Chapter One

INTRODUCTION: THE PRICE OF SUCCESS

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Since the end of the Cold War, the air instrument has become America’s weapon of first resort to handle nearly all varieties of contingencies from disaster relief to major theater wars. When called upon, the U.S. Air Force (USAF) has performed with such a startling degree of precision and power that many claim its new capabilities have revolutionized warfare itself. At the same time, as many of the chapters in this volume reveal, the Air Force faces tremendous challenges in adjusting to the new and expanded role it plays in U.S. national security strategy.

These observations present something of a paradox. At the precise moment that the USAF seems to have achieved its apogee of value and efficacy, the institution itself faces an array of challenges, from privatization to modernization to the integration of the space mission, that threaten to overshadow its recent achievements. In this way, the Air Force is very much a victim of its own success—the nation seems to demand ever more from those who have historically delivered the most. Whatever the reasons, it is clear from the scale of the challenges the Air Force faces that it cannot afford to rest on its laurels for even a moment. The world is clearly changing at a rapid pace, and the USAF must adjust as quickly possible to the new challenges and new tasks that such changes create.

The purpose of this volume—the fourth in RAND’s Strategic Appraisal series—is to aid in that effort by helping readers understand better the capabilities that the USAF can bring to bear in support of U.S. interests and the ability of the USAF to meet the challenging demands of a changing technological and security environment. The contributors examine the geopolitical context in which U.S.
aerospace power must operate; the choices the Air Force faces in a variety of issue areas, from nuclear weapons to space; and the requirements for supporting future forces. This chapter sums up the issues explored by dividing them into problems that remain from previous eras, new problems that have emerged of late, emerging challenges, and emerging opportunities.

WHAT HAS STAYED THE SAME

Change is clearly the idiom of our age. The end of the Cold War, the emergence of new information technologies, and the ongoing integration of global markets have all engendered radical change in a relatively short time. The coincidental start of the new millennium even seems to have neatly delineated the new age on our calendars. Nonetheless, often unnoticed in this whirl of dynamism are the many less stirring but no less critical pockets of stability. For any military organization, and especially one like the Air Force that is culturally prone to look to high-technology innovative solutions, forgetting the past is at least as dangerous as failing to adjust to the future. A great deal was learned during the Cold War about how to create military power and how to apply it to political problems in the modern age. The end of that struggle has not automatically invalidated the lessons.

Two issues from this volume highlight the continued salience of Cold War experience to current dilemmas. The first is the issue of nuclear weapons. These weapons were the foundation of U.S. strategy during the Cold War and, according to some, the technological innovation that spared us the horrors of a third world war. Yet as Glenn Buchan documents (Chapter Seven), current U.S. nuclear policy is an unfortunate combination of stasis and neglect. Nuclear weapons are often seen as an irrelevant and even immoral anachronism in the post–Cold War world. Official U.S. policy toward nuclear weapons encourages this view by encompassing apparently contradictory undertakings: eliminating the U.S. nuclear arsenal in keeping with the Nuclear Non-Proliferation Treaty yet, at the same time, espousing continued adherence to a policy of strategic deterrence against Russia and maintaining U.S. nuclear forces on alert. Prudence requires maintaining the U.S. nuclear arsenal in a world in which nuclear knowledge cannot be unlearned, yet public relations require downplaying the existence and utility of nuclear weapons in the national
military strategy. The result is a policy that, as Buchan demonstrates,
is slowly being crushed under the weight of its own contradictions, as
weapons deteriorate and nuclear knowledge is lost.

Buchan presents many conceivable solutions to this dilemma, from
eliminating nuclear weapons altogether to incorporating them fully
into U.S. warfighting doctrine. Each solution has its individual
advantages and disadvantages, but all require the U.S. national mili-
tary strategy to have the courage of its convictions: If the U.S. military
wishes to retain such weapons over the long term, it must make a
plausible case that these weapons serve a purpose that justifies the
moral indignation they arouse and must ensure that the weapons are
well maintained and deployed consistently with their purpose. The
clearest role for U.S. nuclear forces is to continue to provide a deter-
rent force but against a wider variety of threats than during the Cold
War. This implies maintaining survivable forces and command and
control, a force of almost any reasonable size, and an adequate mix
of forces to hedge against technical or operational failures. It also
implies de-emphasizing rigid targeting plans aimed at specific adver-
saries and building flexibility into the force.

The second area of stability is access to bases. As David Shlapak’s
short history of access issues in Chapter Nine demonstrates, the
ability to base assets abroad and to secure overflight rights has
always been a critical element of U.S. power projection. Even in the
Cold War, with a known adversary and reliable allies on its periphery,
basing issues became a critical enabler of USAF actions. This reality
reflected the fact that the Cold War was ultimately a global struggle
that required the United States to exert influence in a variety of far-
flung regions. In that struggle, the capacity to project and sustain
military power over great distances formed the glue that bound the
U.S. alliance structure and therefore became a critical element of
U.S. influence in the world.

One lesson of that conflict was that a single adversary could capital-
ize on an increasingly small world to convert an argument over
Europe into a global struggle with many fronts. In the future, as
information and communication technologies render that world
even smaller, a variety of adversaries will effectively perform the
same task but in even less-predictable ways. Thus, the capacity to
project and sustain military power, and therefore the issue of access,
will become still more central to U.S. military power. Indeed, as
Shlapak demonstrates, the types of contingencies that are likely to crop up in the next decade or two will most likely occur in areas where the United States faces significant basing uncertainties, particularly the Middle East and East Asia. At the same time, the proliferation of missile and weapons of mass destruction (WMD) technologies has rendered many existing close-in USAF bases less secure. Despite the achievement of staging bombing raids on Yugoslavia from the continental United States during Operation Allied Force in 1999, current technology will not allow the United States to respond to this problem by relying exclusively, or even mainly, on extended-range operations from U.S. territory. Rather, the United States needs a diversified portfolio of strategies and relationships that mirrors and expands on its Cold War experience in worldwide struggle. This portfolio would include not only maintaining the current main operating bases overseas but also planning for uncertainty in access by means of flexible deployment and employment plans.

**WHAT HAS CHANGED**

Despite these important continuities, much has changed for the USAF in recent years. More specifically, the USAF has not yet caught up with several consequential changes in the threat environment. Two particular issues of this type come across in the contributions to this volume.

**Smaller-Scale Contingencies**

The first change involves the increased importance of smaller-scale contingencies (SSCs), such as conducting humanitarian operations and patrolling no-fly zones, in U.S. strategy and priorities. The U.S. military, particularly the Air Force and the Army, has tended to treat these operations as diversions from their principal mission, major theater war. In recent years, however, this position has become untenable because such contingencies have proven to be the principal occupation of these services, a situation that most observers expect to continue for some time. Again, this state of affairs reflects not so much a failure of planning as the U.S. military’s continued success in preparing for and thus deterring major theater wars. This observation implies that the USAF must not allow its capacity for larger contingencies to erode as it prepares to deal with the smaller
contingencies that are likely to continue to preoccupy U.S. policymakers.

However, as Don Stevens, Jack Gibson, and David Ochmanek make clear in Chapter Four, SSCs, because of their frequency and longevity, can no longer be considered lesser-included cases of major theater wars. According to Carl Dahlman and David Thaler in Chapter Twelve, nearly continuous “peacetime” operations, such as the no-fly zones in Iraq (from 1991 to the present), have eroded the readiness of the Air Force in ways that have not even begun to show. Unlike the Navy and Marine Corps, the Air Force has not structured its personnel and maintenance policies for long, low-intensity and peacetime deployments. Thus, to undertake these operations, the Air Force has been sacrificing its future readiness, particularly by reducing its opportunities and capacity for training.

The development of Air Expeditionary Forces, intended to allow an orderly and predictable rotation of personnel through peacetime deployments, represents a start toward a solution, rather than a complete solution, for what must ultimately be a wholesale shift within the Air Force away from making neat distinctions between times of war and peace. To allow the Air Force to undertake frequent SSCs without impairing future readiness, these changes will need to reverberate throughout the service and go well beyond personnel policies and deployment schedules. Logistics provides a prime example of the type of wholesale shift required. The current system is designed for heavy deployments with fairly long lead times. To support Air Expeditionary Forces and the missions they are likely to undertake, the Air Force will need a logistics system that, like the one Robert Tripp and his coauthors lay out in Chapter Ten, allows quick deployments through fairly unprepared bases.

The Threat of Weapons of Mass Destruction

The second consequential change with which the USAF has not fully caught up is the potential for its opponents to use WMD. In Chapter Three, Daniel Byman and his coauthors note that we can expect adversaries to respond to U.S. conventional superiority by resorting to asymmetric strategies that will probably include use of WMD. Operationally, use of such weapons threatens the ability of the U.S. military to deploy to a theater and to operate out of close-in bases.
Politically, these weapons threaten to fracture U.S. coalitions and to undermine public support for U.S. intervention through the prospect of massive casualties. Indeed, as Richard Mesic argues in Chapter Eight, any use of WMD is likely to change the very nature and scope of conflict—and undoubtedly not in a way that favors the American way of war.

While awareness of the WMD threat is widespread, the response to this threat has so far been ineffective. Politicians and military organizations prefer to deal with vulnerability by attempting to eliminate it: If the enemy builds a bigger battering ram, the natural response is to build a thicker door. Unfortunately, though that response is appropriate, no door appears to be thick enough when it comes to WMD. Active defenses, particularly theater missile defenses, have great value but cannot be 100-percent effective against WMD, even when combined with preemptive counterforce attacks.

Effective responses will probably require an integrated approach that combines multilayered active measures with passive defenses (chemical suits, nuclear hardening, etc.) and political strategies that range from deterrence through threats of retaliation and denial and through active measures to enforce norms against proliferation. Such an integration would clearly require cooperation not just across the services, as is now familiar (albeit imperfect), but also with the government agencies responsible for civil defense and diplomacy. The approach might also include force mix adjustments to improve the Air Force’s ability to operate effectively when based farther from target areas, as Shlapak suggests in Chapter Nine, and even to move some functions into space, specifically to avoid the WMD threat.

EMERGING CHALLENGES

Beyond the immediate problems, this Strategic Appraisal highlights several emerging challenges that the USAF will need to meet in the relatively near future. In Chapter Five, Robert Preston and John Baker highlight two emerging challenges in the area of space. First, the continued commercial viability of the U.S. space industry appears to be at risk because of competition from terrestrial alternatives and because export controls limit the industry’s ability to compete internationally. Preston and Baker recommend that the government take active measures to employ its space industry to shape
international capabilities and to maintain the U.S. advantage in space technology. Notwithstanding such measures, however, the Air Force should expect to increase its role as a supplier of space capabilities for areas in which the commercial sector lacks a viable business case, such as surveillance, warning, and protected communications.

The second emerging space challenge results from the possibility, even likelihood, of attacks on U.S. assets in space. As space systems increasingly integrate into military activity at the theater and even tactical levels, adversaries will begin to see space as contributing directly to military capability. They will therefore have the desire, and most likely the capability, to bring the fight to space and to attack U.S. space assets. Although Preston and Baker do not believe the USAF needs to take a position on the weaponization of space, they do recommend that the USAF prepare to defend critical U.S. space assets that will be an economic and military center of gravity for the United States.

Another challenge is the well-publicized but perhaps not-so-well-understood difficulties in maintaining military readiness. As Dahlmann and Thaler emphasize in Chapter Twelve, current readiness measures have understated USAF readiness problems. Current measures only reveal how ready units are for operational tasks, but military units have an additional critical requirement to maintain the human and physical capital of the force through training and maintenance. Because current metrics have failed to measure lost opportunities for on-the-job training, they have missed much of the effect on USAF units of declining recruitment and retention and frequent contingencies. The booming economy has meant that skilled workers are in high demand, while frequent contingencies have forced the USAF to sacrifice on-the-job training on the altar of operational demand. The result is that the USAF skill mix is deteriorating more than is widely known, especially in pilots and maintenance personnel. Much of the cause lies outside the Air Force, but, as Dahlmann and Thaler emphasize, the first step in meeting this emerging challenge will be to develop a readiness metric that can adequately communicate the problem to the political leadership.

Finally, the various technological developments surveyed in this volume together form the dim outlines of a more distant, yet no less important, challenge. According to many analysts, the increased
importance of information and sensors implies that the first, most important battle in any conflict may be the fight for information superiority. In such a battle, the opening shot is likely to be a “sensor shot” that attempts to disable a nation’s capacity to collect, process, or disseminate information. Unfortunately, some analysts fear that, concurrent with this trend, the United States may be building a national information architecture that is vulnerable to a first “information strike” that could disable or delay the U.S. ability to respond to an attack. This development is particularly frightening because the presence of such a first strike capability means that the offense-defense technological balance would appear to be shifting toward the offense. A critically poised and vulnerable information infrastructure might thus create the need to preempt potential attacks, creating the same type of hair-trigger, lose-or-use-it proposition that so concerned nuclear analysts during the Cold War.

This development, while not imminent, remains a possibility in the not-too-distant future. For the USAF, this type of warfare would put a premium on developing effective information defenses not just for its own systems but for other military and even civilian information infrastructures. Failing effective defenses, a hair trigger would also have an important effect on the USAF capacity to operate in coalition with allies. The rapid crisis dynamics implied above would require developing standing coalitions that have done enough training together to operate effectively from the outset of a crisis. An offense-dominant information war would render the current model of ad hoc coalition formation unworkable and would necessitate paying greater attention to integrating forces and capabilities with allies.

EMERGING OPPORTUNITIES

While the challenges detailed above are certainly daunting, many emerging opportunities, both technological and organizational, will help the U.S. military and the USAF in particular to meet the challenges ahead. This *Strategic Appraisal* highlights four such opportunities that have great potential and that often receive less attention than they deserve.

The first such opportunity comes from the promise of a new generation of munitions. Munitions receive far less attention than the more glamorous combat aircraft that deliver them. Nonetheless, effective,
advanced munitions will be critical for realizing the potential of the next generation of aircraft and indeed should influence decisions about which aircraft to buy. New standoff weapons, particularly the Joint Air-to-Surface Standoff Missile (JASSM) and the Joint Direct Attack Munition (JDAM), and new smaller munitions, such as the Low-Cost Autonomous Strike System (LOCASS), offer dramatically improved performance at relatively low cost. Indeed, as Stevens, Gibson, and Ochmanek make clear in Chapter Four, the single most cost-effective action the USAF can take is to buy more standoff weapons, particularly JASSMs, so that its nonstealthy platforms can participate in the early part of an air campaign. Similarly, the availability of effective smaller weapons, such as LOCASS, will make aircraft with internal weapon bays (such as the F-22 and the Joint Strike Fighter) much more effective and favors the creation of an attack variant of the F-22 with a larger weapon bay, the F-22E. The authors emphasize, however, that, to take advantage of these dramatic improvements in munitions and realize the full capabilities of its next-generation combat aircraft, the Air Force will need to spend more than is currently programmed on munitions.

Another emerging opportunity highlighted in this volume is the possibility of improving Air Force outsourcing practices to achieve fairly dramatic savings in support services. Although outsourcing efforts were an integral part of every proposal to restructure Air Force support services during the 1990s, outsourcing has not to date produced the degree of savings that its apostles prophesied. In Chapter Eleven, Frank Camm asserts that this lackluster performance resulted from the inappropriate assumption that outsourcing could save money simply by transferring the provision of services to the private sector. However, outsourcing per se will not produce savings for the Air Force; rather, competition will. Whether the public or private bidder won (and public bidders have often won), competitions have created substantial savings and could potentially save even more.

Because of the focus on outsourcing as an inherent good, the USAF has often ignored how important the details of an outsourcing program are to ensuring competitive provision of services and therefore to the success of the program. Camm suggests a new process of “strategic sourcing” to determine what services should be outsourced, to ensure competition for providing services to the Air Force, and to align outsourcing with the strategic goals of the USAF.
Looked at through this lens, the Air Force appears to have been too conservative in determining what services are eligible for outsourcing and is missing important chances to learn from best commercial practice and to achieve substantial savings.

The third emerging opportunity comes in the area of ballistic missile defense. While missile defense has become one of the most visible national security issues, public debate to date has focused on national missile defense. However, the division between theater and national missile defense, while enshrined in the vocabulary of the political debate, is artificial. There are no technical differences in many areas, and the idea of a “national” missile defense system inappropriately signals U.S. allies that they will be excluded from the protective umbrella of missile defense. This implies that there needs to be much more emphasis on and understanding of the problems and opportunities of theater missile defense and its role in the U.S. national security strategy.

In fact, as Mesic points out in Chapter Eight, defense against WMD and ballistic missiles should be thought of as a system of systems that includes active missile defenses systems of all types (terminal, mid-course and boost phase), counterforce options, passive defenses and a battle management system to link the whole system together. While no one system can be 100-percent effective, Mesic emphasizes that modest capabilities can make a dramatic difference when combined into a system of systems. For this reason, the battle management system is perhaps the key element of a multilayered ballistic missile defense. The Air Force has important contributions to make to this system of systems in designing and operating the battle management system and in contributing promising theater missile defense systems, such as the airborne laser, to a layered missile defense architecture that can protect both the United States and its allies.

The final emerging opportunity highlighted in this volume concerns the contribution the USAF can make to securing the U.S. capacity to establish and retain information superiority over its opponents. In future conflicts, winning the contest for information superiority will allow the United States to secure the high ground in high-tech battles. In Chapter Six, Brian Nichiporuk demonstrates how the United States can use new information technologies to achieve information superiority and provides counters for some of the most appealing
asymmetric strategies likely to be used against the United States. He presents four information warfare concepts of operation for how the United States might, with relatively little expenditure of blood or treasure, effectively diminish the utility of enemy WMD and preserve U.S. power-projection capability in the face of attempts to deny access.

GETTING PAST SUCCESS

Successful organizations rarely adapt to new challenges successfully. Their past record of unbroken triumph instills in them a confidence, some would say a hubris, in their current way of doing things that impedes their ability to recognize and to adapt to changes in their environment. It is for this reason that so few commercial companies have demonstrated an unblemished record of profitability over the long term. Eventually, nearly all large corporations have stumbled as they failed to recognize an emerging opportunity or challenge. While such corporations can usually recover from such a misstep, the USAF does not have the luxury of failing to respond to new realities. Avoiding that unhappy outcome will require getting beyond the successes of recent years and planning for an uncertain future in which past achievement does not guarantee future success.

Moreover, that planning must begin immediately; the decisions taken today—on force mix, on information technology, and on a host of other issues—will have ramifications far into the uncertain future. We cannot know the future, but to operate successfully in an environment with long-term planning horizons, we must have an opinion on it—one that should be informed by research and wisdom. While these features will not provide certainty, lack of certainty cannot justify inaction. The purpose of this volume has been to point out areas in which the accumulated research and wisdom of recent RAND work can point to actions that can be taken immediately to prepare for an uncertain future.

We recognize, however, that the Air Force faces trade-offs in implementing many of these recommendations. Resources are limited, and spending funds to improve readiness, for example, necessarily reduces funds available to modernize the force. Understanding the trade-offs and prioritizing the various demands on defense resources—those detailed here as well as many others—was beyond
the scope of this study. This absence should not be taken as an implication that such a task is easy or unnecessary. In many ways, choosing among the challenges and opportunities detailed here, as well as several not discussed, is the most difficult and pressing task the USAF faces.