you recommend the book to someone else? Explain why or why not.[1]

When you finish, send your submission to the same address as listed above. We prefer E-mail since we intend to post your comments on the World Wide Web in *Air Chronicles* as we receive them. If you disagree with another reader's critique of a book, respond; we're aiming at developing an ongoing discussion. □

Note

1. Adapted from a student handout attributed to Dr. Harold T. Parker, professor emeritus at Duke University.

Fodder for Your Professional Reading

Airpower and the Sea Services

Dr. David R. Mets*

WHY IN THE WORLD would a young Air Force warrior-scholar want to use up precious professional reading time examining the story of airpower and the sea services? I suppose that one could build a case that such an endeavor is even more important than going further in studying the history of one's own service. Just about everyone coming out of the officer-accession programs already knows who Billy Mitchell and Hap Arnold were, but how many among us could discuss the role of William Moffett or Joseph "Billy Goat" Reeves? Yet, many of us are destined to serve in joint assignments with sea-service colleagues raised on a diet of Moffett, Reeves, and Midway. Thus, one finds some utility in a study of maritime airpower, if only to create a vocabulary for communicating with our joint brethren. If one of them stated that "Schweinfurt proves . . . ," most of us would have some idea of whether we should challenge that assertion. But were he to argue that "Leyte Gulf proves . . . ," how many of us could step forward to question him?

*I wish to acknowledge the valuable assistance of Lt Col David L. Coulliette and Lt Col Wray Johnson, USAF, and Maj Michael A. O'Halloran, USMC, in the preparation of this article. I also want to thank Maj Pete Osika of the College of Aerospace Doctrine, Research, and Education at Maxwell AFB, Alabama, for his significant contribution. Any mistakes of interpretation or fact remain my own responsibility.

More important, what if one day you are a joint force air component commander (JFACC) or one of his or her staffers? What if the JFACC works for a naval commander in chief (CINC) at Pacific Command or a Marine CINC at Central Command? Would you need to know more about the character of maritime airpower than you do now? What if one day an Air Force officer becomes a CINC and has both naval and marine component commanders working for him or her? Will that CINC need to know what Midway, Yankee Station, and "traps" are all about? Once the Tomahawks and F/A-18s cross the shoreline, do significant differences exist between them and F-16s or air-launched cruise missiles? Does a MiG know whether the missile that hits it came from an F-14 or an F-15? Is it essential, therefore, for the twenty-first-century air strategist to understand as much about airpower "from the sea" as any of its other forms?

The purpose of this article, then, is to give you some ideas about enhancing your professional reading program—widening its scope to give you some additional insight on airpower in the naval and maritime contexts. We begin with a summary of the naval experience with airpower, then offer minireviews of five new books that are mostly about airpower in the naval context, and conclude with a list of 10 books that would give you a fair start in the study of airpower as it relates to the US Marine Corps and Navy.

A Shoestring Primer on the Development of Airpower and the Sea Services

The Jeffersonian Era

Through most of American history, the United States has not been a major sea power. In the beginning, we had no hope of competing with Britain's Royal Navy; in any case, we had other fish to fry with our continental expansion and development. Our overseas commerce was important, but the threats to it were usually limited. In any event, it benefited from Pax Britannica, under which the Royal Navy made the seas somewhat safe for American commerce. So the vision that prevailed for most of the nineteenth century was Thomas Jefferson's preference for a small-ship navy whose main purpose was to defend the coasts and offer minimal protection to commerce. The main exception occurred during the American Civil War, in which the Union built up one of the world's great navies and used it to good effect in blockading the Rebels and assisting the Army with riverine operations and a few amphibious attacks.

The New Imperialists and Mahan

At the first centennial's end, a sea change occurred. Because the frontier closed in 1890, any expansion would have to be overseas. A vast maritime technological revolution took place during and after the Civil War: the Navy converted to steam propulsion and metal ships; submarines arrived even before World War I, along with practical torpedoes; the effectiveness of naval gunnery made a quantum jump; and coaling stations for both commercial and naval vessels became essential en route to overseas markets. As Alfred Thayer Mahan saw it, the function of the Navy was no longer merely coastal defense, commerce protection, and raiding. Rather, the service should now gain command of the sea through a great naval battle between capital ships, as in Trafalgar, where Adm Horatio Nelson had defeated the Napoleonic naval threat. This new function would require a great fleet of huge, heavily gunned ships of the line.

The Test of the Great War

The United States did not get into the war in time for the great battle of Jutland, and, in any event, that fight little resembled Trafalgar. The German U-boats demonstrated that a Jeffersonian-era assault on maritime commerce had more potential than Mahan thought and that conventional command of the sea could do little to stop it. So, no clear "lessons" of the naval war existed, and the US Naval Institute's *Proceedings* in the 1920s published many articles about Jutland and an equal number about the utility of naval aviation. Destruction of the German fleet deprived the US Navy of its main—almost only—threat.

Naval Aviation as an Auxiliary

The Navy of the 1920s was not nearly as Neanderthal as many Air Force officers seem to believe. True, most officers valued aviation as an enormous enhancement of the effectiveness of gunfire—and it was that. But some admirals even then had visions of aircraft ultimately becoming the main striking force. British carriers of the early 1920s were clearly ahead of their US counterparts, but by the end of the decade, America had the best naval aviation in the world, and the USS *Lexington* and *Saratoga* were the leading carriers. The end of that decade saw Pacific Fleet exercises in which air forces practiced attacks on both Pearl Harbor and the Panama Canal. Still, for most people, the main function of aviation was to win air superiority over the battle—and the best way of doing that was sinking the enemy carriers.

Hesitant Development of Naval Aviation as the Main Striking Force

Some doctrinal and organizational change followed the technical revolution that produced aircraft and carriers. The task force gradually replaced organization by ship type, and on the day of Pearl Harbor, the United States had eight battleships and seven aircraft carriers under construction. The flattops included the 27,000-ton *Essex* class that would win the naval air war in the Pacific. Arguably, only on the eve of war did carrier decks feature Dauntless dive-bombers with the capability of lifting a bomb big enough, carrying it far enough, and aiming it accurately enough to threaten the horizontal armor of most of the world's battleships.

Pearl Harbor and the Test of War

Pearl Harbor was defective as a test of Mitchell's theories for the same reason the 1921 tests proved inconclusive: the American battleships were immobile and undefended. However, the Japanese quickly sent the Royal Navy's *Repulse* and *Prince of Wales* to their watery graves even though they were moving, but without any air cover. During the war, though, battleships transitioned from the main striking arm to support roles as antiaircraft platforms and amphibious gunfire-support ships. The carriers quickly became the capital ships for both winning the sea battle and then projecting power ashore. Again, in 1945 the Japanese navy was in its watery grave, and the US Navy had lost its principal—and only—threat.

Revolt of the Admirals

The Navy for a time seemed to be a service without a mission. Nuclear attacks evidently said that air attack would decide the next war in a matter of hours; therefore, there would be no time for sea power to have an effect. Because the USSR was so heavily a land power, no other possible mission existed. That, in part, explains the viciousness of the interservice rivalry surrounding the Unification Act and acquisition of the B-36. However, the

Korean War not only opened the gates to the treasury but also showed that in the absence of jet fields, carriers could perform a very useful function in power projection ashore, notwithstanding the absence of any discernable naval threat.

The Blue-Water Navy and the Soviets

About the time the Navy began to make its case for power projection ashore in places like Korea, the Soviets provided that service with yet another reason for being: the building of a great submarine fleet, first to threaten the lines of communications to the North Atlantic Treaty Organization's member states, and then to threaten the American homeland itself with nuclear missiles. This mission remained viable for many decades afterwards, providing the rationale for sustaining great carrier and submarine fleets.

From the Sea

The collapse of the Soviet Union again deprived the US Navy of a threat upon which to build its house. The submarine fleet lost both its nuclear-attack role and its antisubmarine function. The carrier part of the Navy was somewhat better off because it could function in a conventional-attack role in many other areas of the world. But now an increasing focus on power projection ashore enhanced the brown-water parts of the Navy—the minesweeping and amphibious forces. So lately, one perceives the function as establishing an enclave ashore to prepare for the follow-on heavy forces of the Army and Air Force.

The Jeffersonian Era

Some wonderful tales about American sea power existed before the Wright brothers came along. But for our first hundred years, naval power was not a high national priority. Even then, some leaders wanted to build great ships of the line. However, the population was small, the treasury usually bare, and Indians and outlaws on the frontier posed a more immediate problem than the great fleets of Europe. Our "Manifest Destiny" to expand preoccupied itself with filling up the continent for many years.

Thomas Jefferson's naval policy asserted that this country needed only a modest fleet of small ships and boats sufficient to protect its coasts and defend overseas commerce in a limited way. Although one must concede that this made sense, his policy briefly came to grief during the War of 1812, when enemy naval superiority allowed the British to sail up the Chesapeake and burn the White House. But even then, because the British could not establish naval superiority on the Great Lakes, the war ended in a standoff. For the rest of the period before Fort Sumter, not much need existed for a substantial navy—even then, the United States found refuge behind the peace maintained by the British Royal Navy. The conversion to steam, which began in that period, resulted in the founding of the US Naval Academy in 1845 to provide the requisite engineers.

The Union built up a very substantial fleet during the Civil War for both brown-water operations on the rivers and blue-water work on the high seas in blockading ports and chasing Rebel commerce raiders. Too, the ordeal of the Union stimulated more rapid technological change in the building of ironclads and even rotating turrets. But after the war, the US Navy quickly fell into stagnation that lasted for another 20 years or so.

The New Imperialists and Mahan

The industrial revolution in America started even before the Civil War, but it really

Photo courtesy of US Air Force.

Left to right: *Rear Adm William Moffett, Orville Wright, and Brig Gen William Mitchell, circa 1922. Moffett was the head of the Bureau of Aeronautics from 1921 until his death in an airship accident in 1933. His political and managerial skills were vital to the building of naval airpower during its first decade and more.*

got rolling after the agrarian South could no longer make its voice heard in Congress. Soon we built the railroads, populated the West, established the great manufacturing plants in the East, and witnessed the maturation of mechanized farms. These events, and many others, stimulated new interest in the overseas world. Because we needed new sources of raw materials, we had to find new markets.

All of that implied increasing involvement in trade routes and shipping, en route refueling stations, ship building and metallurgical industries, and a naval force to protect it all. Finally, the Republican Party, known for its responsiveness to the needs of big business, dominated politics for most of the period.

The Navy started stirring again in the 1870s—first with the founding of the Naval War College and the US Naval Institute and then with the beginning of the conversion to all-metal vessels (iron followed by steel). After abandoning sail propulsion, the service electrified the fleet and substantially improved its guns and gunnery. It also developed submarines and destroyers with the torpedoes to arm them. Gradually, the dedication to small Navy vessels like cruisers diminished, and battleships and dreadnoughts entered the fleet.

Brought up at West Point, where his father had been a professor of wide renown, Alfred Thayer Mahan attended Columbia University for a couple of years and then received advanced standing at the US Naval Academy. He remains the only person in the history of the institution who did not go through the freshman year. Mahan graduated in 1859, second in his class of 20.[1] After Mahan served blockade duty during the Civil War, Stephen Luce recruited him to become a faculty member at the Navy's war college, then being set up in Newport, Rhode Island. Working mostly at the New York Public Library, Mahan prepared a series of lectures that be-

came the basis of his course at Newport and also of his most famous work, *The Influence of Sea Power upon History, 1660–1783,* a smashing success.[4] Afterwards, he went back to sea only one time—to Europe, where he even received an audience with Queen Victoria.

Mahan was a favorite of the imperialists of his day, especially Theodore Roosevelt, assistant secretary of the Navy under President William McKinley. The performance of the Navy in the Spanish-American War seemed much more splendid than it really was, and the service earned a good deal of public affection. An assassin's bullet brought Roosevelt to the presidency—a great benefit to the Navy, which enjoyed further buildup during the initial decade of the new century, just as the Wrights were first learning to lift us from the ground.

Mahan argued that command of the sea was vital and that one could achieve it by winning a great sea battle between the main battle fleets. After that victory, everything else would follow almost automatically: the denial of enemy commerce, the freedom of friendly commerce, the free use of blockades, the ability to conduct amphibious invasions, and on and on. In short, whoever commanded the sea would rule the world. Among the corollaries to that principle was the urgent need for a great American battle fleet.

Thus, at the time that the Army had just emerged from its role as a force of Indian fighters, the Navy was riding high, wide, and handsome. The Army acquired its first motor vehicle in 1906 and contracted for its first airplane in 1907—the same year that Roosevelt sent the Great White Fleet on its voyage around the world. Clearly, the Navy remained the first line of defense. The service found itself in the midst of a whole string of technological revolutions that had begun before the Civil War and that continued rapidly under Roosevelt. Technical change, a relatively novel thing in the Army, became a way of life with the Navy. Too, the Navy had developed its war college to a very considerable stature by the turn of the century, but the Army War College arose only after the fiascoes of the Spanish-American War made clear the need. The US Naval Institute and its publication *Proceedings* already had existed for several decades, and war gaming at Newport had become quite mature. By the time of World War I, then, these events were conditioning the way that the naval service would meet yet another technological innovation—airpower. By then, the old split in the Navy's ranks between engineering and deck officers had healed, but the memory of such problems lingered strong in the minds of senior officers.

The Test of the Great War

In a short time, the Navy followed the Army into aviation. Even before World War I, the Navy had landed airplanes on and launched them from its ships, established a flying-training program, and actually used aircraft in combat at Vera Cruz, Mexico, in 1914. Airpower really did not figure in the one great sea battle in World War I, and naval aviators involved themselves in antisubmarine warfare (ASW) and in more conventional air fighting at the northern end of the Western Front.

No definitive lessons would emerge from such a limited experience, but pressure for the development of aviation rose to high levels in the Navy in the immediate aftermath of the war. Aviation had captured the imagination of everyone during the conflict—especially so in reaction to the horror and dreariness of trench warfare and the scarcity of great sea battles. Sailing back from Europe aboard the USS *Aquitania,* Billy Mitchell treated Capt Jerome Hunsaker, USN, to a full explanation of his vision for the future of aviation—which did not allow a great part for battleships or the Navy itself. Hunsaker and Mitchell himself both treated the General Board of the Navy to this vision before the end of 1919. If the romance of it all were not enough, then the threat implied by Mitchell's schemes certainly helped stimulate the status of aviation in the naval service. If the admirals did not move swiftly in assimilating airpower to the Navy, then Mitchell

would usurp it all for an independent air force. Indeed, they needed to look no further than the Royal Air Force, founded in 1918 and containing naval aviation.

Naval Aviation as an Auxiliary

Ships themselves were initially used as auxiliaries to the main striking arm in the Greek and Roman armies of ancient times. For many centuries they remained mere auxiliaries of the infantry, transporting soldiers to the scene of battle. But once they had closed with enemy vessels, the fight differed little from a battle on land. Only in the late sixteenth century did naval warfare become a battle between ships rather than among soldiers. So it was not at all unique that both the US Army and Navy first employed this new thing, the airplane, to enhance the effectiveness of older instruments of battle.

The term *battleship sailor* in more than just Air Force circles has become a euphemism for *unthinking, reactionary clod.* This is especially so among the intellectual heirs of Billy Mitchell. But I am sorry to report that in 1921 Billy may have been wrong and the battleship sailors right. It is true that the German battleship *Ostfriesland* went down under the force of the Air Service's 2,000 lb bombs and that the media got some splendid pictures of the sinking, leading to a field day in the press. But the ship was hard by the coast, stationary, and undefended. Pearl Harbor seemed to confirm that Mitchell's conclusions had been right. There too, however, the surprise attack caught the battleships at anchor, in narrow waters, and undefended either by antiaircraft artillery (AAA) or airplanes. Soon after, early in World War II, the Japanese caught the British capital ships *Prince of Wales* and *Repulse* at sea and under way. Both went to the bottom. But they too had no air cover, and the AAA was not as dense as it later became on battleships. The *Bismarck* was a tough nut to crack when the Royal Navy tried to run her down. When the British finally found her, their aircraft torpedoes disabled but did not sink her. The force, commanded by surface sailors, gave her the coup de grace with gunfire and torpedoes. When the US Navy caught the world's greatest battleship, the *Musashi,* in the narrow waters of San Bernadino Strait without any air cover in 1944, after the Japanese had been bled seriously for almost three years, it took 19 torpedo hits plus numerous bomb strikes to put her down.

The point is that the battleship sailors of 1921 and long after did have a case in logic. If Pearl Harbor had come at almost any time before 1940, *battleship sailor* might well have become a euphemism for *foresighted military leader.* As Thomas Wildenberg shows in his book *Destined for Glory,* reviewed below, it took the development of dive-bombing as a method of getting the accuracy needed and the acquisition of an aircraft like the Dauntless that could haul a heavy enough bomb a reasonable distance to make an impression on modern, horizontal battleship armor. The Dauntless did not turn up until 1940.

Meanwhile, aviation in a supporting role certainly did enhance the effectiveness of battleships. In the last decades before World War I, the development of newer and larger rifled barrels, new propellants, and more effective projectiles greatly extended the range of artillery. On land, artillery spotting became vital since guns far outranged eyesight from the trench level. Thus, spotting from the air became a vital advantage for ground generals. Consequently, they became the first to raise the cry for air superiority—to develop a permissive environment for their own spotters and deny it to the enemy's. Similarly, fire control at sea lagged gun range. Further, the United States remained well behind the Japanese and the British in the numbers of cruisers, a principal function of which was scouting or long-range reconnaissance. Surface sailors well knew that they were not about to get much cruiser money out of Congress and were persuaded that carrier aircraft, land-based airplanes, or airships could do such scouting more rapidly and much more cheaply.

Even before the Great War, guns could hurl a 1,500 lb projectile far over the horizon. At first, fire control experienced improvement by centralizing it aboard ship and putting the fire-control officer high up in the superstructure. But that was not enough. Towed kites and balloons provided some thrilling rides for the spotters, but they were impractical. Using airplanes for spotting right after the Great War immediately revealed that the battleship fleet with air superiority would have a decisive advantage over its enemy. If one could make the environment safe for one's own spotters and lethal for the enemy's, one could destroy the enemy battle line before it could begin accurate fire itself. If the spotters could yield, say, only five miles in range advantage, that might well be enough. With the enemy battle fleet steaming at around 20 knots, firing at it for 15 minutes (assuming one was not steaming away from it) might well be enough to win the battle—and the war, according to Mahan. If one's aircraft could not sink enemy battleships but only slow them down by damaging or forcing evasive maneuvers on them, even that was all to the good.

So at first, battleship sailors thought they would need aircraft carriers to supply air superiority over the battle area and then reconnaissance and spotting services to make gunfire more effective. They quickly saw that the best way to achieve air superiority entailed sinking the enemy aircraft carriers. At the time of the Mitchell trial in 1925, however, the aircraft of the day did not have a prayer of carrying an appreciable bomb load out to battle distance or of consistently finding the enemy. Further, dive-bombing was not developed until 1927 and the decade that followed, and B-17s at Midway proved that hitting a maneuvering ship from level flight was very difficult if not impossible. The complete attrition of Torpedo Squadron 8 in the same battle indicated that that mode of attack was far from a free ride. Moreover, the addition of blisters to battleships to detonate torpedoes away from the main hull and the limitations of the size of the torpedo warhead limited its promise. These problems were partially solved by 1940, but by then the statute of limitations had run out for the *Ostfriesland* tests.

Hesitant Development of Naval Aviation as the Main Striking Force

Completed in December 1927, the *Lexington* and *Saratoga* became a factor in fleet exercises the following year. Before the end of the decade, carrier aircraft maneuvering at sea had run mock attacks against the Panama Canal. Long after, Adm John Thach recalled that he had participated in a surprise mock air attack against Pearl Harbor in the very early 1930s. For a long time, warships had been organized according to types: battleship or destroyer squadrons and the like. Starting in the early 1930s, though, the Navy began experimenting with task organization—a more or less permanent unit containing all types and built around an aircraft carrier. This became standard procedure during World War II and has persisted to the present. An associated development involved the press to get as many planes as possible aboard a given vessel and to raise their sortie rate to as high a level as possible. In the end, this gave US carriers a decided advantage over all others.

Air Force officers often do not appreciate the tight relationship between ship and aircraft design that exists in the Navy. For us, if the airplane becomes heavier, we just thicken the runway. If its landing distance increases, we just lengthen the runway. But on a carrier, once the flight deck attains a certain strength, then increasing it would require a truly major operation. Moreover, the size of the elevator limits the weight and size of carrier aircraft. If the fill in aircraft bombs becomes too sensitive, then we in the Air Force just buy more real estate and store fewer of them in each igloo. But in the Navy, that is not an option. The size of the ship's magazine remains fixed—or nearly so.

When the *Lexington* and *Saratoga* joined the fleet, they used up almost half of the carrier tonnage granted the United States under the Washington treaties (66,000 of 135,000 tons allowed). So for a time, the Navy thought it best to make new designs smaller to get as many units as possible from the total allowance. Thus, the first American ship designed as a carrier from the ground up (both the *Lexington* and *Saratoga* started out as battle cruisers) was the *Ranger*—about 14,000 tons. As it turned out, this made her too slow and vulnerable for service in the wartime Pacific, so she stayed in the Atlantic throughout World War II. We built one more carrier about that size and then three of about 20,000 tons. The Navy appreciated the value of size long before Pearl Harbor and, when the Japanese attacked, had a design already in the shipyards that delivered a ship of 27,000 tons (*Essex* class), not far short of the *Lexington*. This increase in size enabled the development of the heavier Hellcat and Corsair fighters that made us more competitive with the Japanese Zeros—the source of so much trouble in the early days of the war. Thus, by the onset of war, we had the ships and some of the airplanes we would need, a doctrine for achieving air superiority and command of the sea, and a developing task-force organization that remains in use.

Pearl Harbor and the Test of War

The typical Air Force officer, it seems to me, knows a lot more about World War II in Europe than in the Pacific. The typical Navy officer, I am sure, knows much more about the Pacific war than the part of it in Europe. So, to some extent, when they find themselves on joint staffs, they tend to talk past each other—to speak with different vocabularies. The systemic and parochial reasons for this need not detain us, but Air Force warriors have good reason to give the Pacific more attention. A big part of our war in Europe was about the heavy bombing of large industrial centers—something not likely to happen again. Until the last year of the war, the fighting in the Pacific war featured tactical air operations and campaigns of limited size that may offer good instruction for the future. Finally, we should note that for a time in the early and even the middle part of the war, the United States had more forces deployed to the Pacific than to Europe.

One of the two main campaigns in the Pacific, the one through the Central Pacific, was very largely a naval war although it did involve vicious fighting ashore. The other, in the Southwest Pacific under the command of Gen Douglas MacArthur, was more of a land war but involved a very substantial naval and amphibious element. This situation probably violated the principle of mass, but either arm of that strategy usually outnumbered the Japanese, so it did not make that much difference. Although it is hard to say which campaign did more damage to the Rising Sun, no doubt our naval brethren tend to call the Central Pacific drive the main attack.

In any event, in part because of US naval competence, in part because of good fortune, and in part because of an intelligence coup, the Battle of Midway put a severe dent in Japanese airpower, especially naval airpower, its stronger form. Soon after in the Solomons campaigns, we further decimated Japan's naval airpower. The Battle of the Philippine Sea, which occurred in the summer of 1944, was a one-sided thing—a "turkey shoot." When we saw that the Japanese were staggering, we moved forward the invasion of Leyte, stimulating the last great naval battle—a close-run thing. The Japanese almost got their combat units in among MacArthur's amphibious forces, but we saved the day by the narrowest of margins. Thereafter, the main threat was the kamikazes, a problem to which we found no real solution before nuclear weapons precipitated the end. The United States Strategic Bombing Survey concluded that the combination of the submarine blockade and the strategic bombing of the home islands had proved decisive, but you may find it hard to persuade your carrier-flyer colleagues on joint staffs of the validity of that inference.

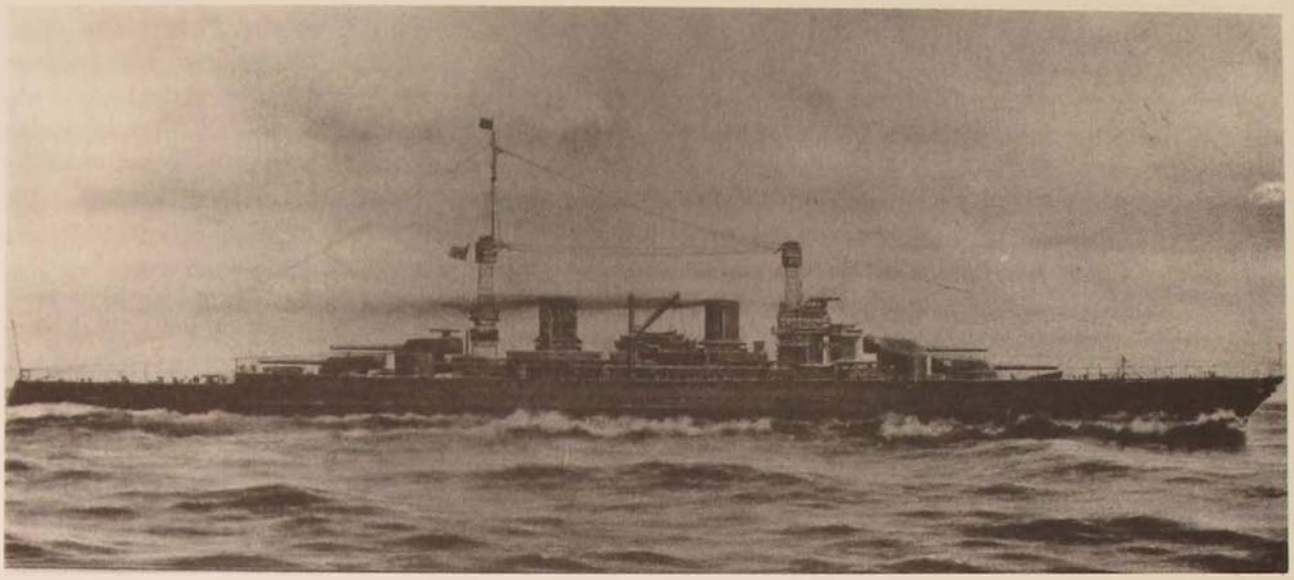


Photo courtesy of US Navy.

Artist's conception of the US navy battle cruiser Lexington. *The battle cruisers of the early twentieth century were capital ships with armament and propulsion similar to those of battleships. However, they did not have the same armor plating. The theory was that they could run away from battleships and outgun everything else afloat. But the British battle cruisers at Jutland suffered heavily, and the design lost favor before the Washington Conference.*

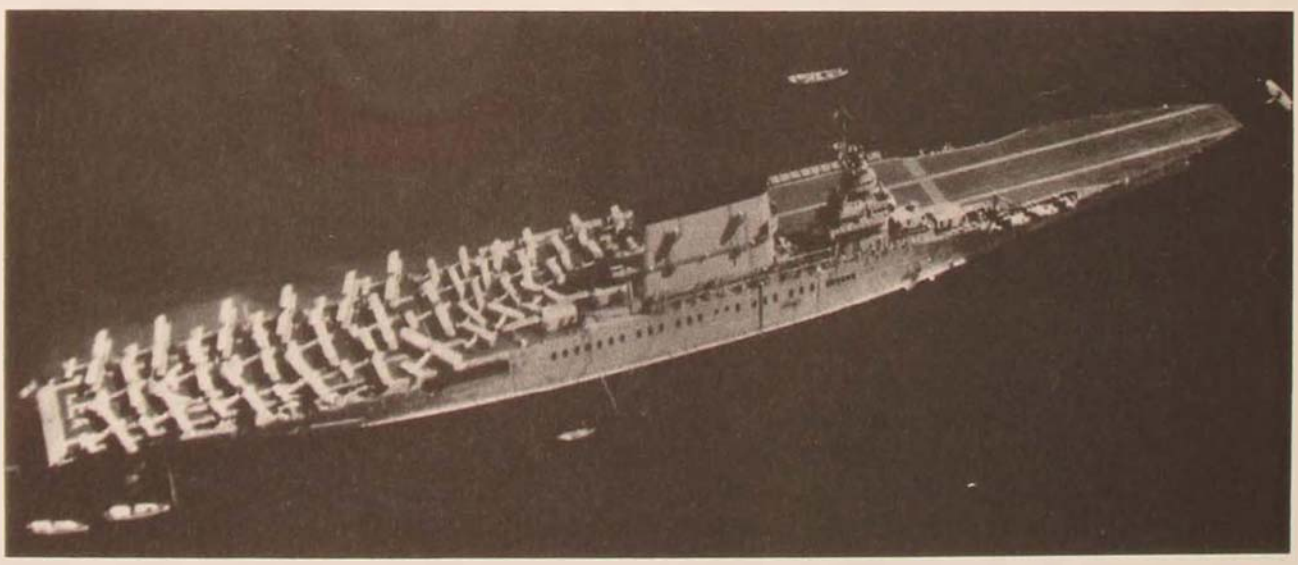


Photo courtesy of US Navy.

USS Lexington *at anchor, circa 1935. The Washington treaties permitted the United States to convert two battle-cruiser hulls to aircraft carriers, one of which became the* Lexington, *shown here, and the other the* Saratoga, *which was nearly identical. Both displaced 33,000 tons in accordance with the treaty limit and at first carried eight-inch guns. The* Lexington, *CV-2, was lost in May 1942 during the Battle of the Coral Sea. The* Saratoga *survived the war despite much battle damage and was sunk during one of the postwar nuclear tests.*

Photo courtesy of US Air Force.

Left to right: *President Franklin D. Roosevelt, Orville Wright, and Ohio governor James Cox, Wright Field, Ohio, 1940. President Roosevelt had been assistant secretary of the Navy during the Woodrow Wilson administration and a lifelong fan of boats and ships. He was a great friend of the Navy, but by 1940 he had come to value airpower very highly and was developing the Air Corps as rapidly as he could. When he came to office in 1933, he immediately started rebuilding the Navy using public-works money.*

Arguably, the Navy became a victim of its own success. The German fleet had gone to the bottom at the end of World War I. Now the Japanese navy was out of the picture. The United States had command of the seas, and no one could challenge us. The British treasury would not support a great navy any more, and, in any event, war with Great Britain was unthinkable. The USSR was in no shape for a war; moreover, it was almost wholly a land power and not at all dependent on raw materials or food from overseas. So what threat justified the existence of the greatest navy in history?

As with the Army Air Service and Air Corps, naval aviators long felt that the "Gun Club" was denying them their rightful place in the sun. True, senior operational commanders in the Pacific did not cut their teeth in aviation.[3] But soon after Hiroshima, aviators began to take their places at the pinnacle of the profession. The first career aviator who became chief of naval operations was Forrest Sherman, who took office in 1949.

Revolt of the Admirals

The most memorable hours in my 70 years as an American were VJ-day, when the war ended. The whole city of Quincy, Massachusetts, poured into the square, smiling and joyful. Dour New England had rarely seen such public hugging and kissing. It was just great to be an American. Our monopoly on nuclear weapons and the new United Nations would guarantee world peace forevermore. The quick appearance of cheap atomic power would wipe out poverty once and for all. Looking back, I am amazed by how fast that great feeling dimmed.

Arguably, that was also the greatest day in the history of the United States Navy. It had risen from the depths of despair at Pearl Harbor to the heights of its greatest glory in

September 1945 at Tokyo on the quarterdeck of the battleship *Missouri*. American carriers had won the naval war in the Pacific, and Navy aviators had come out of the wilderness poised to grasp the reins of power in their service. But the clouds of interservice rivalry soon masked the sunlight of that great victory.

The initial vision of the meaning of nuclear weapons was that they were so horrible that no one could ever stand up to them. If they did not inhibit war entirely, they were so deadly that one could not resist them for long. One assumed that they would never be much smaller than the 10,000 lb weapons dropped on Hiroshima and Nagasaki. Thus, only large, land-based aircraft could carry them. They would make such short work of war that neither blockades nor amphibious operations nor efforts at commanding the sea would have time to make any difference. In any event, who was left to blockade? Who challenged our command of the sea? Who had a submarine fleet that we could depth-charge? A two-ocean Navy was a relic of times gone by.

On top of that, the whippersnapper Air Force (Army Air Forces just then) had come on the Pacific scene with its B-29s and "nukes" at the last minute to hog all the glory that should have been the Navy's. The media quickly forgot the long grind through the Pacific islands and became fascinated with the nuclear marvels. Congress and especially the president were on the lookout for an "econo" way of providing national security.

Photo courtesy of US Air Force.

First secretary of the Air Force, Stuart Symington, circa 1947. He and the two generals whose picutres are on the wall, Dwight Eisenhower and Carl Spaatz, were among the leading proponents of a Department of Defense and a separate air force. Symington was put under a cloud by charges coming from naval employees regarding corruption in the B-36 acquisition program, but Congress investigated the charges and exonerated the secretary.

Perhaps we could do it with one air force and a few nukes instead of the huge, expensive Navy and Army.

All of that resulted in American military history's most vicious interservice battle—a debate over service unification and an independent air force. In form, Mitchell's dream came true—such an air force and a Department of Defense became reality. However, not one but three or four air forces emerged, and the Department of Defense was only a hollow shell of what Mitchell had envisioned—strictly limited in size and having power only to "coordinate." The separate existence and size of the US Marine Corps became chiseled into the stone of law, and naval aviation continued its existence as well—with a substantial element of land-based airpower. The Unification Act of 1947 did not really do much to settle things.

Early in 1948 President Harry Truman gathered the chiefs of staff down at the naval base at Key West, Florida, to attempt to bring more harmony and cooperation into the services; he held another such meeting at Newport, Rhode Island, later in the year. They did not work. Qualifications to the agreements hammered out soon made them meaningless. The US Air Force, the new kid on the block, drove hard to stake out the strategic-attack mission as its own private preserve. Part of this included acquisition of the B-36, a very long range bomber of truly massive proportions. The Navy, having lost so many missions, now tried hard to get a piece of the nuclear pie, partly out of its need to develop a carrier-attack airplane with a bomb bay big enough to hold a 10,000 lb weapon. This entailed building a new, flush-deck supercarrier—the *United States*. Although the Navy had previously embraced power projection ashore, that now threatened to become its principal mission, putting it in direct competition with the Air Force.

Secretary of Defense James V. Forrestal committed suicide about that time, and his replacement, Louis Johnson, promptly cancelled the building of the *United States*, setting off a major revolt among the admirals. The conflict produced anonymous accusations of corruption in the B-36 acquisition program and ultimately led to the relief of the chief of naval operations himself, Adm Louis Denfeld. Although Congress investigated the accusations and found no corruption by Secretary of the Air Force Stuart Symington or anyone else, the dawn of 1950 saw no end to the looming bureaucratic battles.

But in June 1950, the North Koreans invaded South Korea, stimulating an unexpected US military response. This new war, so soon after Hiroshima, dispersed the euphoria that had followed the defeat of the Japanese. It did, however, reopen the gates of the treasury for the armed forces, and soon the rivalry diminished greatly. The scarcity of jet airfields on the Korean peninsula enabled the carriers to demonstrate real utility even in a nuclear world without an obvious naval adversary. At the end of the Korean War, President Dwight Eisenhower, who had been a major proponent of unification and a separate air force, appointed Adm Arthur Radford as chairman of the Joint Chiefs of Staff. Eisenhower's selection of Radford, one of the main opponents of unification and a separate air force, symbolized interservice peace, as did the fact that in the 1950s the Navy got its authorization for the *Forrestal* class of supercarriers.

The new carriers, about the size intended for the *United States*, were not flush-decked, but that did not matter any more. By then, one could miniaturize nuclear weapons to the point that small carrier aircraft could carry them. By then, too, the Soviets were providing the threat upon which the Navy could build a new house.

The Blue-Water Navy and the Soviets

In 1945 the Soviets captured a good part of the German submarine fleet along with the supporting science and technology, transferring all of it to their homeland. Soon they began building a submarine fleet of their own, based mostly in their northern ports,

Photo courtesy of US Navy.

The USS Sam Rayburn, *a ballistic missile boat, circa 1960. One of the things that diminished the intensity of interservice rivalry in the late fifties and early sixties was the surprise appearance of a new technology—submarine launched ballistic missiles. This gave the Navy an important role in the nuclear-deterrence mission in a way not threatening to the Air Force and yet apparently very stabilizing to the nuclear balance.*

and began to threaten US sea lines of communications with NATO allies. They also followed the United States into the submarine launched ballistic missile (SLBM) business, which came to threaten the American homeland itself. All of this stimulated the rebuilding of the Navy's ASW capability, at first based on light surface combatants and airpower but later expanded to the use of attack submarines themselves as ASW platforms. The Soviets' actions also became part of the justification of a carrier-fleet nuclear mission that would not compete with the role of the Air Force: attacking the Soviet submarine menace at its source, also in its northern ports. All of that became a maritime strategy that in its most ambitious form called also for a naval attack on the right flank of the hypothetical Warsaw Pact charge to the westward. It reached its culmination during the administration of President Ronald Reagan.

Because of technological problems, the Navy lagged the Air Force a bit in the transition to an all-jet force. The early jets required a great length of runway for takeoff and accelerated slowly when their pilots elected to make a missed approach. The latter difficulty was especially dangerous because a late decision on the part of the pilot could easily result in a crash into aircraft that had previously landed on the foredeck, loaded with highly volatile fuel and munitions. Two British ideas, the steam catapult and the canted deck, ultimately overcame these problems. The catapult allowed the launch of heavily laden aircraft from minimum lengths, and the canted deck moved the landing area outwards so that an aircraft on a missed approach could take off straight ahead without going over airplanes on the forward end of the flight deck. The problems also diminished with the building of ever-larger carriers, culminating with the current *Nimitz* class at a displacement above 80,000 tons—three times the size of the *Essex* class of World War II vintage. But again, the heyday of the Reagan years did not last long and was undermined by the collapse of the USSR and the Warsaw Pact.

From the Sea

The disappearance of the Soviet threat hurt the submariners of the US Navy the most. Both parts of their mission, ASW and SLBM, focused almost exclusively on the USSR, and neither adapted easily to other kinds of conflict. But the aircraft carriers proved more adaptable. They had demonstrated a high utility in the early days of the Korean War, a limited conflict resembling the diffuse threat now seen in the American future. Since no one had anticipated Korea, no elaborate bases existed to which we could deploy land-based air units. Similarly, since it is difficult to predict future areas of conflict,

Photo courtesy of Lt Col Mason Carpenter, US Air Force.

US Navy F-14 Tomcat refueling from US Air Force tanker, Gulf War, 1991. The Tomcat is a 1970s-era design, optimized for air-to-air work based on the "lessons" of the Vietnam War. In the Gulf War, it was still confined to work in the air-to-air battle using AIM-7 Sparrows, AIM-9 Sidewinders, and AIM-54 Phoenix air-to-air missiles. It also had an M-61 20 mm cannon, but missiles did all its kills. Since the war, it has been modified with bomb racks and the capability to employ navigation and targeting pods to give it an air-to-ground capability as well.

the portable airfields on aircraft carriers gain some utility. One can also vary their deck loads to adapt to many different conflict scenarios—something not possible for submarines.

The Navy's new "From the Sea" strategy allows for no blue-water threat—no great battle for the command of the surface of the sea or the region below the surface. Too, the future adversary is beyond prediction—the threat is diffuse. But most important places are only a short distance from the sea, many accessible by amphibious forces composed of naval and marine units. Future conflict will likely occur not in the open ocean but along the shore—the littoral—in the brown-water area so long considered a backwater for the US Navy. This is the province of amphibious and mine-warfare forces, both of which take on a new prominence under the "From the Sea" concept. The idea is that the Navy and Marine Corps have the special capability to make surprise invasions that can force entry into an enclave which will then supply the base area for the heavier Army and Air Force forces—if heavier forces are needed at all. Aircraft carriers are essential for this kind of war, and some ASW capability is necessary as well to protect the power-projection force from small submarine attacks.

Photo courtesy of Lt Col Mason Carpenter, US Air Force.

US Navy EA-6 Prowler refueling by the probe-and-drogue method from a US Air Force tanker during the Gulf War, 1991. The Prowler's mission is defense suppression, either nonlethal, using electronic jamming, or lethal, launching antiradiation missiles at radar sites.

For the readers of *Airpower Journal*, a whole new airpower world waits to be examined. It is alien to many of us, but—fortunately—a huge and interesting literature describes it. It behooves the Air Force's young warrior-scholars, such as you, to become somewhat familiar with maritime airpower and the sea services through the vicarious experience of reading some or all of the works on the sampler list below. If you have the chance to experience carrier operations at sea, by all means grasp it. Doing so will add greatly to your education and at the same time serve as a fascinating interlude. □

Five New Books on Airpower at Sea

Air Warriors: The Inside Story of the Making of a Navy Pilot by Douglas C. Waller. Simon & Schuster, New York, New York, 1998, 416 pages, $25.00.

Waller, a *Time/Newsweek* journalist specializing in national security, is a strong writer but a dilettante in matters of aviation. He bases his book very largely on short tours at Pensacola and on shipboard, a few flights, and many interviews. Some journalistic bias turns up in his tendency to take the words of ensigns and lieutenants at face value while viewing everybody over 30 with suspicion. If you are at all inclined to the subject, go on to Baldwin's *Ironclaw*, below.

Destined for Glory: Dive Bombing, Midway, and the Evolution of Carrier Airpower by Thomas Wildenberg. Naval Institute Press, Annapolis, Maryland, 1998, 280 pages, $34.95.

This book, written by a serious naval historian who is now a scholar at the National Air and Space Museum, shows how dive-bombing and carrier aviation developed during the last decade before the war to produce a true ship-killing capability that really could decide battles at sea. This work is worth your time because it effectively relates technology, doctrine, and organization in a way that will enhance your understanding.

Ironclaw: A Navy Carrier Pilot's Gulf War Experience by Sherman Baldwin. William Morrow, New York, New York, 1996, 265 pages, $24.00.

Baldwin is a qualified carrier pilot with a strong writing style. Although his book overlaps Waller's to some extent, Baldwin writes engagingly and with a good deal more authority. This book will give you some of the flavor of the day-to-day life aboard carriers and some insights into coping with the prospects of and actual combat.

Sea Wolf: A Biography of John D. Bulkeley by William B. Breuer. Presidio Press, Novato, California, 1989, 318 pages, $16.95.

This is a chest-thumping, hero-worshiping biography done by a prolific author supplying the market for popular history. Because it contains very little on airpower, you can skip this one or go back to William Lindsay White's *They Were Expendable* (1942) for the story of the deliverance of Gen Douglas MacArthur on PT boats in 1942.

U.S. Marine Corps Aviation, 1912 to the Present, 3d ed., by Peter B. Mersky. Nautical and Aviation Publishing Co., Baltimore, Maryland, 1997, 383 pages, $29.95.

Written by a short-service Marine aviation veteran, this book is a mind-numbing listing of every unit and ace pilot in the history of the corps, with little analysis of Marine air doctrine and still less of an effort to place it in context. Skip this one in favor of the Sherrod, Cagle and Manson, and Uhlig books listed in the sampler, below. Of the five works listed here, I would give the Wildenberg work a fairly high priority and then recommend Baldwin's for lighter but informative reading. The rest, you can skip.

A 10-Book Sampler on Naval Aviation for Your Professional Reading Program

Baer, George W. *One Hundred Years of Sea Power: The U.S. Navy, 1890–1990.* Stanford, Calif.: Stanford University Press, 1994.
See pages 125–27 for the context in which naval aviation developed.

Barlow, Jeffrey G. *The Revolt of the Admirals: The Fight for Naval Aviation, 1945–1950.* Washington, D.C.: Naval Historical Center, 1994.
Written by a Washington Navy Yard employee whose father is a naval aviator; that shows, but the book is nonetheless authoritative.

Buell, Thomas B. *Master of Seapower: A Biography of Fleet Admiral Ernest J. King.* Boston: Little, Brown, 1980.
A model biography that yields important insights into the development of naval aviation during the 1930s and World War II.

Cagle, Malcolm W., and Frank A. Manson. *The Sea War in Korea.* Annapolis: US Naval Institute Press, 1986.
Written by two experienced naval officers (Cagle became an admiral); includes good chapters on naval air in Korea.

Reynolds, Clark G. *Admiral John H. Towers: The Struggle for Naval Air Supremacy.* Annapolis: US Naval Institute Press, 1991.
The life story of a pioneer naval aviator—strong on the early days down to the end of World War II.

Sherrod, Robert. *History of Marine Corps Aviation in World War II.* Washington, D.C.: Combat Forces Press, 1952.
A survey of the subject down to the end of World War II—still authoritative.

Trimble, William F. *Admiral William A. Moffett: Architect of Naval Aviation.* Washington, D.C.: Smithsonian Institution Press, 1994.
A first-class description of the role of Moffett, who was not a pilot but nonetheless crucial to the way in which naval aviation developed.

Turnbull, Archibald D., and Clifford L. Lord. *History of United States Naval Aviation.* New Haven: Yale University Press, 1949.
The classic overview of naval aviation down to the end of World War II—still valid.

Uhlig, Frank, Jr. *Vietnam: The Naval Story.* Annapolis: US Naval Institute Press, 1986.
Contains a good chapter on naval aviation by Vice Admiral Cagle and another by Lt Gen Keith B. McCutcheon on Marine aviation in South Vietnam.

Winnefeld, Adm James A., and Dr. Dana J. Johnson. *Joint Air Operations: Pursuit of Unity in Command and Control, 1942–1991.* Annapolis: US Naval Institute Press, 1993.
Explains the success of the Solomons joint air campaign compared to most others. The authors discuss Operation Desert Storm, deeming it more successful in unified effort than either Korea or Vietnam.

One for Good Measure

Melhorn, Charles M. *Two-Block Fox: The Rise of the Aircraft Carrier, 1911–1929.* Annapolis: US Naval Institute Press, 1974.
The classic work on the foundations of naval aviation.

Notes

1. William Briggs Hall, the first man in the class, resigned at the onset of the Civil War, leaving Mahan as the top graduate on active duty for most of his service. *Register of Alumni, Graduates, and Former Naval Cadets and Midshipmen* (Annapolis: United States Naval Academy Alumni Association, 1992), 149.

2. For an authoritative source on the life of Mahan, see Robert Seager II, *Alfred Thayer Mahan: The Man and His Letters* (Annapolis: Naval Institute Press, 1977). Mahan's triumph was *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1890).

3. Adm Chester Nimitz had been in submarines and cruisers. Adm Ernest King, chief of naval operations, had wings, but he had won them as an O-6 and never served in a squadron. Adm William Halsey also won his wings as an O-6. Adm Raymond Spruance, the victor at Midway, was a cruiser sailor. Finally, Adm Marc Mitscher, the seniormost leader and one of Spruance's task-force commanders in the Fifth Fleet, had been in aviation from the ground up.

In any moment of decision the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing.

—Theodore Roosevelt

IW Cyberlaw

The Legal Issues of Information Warfare

Maj David J. DiCenso, USAF, Retired

SHOULD INFORMATION-WARFARE techniques be viewed as weapons or as another instrument of foreign policy? This article briefly delves into the treaties and laws governing warfare from an information-war perspective. Do these treaties and criminal laws prohibit the bulk of the most technologically effective techniques from being used, particularly during peacetime?

By and large, many of the legal parameters of information warfare (IW) are, as yet, ambiguous. This uncertainty can only be resolved through open and frank discussion of just where information-warfare operations fit into foreign policy, international relations, and the international legal environment. The problem is that a nation or actor may well take advantage of the ambiguities that exist and force us to attempt to resolve these issues long before we are prepared to even address them. This article is a modest step to suggest a paradigm for analysis of these issues before we find ourselves backed into the proverbial corner and are forced to choose

between no response and a vigilante-style response.

Do these treaties and criminal laws prohibit the bulk of the most technologically effective techniques from being used, particularly during peacetime?

What Is "Information Warfare"?

Although it seems clear at first blush, the term *information warfare* means different things to different people. There is little agreement on an accepted definition. *Information warfare*, *attack-mode* and *defensive-mode warfare*, *electronic warfare*, *cyberwarfare*, *cyberwar*, *soft war*, *hacker warfare*, and *low-intensity warfare* are just a few of the terms that are used in information-warfare circles to describe the same general concept.[1]

Sun Tzu thought of information warfare as including all elements necessary to win without fighting. He advised that you should "assess your opponents; cause them to lose spirit and direction so that even if the opposing army is intact it is useless."[2] This suggests that the scope of information warfare has, from the very beginning, been all-inclusive and embraces every aspect of information use that would permit war without battle. This seems to include the modern notions of human intelligence (HUMINT), electronic intelligence (ELINT), communications intelligence (COMINT), psychological operations (PSYOP), and every other method of gathering and affecting information that may be used to the advantage of one nation or to the detriment of another during a conflict.

Gen Ronald R. Fogleman, former Air Force chief of staff, has referred to the information explosion and the proliferation of interest in information operations as the "fifth dimension of warfare."[3] He describes the land, sea, air, and space as the first four dimensions.[4] He characterized information warfare as "any action to deny, exploit, corrupt, or destroy the enemy's information and its functions; protecting ourselves against those actions; and exploiting our own military information functions."[5]

Alvin and Heidi Toffler were among the first to meaningfully address the modern information explosion and its impact upon society. They speak of our next conflict as being an "anti-war." They characterize the latest information revolution as the "information age" much like the agricultural age and the industrial age.[6] They recognize that knowledge is the "central resource of destructivity just as it is the central resource for productivity.[7] "Knowledge is what the anti-wars of tomorrow will be about."[8] The Tofflers' opinions suggest that the breadth of information warfare is all-encompassing, including all forms of knowledge.

The National Defense University (NDU) defines information warfare as the "aggressive use of information means to achieve national objectives . . . the sequence of actions undertaken by all sides of a conflict to destroy, degrade, and exploit the information systems of their adversaries," and it also includes actions intended to protect systems against hostile actions.[9] The Information Warfare Center at Kelly AFB, Texas, casts a wide net in its definition of information warfare. Its view is that information warfare is "broadly considered to be the use of computer, satellite, telephone and other systems to damage, destroy, degrade, exploit and interfere with command and control (and other) systems of an adversary or potential adversary and the use of such techniques to deny an enemy or a potential enemy the ability to do damage, destroy, degrade, exploit or interfere with similar systems owned and used by the US."[10]

This view, and an industrial or commercial notion of "information assurance" or defensive methods to protect information assets, are probably the best conceptualizations we can adopt to describe the specific military information environment relevant to the issues that follow. It is the one that is adopted for the remainder of this article. However, IW is

"What is an act of war in cyberspace? Is a personal computer or Unix-based system a 'weapon'? Is hacking through the communications systems of a hostile nation an 'attack'?"

generally much broader in scope than those technology-oriented aspects relevant here.

What Can the United States Legitimately Do?

The resolution of this issue requires an exhaustive search for guidance. Space law, telecommunications law, international law, criminal law, and the Law of Armed Conflict (LOAC) are all applicable to some degree. One must examine these sources as a whole body of law in order to derive a valid and effective framework for resolving this issue.

Laws bind the nation that created the law, but they generally do not bind other nations. Laws can be enforced in the court system of the country that has jurisdiction over the offense. Treaties are agreements between nations regarding issues that will have some type of mutual impact upon them. Treaties are essentially contracts between nations and bind only signatory nations. Customary laws are the unwritten rules by which nations interact. Treaties and customary laws are enforced in a variety of ways through the International Court of Justice (ICJ), domestic law, arbitration, or the convoluted political process, for example.

Does the UN Charter Apply to Information Warfare?

The initial treaty that one thinks of when considering international issues and conflict is the UN Charter. Unfortunately, it was drafted in terms of armed aggression, not information wars. The UN Charter provides for the relationships of nations in joint, multinational activities of diverse types, not just in

times of war.[11] Article 2(4) of the charter indicates that "all members shall refrain . . . from the threat or use of force against the territorial integrity or political independence of any state." Two ICJ cases, the Corfu Channel case and the Nicaragua case,[12] suggest that Article 2(4) of the UN Charter is violated any time a country resorts to aggression in an attempt to force another country to undertake a particular action. This is a codification of international relations reflecting a concept transcending treaties—the manifestation of the fundamental notion of sovereignty. This age-old concept remains as strong as ever in guiding the course of international relations as well as both domestic and foreign policy. The concept is a fundamental starting point for any analysis of international law issues.

Does Space Law Apply to Cyberspace?

This question is easy to answer in traditional lawyer's terms: It depends. It is dangerous to simply equate outer space with cyberspace. Although some people may conceptualize both as a free space without territorial boundaries, that approach may run afoul of various laws, treaties, and customs. Regardless of one's interpretation of cyberspace, the basic relationship is clear: A person at one location is using a computer to negatively impact another individual or organization at another location. Telecommunications has long been viewed as a medium, not a location. This traditional analysis views the use of computers for "information warfare" as simply the utilization of a more advanced communications system.[13]

The space-related treaties (space law) appropriate to consider in this context are the Outer Space Treaty, the Moon Treaty, and the Liability Convention. The United States has agreed to each of these treaties. Each shares a common underlying principle, although not always clearly articulated: The use of space will be limited to peaceful purposes.[14] This was recognized by the United States in the amended National Air and Space Act (NASA) of 1958[15] and 42 US Code (USC) 2451, wherein "the Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of mankind."[16] This clearly diminishes the potential for unrestrained use of space for hostile purposes.

The Outer Space Treaty indicates that parties agree "not to place in orbit around the earth any *objects carrying nuclear weapons or any other kinds of weapons of mass destruction*" (emphasis added).[17] The italicized text of this passage indicates the ambiguity of the treaty.

What is a "weapon of mass destruction"? This generally refers to nuclear, biological, or chemical weapons. When this treaty was penned in 1967, the escalating computer power and cyberwarfare capabilities were probably not foreseen by the drafters. Some have interpreted this treaty to mean that it does not include communications equipment that could transfer data between two or more terrestrial points and is thus excluded by a "strict" reading of the treaty.[18] This interpretation, while legally accurate, necessarily avoids the practical consideration of the devastation that could be caused, by corruption or manipulation of information, upon members of the victim nation. How can one claim that shutting down utility grids, transportation systems, and banking systems is not "mass destruction"? Under the conventional use of the phrase, as discussed above, it simply does not qualify from a legal standpoint. Should it? It seems that if the satellite carries communications equipment that is an integral part of a larger system that actually causes or precipitates "mass destruction" upon the enemy, then the satellite is indeed carrying a vital component of the weapon system as a whole.

This begs for a definition of a "weapon system." In this regard, the US Marine Corps seems to be forward-thinking. They look not to the physical aspect of an item, but its intended use.[19] Thus, if satellite communications equipment were intended to be used for purposes of offensive or "attack-mode"

warfare, it would require the same review as any other weapon system prior to its acquisition. For all practical purposes, this approach seems to unilaterally place communications equipment meant for IW clearly within the treaty definition. This is not, however, a settled issue.

What does the Outer Space Treaty mean when it prohibits satellites that "carry" the weapon? Some would argue that satellites would not actually be weapons, since they simply transfer information. As mere relays for the information warfare "weapon," the communications relay would not, in and of itself, be a weapon subject to the treaty.[20] Again, this technical view does not consider the essential relay system as part of the whole weapon. A personal computer in isolation is not capable of an attack upon another nation's infrastructure; but when combined with telecommunications satellites capable of expanding the computer's influence to a nation in a distant area of the globe, has not the communications equipment aboard the satellite become part of the information "weapon"? This may be merely a semantic or philosophical argument, but it illustrates the ambiguity of the treaty.

The Outer Space Treaty isn't the only player on the field. The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the Moon Treaty) was created in 1979. It clearly prohibits the use of the moon as a military asset. Development and exploration of the moon must be conducted in a peaceful manner. The treaty attempts to assure that the use and exploration of the moon will not become an area that creates international discord. Moon-based communications equipment for information warfare purposes would seem to be simply prohibited. However, the United States has never ratified or signed this treaty. Although the United States is not bound as a signatory nation, these provisions should be considered before any such moon-based system is contemplated, if for no other reason than for political harmony and consistency in our foreign policy.

At first blush, the Convention on International Liability for Damage Caused by Space Objects (October 1973) appears to relate to cyberspace. This treaty, commonly referred to as the "Liability Treaty," requires a launching state to pay for any damages caused by one of its space objects if the object causes damage to the surface of the earth or to an aircraft in flight.[21] It also discusses space objects "launched" by a state, implying the intent to apply it to satellites, rockets, and other tangible space vehicles.[22] The treaty is vague enough that a "victim" state may claim that terrestrial information damage is fairly embraced by the language of the treaty itself if they are attacked or threatened. Since the concepts and capabilities involved in IW are such recent developments, an argument to impose liability under this decades-old treaty may be extremely weak.

Although these treaties exist and may have some impact upon information warfare, they provide little, if any, meaningful guidance. Recognition of these space-law considerations is vital, however, as they must be considered much as an infantryman would consider the location of mines while crossing a field; they are not necessarily roadblocks to our progress but have the potential to cause explosive and disastrous international legal problems if we run afoul of their provisions. Outer space and cyberspace may seem conceptually similar, but the legal mechanisms that we rely upon to resolve legal issues in outer space were created to resolve issues that simply do not exist in cyberspace. Space law was created to resolve issues that revolve around spacecraft or the use of celestial bodies. Simply put, space law will not help us resolve any of the issues we currently face in negotiating the legal landscape of cyberspace.

Does Telecommunications Law Apply?

The treaties known as International Telecommunications Satellite Organization Agreement (INTELSAT) and the Conven-

tion on the International Maritime Satellite Organization (INMARSAT) comprise the body of international telecommunications law that currently exists and is applicable to information warfare.

Despite the impression that one might garner from the popular media, there actually is a substantial body of statutory law that applies directly to computer crime and hackers.

The INTELSAT (1973) broadly defines "telecommunications."[23] The treaty's intent is to ensure that a satellite will only be used for peaceful purposes. This broad prohibition includes virtually every aspect of information warfare data traffic. Fortunately, it also specifically articulates a position on satellite systems that have a military purpose. "This agreement shall not apply to the establishment, acquisition, or utilization of space segment facilities separate from the INTELSAT space segment facilities solely for national security purposes."[24]

The International Telecommunications Convention of Malaga-Torremolinos (25 October 1973), Article 35, states that "all stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Members." Thus, the treaty seems to prohibit the use of a satellite station to disrupt or somehow interfere with the communications of other states. Paradoxically, the same treaty states, in Article 38, that "Members retain their entire freedom with regard to military radio stations of their army, naval, and air forces." Thus, the treaty recognizes that there may, indeed, be a military use of a satellite system that would not otherwise comply with the earlier provisions of Article 35. However, since 95 percent of our military administrative traffic passes through civilian communications systems,[25] one must ask if this is a "military" system for purposes of Article 38 or if it is a "civilian" system that is protected under Article 35.

Why is the "civilian versus military" distinction relevant? When INTELSAT is read in conjunction with the International Telecommunications Convention of Malaga-Torremolinos, it is clear that the military may not use civilian telecommunications satellites to assert military power, but may use a "military" satellite system for such purposes. Military telecommunications satellites, expressly excepted from the International Telecommunications Treaty of Malaga-Torremolinos, may be able to disrupt or interfere with the communications systems of other nations in the interest of national security, with the limits discussed earlier. The character of the communications satellites is thus critically important.

The INMARSAT (1976), Article 3(1), limits the use of the INMARSAT space segment to the improvement and facilitation of maritime communications. The treaty restricts the use of satellites owned or leased by INMARSAT to "peaceful purposes" only. Presumably this would prohibit the use of INMARSAT space segments for military purposes.[26] The intent of the INMARSAT is to prohibit the use of the satellite systems for military purposes other than navigation and routine communications similar to those in which a civilian maritime vessel would normally engage.[27] Generally, the quintessential interest in telecommunications seems to be the preservation of the tradition of noninterference.[28]

How Does Criminal Law Apply?

With the World Wide Web expanding at its current rate, the opportunities for those with ill intent abound. Most systems on our Internet are privately owned and are shockingly vulnerable to a cyberattack by a technically oriented person with criminal intent. Criminal law is an important and relevant area to consider when evaluating precisely what we can legitimately do. The law is specific and

"Any analysis regarding information defenses or back hacking must be viewed from a criminal law perspective—at least until the source of the intrusion can be identified. . . . Once we have determined the identity of the unauthorized intruder or the origin of the intrusion, we can better determine who must respond, and how."

incorporates many fundamental constitutional considerations such as the user's right to privacy and the protection of the individual from unreasonable searches and seizures.

Despite the impression that one might garner from the popular media, there actually is a substantial body of statutory law that applies directly to computer crime and hackers.[29] Computer crimes are federal offenses.[30] Government computers and computers that are merely used by or for the government are protected,[31] as are computers used "in interstate commerce or communications."[32] Obviously, any computer that accesses the Internet will likely fall squarely within this statute. One who knowingly causes the "transmission of a program, information, *code, or command* and as a result of such conduct, intentionally causes damage without authorization, to a protected computer" in interstate commerce has committed a federal crime as well (emphasis added).[33]

The Access Device Fraud Act protects computer passwords, the use of access devices is prohibited, and use of access device-making equipment is similarly outlawed.[34] Title 18 also provides some password protection to stolen and fraudulently obtained passwords which could then be used to access computers by unauthorized individuals to wrongfully obtain things of value.[35]

Unauthorized interception (or intentional disclosure of the contents of unauthorized interception) of wire, oral, or electronic communications is prohibited by federal law.[36] There are several exceptions, the most notable of which is that so long as one of the parties in the conversation has

consented, the interception is permitted.[37] The statutory framework also provides for civil liability for unauthorized interception of communications.[38]

Unauthorized access to stored communications is also prohibited, and creates civil liability on the part of the one who unlawfully obtained such access.[39] Federal law also proscribes intentional unauthorized access to "a facility through which an electronic communications service is provided" if the person achieving such access "obtains, alters, or prevents authorized access" to communications while the data is in storage.[40]

Federal statutes exist to protect federal records, property, or public money.[41] Thus, bank and credit records are protected,[42] as are electronic fund transfers involving interstate commerce or foreign commerce.[43] Mail fraud is proscribed.[44] So is using a remote terminal or computer to further a fraud where messages cross state lines.[45]

Since making false or fraudulent statements to a government department or agency is prohibited,[46] a hacker who intentionally and falsely represents himself electronically to be an authorized user in a government computer system may violate federal law.

Of particular interest to the Internet community is the Privacy Protection Act of 1980.[47] This statute provides protection to electronic bulletin board systems (BBS) operators. BBSs may still be searched, however, if the government meets a specified criteria and obtains the proper authorization.[48]

E-mail interception is governed by existing telecommunications law. Intercepting the communications and accessing the communications are possible if they meet the criteria of the law's exceptions, with proper search authority, or with a court order.[49]

Why are all of these criminal laws important to help us determine what the military can legitimately *do?* Until the identity of the hacker is known, we must obey the criminal laws. These laws apply to us as well as to the hacker. Once the hacker is identified, however, different approaches may be appropriate (more on this later).

Search and seizure laws vary radically from country to country, and the biggest problem law enforcement authorities face is the chaos that seems to arise when the hacker is located in, or electronically travels through, a foreign country. For example, while we recognize an exception to our Fourth Amendment warrant requirement if there is exigency or "hot pursuit" to apprehend a criminal,[50] not all governments would recognize, or even care, about a US constitutional amendment exception when the United States seeks to intrude into their systems without preexisting authority. Imagine a hypothetical hacker, located in New York, who hacked through a commercial computer system into a computer in France, then on to a government computer in Taiwan, then through a Chinese military installation, back to South Korea, on to an installation in North Korea, then to the Japanese Defense Force computer system on Okinawa, and finally, back to the United States, where the hacker unlawfully enters a NASA computer. Consider the international uproar if North Korea and China perceived the United States government's pursuit of the hacker to be an intrusion upon their military information systems. Suppose they view the initial hacker as a user and the person "back hacking" through their system as the hacker. The political ramifications are magnified considerably if they then determine that the hacker turns out to be a US government or law enforcement agent! This is an area where politics is clearly a paramount concern and may be at odds with obvious national security concerns.

In the cases of Rome Labs and the Argentine Intrusion, the hackers electronically traveled through foreign nations before reaching their intended targets. In each case, the primary problem in rapidly identifying the intruder was obtaining the cooperation of the international police agencies and governments involved.[51]

The Council of Europe recently convened to address this issue. It was clear that the various nations need to work together toward standardized uniform criminal procedures. After evaluation of the problems involved,

the council recommended that "the power to extend a search to other computer systems should also be applicable when the system is located in a foreign jurisdiction, provided that immediate action is required. In order to avoid possible violations of state sovereignty or international law, an unambiguous legal basis for such extended search and seizure should be established."[52]

Investigation of federal computer crimes in the United States is generally within the purview of the Federal Bureau of Investigation (FBI). If a foreign source of an electronic intrusion is identified, the Central Intelligence Agency (CIA) would become involved. The Secret Service is the office of primary responsibility when the intrusion has financial implications. While the Defense Information Systems Agency (DISA) handles security breaches in military computer systems, the Air Force's Office of Special Investigations (AFOSI) is deemed a leader in developing investigation strategies and is generally given a great deal of freedom in investigating incidents involving Air Force computers.

It seems that there will be some international effort to resolve the incompatibility of criminal law at some point in the near future. Until such time, the best way for law enforcement to track hackers through diverse jurisdictions is through close coordination with investigators in the host countries and in strict compliance with their laws. This approach is not particularly rapid or efficient, but it respects the all-important concept of national sovereignty and causes no adverse international political ramifications.

The Law of Armed Conflict

Much of our international law is merely a recognition of the "customary laws" of nations. Some of these have been codified and have become treaties, while yet others remain as mere manifestations of accepted traditional international practice.[53] The rules governing the conduct of nations and combatants during hostilities are known collectively as the Law of Armed Conflict. The LOAC is simply that part of international law that represents an attempt to regulate conduct during armed hostilities in a manner that is practical (so that it will not impede the waging of war) but to nonetheless minimize its savagery. Whether war is waged on the muddy fields of Verdun by shell-shocked infantry troops or a high-tech cyberspace battlefield, the rules and general principles of the LOAC remain applicable.

The primary conventions that codified the concepts of war-fighting principles are found in the various Hague and Geneva Conventions.[54] Basically, the Hague Conventions can be thought of as "offensive" in nature, while the Geneva Conventions deal with the treatment of the sick, wounded, and prisoners of war; these may be collectively considered mere "defensive" provisions. These conventions are now the nucleus of the LOAC.[55]

Their primary objective is to ensure that hostilities are directed to defeat enemy forces, not to injure innocent civilians or other noncombatants. The LOAC is an attempt to protect everyone, combatant or noncombatant, from unnecessary suffering, savagery, and brutality that accompanies armed conflict. It is a method to facilitate the restoration of peace following the conclusion of armed hostilities.

Typically, the main principles of the LOAC are military necessity, humanity, proportionality, and chivalry. These fundamental principles are used as a guide in interpreting the LOAC and in reaching an appropriate conclusion when particular circumstances do not specifically fit within the parameters of existing rules.[56]

The LOAC provides combatants with certain rights and privileges if wounded or captured in wartime, and it proscribes certain offensive activities. The Prisoner of War Convention identifies the "protected persons" under the LOAC.[57] Generally, civilians accompanying an armed force do not engage in acts of war—media representatives, contractors, civilian services personnel, and so forth—are all deemed "Auxiliary Services" and are entitled to prisoner-of-war (POW)

status if captured. If one of these individuals were to engage in a hostile act, that individual would be deemed an "Unlawful Combatant" and could be punished under the laws of the captor.[58] Spies do not receive any special treatment under the LOAC and are punished under the laws of the captor nation.[59]

The conventions and traditions seem clear and easy to understand, but when applied to information warfare, they become difficult to administer. To date, the rules and laws have been concerned with sovereign borders and physical invasion of those borders by armed belligerents. In cyberspace there are no borders. The landscape is an unbroken terrain of network connections between military and civilian computer systems that interact rapidly without regard to the artificial lines on a map that designate international borders. The threat comes from computer technicians who may be able to disable banking systems, electrical grids, airline traffic control systems, and communications equipment. At what point are these actions serious enough for a victim nation to respond with force? What is an act of war in cyberspace? Is a personal computer or Unix-based system a "weapon"? Is hacking through the communications systems of a hostile nation an "attack"?

Air Force Policy Directive (AFPD) 51-4, *Compliance with the Law of Armed Conflict*, par. 2, requires Air Force personnel to comply with the rules "during armed conflict." The AFPD defines *armed conflict*[60] as a situation where at least one state has begun to use armed force. However, there is no guidance on what legally constitutes "armed force." Logically, to use armed force, one must utilize an arm or weapon of some type.

Air Force Instruction (AFI) 51-402, *Weapons Review*, May 1994, suggests computer systems would probably not be considered weapons. "Weapons are devices designed to kill, injure, or disable people, or to damage or destroy property. Weapons do not include . . . electronic warfare devices."[61] Even though the computer itself would not be thus deemed a "weapon," it could, indeed, do substantial damage to an enemy's war-fighting capability.[62]

None of these issues have yet been resolved. It is not surprising that the LOAC is not up to date in regard to IW. During World War I, no provisions existed for aerial warfare; principles had to be developed from the existing rules that governed ground warfare and naval bombardment. Only after seeing the results of applying land warfare rules to bombing did the thought arise to develop a code specifically designed to address air warfare.[63] The LOAC is dynamic and evolves along with new technology and the war-fighting capabilities of various nations.

Even though damage may be done to a nation's capabilities, there is no authority to suggest that a computer is a weapon or that an information operation act is an "act of war." Of course, if a hostile nation defines the act of war based on damage caused or damage potential instead of the character of the item used to commit the act, the analysis would be quite different. Although this view may not favor the nation with the technological edge, it is the most logical conclusion. If death and destruction resulted from the IW operation, an armed response by the victim nation would probably be warranted. If we were to cause a power grid shutdown in a foreign country, it could foreseeably lead to civilian riots; hospitals could have unforeseen casualties from failing life-support or otherwise relying upon the power grid for public health purposes; mass transit in major cities could be disrupted bringing a concomitant economic disaster when workers cannot get to their place of employment; and the financial system could be disabled. The potential adverse repercussions could be remarkably dramatic. It would be difficult, indeed, to convince the victim nation that this intentional vulnerability exploitation by an unfriendly nation was not an act of war. If even minor disruptions can cause violent outbursts and disarray,[64] imagine the repercussions of intentional and strategic manipulation of a country's infrastructure systems. Military retaliation by the victim country

should be an expected consequence of such an electronic attack.

Defensive Application of the LOAC to Information Warfare

Defensively, there does not seem to be any issue of great legal significance. A nation may protect its information or systems in any way it chooses so long as it does not negatively impact another nation or another nation's communications systems. Issues such as encryption and various other aspects of cryptology are currently raising a great deal of interest, but at this point, the issues raised seem to be those of policy and strategy, not of law. Offensively, the character of the problem is quite different.

Offensive Application of the LOAC to Information Warfare

What are some of the offensive possibilities? Could we attach a "logic bomb" to DOD information, so that a hacker who obtains the information also obtains the "bomb" that destroys his computer system? Could we engage in "active defense" where we intentionally send destructive code to his machine upon realization and confirmation of the unauthorized penetration of the DOD system? Could we send him a "worm" to infect and/or disable his system?

We can do none of these things. Without identifying the infiltrator, we cannot even determine whether it is a national security issue. The new amendment to the Computer Fraud and Abuse Act of 18 USC 1030 (a)(5) prohibits the intentional destruction of data in computers without regard to whether the person "attacked" was initially authorized access or not. Such activity is a federal felony. Additionally, if the attacker wove his way through several different systems before "attacking" the DOD computer, and in response, we sent a destructive code to him, there is a possibility that every system along the way would also be damaged or corrupted. This could be disastrous if he were using a government computer or accessing the information through yet another government computer. But what if the hacker were a teenager using a civilian parent's computer where his parent ran a business out of the home, such as a dentist, accountant, lawyer, or other professional? Taking down the computer system with client records stored therein could have unintended consequences, potentially very costly ones. How could fast responses ensure that collateral damage is minimized or at least considered? There seems to be no effective way to undertake "active" defenses that would be acceptable, either legally, conceptually, or practically. The preferable approach may be to use additional (self-altering) passwords and advanced encryption or even several layers of encryption if necessary.[65]

There is seldom a clear point at which we can identify the mythical act of war.

Discussion of an act of war seems to be in vogue right now in information warfare circles. Even casual rumination on this point would lead to the conclusion that it is "a singularly imprecise and unhelpful concept" that became passé a half-century ago.[66] Conflict is a process of escalation. If a country engages in an unfriendly conduct of some type, then the adversely affected nation would likely respond "offensively." This is not a progression of distinct stages but rather an unbroken continuum where unfriendly acts become increasingly hostile. There is seldom a clear point at which we can identify the mythical act of war. International concerns from both a political and legal perspective must always be considered any time a nation seeks to engage in unfriendly activity where another nation may suffer. Unfriendly acts have been used for hundreds of years to encourage a nation to comply with a particular demand of another country. A naval blockade is an age-

old example of an "unfriendly act" intended to direct or control another nation's actions. Economic embargoes and blockades are also unfriendly acts with concomitant adverse international impact. Both have been historically viewed as unfriendly acts, but not necessarily acts of war.

I submit that even in peacetime, however, the principles behind the LOAC remain applicable at all times.

Is there an electronic parallel between an economic embargo and an information embargo? Information isolation is an analogous counterpart to the naval blockade of yesteryear. These activities occur outside of the nation's borders, whether the blockade is a physical one or an electronic one. A blockade is not an act of infiltration, as an attack would be. An electronic blockade would create a similar isolation, only it would apply to the nation's electronic networks. In such a scenario, an electronic embargo or blockade would (and should) be subject to precisely the same political and policy considerations as its eighteenth century counterparts.[67] The low-level unfriendly activity of these types is nothing new; only the medium has changed in size, scope, and complexity from physical coordinates to cyberspace.

Offensive information warfare using computer technology should be viewed as an escalation of hostilities instead of an act of war. This commonsense approach would better reflect the reality of politics in international relations. Escalation of hostilities may reach the point where actual physical damage is caused by a belligerent nation's armed military force; the rules of the LOAC are then clearly and unequivocally applicable. An example of this is the 1986 bombing of a disco in Germany by state-sponsored terrorists from Libya. Our response was to bomb several military sites in Libya including the Tripoli Airport, the Aziziya barracks, a naval base and airfield, and the port of Benghazi.[68] This response by the United States was well within the parameters of acceptable behavior of a nation under the LOAC.

If the offensive use of computers to disrupt, corrupt, interfere with, or deny enemy computer and information system utilization does not equate to an armed conflict, then the LOAC would (arguably) not apply to the offensive-mode computer intervention in another nation's systems.[69] This, it seems, is a troublesome interpretation of the applicability of the LOAC to cyberwarfare. It would leave the door wide open for offensive use of computers with no checks or balances upon such use. It suggests that the principles, discussed above, would not apply in the absence of armed conflict.

It would seem that many electronic activities have clear parallels to traditional "physical" actions that a nation may take. If one were simply to equate the electronic action to a physical act according to the damage done, the analysis is much less problematic. In these cases, traditional LOAC analysis applies.[70] I submit that even in peacetime, however, the principles behind the LOAC remain applicable at all times.

The Law of Armed Conflict obviously applies to "armed" conflict. Traditionally, this has implied a physical invasion or confrontation. It seems readily apparent from a conceptual viewpoint that computer warfare should be governed by the traditional laws of armed conflict, but the terminology used in our conventions does not clearly apply. To casually dismiss the applicability of the LOAC simply because the LOAC does not apply under a strict, literal reading of the conventions would be a simplistic approach by a nation that would be inclined to exploit this loophole. The danger is that such a loose (and arguably inappropriate) reading of the laws is that it works both ways. The nation that seeks to exploit a vulnerability of another nation then later claims that the LOAC does not apply should beware that it may be the victim of a cyberattack by a similarly disposed nation. Under such circumstances, the hapless victim of the attack would likely

change its definition rapidly and claim a contrary interpretation of the LOAC. It is critical that these issues be resolved as soon as possible to prohibit or inhibit the gamesmanship that these ambiguities invite.

Does a nation forfeit its neutrality if communications from a belligerent nation travels through communications relays physically located inside the neutral's borders? Information warfare operations are as likely to travel through neutral countries as any others before reaching the belligerent target. Computer telecommunications travel through cyberspace in exactly the same way as routine telephone traffic. A single telephone conversation may travel through several different links. Part of the conversation may occur through a set of links that automatically shift to another route without disrupting the connection while remaining transparent to the user.[71] There is no sure way to know exactly what route an information attack would travel over the international telecommunications systems in getting to the target belligerent. However, unintentional intrusions of a belligerent into a neutral country's communications systems is not deemed an LOAC violation, nor does the neutral nation forfeit its neutrality.[72] Of course, if a neutral nation were to restrict one belligerent nation from using its telephone relay systems while allowing such use by another belligerent nation, then a different analysis would apply. If the same telecommunications systems are open to all, and the use by belligerents is not intentional, then there is no threat to the neutral nation's claim of neutrality.

Jurisdiction and Information Warfare Investigations

During the Vietnam conflict, the US Army was called upon to respond to a variety of violent outbreaks of protesters. The Army worked in conjunction with local law enforcement and quickly found that the intelligence available regarding potential adversaries was inadequate. The US Army Intelligence Command (USAINTC) developed an "elaborate, nationwide system with the potential to monitor any and all political expression. No person was too insignificant to monitor; no activity or incident too irrelevant to record."[73]

Even though the DOD prohibited the collection of civilian surveillance in the 1970s and mandated the destruction of the records that had been compiled already,[74] both the House and Senate formed select committees to monitor the military surveillance data collection and act as an oversight committee.[75] The Intelligence Oversight Committee acts as a check upon the military's potentially invasive investigation and database building capabilities.

Covert IW activity[76] is governed by federal law.[77] The president of the United States must submit a finding to Congress, in writing, that details exactly why the foreign policy activities of the United States require the covert action and explaining why the action is important for assurance of national security.[78]

Even the CIA must obtain a Presidential Finding before conducting peacetime covert information-gathering operations.[79] DOD is tasked to respond to CIA needs by the director of the CIA; DOD is the only primary agency for signal intelligence activities through the National Security Agency (NSA).[80] The Treasury Department is responsible for collecting information related to financial concerns, monetary information, and foreign economic information. The Treasury Department is authorized only to collect "overt" information.[81] Overt information collection is considered to be the gathering of data, where the target of the data collection is aware that they are giving information to the government agency which is engaged in the collection activity.[82] The State Department conducts information relevant to US foreign policy. Like the Treasury Department, the State Department is normally limited to collection of only overt information.[83]

All executive agencies are generally prohibited from participating in secret operations unless they obtain approval from the agency and the attorney general. Even then, the activity can only be undertaken as part of

a lawful FBI investigation or when the target of the surveillance is composed primarily of people with foreign allegiance and the investigators must reasonably believe that the target organization or people are acting on behalf of a foreign power.[84]

Collection of foreign intelligence information (data about capabilities, intentions and activities of foreign countries, organizations, and persons)[85] is permissible in the United States, and it must be gathered by the FBI or an intelligence component (with some prohibitions) and may not be collected if the purpose is to acquire information about an individual's domestic activity. Collection of intelligence data is allowed in international terrorist or international drug investigations, if needed, to protect a person or an organization.[86] Collection of information to protect US (or foreign) intelligence sources, or methods of collecting such information, is also permissible.[87]

The FBI is permitted to collect information in the United States if the efforts are to protect intelligence sources or methodology from unauthorized disclosure.[88] An intelligence component may only collect information regarding employees or contractors.[89] It may also collect information on past or present employee applicants. If the intelligence component is within the charter of the government agency, it may collect information about people that it reasonably believes to be potential sources or contacts. Such surveillance is deemed necessary to determine their credibility or suitability for utilization as contacts.[90] Overhead reconnaissance not specifically directed at US persons is also allowed, as is information about security investigations of personnel or communications security.[91] Information incidentally obtained that indicated involvement in a crime is permitted as well.[92] Lastly, information may be obtained by an authorized component or unit if it is "necessary for administrative purposes."[93] Although this sounds like a euphemism for a carte blanche authorization for the DOD, it would be unlikely for the National Security Authority (the president acting through the secretary of defense) to approve such an operation without a valid, necessary administrative reason.[94]

The DOD is not exempt from normal "civilian" rules that govern the conduct of computer operations. This is to say that there is no exemption from the US Constitution or various federal, state, or foreign criminal laws. The restrictions upon intelligence-gathering operations must satisfy the restrictions placed upon the activity by the rules of criminal law, foreign criminal laws, and international treaties. For information-warfare purposes, this restriction is by far the most onerous, as outlined in the criminal law section discussed earlier in this article.

Conclusion

My paradigm for analysis of these issues incorporates a criminal law "default." That is to say, any analysis regarding information defenses or back hacking must be viewed from a criminal law perspective—at least until the source of the intrusion can be identified. We must not act in any way that would damage the unauthorized intruder's computer or any intermediate systems, as we would not yet be able to ascertain the risks of taking affirmative, aggressive action against the intrusion.[95] Once we have determined the identity of the unauthorized intruder or the origin of the intrusion, we can better determine who must respond and how. Exactly how we proceed from that point depends upon the location of the hacker and an assessment of the potential collateral damage.

If the intrusion is by a US citizen or military hacker, then the investigation and recourse are undertaken by the appropriate government agency such as the FBI, CIA, or Secret Service. If the intruder is not a citizen, but constitutes a foreign power, then the FBI or CIA with DOD support would be the likely agencies to resolve the issue. All applicable international laws, treaties, and criminal laws would clearly apply.

During wartime, however, DOD is given wide latitude to undertake intelligence-gathering activities. During such times of conflict, the

paramount concern would be national security. Many of the international customs and treaties are simply disregarded during time of war, subject to some limitations (such as continued adherence to the Law of Armed Conflict). If covert operations in the interest of national security are planned, then the traditional criminal rules would not strictly apply, as prosecution of offenders would probably not be contemplated. At that point, we would be more interested in ensuring our national security instead of future potential prosecution of criminal offenders. Of course, such disregard of international agreements will only happen when directed by the very highest levels of our government, and only after the ramifications and repercussions of such activity is thoroughly examined. This rapidly evolves into an issue that emphasizes the political dimension and relies upon motivations rooted in domestic and foreign policy; it is not necessarily guided or constrained by the law.

Although this analysis framework seems vague, the issue can be resolved by always resorting to a criminal-law default. Once the system intruder's identity is known, we will be better able to assess the relative merits of our response alternatives. If the intrusion occurs in time of war, then the rules by which we play are slightly altered in the best interests of national security. If the issue is one of covert operations, then entirely different rules apply, as outlined above.

Information warfare techniques are best viewed as another instrument of foreign policy from an LOAC perspective. The problematic aspect of this conclusion is that the above-mentioned treaties and criminal laws would likely prohibit the bulk of the most technologically effective techniques from being used, particularly during peacetime.

There are many aspects of "cyberlaw" that are, as yet, still unclear. These uncertainties must be resolved. If a nation takes advantage of the ambiguities that exist, the time to resolve the issues may be upon us before we are prepared to address them. Under such circumstances, it is unlikely that we would obtain the result that would be in our best interests. The United States should seize the initiative on these issues and provide guidance and leadership that would help ensure that the ambiguities are resolved properly and in the best interests of the United States.

It has been clearly demonstrated that we are not giving the issue of computer system vulnerability adequate attention. From the neglected systems themselves to the neglected system administrators, we seem to be passively enabling the hackers, crackers, and miscellaneous unauthorized intruders to accomplish their goals. We must enhance the security of our systems and provide those involved in the operation of the systems with the recognition and training that they deserve. We realize our systems are shockingly vulnerable and must act much more quickly than we seem to be doing to rectify this unfortunate situation.

Despite the problems that we have experienced, the United States (particularly the United States military) seems to be increasingly proactive in taking decisive action. As vulnerable as we appear to be, it seems that we are still on the cutting edge in addressing information warfare and global cyberspace issues. The Council of Europe has recommended that we standardize our criminal procedures to facilitate the tracking of international hackers, and we must seize the initiative to properly influence the drafting and implementation of effective international agreements as soon as practicable. Although other countries recognize the problems, it seems that we (the United States) remain as the leaders in the realm of cyberlaw and in recognizing its importance in the information age. The present and future cost of losing our position of leadership in this area may be beyond calculation. It is imperative that we remain on the cutting edge, both in ensuring the responsiveness of domestic law and international agreements to the emerging technologies encountered in the on-line world; we have a chance to shape the very substance of future cyberlaw. If we fail to do so, we must become content to live under global treaties and practices that may not be wholly to our liking. We cannot afford to lose this unique opportunity. □

Notes

1. Donald E. Elam, "Attacking the Infrastructure: Exploring Potential Uses of Offensive Information Warfare" (master's thesis, Naval Postgraduate School, June 1996), 14.

2. Sun Tzu, *The Art of War*, trans. Thomas Cleary (Boston, Mass.: Shambhala Publications, distributed by Random House, 1988), 67.

3. Gen Ronald R. Fogleman, USAF chief of staff, "Information Operations: The Fifth Dimension of Warfare," remarks delivered to the Armed Forces Communications-Electronics Association, Washington, D.C., 25 April 1995, *Defense Issues* 10, no. 47 (1995): 1–3.

4. Ibid.

5. Department of the Air Force, *Cornerstones of Information Warfare* (Washington, D.C.: Department of the Air Force, 1995), 3–4.

6. Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the Twenty-First Century* (New York: Warner Books, 1993).

7. Ibid., 71.

8. Ibid., 203.

9. *Definitions for the Discipline of Information Warfare and Strategy* (Washington, D.C.: School of Information Warfare and Strategy, National Defense University, undated), 37.

10. Col Richard A. McDonald, "Intelligence Law," Department of the Air Force outline created for the Air Force Information Warfare Center, 1.

11. Article 51 of the UN Charter states that "nothing in the present Charter should impair the inherent right of individual or collective self-defense if an *armed attack* occurs against a Member of the United Nations, until the Security Council has taken the measures necessary to maintain international peace and security" (emphasis added).

12. *United Kingdom v. Albania* (1949), International Court of Justice (ICJ) 4; and *Nicaragua v. United States* (1986), ICJ 1.

13. See, for example, The Convention Respecting the Rights and Duties of Neutral Powers and Persons in Case of War on Land, Article 8, The Hague, 18 October 1907.

14. See, for example, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 27 January 1967, *United States Treaties and Other International Agreements* (UST) (Washington, D.C.: US Government Printing Office, 1976), vol. 18, 2410 (18 UST 2410), and *United Nations Treaty Series* (UNTS) (New York: Secretariat of the United Nations, (1970), vol. 610, 205 (610 UNTS 205), hereinafter the Outer Space Treaty. See also the Agreement Between the United States of America and the Union of Soviet Socialist Republics Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes, April 1987. Interestingly, the treaties promote peaceful purposes by the signatory nations but do not limit them to "only" peaceful purposes, thus leaving an ambiguity for a single nation to explore potential uses that are not peaceful. Note that the use of the word *should* as a term of art leaves the door open for exceptions. Had these provisions been intended to absolutely forbid the hostile use of space under all circumstances, the drafters surely would have used the words *shall* or *must*.

15. National Aeronautics and Space Act of 1958, as Amended, see Public Law 85-568, 85th Congress; H.R. 12575, 29 July 1958; 72 Stat. 426.

16. Note once again the use of the word *should* as opposed to the words *shall* or *must*.

17. Outer Space Treaty, Article IV.

18. Maj Richard W. Aldrich, "The International Legal Implications of Information Warfare" (unpublished study, US Air Force Academy, Institute for National Security Studies, Colorado Springs, Colo., April 1996), 20.

19. Lt Col Gary Sharp, USMC, Joint Chiefs of Staff Legal Counsel's Office, interview with author, 9 July 1996.

20. Aldrich, 20.

21. The Convention on International Liability for Damage Caused by Space Objects, October 1973, 24 UST 2389; and *Treaties and Other International Acts Series* (TIAS) No. 7762, Article II (Washington, D.C.: US State Department, 1973), hereinafter the Liability Treaty.

22. Ibid., Article IV.

23. The International Telecommunications Satellite Organization Agreement (INTELSAT), 20 August 1971, Article I(j), hereinafter INTELSAT.

24. Ibid., Article XIV(g). Note that the term *space segment* is defined in Article I(h). Space segment facilities include not only the telecommunications satellite itself but also the related command and control equipment necessary to control the satellite.

25. Col Philip Johnson, Headquarters USAF/JAI, "The International Legal Implications of Information Warfare," in Air Force Publication (AFP) 110-34, *Commander's Handbook on the Law of Armed Conflict: A Primer on Legal Issues in Information Warfare*, October 1995.

26. One may argue that the aggressive use of an INMARSAT satellite communications system to protect the security of a nation qualifies as a defensive or "peaceful purpose"; this specious argument may exist, but it seems transparently disingenuous at best.

27. The counter argument is that if military "routine" communications traffic were to be passed over the satellites in anticipation of war, then the treaty would apply and prohibit such communications. This argument is probably not convincing, however, because if the traffic passed is navigational, as opposed to tactical, in nature, then the communications could hardly be distinguished from civilian navigational telecommunications.

28. This sentiment of communications noninterference is echoed in the United Nations Convention on the Law of the Sea, Article 109, that prohibits broadcasting from the high seas to cause interference with coastal radio broadcasts.

29. For an in-depth discussion of criminal investigations and a more detailed application of federal statutes, see the "Legal Guide to Computer Crime," prepared by the Office of the Staff Judge Advocate, Air Force Office of Special Investigations, by Lt Col John T. Soma USAFR; Elizabeth A. Banker, Headquarters AFOSI/JA; and Alexander R. Smith, University of Denver College of Law (hereinafter the OSI Guide). See also the "Federal Guidelines for Searching and Seizing Computers," July 1994, by the US Department of Justice Criminal Division and Scott C. Charney and Martha Stansell-Gamm of the Computer Crime Unit (hereinafter the DOJ Guide). Both of these sources are excellent resources for thorough evaluation of the criminal investigation and prosecution process, and they were the sources from which I gleaned the bulk of criminal law citations for this project.

30. The Computer Fraud and Abuse Act of 1986 and the Computer Abuse Amendments Act of 1994 (18 USC 1030) both deal with crimes using computers.

31. 10 USC 1030 (a)(3).

32. 10 USC 1030(a)(5).

33. 18 USC 1030 (a)(5)(amended).

34. 18 USC 1029; and *United States v. Fernandez*, 1993, U.S. Dist. LEXIS 3590.

35. 18 USC 1030(6).

36. 18 USC 2511.

37. 18 USC 2511 (2)(d).

38. 18 USC 2520.

39. 18 USC 2707.

40. 18 USC 2701(a).

41. 118 USC 641; and 18 USC 2071.
42. 18 USC 1005-1006.
43. 15 USC 1693.
44. 18 USC 1341; and 18 USC 1343.
45. 18 USC 1341.
46. 18 USC 1001; and 18 USC 912.
47. 42 USC 2000.
48. OSI Guide, 11; see also DOJ Guide, part V, section B.
49. OSI Guide, attachment 1.1.
50. See, for example, *Warden v. Hayden*, 387 US 294 (1967).
51. *The Rome Labs Incident*: "In March and April 1994, a British hacker known as 'Datastream Cowboy' and another hacker called 'Kuji' (hackers commonly use nicknames or 'handles' to conceal their real identities) attacked Rome Laboratory's computer system over 150 times. To make tracing their attacks more difficult, the hackers wove their way through international phone switches to a computer modem in Manhattan. The two hackers used fairly common hacker techniques, including loading 'Trojan horses' and 'sniffer' programs, to break into the lab's systems. They took control of the lab's network, ultimately taking all 33 subnetworks off-line for several days." The Air Force could not determine whether any of the attacks were a threat to national security in that case. It is quite possible that at least one of the hackers may have been working for a foreign country interested in obtaining military research data or learning exactly what projects the Air Force was working on at the time. "During the attacks, the hackers stole sensitive air tasking order research data . . . [and] also launched other attacks from the lab's computer systems, gaining access to systems at NASA's Goddard Space Flight Center, Wright-Patterson Air Force Base, and Defense contractors around the country." The 16-year-old Datastream Cowboy was caught by Scotland Yard authorities last year, and 21-year-old Kuji was apprehended in June of 1996. (See Testimony of Jack L. Brock Jr., director, Defense Information and Financial Management Systems Accounting and Information Management Division, "Information Security: Computer Attacks at Department of Defense Pose Increasing Risks," GAO Committee on Governmental Affairs, US Senate, Permanent Subcommittee on Investigations (GAO/T-AIMD-96-2), 3. *The Argentine Intrusion*: In August of 1995, intrusions into US Navy computer systems were linked to a computer system that was located at Harvard University and was eventually tracked back to Argentina. This criminal investigation crossed several international borders and required cooperation throughout every step with authorities in diverse jurisdictions. It was the first Title 3 "wiretap" search authorization ever issued for a hacker whose identity was not known. The hacker, a 21-year-old university student, was finally apprehended by Argentine authorities, and apparently did not feel that he had committed any type of misconduct. The hacker's father indicated that "these Yankees don't have the slightest idea about security. Who is at fault? We have done nothing here. Obviously the North Americans are not very clear on security of their systems, if a kid from South America can enter them. I would be ashamed to admit it [sic]." The hacker himself bragged, "You can enter into U.S. military computers, into NASA, a million places . . . I got into all the U.S. Navy defence . . . all the submarines" . . . and "it has been nine months since I'm inside that computer. I could erase everything, enter into any sector and erase any kind of information. I haven't done it because I'm not interested to [sic]." ("Argentine Intrusion Investigation," a presentation by US Naval Criminal Investigative Service at the School of Information Warfare and Strategy's Intermediate Information Based Warfare Course (IB9604), 24 July 1996; see also Public Law 90-351, Title III (note that this search authorization was issued, but since trial has not occurred, it has not yet been tested by a court of competent jurisdiction to address the legality of the issuance. Simply because it has been issued does not necessarily guarantee or certify its propriety under domestic or international law). See the *Austin American Statesman* (newspaper), Saturday, 30 March 1996, and Reuters World Service, Buenos Aires, 30 March 1996. (Note that the local Argentine newspapers *Clarin* and *La Republica* both covered this incident in 1995, but the incident was essentially ignored by the US press.)
52. Recommendation No. R (95) 13 of the Committee of Ministers to Member States Concerning Problems of Criminal Procedure Connected with Information Technology, adopted by the Committee of Ministers on 11 September 1995 at the 543d meeting of the Minister's Deputies, Council of Europe, Strasbourg, France.
53. Sir Arnold Duncan, *The Development of International Justice* (New York: New York University Press, 1954), 23–25.
54. See also Finn Seyersted, *United Nations Forces in the Law of Peace and War* (Leyden, Netherlands: A.W. Sijthoff, 1966).
55. The LOAC used to be known as the "Laws of War," but this terminology became inaccurate when it became clear that armed hostilities and military engagements in the absence of a declaration of war were more frequent and more likely. Thus, the LOAC applies to any armed conflict, whether a "war" is declared or not. Gerhard von Glahn, *Law among Nations: An Introduction to Public International Law* (London: Macmillan Company, 1970), 550–51.
56. Capt Maura T. McGowan, in an unpublished study entitled "Law of Armed Conflict" (Colorado Springs, Colo.: United States Air Force Academy, Department of Law), 20, cites *United States v. List et al.* See United Nations War Crimes Commission, *Trials of War Criminals before the Nuremberg Military Tribunals*, vol. XI, *The High Command Case: The Hostage Case* (Washington, D.C.: US Government Printing Office, 1950), 1253–55; and McDonald, 5.
57. Geneva Convention Relative to the Treatment of Prisoners of War, 12 August 1949, Article 4.
58. McGowan, 3-4 (citing Geneva Convention Relative to the Treatment of Prisoners of War, 12 August 1949, 6 UST 3316, TIAS No. 3364, 75 UNTS 135, Article 85).
59. McGowan, 6 (citing the Hague Convention No. IV of 1907, Article 29).
60. Von Glahn, 595.
61. Air Force Policy Directive (AFPD) 51-4, *Compliance with the Law of Armed Conflict*, par. 1.6.1.
62. McDonald, 5.
63. Consider that actions taken via computer would thus not be deemed an "armed attack" since they are not "weapons" and may cause damage, but would not involve an act of "violent force," regardless of how destructive the repercussions of the computer activity may be.
64. An example is the winter blizzard of 1995–1996 in New York City that caused many minor violent outbursts or the multistate power outage caused by a fallen tree in the western United States in the fall of 1996.
65. The potential for this approach arose during the author's interview with Ms. Martha J. Stansell-Gamm, Computer Crime Unit, US Department of Justice, Criminal Division, 10 July 1996.
66. Col Phillip Johnson, HQ USAF/JAI, "Primer on Legal Issues in Information Warfare," talking paper, October 1995, 11.
67. Note that this is an LOAC analysis only and does not consider telecommunications laws and criminal laws that would likely cloud the issue. These are discussed elsewhere in this article.
68. This incident was pervasively covered in contemporary American media. For example, see articles on the raid in *Newsweek* 107 (28 April 1986): 16–36.
69. Aldrich, 7.
70. It is important to note that this logical conclusion is made in view of the LOAC, and does not consider criminal law or satellite treaties that may be violated by such acts. In peace-

time, these would be valid limitations upon a nation's response, reprisal, and war-fighting options and would most certainly be contemplated during wartime before any violations were consciously undertaken.

71. Lt Col Richard Marshall, National Security Agency, Fort Meade, Maryland, interviewed by the author, 12 July 1996.

72. Department of the Air Force Intelligence Law outline created for the Air Force Information Warfare Center, prepared by Col Richard A. McDonald, 6; see also The Convention Respecting the Rights and Duties of Neutral Powers and Persons in Case of War on Land, Article 8, The Hague, 18 October 1907.

73. McDonald, 7 (citing Senate, *Military Surveillance of Civilian Politics: A Report of the Subcommittee on Constitutional Rights, Committee on the Judiciary*, 93d Cong., 1st sess. (1973), 117.

74. Ibid., 7.

75. Ibid., 8.

76. *Covert action* is defined as an activity of the US government to influence political, economic, or military conditions abroad, where it is intended that the role of the US government will not be apparent or acknowledged publicly. Covert action intended to influence US domestic political process, public opinion, policies, or media is expressly prohibited. See "Memorandum for IW Wargame Participants," J02L7, by Capt Stephen A. Rose, JAGC, US Navy, Staff Judge Advocate, dated 29 January 1996 (hereinafter Wargame Memorandum).

77. 50 USC 413(b).

78. Ibid.

79. Executive Order (EO)12333, United States Intelligence Activities, 4 December 1981.

80. Ibid.; see also *Federal Register* 46 (1981): 59941.

81. Ibid.

82. McDonald, 9.

83. Wargame Memorandum; see also EO 12333 and *Federal Register* 46 (1981): 59941.

84. Wargame Memorandum.

85. Ibid., 9.

86. Ibid., 10.

87. Ibid.

88. Ibid.

89. Ibid.

90. Ibid., 11.

91. Ibid.

92. Ibid.

93. Ibid.

94. See EO12333 and *Federal Register* 46 (1981): 59941, for a more detailed articulation of the specific authority of various agencies to undertake various surveillance activities.

95. Consider this hypothetical: The intruder is the teenage son of a Pentagon official who played on his father's computer without permission while waiting for his parent to return from a meeting. To send a "logic bomb" back from the point of intrusion to the origin could damage a host of DOD computers and could potentially disable the Pentagon's networks. Clearly an automatic response that is harmful to the computer system may not be in the best interests of the United States.

It is well that war is so terrible, or we should get too fond of it.

—Robert E. Lee

No pleasure is comparable to the standing upon the vantage-ground of truth.

—Francis Bacon

ON (THE LAW OF) WAR: WHAT CLAUSEWITZ *MEANT* TO SAY

COL STEVEN J. LEPPER, USAF

CARL VON CLAUSEWITZ'S theories on military strategy and war have become so ingrained in American military thought that almost every US engagement fought or planned today relies heavily on his concepts. Unfortunately, his most polished writing —the only part of his manuscript he considered ready for publication prior to his untimely death—contains only one specific reference to the law of war: "War is . . . an act of force to compel an enemy to do our will. . . . Attached to force are certain self-imposed, imperceptible limitations hardly worth mentioning, known as international law and custom, but they scarcely weaken it. Force—that is, physical force, for moral force has no existence save as expressed in the state and the law—is thus the *means* of war; to impose our will on the enemy is its object" (emphasis in original).[1] I use the term *unfortunately* for two reasons. First, this passage suggests that Clausewitz considered international law irrelevant to war.[2] Second and more significant, his current-day disciples might infer from it that law is unimportant to the formulation of military strategy and tactics *today*. This article seeks to refute both inferences. In fact, the opposite is true: the law of war has been, is, and should continue to be a significant factor in the strategic thinking of the US military.

The Law of War Was Important *Then* (And Clausewitz Knew It)

Students of Clausewitz have often deciphered his cryptic passages by putting them into historical context. That context is also critical to understanding his views on the laws of war. Before Clausewitz, particularly dur-

ing the seventeenth-century "Wars of Religion," European wars generally were brutal and unrestrained. Since religious and ideological differences motivated combatants, these wars were literally no-holds-barred affairs.

After 1648, when the last of these wars—the Thirty Years' War—ended, Europe entered an age of limited war in which smaller, professional armies fought each other for relatively modest political and territorial objectives.[3] Intent on avoiding previous excesses, European sovereigns took steps toward limiting the impact of future conflicts. In addition to establishing formal officer-training courses, they revived chivalry by adopting formal articles of war that imposed strict rules governing treatment of prisoners, noncombatants, and private property. In the early 1800s, Clausewitz attended and taught at the Prussian War College. His cynical reference to the laws of war at least shows that at some point in his career he learned them.

Appreciating Clausewitz's true views on the law of war also requires both a brief reference to Hugo Grotius, the father of modern international law, and an understanding of some of the law's principles and purposes. Grotius, a Dutch lawyer and philosopher, died three years before the end of the Thirty Years' War. His most important work, *On the Law of War and Peace,* was as influential to the study of international law as Clausewitz's *On War* was to the study of war.

Grotius articulated fundamental principles that were generally observed in Clausewitz's era and that survive to this day in the forms of military necessity, proportionality, and humanity. All three concepts spring from the basic idea that "the prohibition against intentionally harming other human beings is set aside in warfare only to the extent that combatants of opposing belligerent nations may rightfully attack one another."[4] Military necessity permits armed forces to attack only those targets that will impair the enemy's ability to make war. Since attacking noncombatants produces no such impact, this rule also protects them. Proportionality prohibits using force greater than necessary to accomplish legitimate military objectives. Finally, humanity prohibits the infliction of unnecessary suffering. This principle protects combatants from attack with weapons that continue to cause injury after their combatant status ends.

Given his historical circumstances, Clausewitz reasonably regarded international law as irrelevant to the application of force. By the time he observed and wrote about war, excesses prevalent during the Thirty Years' War had already moderated. As strategy evolved to require application of force almost exclusively against the enemy army, the law of war must have seemed increasingly superfluous. Nevertheless, Clausewitz's dialectic contrast between absolute and limited war further revealed that he understood and appreciated it.

Clausewitz the absolutist regarded pure war as a "complete, untrammeled, absolute manifestation of violence [which] . . . would of its own independent will usurp the place of policy the moment policy had

brought it into being."[5] As for the law of war in this context, he added, "To introduce the principle of moderation into the theory of war itself would always lead to logical absurdity."[6] Just as quickly as he defined it, however, he acknowledged that absolute war in its pure form is not achievable. "War is never an isolated act,"[7] he wrote; war can never be disconnected from people and their affairs. Their goals, feelings, and intellect inevitably moderate the *practice* of war even if moderation in *theory* would be logically absurd.

Clausewitz the realist understood that, in practice, war is limited and described the most important limit in his most famous quote: "War is merely the continuation of policy by other means."[8] In other words, policy is the national objective, and war is the means of achieving it. Within the broad context of policy lay numerous subsidiary goals and considerations. One is the achievement of peace.

Another constraint Clausewitz ascribed to limited war is its dependence on the characteristics of the people fighting it. He described hostile feelings and hostile intentions as the two different motives that make people fight one another.[9] Hostile feelings are based on emotion and instinct while hostile intentions are purely rational, based on intellect. Both are present to varying degrees in any conflict among people; the proportion in which they are mixed dictates how wars are fought and how long they will last. Thus, in a point relevant to this discussion, Clausewitz concluded, "If, then, civilized nations do not put their prisoners to death or devastate cities and countries, it is because intelligence plays a larger part in their methods of warfare and has taught them more effective ways of using force than the crude expression of instinct."[10]

However, he added that "the invention of gunpowder and the constant improvement of firearms are enough in themselves to show that the advance of civilization has done nothing practical to alter or deflect the impulse to destroy the enemy, which is central to the very idea of war."[11] His first observation—consistent with his concept of limited war—assumed that the "civilized" men of his era were not only capable of regulating but actually did regulate the application of force. The second expressed his feeling that, despite their capacity for moderating force, people nevertheless are fundamentally warlike creatures. Together, these observations lead to the conclusion that rather than considering laws of war unimportant pacifist notions, Clausewitz believed that they simply reflect human evolution from instinct to intellect. In their more intelligent search for better methods of war, people abandoned targeting civilians in favor of more effective ways of killing the enemy on the battlefield.

Far from regarding laws of war unimportant, then, Clausewitz actually understood that they imposed necessary limits on people's ability to wage war. He assumed that such self-control would be as much a part of future wars as it had been a part of his and that it would make war more, not less, efficient.

The Law of War and Clausewitz Coexist and Remain Important *Today*

When one's tools are primitive, it is easier to focus them on narrow objectives. In this sense, achieving self-control was perhaps less difficult in Clausewitz's day than today. With limited military resources and an enemy blocking an army's forward progress toward its ultimate political objective, clearly the immediate military object of war became the enemy's defeat. Whether one believed in the law of war or not, one could easily rationalize that those limited resources would be better employed against the enemy's army than wasted on its civilians. Thus, Clausewitz's conclusion that the law of war imposed an "imperceptible" limit on force recognized, at least in part, that force was already limited by practical and technological considerations.

When one's tools become more sophisticated, Clausewitz's dichotomy between the domination of intellect over instinct on the one hand and the constant improvement of firepower on the other becomes especially important. With the advent of airplanes, weapons of mass destruction, and precision-guided munitions, this tension has become particularly strong. No longer must war be waged on the battlefield; today, only policy truly limits the modern army's potential targets.

This trend toward increased military effectiveness that Clausewitz heralded over 150 years ago brought the United States and similarly equipped nations to a crossroads in World War II. The road toward absolute war was our ability to combine the ferocity of chemical, nuclear, and high-explosive weapons with advanced delivery systems such as the airplane to bring war to the enemy's entire population. The road toward limited war required us to forgo targeting civilians and thereby move toward the intellect side of Clausewitz's intellect-instinct balance. Both sides took both roads. For example, each side's strategic-bombing campaigns targeted the other's civilian populations.[12] However, neither the Allies nor Germany used its stockpile of chemical weapons, perhaps because the Geneva Gas Protocol of 1925 had outlawed them or because both sides considered the prospect of retaliation in kind too frightening.

Where does all this leave us today? As more nations acquire or develop weapons of mass destruction, absolute war becomes a greater possibility. Yet, recent US wars, including the cold war, stand as examples of the restraining power of deterrence and provide optimism for the future. Hopefully, this restraint is part of the policy that will define how we conduct future wars. To the extent that nations have *formally* agreed to some of these policies—for example, the policy against using chemical weapons—they have become part of the treaty-based law of war. Policies to which nations have *tacitly* agreed have become either customary laws of war or bases for deterrence. Today, the labels *law of war* and *deterrence* are

less important than the fact that restraint exists. Hopefully, this restraint—Clausewitz's "intellect"—will continue to be a critical element of future wars.

Clausewitz's Theories and the Laws of War *Tomorrow*

Does the fact that the law of war is more pervasive and restrictive today than it was in Clausewitz's day make his theories any less relevant for future wars? The answer is definitely no. First, from a practical standpoint, many of the customary rules of military necessity, proportionality, and humanity exist today in much the same form as in the wars he fought and wrote about. The rules first applied in the eighteenth century have now achieved almost universal recognition as laws applicable to today's and tomorrow's wars.

Second, many laws offset technology. As people develop newer and deadlier ways to fight wars, international efforts to regulate them strive to keep up. The point here is that although military technology has advanced geometrically since Clausewitz's day, new laws of war have generally helped prevent war from evolving beyond a contest between military forces.

Third, today's rules simply increase the military efficiency Clausewitz intended his principles to achieve. Most, especially those that distinguish legitimate from prohibited targets, are credible because they actually help focus military power on important military objectives. Our challenge is to preserve that credibility by rejecting counterproductive new rules or changes to old ones.

Finally, the law of war is a critical element of war's "paradoxical trinity." In his effort to define war in terms of its "dominant tendencies," Clausewitz described three forces that influence its nature: primordial violence or the "instinct" discussed earlier, chance and probability that foster creativity, and the reason or "intellect" that underlies war's political objectives. The object, he said, "is to develop a theory that maintains a balance between these three tendencies, like an object suspended between three magnets."[13] As an element of reason, the laws of war prevent war from deteriorating into unregulated free-for-alls. By strengthening the "intellect magnet," hopefully they will help keep war within the trinity.

Conclusion

Clausewitz's essential point was that absolute war exists only in theory; in practice, limits exist. The question he probed was how to conduct war successfully within those limits. Although the law of war may not have been a prominent constraint during Clausewitz's era, it certainly was one of the factors that defined the conduct of the wars he wrote about. Today, those laws are no less relevant.

The enduring value of Clausewitz's principles depends, in part, on the continuing validity of his basic assumption that war is limited. Ironically, his theories remain relevant today because the law of war—a concept he viewed skeptically—remains one of those key limits.

Bolling AFB, Washington, D.C.

Notes

1. Carl von Clausewitz, *On War,* ed. and trans. Michael Howard and Peter Paret (Princeton, N.J.: Princeton University Press, 1976), 75.
2. Geoffrey Best, *Humanity in Warfare* (New York: Columbia University Press, 1980), 63.
3. Russell F. Weigley, "American Strategy from Its Beginnings through the First World War," in *Makers of Modern Strategy: From Machiavelli to the Nuclear Age,* ed. Peter Paret (Princeton, N.J.: Princeton University Press, 1986), 409.
4. Paul Christopher, *The Ethics of War and Peace: An Introduction to Legal and Moral Issues* (Englewood Cliffs, N.J.: Prentice Hall, 1994), 100.
5. Clausewitz, 87.
6. Ibid., 76.
7. Ibid., 78.
8. Ibid., 87.
9. Ibid., 76.
10. Ibid.
11. Ibid.
12. W. Hays Parks, "Air War and the Law of War," *Air Force Law Review* 32 (1990): 50–54.
13. Clausewitz, 89.

When the state is most corrupt, then the laws are most multiplied.

—Tacitus

REVIEW: *TOTAL AIR WAR*

MAJ JOHN P. HUNERWADEL, USAF

Editor's note: We are featuring Major Hunerwadel's review of the commercial simulation Total Air War *as a Way Point to call attention to our expanding coverage of airpower-related educational products. Don't worry, books will still be the focus of our Net Assessment section—just as they will remain the principal instruments for professional learning. But in future issues (and already starting to appear on our* Air Chronicles *website), you can look for reviews of war games, educational software, multimedia products, and videos.*

IN THE LAST 10 years or so, two large families of computer-based games have evolved that should be of interest to military airmen. The first is a group of increasingly sophisticated air-combat simulators (ACS) offering very realistic plane-to-plane play. The second is the family of strategy war games essentially similar to the board and counter games of old—*Panzerblitz, Squad Leader,* and such. Both families of games have come a long way in the last 10 years. Some in the strategy family still have the feel of the older games: units that look like counters and God's-eye views of hex-based maps. Students in basic professional military education (PME) and intermediate service schools will recognize these; the military's own war games haven't yet evolved past this point. Still, a number of war games have been devised that offer very realistic and sophisticated treatment of linear surface battle at the tactical and operational levels of war.

What has been lacking in this latter group is a game that portrays air warfare in the wider, operational-level context these other games successfully portray. In almost all of the surface-based games, airpower is abstracted into a type of fire support or airborne artillery. The *Panzer General* series does a fairly elegant job of portraying the value of air in attriting surface forces and providing mobility to them as part of a combined arms team. But this excellent rendition of a "Marine's view of airpower," if you will, ignores much that airpower does. The effects of interdiction in isolating and paralyzing enemy forces and the system-wide shock and exploitation offered by strategic attack are absent in all games currently available. Between the plane-to-plane combat of the flight simulators and the true effects of airpower on warfare, a wide gulf has been fixed. As an airman and a war-game grognard (I started playing when someone gave me a copy of Jim Dunnigan's *1914* back in 1969), I have been waiting a long time for someone to try to bridge the gap.

Thus, it was with some anticipation that I read announcements for a new game: *Total Air War.** It boasted being able to show the full use of air across the spectrum of war as well as offering the most sophisticated ACS yet. The game developers even hired retired Air Force colonel John Warden (of Instant Thunder fame) and his Venturist, Inc., team to help design it. The game promised to be the first truly sophisticated portrayal of air warfare in all its aspects.

The game finally delivered is really two games in one, joined fairly seamlessly. The first game is a very elegant air-to-air and air-to-ground flight simulator based on—really, a sequel to—Digital Image's highly successful *F-22 Air Dominance Fighter.* The second is an entire ongoing air campaign, viewed and controlled from an airborne warning and control system (AWACS) simulator. This part of the game starts with a notional air tasking order (ATO), which can be modified by the player. The player can (but does not have to) plan individual packages or ingress/egress routes and add sorties to the given ATO. Once tactical planning is completed, the player acts as an air-battle manager, running the air war from the AWACS.

It is possible to easily jump between the games while in progress. The game system's artificial intelligence (AI) routines take over the AWACS while the player is out flying and take over individual engagements once the player is back aboard the AWACS. All this seamless sophistication comes at a cost, however. The game is very memory-intensive. I ran the game on a 333-megahertz machine with 128 megabytes of random access memory and an eight-speed CD-ROM player, and portions of it still ran slowly. Attempting to run it on a slower machine might remind old-head computer gamers of the ancient Commodore 64.

Overall, I was impressed with the sophistication of the game's graphical user interface (GUI). This game has the best graphics of any air-combat simulation I have yet seen. It is unequaled in its ability to let the player see a particular air combat from all aspects and to easily switch between views. Even playing as an AWACS controller, you get to watch the action you have highlighted in a small screen to the left of your main display (which does not interfere with the ability to simultaneously monitor the "rest of the war" in symbols on the main display). The AWACS controller interface itself allows the player to selectively highlight any target or target set on the ground, see threat envelopes, switch between various forms of familiar symbology (including the North Atlantic Treaty Organization [NATO] standard), and see the entire ongoing air war depicted three-dimensionally. The only drawback I saw was that the AWACS controller main display became too cluttered to effectively use with more than a couple of ground target sets selected (especially in 3-D display, which I tended to use most). This problem may be unavoidable, however.

---

*Digital Image Design, Ltd., distributed in the United States through Infogames Interactive, Inc., 333 W. Santa Clara Street, No. 820, San Jose, California 95113, 1998, $29.99.

Navigating through the game was fairly intuitive and was well described in the rule book. The over-view screens easily led me to the scenarios the first time I played, but, for some reason, would not let me into the AWACS function the second time. This happened only once, however. This did reveal a shortfall in the rule book: its lack of useful troubleshooting information. The 336-page rule book is devoted mostly to explaining the extremely complex set of controls for the F-22. This part of the book looks and reads like a *Dash-1* (aircraft flight manual) because that's basically what it is. It proved too much to easily wade through. The first time I flew the F-22 simulator, I just got in and started pushing buttons. This seemed to provide a more entertaining (if somewhat bloody) tutorial. It didn't take long to get fairly proficient at flying the simulator, though. Most of the keyboard controls are well thought out—an advantage over many such games, which assume the player is using a joystick. The integration of keyboard and screen mouse controls also works well.

Apart from its strength as an air combat simulation, this game is a strong tool for showing integrated management of an air battle. The AWACS function (when it worked) was fairly intuitive and was graphically brilliant. It was necessary to switch to 2-D display using NATO symbology to use the replanning function, but I found this only a minor annoyance. Replanning is used to retask scenario air-to-ground assets away from their default targets but has no impact on active management of the air-to-air battle. The focus of the AWACS game is on what I would call the "grand tactical" level: managing an ongoing tactical battle space to accomplish preset operational and strategic objectives. In this role it is superb. It really does depict a God's-eye view of the air-battle manager's role very well. The game might be very useful as a teaching tool for air-battle managers or others trying to learn the AWACS function. It could probably be modified in subsequent versions to present an airborne "surface battle manager's" view (à la the joint surveillance, target attack radar system [JSTARS]) very nicely as well. Running the game from this perspective was also quite a bit more fun and challenging than I expected it to be. Obviously, most of the development brainpower went into the game's air combat simulator aspects, but there is enough in the AWACS game to please most gamers.

The game's "grand tactical" focus, however, is its greatest drawback as an operational-level simulation. Each of the game's "campaigns" is a preset scenario, with everything from national-level objectives down to intended target sets already determined. John Warden's consultation seems to have been reduced to a few operational-level buzzwords in the final version of the rule book. There is a rudimentary discussion of center-of-gravity analysis, for instance (using the too-familiar Five-Ring Model), but it plays no part in anything the player actually does. It's just "nice to know" stuff, like a lot of the "designer's notes" musings in many old board war games were. (In fact, *Total Air War*'s designers threw out Warden's "Holy Rings" in favor of their own [somewhat unusual] set of 10 target categories in the final

version.) The scenario introductions do give objectives and strategies. In many cases, though, these are conceptually flawed. Most often the two are confused. What the player should accomplish (the objective) is called the "strategy," and how he should accomplish it (the strategy) is called the "objective." This is worse than useless; it's negative training from the point of view of teaching operational art. The bottom line is, though, that this whole aspect of the game is merely what's known in the war-game business as "chrome."

Some thought apparently went into trying to show operational-level effects on target systems, at least according to the rule book's introductory comments. Each scenario's victory criteria are based upon percentage degradation of selected target sets or systems (like the enemy's national electrical grid). As far as I could tell, however, bombing seems to accomplish linear percentage degradation of targets; so after a predictable number of successful sorties, the targeted system will go down by the requisite percentage and victory will be achieved. I could be wrong. The rule book hints at nonlinear (or at least random) solution components in the game engine, but if they were there, I was unable to see them at work. Perhaps they are invoked at more advanced levels of play. Regardless, as the game now plays, it reinforces the simplistic notion that "target X + target Y + target Z = Victory." This is an idea that pervades too much of the military (the Air Force in particular) and would be negative training for a student trying to learn how to defeat a thinking, reacting enemy. (This problem, of course, is inherent in most all computer war games in which the opponent is a computer AI routine.)

In the larger sense, the game structure also does nothing to show why the player should be hitting a given target set at all. It wouldn't really matter to the player whether he was hitting the enemy's national command structure or a herd of elephants, as long as degradation of the target set met the scenario victory conditions. The game does nothing to show strategy-to-task methodology or reinforce the reasoning behind effects-based targeting. Consequently, it would probably be counterproductive to use this game as an operational-level teaching tool, since it would merely reinforce the typical midlevel Air Force officer's deeply ingrained tendency to "get lost in the weeds" and focus on purely tactical considerations. Thus, as a portrayal of "total air warfare," the game—though a fine tactical-level simulation—is a failure. Having said that, I must say, it is fun!

The game would be greatly improved, from a professional military point of view, if it could be modified to include the following features:

1. A higher-level planning function that allowed the player to take a conflict and National Command Authorities (NCA)-level objectives concerning that conflict and derive theater-level objectives, strategies to accomplish those objectives, center-of-gravity analysis to shape targeting priorities, and actual target sets. Players could then take their plans and execute them. The computer would have a concealed pre-

set list of actual victory criteria, which the player could then measure his or her plan against after execution.

2. An introductory chapter to accompany the planning function, discussing principles of campaign planning. It would be even better if written by someone who knew what he was talking about.
3. A modem/network play option that would allow head-to-head human red and blue (and/or gray) play, as well as team play on a given side. As an example of team play, each player could be given a portion of friendly forces and one or several airborne warning and control systems, from which he would run an AWACS-display game as part of a larger "campaign." (At any time, of course, just as in the current game, it would be possible to drop down into a cockpit and turn AWACS over to AI. If this could be made to run along the lines of the Marines' team version of the game *Doom*, this could have great advertising potential for the United States Air Force.

Maxwell AFB, Alabama

I always considered statesmen to be more expendable than soldiers.

—Harry S. Truman

Net Assessment

The first thing we do, let's kill all the lawyers.

—William Shakespeare
Henry VI, Part 2

Strategy and the Revolution in Military Affairs: From Theory to Policy by Steven Metz and James Kievit. Strategic Studies Institute, US Army War College, Carlisle Barracks, Pennsylvania 17013-5050, 27 June 1995, 38 pages, free.

Strategy and the Revolution in Military Affairs could just as easily have been entitled *What Every Officer Should Know about the RMA*. Since its two authors are well-respected military analysts, yet not proponents of any one revolution in military affairs (RMA) theory, they have been able to address this subject matter objectively. As a result, this succinctly written report represents the best synthesis of open-source literature on the RMA published to date.

The body of the report is divided into five sections covering the context within which the RMA is set, the orthodoxy surrounding it, theoretical insights gained from the generation of hypotheses, policy implications of pursuing the current "minor" RMA, and policy options for the future. In regard to the context of the RMA, it can be found to originate in Soviet concepts of a developing military technical revolution (MTR) back in the 1970s and 1980s. In America, a small band of RMA analysts emerged, for the most part in response to the stunning, one-sided victory that took place during the Gulf War. They have focused on defining and describing military revolutions so that the one envisioned as now taking place could be put in its proper historical context.

At a minimum, there is consensus that standoff precision strikes; advanced command, control, and intelligence (C^2I); information warfare; and nonlethality are thought to characterize the current RMA. If American forces can harness these new technologies and concepts, they will provide us with many politico-military advantages as proven by the Gulf War. Less consensus exists concerning the significance of the second stage of this RMA, based on advances in robotics, cyber defense, internetted structures, and other forms of emerging technologies.

Because this is still a relatively new field of research, disagreement exists among these analysts concerning what constitutes a military revolution beyond a "discontinuous rise in military capability and effectiveness." What is needed is a mature theory to work from. Toward the building of this theory, hypotheses surrounding the configurations of military revolutions need to be developed, as does further identification of historical trends in combat effectiveness, military revolution processes, and the patterns they take.

With regard to the policy implications of pursuing the "minor" RMA now taking place, we must ask ourselves about its current utility to our armed forces and the nation they represent. Any cost-benefit analysis must take into consideration increased combat effectiveness against future opponents, likely countermeasures that will develop, our possible overreliance on military power to the exclusion of other forms of national policy, and the potential alienation of friends and allies due to our ever-growing military strength. To this analysis, we must also factor in the political ramifications of a new RMA-based force structure, an alteration in our deterrence capability, and a gradual US slide into strategic inferiority unless we pursue the RMA.

In conclusion, the report discusses policy options concerning future RMA-based paths available. We have three choices, each of which will greatly affect our security posture in the next century. The first is to continue on the path we are now on, aimed primarily at conventionally armed regional aggressors. The second is to put a brake on the RMA to consolidate our military advantages. And the third is to take the revolution in a new direction. It is imperative that we make the right choice and that it be as well informed a decision as possible.

One of the most important attributes of this report is its acknowledgment that both "major" and "minor" RMAs may exist—a position this RMA analyst has long advocated. Further, the discussion of what used to be called low intensity conflict as the

potential dominant threat in the twenty-first century is highly significant. The authors recognize that a bandwidth problem may exist. If so, this means the United States is focusing on the wrong type of opponent—in general, a conventional, armor-heavy one like the Warsaw Pact or Iraq. The suggestion of a new, autonomous RMA organization—much like RAND of the 1950s—is a provocative and vital concept. Given the constraints imposed by our conventional military institutions, creativity in military thinking really needs to be actively fostered by such a group.

This report has two detractions. References to Marine Corps RMA contributions are, for the most part, absent. By this I specifically refer to the literature generated as an outcome of the "Fourth Generation Debate." Additionally, the Russian perception of "Sixth Generation Warfare," as expressed by Gen-Maj V. Slipchenko, has not been included. Still, these omissions in no way undermine the significant contribution this report represents.

As the authors rightfully suggest, it is now time that we examine currently held RMA assumptions with a set of hypotheses and link them to their potential policy implications. Without the development of a mature theory, the concern is that we will not understand how American force structure, doctrine, and grand strategy should be properly adapted if a "major" RMA is indeed taking place. Because of the national security implications of the policy recommendations made within this report, it is a must read for all military officers.

Dr. Robert J. Bunker
Claremont, California

The Paths of Heaven: The Evolution of Airpower Theory edited by Col Phillip S. Meilinger. Air University Press, 170 West Selfridge Street, Maxwell AFB, Alabama 36112-6610, 1997, 680 pages, $39.00.

The *Paths of Heaven* is an excellent introduction to basic airpower thinking as it has evolved from the early theories of Giulio Douhet *(The Command of the Air)* right through those of Col John Warden *(The Air Campaign).*The book is arranged chronologically, starting with Douhet and ending with a thought-provoking article by Dr. I. B. Holley Jr. that challenges future airpower theorists to learn from their predecessors and outdo them, both in objectivity and rigorous analysis.

The book provides a good sampling of prominent airpower thinkers from various nations and includes pieces on the usual icons (Douhet, Billy Mitchell, Hugh Trenchard, John Slessor, Alexander de Seversky, the Air Corps Tactical School staff, John Boyd, and Warden). One of the book's greatest strengths, though, is the editor's willingness to draw on a diverse group of contributors. Colonel Meilinger includes articles on airpower as conceived and applied by the US Navy, Continental Europeans during the interwar years (1919–39), the former Soviet Union, and NATO. The articles show how divergent trends in airpower development either helped or hindered the organizations and nations involved, as well as provided a historical context for understanding the actions of those actors. There are also chapters on areas with which most US airmen of any service are familiar (nuclear conflict, low intensity conflict, and interservice integration [US AirLand Battle doctrine]) but perhaps understand less well than they would like to admit. I presume much when I attempt to criticize such an undertaking, but the book has some shortcomings—the most glaring of these being the chapter on space power.

Instead of discussing what little doctrine exists relative to space and the need for reasoned, balanced thinking in this area, the contributing author takes the opportunity to argue a thesis for dividing airpower from space power and creating a fourth service. Whatever the merits of the argument, I would say that it is misplaced in this book. Although the discussion is very timely and the essay well reasoned, it is an attempt at persuasion—not a discussion of doctrine. As such, it belongs in the pages of *Airpower Journal*—not in a book about the evolution of airpower theory.

However, an aspect of airpower thought missing altogether is the increasingly important one known as "operations other than war." This area is difficult to grasp and understand, but it is making up a larger and larger part of airpower's everyday commitments around the world. A discussion of what meager doctrine exists and the way it has been applied, for better or worse, would round out the offerings contained herein. Further, the absence of a bibliography—perhaps one focusing on the seminal thinkers (and the availability of their works) addressed in this volume—is a small matter but would provide a ready guide for people interested in reading the original authors.

In summary, *The Paths of Heaven* provides an outstanding single-volume collation of airpower thinking as it has evolved through this century. The quality of the articles is consistent throughout, and they are thoroughly researched and well written. The book is an excellent primer for people who have heard the names of the famous theorists but aren't very conversant with their thoughts. It is a must read for any young officer who is serious about learning more about the evolution of airpower thinking.

Capt Golda T. Eldridge Jr., USAF
Hickam AFB, Hawaii

Historians reach out to current decision makers in this discourse on where the Air Force has been and where it is going. From Douhet and Mitchell to space-control theory, today's best airpower scholars examine the driving intellectual forces of the Air Force mission. Painstaking documentation ensures objectivity. *Paths of Heaven* should become a primer for military-education programs. Professors of the School of Advanced Airpower Studies offer here a single-source document for the history of airpower theory, filling a void and encouraging further critical thinking.

A detailed history lesson at the start gives way to a more dynamic treatment of current air- and space-employment theory. For example, chapter 6 tells how the Air Corps Tactical School assembled the controversial plan of high-altitude precision daylight bombardment. Later, Col Maris McCrabb summarizes NATO air doctrine concisely with a hint of the future. In chapter 11, Dr. Harold R. Winton retraces the Army and Air Force doctrinal dance between 1973 and 1990. He stops short of Desert Storm, to which he refers briefly as a "dialogue of the deaf" (page 433). I hope *that* book is in the works. Finally, the theories of John Boyd and John Warden earn a chapter, Russian perspectives are charted, and space and air doctrine is dissected and compared.

At the end, an essay by Dr. I. B. Holley (major general, USAF, Retired) offers context for the various thinkers and visionaries. He ties the common threads from Douhet to nukes with a challenge to service education to keep pace.

The book should serve as armor for senior leaders who make resource decisions and fight the Air Force's doctrine wars and as a catalyst for the next generation of airpower advocates. I recommend that Air University Press convert this world-class academic compendium to CD ROM format with animated chapter summaries and issue it to all new Air Force officers. The test will come in the decisions they make in their lifetimes.

Col James E. Roper, USAF, Retired
Colorado Springs, Colorado

The Other Missiles of October: Eisenhower, Kennedy, and the Jupiters, 1957–1963 by Philip Nash. University of North Carolina Press, P.O. Box 2288, Chapel Hill, North Carolina 27515-2288, 1997, 231 pages, $18.95.

One can divide *The Other Missiles of October* into two parts: the deployment of Jupiter intermediate-range ballistic missiles (IRBM), which was far more difficult than the Eisenhower administration imagined, and their removal by the Kennedy administration after the Cuban missile crisis. The book also delivers great insight into US-allied relationships that dominated the debate about placement and removal of these missiles.

With the launch of sputnik, the Eisenhower administration and the North Atlantic Treaty Organization (NATO) faced a credibility issue: how to deal with the fact that the dramatic space exploits of the Soviet Union succeeded in decoupling Western European countries from the United States. Nuclear deterrence and allied perceptions were at the heart of the matter. In the discussions following the Suez crisis in 1956, the United States and the United Kingdom obtained a commitment for 60 Thor missiles to be deployed with the Royal Air Force in Britain. One must recall that at this time the United States was still working on Atlas, its first true intercontinental ballistic missile, and thus could not provide a "shield" over Europe. The other IRBM developed by the US defense establishment was the Jupiter. Feeling the domestic pressure to respond to Soviet superiority in space, the Eisenhower administration agreed first to produce both IRBMs and to provide them to allies in an attempt to shore up European nerves more than defenses.

One of the key deficiencies of Jupiter and Thor was their vulnerability: instead of being placed in a silo, they were raised on a launchpad above ground, with no protection. In the words of con-

gressional investigative committees, their launch sites were "vulnerable to saboteurs armed with hunting rifles." Further, the missiles' reaction time was not satisfactory—15 minutes from alert notification. Although USAF personnel were to keep the nuclear warheads separate from the missiles, which were to be operated by host-nation personnel, in reality the warheads were mated to the missiles. Moreover, in order to launch the missile, one only had to pump the volatile mixture of kerosene and liquid into it. Thus it was possible for host nations to launch their own unauthorized nuclear strike, a prospect that congressional investigators complained about and that frightened President Kennedy.

Once the decision had been made to deploy the Jupiters, Air Force general Lauris Norstad, supreme allied commander Europe, had to find takers for these missiles. This task turned out to be as difficult as later cruise-missile deployments in 1989. Due to budget cutting, only 60 Jupiters were deployed—45 to Italy and 15 to Turkey. The deployment to Turkey would later haunt the Kennedy administration. President Eisenhower, already debating the wisdom of deploying missiles so close to the Soviet Union, discounted his own doubts and passed the problem on to the incoming Kennedy administration. Kennedy also questioned the deployment decision but, distracted by other problems and the feeling that Turkish ties to the West and the NATO alliance would be strained, deployed them anyway. Allied insecurity could be relieved only by US nuclear weapons. Interestingly, Italy had accepted the Jupiters to gain additional leverage within the NATO alliance, while Turkey was concerned about weakening US resolve in the face of Soviet aggression and technical superiority.

The deployed missiles soon became a thorn in Premier Khrushchev's side, especially those in Turkey, which could threaten key cities inside the Russian heartland. Castro's takeover of Cuba and the Bay of Pigs disaster provided Khrushchev the opportunity to deploy his own IRBMs. This action led to the Cuban missile crisis, but President Kennedy worried that the missiles in Turkey would prove to be a greater liability than asset. During the crisis, the Jupiters were not bargained in a formal sense, but as Nash makes clear, they were part of informal bargaining led by Attorney General Robert Kennedy. Their end came quickly and quietly. The Jupiters were dismantled, despite the fact that the military considered them an asset and was not willing to part with them.

Because these missiles were rarely discussed in the extensive literature of the Cuban missile crisis, this book fills a void. One subject to which the author could have devoted more space is the Thor missiles. These IRBMs were deployed in different circumstances but are also related to the Cuban missile crisis, in the sense that Prime Minister Harold Macmillan offered them in exchange for the Soviet IRBMs in Cuba. Nash has done an excellent job of explaining the political and military background against which deployment and removal occurred. The NATO interrelationships make *The Other Missiles of October* a worthwhile book for NATO scholars as well.

Capt Gilles Van Nederveen, USAF
RAF Waddington, England

Truman and the Hiroshima Cult by Robert P. Newman. Michigan State University Press, East Lansing, Michigan 48823-5202, 1995, 272 pages, $30.00.

World War II was brought to a close in August 1945 by the atomic bombing of Japan. Few events have generated as many books and articles or as much controversy as the circumstances surrounding the bombing. The 50th anniversary of the bombing saw a watershed of new, reissued, and revised works on the subject. By and large, one can characterize these works as traditionalist or revisionist, providing two distinctly differing views of the bombing.

The traditionalist view maintains that the bombs were necessary to end or hasten the end of the war—that their use saved many American and Japanese lives by avoiding an invasion. The revisionist view grew out of the 1960s, declaring that the bombs were not necessary to end the war because the Japanese were ready to surrender, or that even if an invasion were necessary, it would not have cost many lives. Revisionists typically view the use of the atomic bombs as racially or politically—not militarily—motivated. This explanation is a simplification of both positions, but it is representative of each.

The "Hiroshima cult" Dr. Newman refers to in his title embraces the revisionist views almost dogmatically. In his words, this cult is an "ahistorical group who grew up during the Vietnam era of distrust of the government and the military. The cult has its own holy day, 6 August; its own shrine, Hiroshima; and as stated above, its

own written beliefs." Dr. Newman wrote *Truman and the Hiroshima Cult* as an answer to what he believes are the historical distortions of the cult. Therefore, the book is not about the development of the atomic bombs or the men who dropped them. It is about the decision to use them and the "what ifs" that historians, traditional and revisionist alike, have batted about for the past 50 years.

The book contains eight chapters, two hundred pages of text, and 70 pages of notes. In that 270 pages, Dr. Newman takes the reader through a thorough discussion of the factors involved in dropping the bomb, the military situation in the Pacific, and, ultimately, the evolution of the Hiroshima cult in the 1960s and beyond. The chapter titles show the direction taken by the author: "Why Did Truman Drop the Bomb?" "Was Japan Ready to Surrender?" "Was the Policy of Unconditional Surrender Justified?" "Why No Warning or Demonstration?" "Was a Second Bomb Necessary to End the War?" "Was Dropping These Bombs Morally Justified?" "Why Has the 'Japan-as-Victim' Myth Been So Attractive?" and "What If the Bomb Had Not Been Used?"

Newman has a very readable style made authoritative by his extensive documentation and research. He is so careful with sourcing that one has no questions about the origins of facts or opinions. Further, he tends to drop a bombshell or two in each of the chapters.

In chapter two, for example, he clearly shows that the conclusions contained in the United States Strategic Bombing Survey (USSBS) summary report about early Japanese surrender were wrong. Newman found them to be based on the beliefs of Paul Nitze, the on-scene team chief, rather than on any facts or material gleaned from interrogations of high-ranking Japanese military and political leaders. Nitze was a strategic bombing advocate; it was his opinion that the atomic weapons were nothing more than "bigger bombs." He used his position to ensure that the summary report emphasized the role of conventional strategic bombing in ending the war in the Pacific. The USSBS interrogations clearly show that, barring some other change to the status quo, Japan would have fought on for months and bitterly opposed any attempt at invasion. The conventional bombing, while devastating, would not have brought about surrender. The insertion of Nitze's beliefs as fact in the USSBS summary is no small manipulation of history. The USSBS summary has been taken as gospel for the last 50 years by many revisionists and some traditionalists to support different interpretations of the atomic bombing. Dr. Newman is one of only a handful of researchers to point out this distortion.

Revisionists routinely claim that using the bombs killed more people than allowing the Japanese to surrender on their own or even executing the invasion in November 1945. What *if* the United States hadn't used the bombs? Newman's research indicates that the consequences of not dropping the bombs in August 1945 would have been grim indeed. Assuming the invasion occurred as scheduled in November and not counting the actual casualties of the invasion itself, Newman conservatively estimates that three hundred thousand people would have died each month the war continued past mid-August 1945, based on death-rate figures from the United Nations and other sources. About 80 percent of those deaths would have occurred in Japanese-occupied territory, where the casualty rate would have certainly escalated as Japan's position grew more desperate. The rest would have died as a result of combat and the continued bombing of Japanese cities. All things considered, had the fighting gone into 1946, the additional death toll as a result of the Pacific war would have easily exceeded two million people. Again, this does not include the direct cost in American and Japanese lives due to invasion. The three hundred thousand casualties from Hiroshima and Nagasaki, while regrettable, pale in comparison, especially when one remembers that in Asia over *17 million* people died at Japanese hands from 1932 to 1945.

Truman and the Hiroshima Cult proved a difficult work to review adequately without spoiling it for future readers. I purposely avoided a detailed discussion of "the cult" for this reason. I found it to be so powerful that I read eight other recent works on the subject, both traditionalist and revisionist, to check facts and "sample the competition" before writing this review. Although several works go into more detail about some of the specific points brought out by Newman, none were as compelling or as complete. *Truman and the Hiroshima Cult* will be the standard to which all other works on the subject will be compared. I wholeheartedly recommend it to anyone who has an interest in the debate on the atomic bombing of Japan. True members of "the cult" will not be swayed, but readers who value reasoning, logic, and fact will.

Lt Col David Howard, USAF
Maxwell AFB, Alabama

The Undetected Enemy: French and American Miscalculations at Dien Bien Phu, 1953 by John R. Nordell Jr. Texas A&M University Press, Drawer C, College Station, Texas 77843, 1995, 233 pages.

The Vietminh's defeat of the French colonial force at Dien Bien Phu in 1954 is the best known military operation of the French-Indochina War. One still wonders how French commanders could have erred so grievously in selecting and defending a position as poor as Dien Bien Phu from which to conduct military operations. John R. Nordell Jr., in *The Undetected Enemy,* purports to explain the strategic, tactical, logistic, and intelligence considerations behind the French High Command's decision to fortify and fight at Dien Bien Phu and to answer what Nordell calls the "decades-old question, 'Pourquoi Dien Bien Phu?'"(page xii).

Unfortunately, Nordell offers few new insights into the events leading up to the French debacle at Dien Bien Phu. He relates French decision makers' disregard of logistical and intelligence considerations in their plan to use Dien Bien Phu as a base of operations against Vietminh guerrillas and regulars; Gen Vo Nguyen Giap's subsequent plan to surround and destroy the French garrison at Dien Bien Phu; and the French High Command's mistaken assumptions that active infantry patrolling, artillery support, and airlift from Hanoi could make Dien Bien Phu a tenable position. Nordell also presents the standard interpretation of why the French fell into the Dien Bien Phu trap.

Nordell claims to base his narrative primarily on declassified archival documents, memories, and contemporary press reports. Indeed, he does reference recently declassified Pentagon reports. However, he often copies those reports verbatim into his narrative, with little or no explanation. For example, Nordell inserts into his text a turgid, five-page Joint Strategic Plans Committee analysis of the French position at Dien Bien Phu and then simply ends his chapter with no analysis of the contents of that report. In addition, if one closely examines Nordell's sources, it becomes clear that he borrowed a disproportionate number of his references from other authors' works, particularly Bernard Fall's *Hell in a Very Small Place* and Jules Roy's *The Battle of Dien Bien Phu.* One such case is Nordell's quote of what appears to be a contemporary account: Brig Gen Jean Gilles's warning to Col Christian De Castries, Gilles's successor as commander of the garrison at Dien Bien Phu, that "if you lose an inch of ground, you are done for" (page 84). However, closer examination reveals that Nordell's source is Roy's *The Battle of Dien Bien Phu,* rather than Gilles's or De Castries's memoirs.

Nordell deserves credit for producing an interesting and well-written narrative of the French High Command's decision to garrison Dien Bien Phu, as well as American reactions to that decision. However, *The Undetected Enemy* adds little new to our understanding of why the French chose to stand and fight at Dien Bien Phu. As Nordell's notes suggest, a better place to find the answer to "Pourquoi Dien Bien Phu?" remains the work of either Fall or Roy.

Capt John E. Grenier, USAF
USAF Academy, Colorado

The Corona Project: America's First Spy Satellites by Curtis Peebles. Naval Institute Press, 118 Maryland Avenue, Annapolis, Maryland 21402, 1997, 368 pages, $36.95.

One of the enduring lessons of warfare is the advantage of taking and holding the high ground. The edge gained from being able to look down upon the enemy, detect his scheme of maneuver, and counter it from a position of dominance has long been recognized by military strategists. The need to deny this advantage to the enemy led to pioneering efforts in aerial combat in the early twentieth century and, in turn, revolutionized warfare. Today, and increasingly so in the future, that high ground is represented by space.

Just as present-day airmen trace their roots to the storied men from Dayton, future members of the US military who ply their trade above the surface of the earth will someday look back to the pioneers of the American space community. One of the central stories of the birth and early growth of our national efforts in space is detailed in *The Corona Project.* With this book, Curtis Peebles has completed a protracted struggle to bring to light the long-classified tale of how our nation went about preventing another Pearl Harbor during the cold war. Many aspects of that program led to today's highly protected "national technical means" of intelligence collection, but this account gives the reader great insight into the long and difficult rise of our first space-based reconnaissance capabilities. An aerospace historian with an international audience, Peebles has woven to-

gether primary source documents recently declassified on Corona with first-person interviews and has then married this insider knowledge with leading historical texts on the early space period. The combination is a compelling story of American "can do" spirit.

Following World War II, the United States and the USSR emerged as the two major world political and military powers. Among other rationales, the USSR's detonation of an atomic bomb in 1949 made it absolutely critical to the American leadership that military developments in the Soviet Union be closely monitored in order to prevent another Pearl Harbor—this time directed against the continental United States and with potentially far more catastrophic results. The challenge was the closed nature of the Soviet Union and the tight security measures that began at its borders. Under President Eisenhower classified, high-altitude, unmanned balloons and manned U-2 aerial-reconnaissance overflight programs were initiated to peek into the Soviet interior. Both, however, featured serious limitations. Since the balloons were subject to the capriciousness of the winds, they could not be directed to collect against specific targets. The U-2 did not have this problem, but its shortfall became all too evident with the shoot down of Francis Gary Powers. Clearly, we needed an alternative, and with a boost from the Soviets' sputnik launch, space-based collection gained momentum as the preferred option. Project Corona represented that option.

Corona combined the ability of Americans to overcome the technological and sometimes bureaucratic barriers to gaining the "higher ground" of space. Despite many early failures, Project Corona left an extensive trail of significant accomplishments. With 145 launches from 1959 until the project's end in 1972, Corona missions were successful in debunking the concern over suspected numerical advantages of Soviet bombers and missiles (the famous "gaps") in the 1960s, providing key understanding of the level of effort the Soviets eventually did put into these programs. The missions also gave the United States a clear edge over any other nation in "strategic" intelligence. In addition to military intelligence, Corona missions provided the West with news of the dramatic failure of the USSR's moon project. But as Peebles points out, Corona's greatest legacy stems from the lessons it taught US national leadership about groundbreaking and often costly programs and the fact that they often must be pursued despite what accountants might say. In the long run, our nation is respected around the world because we dare to try.

Peebles recounts three main themes that are set against the strategic drama of the cold war: the development and flight of the satellites, the development of recovery techniques by some unique airmen, and the impact of the information these early spy satellites gave the National Command Authorities. Getting the program literally "off the ground" was an unprecedented challenge. Imagine a groundbreaking development effort whose genesis lay in plans developed in a hotel room and hand-drawn on letter paper. Then try to see yourself as the program manager who must convince the president that, despite 12 unsuccessful missions, the program still needed to go forward. Although each failure actually carried the program closer to the goal of photos from the ultimate high ground, it was still a hard sell. Nevertheless, Ike didn't hesitate to give the order to press ahead.

Closer to home were the equally experimental methods developed to recover the film as it returned to earth. First with specially configured C-119s and later C-130s, aircrews practiced and perfected techniques that resulted in a midair catch of the film-return capsule's parachute. This method was successful only due to the flying skill of the airmen and their willingness to experiment with different methods of rigging the hook assemblies. On a few occasions, the capsule went into the ocean and was recovered by US Navy or US Air Force pararescuemen. During one such situation, the capsule landed in the water but wasn't spotted until late in the afternoon. Two USAF pararescuemen floated with the capsule overnight in a rolling sea and were recovered the next morning cold and drenched but successful in their mission. Airmanship and sacrifice come in many forms.

Peebles provides numerous examples of the impact that Corona photos had on our national decision making. One of the first photos revealed a significant explosion at a Soviet missile-test complex. This event was later determined to be a failed ICBM test launch that caused over 165 deaths, including those of several senior Soviet officials. News of the event eventually came out in the Western press, but no word of it reached the Soviet people until some 30 years later. This contrast reinforced the need for information in an open society and showcased the stark reality of the risks in missile development.

The author's writing style leads the reader from one theme to another with great ease. One

readily wants to look ahead and find out how the significant obstacles that met the program every step of the way were overcome. His research accounts for all of the major aspects of the effort without descending into the minutiae that accompany many official histories. By keeping details tied to the strategic context, the book easily lends itself to becoming required reading for anyone starting out on the path to understanding current space issues.

The accounts of the film-capsule recoveries remind members of the world's greatest air force of the need to be creative and willing to take risks when the defense of the nation is on the line. Senior decision makers should reflect on the trust the US cold war leadership placed in Dr. Land and the people involved in pushing the technology envelope, despite the soaring cost overruns. Most of the great leaps forward for which Americans are world famous would have never passed the muster of the "whiz kids'" logic. Peebles successfully reminds us that leadership in space requires real people solving difficult challenges backed by strong programmatic support from the top. Anyone suggesting that the US Air Force is the rightful steward of military space for the nation can thank the pioneers of Corona for showing the way upward. And the men and women of Corona can be proud of the way Curtis Peebles has finally shed light on their work.

As airmen, we need to view this project in the same vein as the first aircraft experiments of Wilbur and Orville Wright, Benjamin Foulois, Thomas DeWitt Milling (first bombsight test, 1911), and Charles DeForest Chandler (first Lewis gun test, 1912), in that these pioneers were working on the issues of *how*, not *if*, airpower technology could be used for national defense. Men like Merton Davies and Amrom Katz, the acknowledged creators of Corona, saw the path ahead and never gave up on reaching their goal—a global national reconnaissance system. When space travel and eventually space defense become as commonplace as air travel and peacekeeping are today, their names should be remembered for beginning the military's move to space. The question airmen should be asking when pondering the future of the Air Force is not *if* but *how* we will defend our national interests in and from space. Today, we are an aerospace force that depends on both air and space systems to do the mission. Tomorrow, we will see the need for moving some of our most cherished air capabilities to space. We airmen, whether fighter pilot, satellite controller, or logistician, must always be open and willing to pursue new ways that are risky and far different from "what worked in the last war." The men and women of Project Corona did just that.

Lt Col William T. Eliason, USAF
Washington, D.C.

Eagles by Ray Rosenbaum. Presidio Press, 505B San Marin Drive, Suite 300, Novato, California 94945-1340, 1996, 353 pages, $22.95.

After reading the first few pages of a book, have you ever asked yourself why you picked it up in the first place? Well, *Eagles*, by Ray Rosenbaum, was such a book, and my commitment to *Airpower Journal* to write this review was the only reason I finished it.

Eagles is the fourth installment in Rosenbaum's "Wings of War" series. It centers on Maj Ross Colyer, veteran fighter pilot, natural leader, and all-American boy who can do no wrong. He has, of course, a beautiful wife who develops a career in journalism to be productive during his long absences.

Colyer's exploits in this book include realistic descriptions of the early years of the US Air Force, the introduction of jet aircraft—especially the F-80 Shooting Star—the Berlin airlift with its disorganized start, and the first year of the Korean War. The author does portray these significant events with historical accuracy. The reader quickly realizes that the Air Force's safety record was horrendous at the beginning of the jet age, tactical control of combat aircraft was primitive by today's standards, and organization of airlift forces was haphazard.

The book begins with Colyer flight-testing a P-51 at Wright Field, Ohio, and suddenly being diverted to search for wreckage of an F-80. Shortly thereafter he is selected to fly in the Berlin airlift. He flies a C-47 across the Atlantic to Germany, becomes depressed because he has to fly transports instead of fighters, and flies several missions into Berlin. Colyer is then handpicked to fly a small aircraft—the Norduyn Norseman—covertly into East Germany to pick up a defecting Soviet atomic-bomb scientist.

After that assignment, he flies as a passenger to Langley Field, Virginia, where the C-54 he is in crashes, nearly killing him, but he survives and is grounded for a few months with a severe hand injury. While recovering, he finishes his engineering

degree and eventually returns to flying—this time to his dream, the F-80, which is still having mechanical problems. Colyer then goes to McChord Field, Washington, and finally to Korea.

Rosenbaum effectively immerses the reader in the disastrous first year of the Korean War, a conflict that caught America unprepared. Ineffective and crude tactical air control causes one disaster that results in the death of Colyer's sponsor, General Cipolla. Colyer is given the job of correcting this command and control problem, which he does with a dramatic and successful mission.

Large segments of *Eagles* spend considerable time describing the atmosphere of the cold war by examining the life of a talented Soviet MiG-15 pilot, Yuri Pavel, and his training of Chinese pilots who are preparing to assist North Korea. The third world conditions of China in 1950 are revealed as Pavel attempts to teach his inexperienced students. The last fighter battle in the book is between Pavel and a young F-86 pilot, Kyle Wilson. The Soviet loses, but Wilson is shot down, captured, and makes an unlikely escape.

The historical significance of this book is offset by serious literary shortcomings. These include stereotyped characters, a predictable and dull plot sporadically punctuated by unbelievable events, and trite and artificial dialogue that is simply out of place. The language is unintentionally awkward, as illustrated by the liberal use of terms such as *mug, alcohol-fogged brain, flaming hell,* and *awesome.* Transitions between major scenes are also awkward, with the reader required to pause periodically to regain "plot situational awareness."

Although it has some historical value, *Eagles* serves another purpose—motivating budding writers, because if a story like this can be published, you too can learn to write! I do not recommend this book, even if it is free.

Maj Phil Bossert, USAF
Scott AFB, Illinois

Blankets of Fire: U.S. Bombers over Japan during World War II by Kenneth P. Werrell. Smithsonian Institution Press, 470 L'Enfant Plaza, Suite 7100, Washington, D.C. 20560, 1996, 350 pages, $39.95.

The 50th anniversary of the atomic strikes against Hiroshima and Nagasaki, along with the resulting controversy over the display of the *Enola Gay,* provided ample evidence of how few people were able (or perhaps willing) to place these events in context of the strategic-bombing campaign waged against Japan. Ironically, this subject has suffered more from mistreatment than neglect (e.g., see Dr. Jeffery J. Roberts's article "Peering through Different Bombsights: Military Historians, Diplomatic Historians, and the Decision to Drop the Atomic Bomb" in the Spring 1998 issue of *Airpower Journal).*

Although arriving too late to join that debate, *Blankets of Fire* surpasses previous works by asking better, although not unique, questions, such as "How did an air force committed to daylight, high altitude, precision bombing of point targets end up dropping bombs on cities and civilians? And, after all was said and done, how much did the bombing contribute to the defeat of our enemies?" The answers benefit from the author's unique blend of scholarship and practical experience. In the process Dr. Werrell presents a comprehensive look at the B-29, its World War II operations, and its impact.

Many readers will recognize Dr. Werrell from his other works, including past contributions to *APJ* and its predecessor *(Air University Review).* As one might expect, *Blankets of Fire* is thoroughly researched, well written, and supported by extensive sources and statistics. Moreover, Werrell explains in the preface that he feels he was destined to write this book. While stationed in Japan in the early 1960s, he piloted a WB-50, a derivative of the B-29 used for weather-reconnaissance flights. This experience not only provided incentive for the book but also gave him significant expertise and some insight into events without the potential biases of an actual participant.

Beginning with the evolution of US strategic-bombing theory, Werrell establishes the basis for both the doctrine of daylight precision bombardment and the development of aircraft such as the B-17 Flying Fortress and a long-range heavy bomber that would become the B-29. He then takes us through the complex and troubled development history of that aircraft. Sometimes called Gen Henry "Hap" Arnold's "three billion dollar gamble," the B-29 was the most ambitious aircraft program of the war—and the most expensive (surpassing the $2 billion spent to develop the atomic bomb). Plagued by technical difficulties—including engines prone to catch fire—contractors, maintainers, and crews fought the difficult and often dangerous "Battle of Kansas" trying to field operational aircraft with trained crews. Werrell

concludes that they were ultimately successful, but this was a balancing act—fielding something good enough and soon enough in a wartime situation—and readers should judge for themselves.

Just where were they headed? The narrative lays out the political and military calculations that initially committed them to the China-Burma-India theater under the code name Matterhorn in April 1944. The logistics of staging out of India and the austerity of the advanced bases in China became legend, with the operation proving little other than a baptism of fire for men and planes. Werrell notes that a change of commanders—an impatient Arnold sending in the hard-driving Maj Gen Curtis LeMay—produced few tangible results but enhanced LeMay's reputation as a combat leader and innovator.

Initial operations from the Mariana Islands paralleled more than built upon the China experience. (This is one of the strengths of Werrell's narrative: going beyond mere chronology to examine the effects that operations or developments in one area really had on plans or operations elsewhere.) The first daylight raids on precision targets in Japan were characterized by high abort rates, inclement weather, and poor bombing accuracy—disappointing but not altogether surprising results. Because Arnold wanted more and couldn't wait, he again called on LeMay. Werrell examines the command shake-up and the chain of events that led to the first fire raid on Tokyo during the night of 9–10 March 1945. LeMay's change in tactics to low-level attacks at night was a calculated risk whose results set the stage for the devastation to follow.

As the title implies, incendiary raids against urban Japan serve as the focus for the book. However, Werrell addresses other operations that, to date, have received little notice compared to the fire raids and later atomic bombings. In particular he looks at the continued attempts and new techniques used to hit precision targets and the efforts devoted to naval mine laying.

Werrell gives a short but thorough overview of the issues and arguments regarding the atomic bombing, in the end asking, "Was the atomic bombing morally justified? Do the ends justify the means? These are difficult questions, especially many years after the fact when so many aspects of the situation remain in dispute and the terrible pressures and context of that time have long passed into history. The critical step was not the decision authorizing the use of the atomic bombs, but the earlier decisions that allowed the cities and civilians to be the targets of area bombing, first by Japan and Germany, then against Germany and Japan."

A chapter entitled "Futile Victory?" summarizes the lessons from the campaign and its impact on the war. Low-altitude incendiary attacks at night broke completely with prior doctrine and were devastatingly effective. However, the strangulation of Japan, in part due to the B-29 mining campaign, meant that these attacks had far more effect on Japan's will to fight than on its economic capacity to continue the war.

Obviously, one would recommend *Blankets of Fire* to readers interested in serious study of strategic bombing or the war in the Pacific. Other facets of this story—advanced weapon development and acquisition risk management as well as command relations and expeditionary war fighting—have special relevance as we look to the future. Finally, and perhaps most significantly, Dr. Werrell's study provides an unusual opportunity for us to consider air warfare as a whole by examining *all* the ingredients (technology, doctrine, logistics, training, etc.) that went into this air campaign.

Maj Pete Osika, USAF
Maxwell AFB, Alabama

Foundation of the Force: Air Force Enlisted Personnel Policy, 1907–1956 by Mark R. Grandstaff. Air Force History and Museums Program, Washington, D.C., 1997, 299 pages.

Writing some years ago in this country's most prestigious historical journal, a leading scholar of military affairs pointed out an interesting paradox. Although service in the ranks has been a common experience shared by millions of our countrymen since colonial times, American historians have largely ignored the experience of enlisted military service as a subject of scholarly inquiry (Richard H. Kohn, "The Social History of the American Soldier: A Review and Prospectus for Research," *American Historical Review* 86 [June 1981]: 553–54). For the nation's air arm, that scholarly neglect has been admirably remedied by Mark R. Grandstaff's *Foundation of the Force: Air Force Enlisted Personnel Policy, 1907–1956.*

In this carefully researched account, Grandstaff—a Brigham Young University history professor, Air Force Reserve officer, and former Navy enlisted man—examines the origins and progress of

the Air Force enlisted component from the founding of the Aeronautical Division of the US Army Signal Corps in 1907 to the stabilization of Air Force enlisted personnel policy in the mid-1950s. Focusing primarily on professionalization of the noncommissioned officer (NCO) corps, the author sorts out the tangle of laws, policies, and historical events associated with formation of the independent Air Force's rather distinctive military personnel system. The result is a major contribution to our understanding of the institutional and cultural history of our service.

In the broadest sense, *Foundation of the Force* is as much an inquiry into a specialized facet of labor relations as it is a study in military history. Informed by wide reading in the literature on business and personnel management, Grandstaff treats the evolution of the Air Force enlisted corps as an aspect of the ascendancy of big business in twentieth-century American society. *Airpower Journal* readers will be most interested in what this book discloses about the organizational culture of the Air Force enlisted corps.

On that score, Grandstaff emphasizes strong elements of continuity with the past. Amid the host of changes associated with the 40-year evolution of the Army's air arm into a separate service, the cultural world of enlisted airmen changed very little. From its inception as an adjunct of the Signal Corps, the Air Force was centered on technology, and technology demanded enlisted men be able to master complex aviation skills. By the 1920s, if not before, Army Air Service troops were valued more for their technical proficiency than for excellence in traditional military pursuits. Over time, the advance of aviation technology further escalated requirements for skilled technicians and the need for increased functional specialization. According to Grandstaff, most enlisted members of the "old" Air Force (i.e., the Army Air Service/Army Air Corps/Army Air Forces) "were clearly technicians first, and soldiers, a distant second."

The challenge of attracting and retaining a talented, technically oriented "work force" led old Air Force policy makers to adopt the assumptions, beliefs, and practices of the civilian business world. The result was a "progressive" approach toward recruiting, training, and retention that placed much more emphasis on opportunities to acquire a marketable skill than on appeals to an individual's patriotism, desire to serve, and spirit of adventure. In that sense, the official Army Air Service recruiting motto of "Earn and Learn" was more than a little revealing.

One noted sociologist has categorized military members as primarily "institutional" or "occupational" in their professional values, behaviors, and attachments (Charles Moskos, "From Institution to Occupation: Trends in the Military Organization," *Armed Forces and Society* 4 [1977]: 41–49; see also Moskos's more recent *The Military: More Than Just a Job?* [New York: Pergamon-Brassey, 1988]). Institutional orientation denotes a strong attachment to military life as a calling, with emphasis on traditional customs and on such ideals as "service before self." In contrast, occupationalists identify principally with their particular functional specialty and emphasize the job over membership in the organization. Grandstaff finds that previous generations of Air Force leaders earnestly crafted a personnel system whose incentives and rewards inexorably (if unintentionally) promoted a pronounced spirit of occupationalism in the ranks.

Grandstaff's findings have important implications for the Air Force of our day. Writing about the early years of the cold war, he probably is correct that popular perceptions of an opportunity-rich and (compared to the older services) less "military" Air Force served to reduce traditional objections to a large peacetime military establishment. But one doubts whether that "kinder and gentler" image has much utility in this post-cold-war age of the Aerospace Expeditionary Force. In fact, the more pressing question now concerns the degree to which occupationalist tendencies spawned by the personnel policies of yesteryear are inhibiting the efforts of current leaders to engender a force-wide commitment to "core values" and an expeditionary mind-set.

Foundation of the Force casts much needed light on a neglected but vitally important aspect of Air Force history. It also serves as a timely and ironic reminder about the long reach of the law of unintended consequences.

James Titus
Maxwell AFB, Alabama

When the Airlines Went to War by Robert J. Serling. Kensington Publishing Corporation, 850 Third Avenue, New York, New York 10022, 1997, 310 pages, $24.00.

When the Airlines Went to War is an excellent description of the indispensable role played by US commercial airlines in World War II, the Korean

War, the Vietnam War, and the Gulf War. It is an interesting, historically accurate, entertaining, and well-written book that offers many practical lessons for today.

Serling skillfully explains chronologically the contributions of the airlines, including many vignettes about unusual missions, tales of survival, and the interaction of various personalities. Several themes resonate throughout the book, including the impact of strong leadership both in private industry and the military; the role of professional organizations; the technological advance of aviation and the subsequent improvements in safety and utility; the importance of long-term planning; and the indelible link among the military, government, and industry.

Serling begins in the post–World War I period, when the fledgling US airline industry was disorganized, struggling, and unsafe. Former colonel and West Pointer Edgar Gorrell, Billy Mitchell's chief of staff in the American Expeditionary Force, is named the first president of the Air Transport Association (ATA) of America, which the major airlines formed in 1936. The purpose of the ATA was to give the airlines a unified voice in Washington, but Gorrell took it further by making it a clearinghouse for technological development and operational methods to improve air safety.

When the ATA was founded, the airlines had operated their own air traffic control system. Gorrell changed that by lobbying Washington successfully for federal funds to build a modern control system, weather stations, and navigation aids. Also that year, Gorrell began working with the airlines to develop a plan for quickly mobilizing in the event of a national emergency. This plan was partially implemented in 1938, when a major hurricane ravaged the east coast, and was fully implemented just after Pearl Harbor, when FDR nearly nationalized the airlines. This plan was the precursor to the creation in 1951 of the Civil Reserve Air Fleet, which today constitutes one-third of the total strategic airlift capacity of the US military.

At the beginning of World War II, the airlines initially turned over half their fleet of 359 aircraft to the Army Air Corps. But as crucial as these aircraft were, the experienced and skilled manpower provided by the airlines was just as important. This manpower included pilots, navigators, radio operators, maintenance and dispatch experts, aeronautical engineers, chief executive officers (CEO), and many others. This core of people trained tens of thousands of others in a short time, and by the end of the war, over three hundred thousand personnel were in the Air Transport Command and the Naval Air Transport Service, running a global airlift of unprecedented proportions.

Each airline made particular contributions, most based on the knowledge of the geographic areas they had concentrated on prior to the war. Over 44 airlines contributed, including the "big five" at that time: Pan American, Trans World Airlines, American, United, and Eastern. Although many of the CEOs were bitter rivals, during the war they all willingly contributed to the effort, many even refusing to make a profit on war contracts.

Two critically important airline contributions are worth mentioning. In December 1941, the airlines flew numerous sorties to Alaskan bases to prevent those outposts from being overrun by the Japanese. And during the first 75 days of the Korean War, the airlines supplied most of the trans-Pacific airlift until adequate military reserves could be called up.

This book contains many interesting anecdotes that prevent it from being too dry. Stories include one that explains how the first Air Force One, called the *Sacred Cow*, was created and another that describes how Eastern Airlines CEO Eddie Rickenbacker survived for 22 days in a raft after ditching in the Pacific Ocean. Other vignettes include accounts of the tough wartime conditions in which aircrews routinely flew, including severe weather, actual combat, and the practice of flying 250 hours in one month (today's maximum is 125 hours).

The book's only shortcoming is that it spends most of its time on World War II and briefly summarizes in only two chapters the monumental Berlin airlift and the wars in Korea, Vietnam, and the Persian Gulf. But overall, Serling supports his thesis that the airlines played an indispensable role in all these conflicts. According to Gen Hap Arnold, "the contribution to the military of our competitive civil carriers in equipment, trained personnel, operating methods, and knowledge has been of first importance in this war."

I highly recommend *When the Airlines Went to War.* This book is a must read for anyone interested in the history of airpower in general and air mobility in particular.

Maj Phil Bossert, USAF
Scott AFB, Illinois

Mission Debrief

I Can Write Better than That!

OK, THEN DO IT! *Airpower Journal* is always looking for good articles written by our readers. If you've got something to say, send it to us. We'll be happy to consider it for publication.

The *Journal* focuses on the operational and strategic levels of war. We are interested in articles that will stimulate thought on how warfare is conducted. This includes not only the actual conduct of war at the operational and strategic levels, but also the impact of leadership, training, and support functions on operations.

We encourage you to supply graphics and photos to support your article, but don't let the lack of those keep you from writing! We are looking for articles from twenty-five hundred to five thousand words in length—about 15 to 25 pages. Please submit your manuscript via electronic file in either MS Word or Word Perfect format. Otherwise, we need two typed, double-spaced draft copies of your work.

As the professional journal of the Air Force, *APJ* strives to expand the horizons and professional knowledge of Air Force personnel. To do this, we seek and encourage challenging articles. We look forward to your submissions. Send them to the Editor, *Airpower Journal,* 401 Chennault Circle, Maxwell AFB AL 36112-6428.

. . . But How Do I Subscribe? EASY . . .

- Just write New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh PA 15250-7954.
- Say that you want to subscribe to AFRP 10-1, *Airpower Journal,* stock number 708-007-00000-5.
- Enclose a check for $20.00 ($25.00 for international mail).
- Spend a year enjoying four quarterly issues mailed to your home or office.

Basis of Issue

AFRP 10-1, *Airpower Journal,* is the professional journal of the Air Force. Requirements for distribution will be based on the following:

One copy for each general officer on active duty with the US Air Force and Air Reserve Forces.

One copy for every five (or fraction thereof) active duty US Air Force officers in the ranks second lieutenant through colonel.

One copy for each US Air Force or Air Reserve Forces office of public affairs.

Three copies for each Air Reserve Forces unit down to squadron level.

Three copies for each air attaché or advisory group function.

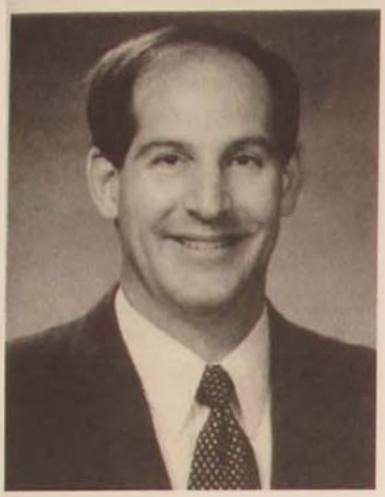
One copy for each non–US Air Force, US government organization.

One copy for each US Air Force or US government library.

If your organization is not presently receiving its authorized copies of the *Airpower Journal,* submit a completed AF Form 764a to your publications distribution office (PDO).

The Editor

OUR CONTRIBUTORS



Frank Finelli (USMA; MS, Massachusetts Institute of Technology; MMA, US Army Command and General Staff College) currently serves on the Defense Science Board Panel on Transformation. He has also served as the legislative assistant responsible for defense, intelligence, and foreign affairs for Sen. Dan Coats (R-Ind.), chairman of the Airland Subcommittee, Senate Armed Services Committee, and member of the Senate Select Committee on Intelligence. A retired Army lieutenant colonel, Mr. Finelli held several positions on the Joint Staff as well as serving in field-artillery assignments with the 82d Airborne Division and the 1st Armored Division. His military awards include the Defense Superior Service Award, Legion of Merit, Honor Cross of the German Armed Forces in Silver, Ranger Tab, and Master Parachutist badge.

Col Thomas E. Griffith Jr. (USAFA; MA, University of Alabama; PhD, University of North Carolina) is a special assistant to the chairman of the Joint Chiefs of Staff. He flew combat missions in the Gulf War and has previously served as deputy director, Chief of Staff of the Air Force Operations Group, Washington, D.C.; chief, F-15E Standardization/Evaluation, Seymour Johnson AFB, North Carolina; and flight commander. He is the author of *MacArthur's Airman: General George C. Kenney and the Air War in the Southwest Pacific Theater in World War II* (University Press of Kansas, 1996), as well as articles in *Airpower Journal* and *Strategic Review*. Colonel Griffith is a graduate of Squadron Officer School, Air Command and Staff College, the School of Advanced Airpower Studies, and the National War College.

Dr. David R. Mets (BS, USNA; MA, Columbia University; PhD, University of Denver) is a professor at the School of Advanced Airpower Studies, Maxwell AFB, Alabama, and was once the editor of *Air University Review*. He spent a 30-year career as a Navy sailor and as an Air Force pilot and navigator. He flew more than nine hundred C-130B sorties in Vietnam, and his last flying tour was as commander of an overseas AC-130 squadron. He had teaching tours at both the US Military Academy and the US Air Force Academy. Dr. Mets has published three books.

Maj David J. DiCenso, USAF, Retired (BS, University of Maine; JD, Vermont School of Law) is director of training services at the SecureLogix Corporation, San Antonio, Texas. As an assistant professor of law at the Air Force Academy, he developed the cyberlaw course and cocreated and directed an interdisciplinary course entitled Computer Law and Policy. He has been instrumental in instructing officers in the Law of Armed Conflict, and his expertise in the international implications of information warfare has led to extensive research and writing in the field. Prior to his Air Force Academy assignment, he spent several years serving in a variety of capacities ranging from military criminal defense work in the United States and Europe to handling a myriad of civil law issues, customs issues, and international tort claims in Japan.

Col Carla D. Bass (BA, Purdue University; MA, University of Oklahoma) is commander of the 694th Intelligence Group, Air Intelligence Agency, Fort Meade, Maryland. Former positions include chief of the Special Security Office, Headquarters USAF, Washington, D.C.; chief of the Force Employment Division, 497th Intelligence Group, Washington, D.C.; commander of the 324th Intelligence Squadron, Hickam AFB, Hawaii; and chief of staff support, Headquarters Air Intelligence Agency. Colonel Bass is a graduate of Squadron Officer School, Marine Corps Command and Staff College, Air Command and Staff College, and Air War College.

Lt Col Michael MacIver (BBA, University of Texas; MBA, University of North Dakota) is commander, 85th Mission Support Squadron, Keflavik Naval Air Station, Iceland. His previous assignments included missile crew duty at Minot AFB, North Dakota; Minuteman and Peacekeeper instructor at Vandenberg AFB, California; intercontinental ballistic missile programs manager and executive officer at Headquarters Strategic Air Command, Offutt AFB, Nebraska; and missile operations staff officer and protocol action officer at Langley AFB, Virginia. He is a graduate of Squadron Officer School and Air Command and Staff College.

Dr. Abigail Gray-Briggs (BA, Southeastern Louisiana University; MA, Northeastern Louisiana University; PhD, Bowling Green University) is chair of the Department of Research and an assistant professor of communication at Air Command and Staff College (ACSC), Maxwell AFB, Alabama. During her six years at Air University, she has brought the ACSC research program from concept to the forefront of Air University research activities. As a professor, she has taught a wide range of communication, health, and business courses. As a communication consultant, she conducts training and development in the business and health-care industries with *Fortune* 100 and *Fortune* 500 firms. Dr. Gray-Briggs is the author of numerous articles and frequently publishes in the international arena on transcultural leadership, the dynamics of organizational communication, the impact of modern informational technologies on organizational cultures, critical thinking, effective writing, and research processes and methodologies.

Order Processing Code:
* 5679

United States Government
INFORMATION

☐ **YES,** please send me ____ subscription(s) of the ***Airpower Journal*** (AURE) for $20.00 each ($25.00 foreign).

The total cost of my order is $_____. Price includes regular shipping and handling and is subject to change. International customers please add 25%.

_____
Company or personal name (Please type or print)

_____
Additional address/attention line

_____
Street address

_____
City, State, Zip code

_____
Daytime phone including area code

_____
Purchase order number (optional)

Charge your order. It's easy!

MasterCard

VISA

To fax your orders (202) 512–2250

To phone your orders (202) 512–1800

For privacy protection, check the box below:
❑ Do not make my name available to other mailers

Check method of payment:
❑ Check payable to Superintendent of Documents
❑ GPO Deposit Account ☐☐☐☐☐☐☐–☐
❑ VISA ❑ MasterCard

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐☐☐☐ (expiration date)

Thank you for your order!

_____
Authorizing signature 11/95

Mail To: Superintendent of Documents
P.O. Box 371954, Pittsburgh, PA 15250–7954

Important: Please include this completed order form with your remittance.

Tear Out and Remove

Want a Subscription to the *Airpower Journal?*

Detach this card, fill it out, and mail it along with a check, VISA, or MasterCard number to

Superintendent of Documents
P.O. Box 371954
Pittsburgh PA 15250-7954

Make all checks payable to Superintendent of Documents

Superintendent of Documents
P.O. Box 371954
Pittsburgh, PA 15250-7954

Tear Out and Remove

AIRPOWER JOURNAL COMMENT CARD

We are always interested in hearing from our readers. Please use t
card to comment on this issue _____
Issue Article

PLEASE PRINT

Rank/Title First Name Initial Last Name

Street City State/Country Zip Co

AIRPOWER JOURNAL SURVEY CARD

Please help us serve you better by completing and mailing this card.

1. How well is the *Airpower Journal* meeting its mission of being an open forum for officers to express their views?
   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 (1 = extremely poorly, 5 = extremely well)
2. How well is the *Airpower Journal* staff shaping the professional dialogue?
   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
3. Comments:

PERSONAL DATA (OPTIONAL) PLEASE PRINT

Rank/Title First Name Initial Last Name

Street City State/Country Zip Cod

FEEL LIKE SPEAKING UP?

Fill out the attached cards and drop in any mailbox.

01 Chennault Circle
Maxwell AFB AL 36112-6428

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY LABEL
FIRST CLASS PERMIT NO. 200

POSTAGE WILL BE PAID BY ADDRESSEE

AIRPOWER JOURNAL
Airpower Research Institute
401 Chennault Circle
Maxwell AFB AL 36112-8930

RPOWER JOURNAL
01 Chennault Circle
axwell AFB AL 36112-6428

OFFICIAL BUSINESS
ENALTY FOR PRIVATE USE, $300

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY LABEL
FIRST CLASS PERMIT NO. 200

POSTAGE WILL BE PAID BY ADDRESSEE

AIRPOWER JOURNAL
Airpower Research Institute
401 Chennault Circle
Maxwell AFB AL 36112-8930

The *Airpower Journal* (ISSN 0897-0823), Air Force Recurring Publication 10-1, is published quarterly. Subscriptions may be ordered from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh PA 15250-7954. Annual rates are $20.00 domestic and $25.00 outside the United States. The GPO stock number is 708-007-00000-5. See *Airpower Journal* on-line. Visit *Air Chronicles* at http://www.airpower.maxwell.af.mil/.

The *Journal* welcomes unsolicited manuscripts. Address them to Editor, *Airpower Journal*, 401 Chennault Circle, Maxwell AFB AL 36112-6428. E-mail or submit your manuscript via electronic file in either MS Word or WordPerfect format. All submissions will be edited in accordance with the standards set forth in the *Air University Style Guide for Writers and Editors* (available on-line in the *Airpower Journal* section of *Air Chronicles* at http://www.au.af.mil/au/oas/aupress/style). *Journal* telephone listings are DSN 493-5322 and commercial (334) 953-5322.