

Developing Twenty-First-Century Airpower Strategists

R. Michael Worden, Major General, USAF

*What is of supreme importance in war is to attack the enemy's strategy . . .
next best is to disrupt his alliances . . . the next best is to attack his army.*

—Sun Tzu

MANY ARGUE that we are in a period of history with potentially cataclysmic dangers. Are we on the cusp of a series of dramatic upheavals? Will global demographic shifts, changing age structures, and population migrations lead to friction and ultimately violent conflict? Will rapid urbanization and unassimilated cultural enclaves collapse weak or failing states or paralyze others? Will the competition for energy and arable land or water lead to new tensions and violence? Will loose nuclear or biological weapons in the hands of those who hate America or its close allies lead to a tragic catastrophe? Will today's proliferation of "information," whether factual or not, increase cultural misunderstandings, tensions, and distrust between the perceived "haves" and "have-nots" and lead to violence? Will rising economic powers on the horizon surpass the United States by taking advantage of technological shifts, globalization, and our preoccupation with global security affairs? Will America maintain sufficient leverage into the future to assure its national security interests when, many would argue, economic, educational, scientific, technological, and diplomatic power seems to be shifting elsewhere?

Our involvement in a new kind of war with an implacable enemy who invokes an extremist brand of Islam against America's way of life, as well as that of our secular allies, is foremost on the security "screens" of "present-

Maj Gen R. Mike Worden commands the US Air Force Warfare Center, Nellis Air Force Base, NV. He is a 1976 graduate of the US Air Force Academy and has served four assignments in Europe, four in the Pacific, and in combat and hostilities in Operations Desert Storm and Provide Comfort. The general has been Director of the Air Force Chief of Staff Operations Group, Director of Operations for US Forces Japan, and executive assistant to the commander of Pacific Command. He has also served as deputy commander for NATO's Combined Air Operations Center 6 and Director of Operational Plans and Joint Matters in the Office of the Deputy Chief of Staff for Air and Space Operations. Additionally, he has commanded an operations group in the Pacific, a wing in Europe, and an expeditionary wing during hostilities in Operation Iraqi Freedom. General Worden is a command pilot with more than 2,500 flying hours. He was recently selected for reassignment as vice-commander, Air Combat Command, Langley Air Force Base, VA.

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2008		2. REPORT TYPE		3. DATES COVERED 00-00-2008 to 00-00-2008	
4. TITLE AND SUBTITLE Developing Twenty-First-Century Airpower Strategists				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Air University, Strategic Studies Quarterly, 155 N. Twining St BG 693, Maxwell AFB, AL, 36112-6026				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 15	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

mind” Americans. This enemy presents a tricky, adaptable threat, operating effectively inside traditional nation states as well as transnational entities using small, shadowy cells with sometimes shifting allegiances. It thrives in nontraditional domains using nontraditional means and is unabashedly unrestrained by established international norms of behavior, laws of armed conflict, or treatment of noncombatants. Even before the United States and its partners invaded Iraq, these extremists had declared a global war on us with a fanatical determination; we have no choice but to face this threat responsibly and persistently . . . or face the consequences. Nor can we afford to be too myopic on the present extremist threat; preparing for emerging conventional threats with sophisticated weaponry requires long lead times to develop and acquire effective countertechnologies and countertactics.

For example, we know potential adversaries of all types are pursuing missile technologies—ranging from rockets and mortars to cruise, ballistic, and intercontinental missiles with increases in range, accuracy, and lethal payloads. Many are cheap; all represent asymmetric and credible attempts to nullify the advantages opponents have traditionally enjoyed as a product of military superiority in training, tactics, and power. In sufficient numbers, these missiles could threaten to overwhelm defensive systems and cause great damage to even an advanced and mature military force. A case in point occurred in August 2006 when Hezbollah fighters in Lebanon used waves of relatively cheap rockets and mortars to present a serious challenge to Israel’s ability to protect its citizens.¹ Could this be a pattern for future conflicts?

At the high end of the missile technology spectrum, we also witnessed in January 2007 the Chinese shoot down a satellite, creating an extensive space debris field requiring other satellites to consider expending precious fuel to avoid collisions. How then does our Air Force protect America’s vital interests when potential Pearl Harbor–like events can occur at nearly the speed of light, and boundaries between military and civilian, military and commercial, and US and other nations’ assets become increasingly blurred? Our best response is to develop Airmen who are strategists and who are strategically minded. Strategically minded Airmen study their profession and the evolving international environment to anticipate future security needs. Air strategists create plans for coping with both present and emerging challenges. The air strategist’s first concern must be to gain and maintain sufficient access to the battlespace with acceptable risk. This usually infers gaining and maintaining space, cyberspace, and air superiority.

Let's start by looking a little deeper into space. Our joint force and our society are extraordinarily dependent on space. Our military increasingly relies on space for situational awareness, missile warning, intelligence, communications, weather, command and control, navigation, timing, and many other necessities. On the commercial side, some estimate that space contributes \$90 billion per year to the US economy, including truck fleet management, credit card validations, pay-at-pump services, automatic teller machine withdrawals, high-speed Internet, traffic, weather reports, and almost all television and radio distribution. Therefore, space is already absolutely critical for global commerce and communications and, consequently, for our security—perhaps more so for the United States than for any other nation. Therefore, as a top priority, air strategists must protect our military and commercial assets in space; and failing that, they must be prepared to lose or reconstitute those assets. It will not be easy or cheap, especially since our Cold War constellation is running low on fuel and will likely need to be replenished or replaced within the next nine to 12 years.

Today, space primarily moves data for our information-reliant society. It uses electronics in the electromagnetic spectrum to collect, store, manipulate, and send data. We call that domain *cyberspace*. Cyberspace exists virtually everywhere today, and our nation relies on it heavily. It, too, is a strategic center of gravity and a vulnerability for the United States.² It is likely that cyber power today is what airpower was a century ago—postured to revolutionize warfare. We continue to focus on improving our defenses, but it is difficult in this complex domain to know what we don't know.

But what we do know is that space and cyberspace are now contested domains. This gives a whole new meaning to how the strategist understands and applies traditional airpower capabilities of speed, range, precision, and flexibility. Maturing in space and cyberspace introduced us not only to speed-of-light methods, bandwidth management, hypersonic projectiles, and more sophisticated use of the frequency spectrum, it also takes us to a level of speed, power, and consequence that requires prescient policies with a priori decisions designed to protect our growing dependence on those domains. Superiority in these domains is essential, or air and surface operations are at great risk. As other nations develop more offensive capabilities, they certainly will monitor how we respond to force being used in space and cyberspace. Even nonstate actors have ample freedom of action in cyberspace and reach their audiences quite effectively, to include conducting "terrorist universities" on the Internet.³

In the information age, media savvy adversaries know how Western media functions, how it can influence domestic and world public opinion, and how critical public opinion is in functioning democracies. They often stage or provoke attacks that can be embarrassingly filmed, portrayed, staged, and edited to have an immediate strategic effect via the Internet or via our “speed to the market” media, often in defiance of the full facts on the ground. Most agree we need to fare better in this “influencing public opinion” arena, which is of growing strategic importance in the information age and is accelerated by the technologies available while being complicated by laws and policies generally written for a past era. And if that weren’t enough, Airmen also have to worry about other emerging cyber threats stemming from nanotechnology, passive detection systems, directed energy, plasmic shielding, and other sources.

Globalization, the dominating contextual influence of our time,⁴ is upon us, and twenty-first-century national security policies and practices must address the reality that local disruptions have the potential to stimulate widespread political, social, ideological, and economic consequences. As such, the daunting challenge for our national security organizations, to include the US military and our Air Force, is to limit or prevent such disruptions by being able to respond to a variety of global threats, perhaps at a moment’s notice. In so doing, we must ensure our national security interests, which include the preservation of our values and freedoms, as well as the free flow of goods and services on land and sea and in the air, space, and cyberspace—all so necessary for our economy and our society.

What twenty-first-century air strategists must first appreciate is that the nature of conflict and war does not change. It is rooted fundamentally in human nature—in greed and a thirst for power and self-interest.⁵ While the nature of war does not change, the face of war does. This evolving face of war is influenced by previous experience, the possibilities of technology, acceptabilities within cultures, and political context. The strategists’ grasp of the realities and opportunities within this context is key as it informs them of how best to utilize various means within the diplomatic, informational, military, and economic (DIME)⁶ context.

We, like other nations, develop a “national style” for conducting military operations that reflects how we go about preserving our culture and values and maintaining our security. America’s political, economic, diplomatic, and communicative approaches to solving problems and protecting its interests comprise this national style. America has used its relative

wealth and penchant for high technology to introduce sophisticated command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) with global reachback capabilities, stealth, unmanned aircraft systems, precision, and speed that have led to expectations for quick, decisive, low-casualty military conflicts.

So it is not surprising that our preferred way to ensure the military can fulfill its national security role in the current and emerging threat environment is to invest in twenty-first-century technology—specifically, technology that enables (1) active monitoring of potential threats, (2) rapid deployment, and (3) precise employment of nonlethal and, sometimes, lethal capabilities to achieve desired effects. Our Air Force manifests this in its major mission areas it calls “Global Vigilance, Reach, and Power.”

Of course, there is more to a successful national security strategy than military technology—strong leadership, well-managed intelligence, an effective interagency process, and reliable coalition support, to name a few. But a nation whose strength and preferred style relies on technology, and that has little tolerance for US casualties, is logically going to search first for technological solutions that put fewer American and coalition lives at risk.

So How Do We Develop Successful Strategies in This Challenging Environment?

In the twenty-first century, strategic thinking remains as difficult as it is vital. Strategy remains a constant adaptation of what we call ends (or objectives), ways (the hows), and means (the tools) to shifting conditions in an environment in which passion, chance, uncertainty, friction, and ambiguity dominate. And to make it even more challenging, as Gen T. Michael Moseley, our chief of staff, points out—will the strategy work in the unknowable next test, where the enemy gets a vote?⁷

Strategy is more than merely applying resources to solve problems, and it is more than applying kinetic or industrial-age solutions. The science of war is challenging enough with today’s rapidly evolving technologies, exponential production of knowledge, and computing power. It is far more complex than our current vernacular of a five-paragraph field order, a commander’s estimate, military decision-making process (MDMP),⁸ or “strategy to task” applied in a Jominian⁹ fashion can cope with.¹⁰

The military strategists' success or failure lies more in their grasp of the art of war. By understanding the dynamics of context in an information age, they are better able to identify the problem, understand their limited means, and apply them in flexible ways compatible and integrated within an effective overall DIME strategy at acceptable risk. They are aware of how politicians and policy impose limits on ways and means and how they ultimately affect achievable objectives. They realize operational, tactical, coalition, and legal realities may also limit options.

As General Moseley noted, the essence of strategic effectiveness is the ability to understand the fog of war and the cunning adversary, and to connect seemingly disparate activities, issues, and areas of concern into a coherent whole. Developing and implementing a coherent strategy require "imagination, creativity, and sound logic."¹¹ But foremost, strategic success requires an understanding of the human and social activity called war and of the probabilities of human behavior in conflict. Know your enemy! The nonlinear battle of wills between personalities, cultures, ideologies, societies, and psychologies dominate the epicenters of war's influence—and all play out under the gaze of a less than fully informed media and public opinion.¹²

How Do We Then Develop Twenty-First-Century Strategists?

Air strategists make time to study war—in the classroom, seminar, or conference—but mostly in a professional life devoted to self-study and reflection. They study military and world histories and cultures. They analyze case studies to confront decision-making dilemmas in various contexts. They track technologies and the availability, relevancy, and possible integration of evolving technologies of all players that will define their means. They read biographies to capture the wisdom of those who may have faced similar challenges. They understand their own political, social, and military systems. They seek to understand those of their allies with study and networking. They understand that a "wide variety of factors—politics, economics, geography, history, culture, religion, ideology, [and propaganda]—influence strategic behavior in subtle but important ways."¹³ They continuously train, rehearse, exercise, study, and network with peers, mentors, and partners. They write to clarify and sharpen their critical thinking and communicative skills. Most importantly, they listen

and learn. Building experience and informing intuition with an appreciation of contextual dynamics is the endless labor of decades.

But this lifetime of intellectual and professional development must first produce, as Clausewitz observed, an understanding of the nature of the war one is in, to avoid mistaking it for what it is not. And then, with great foresight, the successful strategist conveys a clear vision of an achievable end state,¹⁴ clearly communicates a path to its achievement, and maintains a flexibility to adapt if it is not working within the boundaries of acceptable risk and cost.

Successful strategies require means, or tools, and organizational approaches that are relevant and effective to the task at hand or on the near horizon. Some have fashionably called that analysis an understanding of the state of “military transformation.”¹⁵ The air strategist must understand the capabilities and limitations of the state of military transformation within which one operates.¹⁶ Transformation requires material, organizational, and human investment. Let’s look first at material investment.

Many Americans, especially those whose personal lives have not been affected by war, take peace and security for granted. But as Joseph Nye Jr. of Harvard University put it, “Ignoring the role of military security in an era of economic and information growth is like forgetting the importance of oxygen to our breathing.”¹⁷ In our current threat and security environment, we cannot afford to short ourselves on oxygen—even if the sticker price for defense intimidates us.

The US military, and especially the US Air Force, has been on a procurement holiday for the past several decades. We cannot overemphasize our need now to recapitalize our force, especially given that other nations have produced several generations of aircraft, surface-to-air missile systems, and counterspace systems that in some cases rival or exceed our capabilities. The average age of our aircraft is more than 24 years old—the oldest force in our history. The cost to maintain this old fleet has increased dramatically. We have some aircraft like the venerable B-52 that is nearly 50 years old, and the way we are going, the last B-52 pilot’s mother has yet to be born. To put that age in perspective, our B-52 bombers and KC-135 air refueling tankers are analogous to flying biplanes like the Sopwith Camel in the Vietnam War. Extended combat operations are wearing out our aircraft at five times the normal rate of aging; maintenance costs have risen 87 percent in the last decade, exacerbated by rising fuel costs, contractor fees, spare parts, utilities costs, and by costs associated with

reopening assembly lines. While Americans may not want our forces to go to a fight with old equipment, our air strategists must deal with these realities and with the associated risks. However, our strategists also recognize that to be successful in our material transformation, we must have first-rate technology that is networked, survivable, and can function at longer ranges, in more versatile ways, and at much greater speeds.

Yes, first-rate technology is expensive. But given the threats and consequences we face today and into tomorrow, can the United States afford not to recapitalize our aging fleet? To put this last point in historical perspective, we spent 37 percent of our gross domestic product on defense in WWII, 12 percent in the Korean War, 9 percent in the Vietnam War, and 6 percent in the Reagan era; in today's global war on terror we are spending under 4 percent on defense.¹⁸ The successful air strategist needs some high-suit cards.

In addition to making technology a top priority, organizational design is an important ingredient of transformation. The Air Force's overarching organizational construct is to improve America's capabilities for Global Vigilance, Global Reach, and Global Power. Though not cheap, it is increasingly vital in a global world. Said another way, we need to know what is going on, to get there quickly, and to produce desired effects . . . anywhere, anytime, anyplace if we are to remain a superpower. In twenty-first-century warfare, unless we have superiority in air, space, and cyberspace, we cannot expect to win on the surface of the earth. Other than perhaps a Scud attack in Operation Desert Storm, the fact that no American Soldier or Marine has been attacked from the air during hostilities since April 1953 is a matter of great pride and hard work. It doesn't just happen; it is made to happen with considerable hard work and, yes, substantial amounts of taxpayer money. But as our capabilities erode with aging force structure, we run higher risks in maintaining superiority in these core missions. A key strategic problem for air strategists today is that they must comprehend evolving capabilities and limitations within our core mission areas.

First and foremost, the key enabler of Global Vigilance provides timely, relevant, actionable intelligence that allows us to intervene in an effective manner. Global Vigilance provides prescient intelligence on developing crises. The air strategist understands that persistent, relevant vigilance empowers our leaders with improved knowledge and better opportunities to deter and engage the enemy or defuse potential hostile situations. With this greater situational awareness comes a greater confidence and ability

to execute operations. This globally responsive ISR and communicative capability can provide knowledge that is of great interest to joint and coalition partners. Done right, it can enhance cooperation between services and nations and help build the trust that fosters unity of effort and ultimately facilitates collective security.

While identifying potential global security problems is the first step, the next requirement is getting there to do something about it. Global Reach allows us to move the required mix of combat forces and capabilities anywhere in the world in a matter of hours to days. To the air strategist, global mobility exploits the vertical dimension above the earth, giving air and space forces advantages to operate at high speeds and long distances unimpeded by terrain. We must be able to react rapidly and sustain joint war fighters across the full spectrum of operations, with little or no warning. Our global mobility forces do not know where the next deployment will be, so we must continue to work basing and overflight rights in peacetime while continuing to build partnerships, especially in strategic locations.

Our final focus is on Global Power, which allows us to apply decisive force when and where it is needed. Whereas Global Reach is the ability to go places quickly, Global Power is what can be done once we arrive. Those who threaten peace should be on notice that they have no refuge. The air strategist must be able to hold any target at risk, anywhere at anytime. Survivable weapon systems that range, penetrate, and persist globally with a variety of kinetic and nonkinetic precision payloads are essential to deter and dissuade those who would threaten our national security. Global Power must also be able to neutralize undeterrable threats posed by rogue individuals and states or those who provide them sanctuary.

Finally, let's explore the final and most important element of military transformation—our people—focusing on our strategists, commanders, and decision makers who must lead this effort. Gen George Patton's admonition, "Wars may be fought with weapons, but they are won by men. It is the spirit of the men who follow and of the man who leads that gains the victory," still rings true.¹⁹ Frankly, many, if not most, of our senior combat leaders are quite skilled in the art and science of conventional war. Most understand how to function in a joint environment, and they appreciate and optimize the cultural differences between the services. What they must learn, and therefore what we need to prioritize in our military training and education, is an understanding of the critical factors that

dominate the context in which they must operate. One might call this construct the “three-front war” of the twenty-first century.

The Three-Front War

The first front that modern strategists must understand is how to fight in a globalized world in an information age. In this world, masses of information are exchanged at the speed of light, most of it beyond the commander’s control. A seemingly omnipresent media with a speed-to-the-market creed—a market in which ratings and influence often supersede a quest for truth—has dramatic effects on perceptions and politics and, as a consequence, on risk management. Every tactical decision potentially has a strategic impact. In addition, in a globalized world where economies and information systems are inexorably linked, there are severe constraints on targeting, even with precise and theoretically discriminate weapons. We do not spend sufficient institutional or reflective time educating and training our commanders and strategists to comprehend and function in this tasking environment.

The second front is the fight at home. American commanders and strategists must understand the nature and nuance of the American political system. There is an expectation of short, moral, precise, clean, and efficient wars, and that we will dominate conventional adversaries. This runs counter to both the nature of war and its history. Our Air Force has been in continuous conflict since 1990. A transparent, democratic superpower conducting wars and honoring certain values and processes under the scrutiny of world media and the Congress can be quite predictable. Our adversaries know this. They have studied our patterns and our systemic vulnerabilities. Our society at times is accustomed to resolving life’s problems in 30 minutes (+/- commercials). Our hot wars in the past 30 years have lasted 90 days at most . . . a mere “sound byte” relative to the length and bloodletting of more distant conflicts. To boot, there have been limitations on interagency cooperation and what one might label “sufficient” commitment throughout government for a nation at war. Unfortunately, most of our government organizations do not have long-range, robust, detailed, proven planning methodologies like the military . . . nor for that matter, do they have the resources or commitment to build such an approach. Many have personal or institutional agendas and sometimes “leak” to advance those agendas. Our war colleges and self-study could spend more time developing an understanding of the realities and dynamics of the American political system.

Our Air Force should look strategically at how we develop our officers in the realities of other elements of our government and political system.

The final front for the twenty-first-century military commander and strategist is to learn to work within a coalition, with all its complexities, capabilities, and constraints. In a globalized world, no country can initiate autonomous military action and expect to succeed, at least in the long term. Since coalitions are prevalent, modern combat strategists and leaders must be astute to coalition military capabilities and limitations, and they must be sensitive to the strategic value of keeping the coalition together under stress. In addition, leaders must be sensitive to national, coalition, and global perceptions of coalition actions. To facilitate leadership development on this front, the Air Force, for example, has invested heavily in building air force-to-air force relationships. We have smartly beefed up our language, international affairs, and foreign area officer training programs. We established a Coalition and Irregular Warfare Center of Excellence at Nellis Air Force Base that works with coalition partners to help traditional airpower capabilities be more relevant for irregular warfare activities and also to help vulnerable nations bolster their air capabilities in the fight against terror. We are slowly improving on this front.

A Culture for the Three-Front War

To complement an emphasis on these three fronts which characterize the dominant contextual factors our strategists face, a relevant war-fighting culture is critical to strategic success. True military transformation and successful strategies for the twenty-first century require us, first and foremost, to think anew and to develop collaborative and flexible approaches to problems within changing circumstances. At the USAF Warfare Center, we have adopted a “winner’s creed” we call the three “I’s” that can have strategic institutional implications.

The first “I” is *innovation*. We structure our operational- and tactical-level training, testing, and tactics development efforts at the Warfare Center to breed disciplined innovation at the individual and unit levels. Innovation rests on foresight—the aptitude to discern current and emerging trends and anticipate their future potential. We present Airmen with problems they have never seen before and get them to think and act creatively as a team to forge solutions. We do this in our weapons school, our test community, and our aggressor force, to name a few. To develop strategic innovators, our Air Force must invest in a wide range of activities that also force Airmen to grapple with the

problems of the strategic environment—just as they are already accustomed to doing with the tactical and operational environments. Thinking “strategically” allows Airmen to better comprehend the critical environmental factors within which they will have to solve problems. Such activities could include sponsored advanced degrees, strategic simulations or war games, periodic strategic conferences and roundtables, and sponsored strategic research initiatives. In short, the combination of preparation and practice will develop corps of Airmen who can provide innovative solutions to the kinds of problems the future will present.

This intellectual agility and adaptability is taken into our next “I,” *integration*. We must know the technological limitations and capabilities of all of our weapons and communications systems, as well as those of our sister services and coalition partners. This, combined with an appreciation of how well these partners are trained, factors into our candidate tactics and strategies (ways and means) to fit within a relevant context. Integrating with each other seamlessly uncovers creative solutions through which the sum exceeds the individual parts. We demand integrated training, testing, and tactics at the Warfare Center—integration between air, space, cyberspace, the other services, and coalition partners. But strategic integration requires Airmen to think beyond the military context to anticipate the social, political, economic, and informational consequences of policy decisions. Because of the range and speed inherent in air, space, and cyberspace capabilities, air strategists must consult with members of other government and coalition agencies at the outset to ensure the plans they develop integrate with the capabilities and policies that those agencies can bring to bear.

The final “I” stands for *incorporation*. It institutionalizes a rapid learning process whereby assessments of what works and does not work are quickly validated and turned into our new playbook, truly making lessons “learned.” We must be a learning organization that does not make the same mistake twice, an organization that rapidly propagates learning. Our 561st Joint Tactics Squadron conducts focused and timely conferences and has developed information technology processes that facilitate real-time collaboration and dissemination that have noticeably accelerated our institutional learning speed at tactical levels. For example, recurring weapons and tactics conferences, high-quality weapons school papers, and flash tactics bulletins have also made valuable contributions toward incorporating the most current and relevant ideas into our war-fighting playbooks. We have similar efforts emerging at the operational level. As a result of these initiatives and others, we are able to con-

struct a battle rhythm which influences out year funding, current and future policies, and doctrine at the most senior levels of the USAF. With “incorporation,” our Air Force better empowers Airmen with the proper tools, processes, and culture to analyze, identify, and apply current and emerging capabilities within our air, space, and cyberspace domains. Institutionalizing the three “I’s” at the tactical, operational, and strategic levels into our war-fighting culture also helps us adapt and transform to become a more agile, relevant, and resilient force. The air strategist benefits greatly from this process and culture.

The Imperative for Developing Air Strategists

There is a larger conclusion. The US military—particularly the Air Force—is evolving to become a more global force in an information age characterized by speed-of-light systems and weapons of mass consequence. As the people of the world become more connected, effective national security strategies must negotiate the realities within this complex, globalized context. We must be prepared to confront a wide range of potential opponents and to execute diverse missions ranging from humanitarian relief, to brutal, adaptive irregular war, to high-end-state warfare. Perhaps an even greater challenge involves developing ways and means to prevent crises or to provide constructive solutions that serve long-term strategic interests. To respond effectively to present and imposing future military challenges, we must make hard choices on limited resources about the use of force when developing strategy—that is, estimating strategic probabilities, risks, and consequences while trying to apply ways and means appropriately to achieve ends.

While our twenty-first-century air strategists must continue to read, listen, study, exercise, and analyze the evolving calculus of ends, ways, and means in assembling effective strategies to develop themselves and inform their perspectives and intuition, they would be well served to look closely at the three fronts of twenty-first-century warfare. Institutionalizing a warfighting culture that demands *innovation*, *integration*, and rapid *incorporation* facilitates the institutional agility required to adjust when our strategy falls short. Or as Sir Michael Howard wrote more than 30 years ago, “I am tempted indeed to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they have got it

wrong. What does matter is their capacity to get it right quickly when the moment arrives.”²⁰ That capacity to get it right quickly that Sir Michael described does not come by accident; it comes only with focused, lifetime professional preparation that produces a corps of strategic thinkers.

Today, the tide of constrained resources against a growing series of threats is against us, and we must compensate with modern equipment and modern strategists, especially for a service that contributes Global Vigilance, Global Reach, and Global Power for our combined force. With our increasing national dependence on the use of space, cyberspace, and air and sea lanes for our economic and social well-being, we have uncovered new vulnerabilities. Unfortunately, we may be only one technology and one day away from losing superiority in one or more of those critical domains. Our nation’s Air Force is responsible for maintaining air, space, and cyberspace superiority. Investing in both the material and intellectual capital for its success is a wise choice—perhaps the only choice if we are to maintain our security in the future. **SSQ**

Notes

1. For a timely analysis of the 2006 Israel-Hezbollah War, see William M. Arkin, “Divine Victory for Whom? Airpower in the 2006 Israel-Hezbollah War,” *Strategic Studies Quarterly* (SSQ) 1, no. 2 (Winter 2007): 98–141.

2. T. Michael Moseley, “Airmen and the Art of Strategy,” SSQ 1, no. 1 (Fall 2007): 14. Current and potential adversaries have declared the electromagnetic spectrum a fifth-dimension battlespace, and yes, we are experiencing hundreds of attacks on our nets each year that are increasing in their sophistication. Last spring, Estonia experienced a massive and crippling cyber attack from entities within another state.

3. Gabriel Weimann, *Terror on the Internet: The New Arena, the New Challenges* (Washington, DC: US Institute of Peace Press, 2006).

4. National Intelligence Council (NIC), *Mapping the Global Future: Report of the National Intelligence Council’s 2020 Project* (Washington, DC: Government Printing Office, December 2004), 10. The NIC defines *globalization* as the “growing interconnectedness reflected in the expanded flows of information, technology, capital, goods, services, and people throughout the world” (ibid.).

5. Thucydides, *History of the Peloponnesian War*, mentions that we go to war for either, or a combination of, “fear, honor, and interest.” See Robert B. Strassler, ed., *The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War* (New York: The Free Press, 1998).

6. DIME infers a holistic integration of all the instruments of national power.

7. Moseley, “Airmen and the Art of Strategy,” 9.

8. The MDMP is the US Army’s methodical planning process.

9. Antoine-Henri Jomini, nineteenth-century Swiss military theorist who generally professed that following the correct doctrine and procedure would lead to victory. See Jomini, *The Art of War* (1838; repr., Novato, CA: Presidio Press, 1992), 271, 325.

10. Gabriel Marcella, "The Strategy of Teaching Strategy in the 21st Century," *Of Interest* (Carlisle Barracks, PA: Strategic Studies Institute, Army War College, 8 November 2007), 2, <http://www.strategicstudiesinstitute.army.mil/pdffiles/of-interest-6.pdf>.
11. Moseley, "Airmen and the Art of Strategy," 10.
12. Marcella, "Strategy of Teaching Strategy," 2.
13. Moseley, "Airmen and the Art of Strategy," 10.
14. Ibid., 11.
15. DoD, Office of Force Transformation, *Military Transformation: A Strategic Approach* (Washington, DC: Office of the Secretary of Defense, Fall 2003), http://www.oft.osd.mil/library/library_files/document_297_MT_StrategyDoc1.pdf.
16. See Martin van Creveld, *The Changing Face of War: Lessons of Combat from the Marne to Iraq* (New York: Presidio Press, 2006); and Gen Rupert Smith, *The Utility of Force: The Art of War in the Modern World* (New York: Alfred A. Knopf, 2007).
17. Thomas L. Friedman, *The Lexus and the Olive Tree: Understanding Globalization* (New York: Random House, 2000), 443.
18. Office of Management and Budget, *Budget of the United States Government, Fiscal Year 2008* (Washington, DC: Government Printing Office), 118–25.
19. George S. Patton, "Mechanized Forces: A Lecture," *Cavalry Journal* 42 (September–October 1933): 5–8.
20. Michael Howard, "Military Science in an Age of Peace," *RUSI: Journal of the Royal United Services Institute for Defence Studies* 119 (March 1974): 7.