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The Need for a Strong US Nuclear Deterrent in the
Twenty-First Century

Franklin C. Miller

Space: Tomorrow and Beyond

Lt Gen Garry Trexler, USAF, Retired

**Lessons from Modern Warfare: What
the Conflicts of the Post–Cold War Years
Should Have Taught Us**

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Moving Deterrence Forward, or Backward?

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Book Essay

Decade of War: No Lessons Endure

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The Need for a Strong US Nuclear Deterrent in the Twenty-First Century

Nuclear weapons will continue to have a significant influence on international security for the foreseeable future. Their elimination has not been seriously considered in any of the nuclear weapons states except the United States and the United Kingdom. France, Russia, China, India, Pakistan, and North Korea have shown no such inclination. Indeed, Russia, China, India, and Pakistan are all embarked on major nuclear weapons modernization programs. In such a world, the United States will continue to need a viable and effective deterrent to prevent nuclear attack or nuclear blackmail against ourselves or our allies. The key questions are: What constitutes a credible deterrent and how much is enough?

While the United States has deferred nuclear weapons modernization, other nations are moving forward. Among the so-called P-5 nuclear weapons states, Russia is deploying a new generation of intercontinental ballistic missiles (ICBM) and is contemplating building a second new type—a giant Cold War throwback in the “heavy” ICBM class. It is also deploying two new types of submarine-launched ballistic missiles (SLBM) and a new class of strategic ballistic-missile submarines (SSBN). China is deploying two new types of ICBMs, developing a new SLBM, and building a new class of SSBNs. It is the only one of the P-5 nuclear weapons states which continues to increase the size of its nuclear missile force. France is completing a long-standing modernization of its SLBM force. Since 2009, India and Pakistan have accelerated their subcontinental nuclear arms race, and both countries are building and testing longer-range land-based missiles. India is moving rapidly toward deployment of an SSBN and achieving a strategic triad, while Pakistan is doubling its fissile material production capability and has deployed a new generation of tactical nuclear weapons. North Korea continues its attempt to develop ICBM-class missiles. In contrast to all of this, the United Kingdom has postponed, until after the next parliamentary elections in 2015, a final decision to replace its aging SSBNs with new ships (although preliminary design work is proceeding). The United States has deferred any major efforts to modernize the three legs of its nuclear triad or its nuclear weapons infrastructure.

It should be clear that the often-repeated aspirational statement made by the nuclear disarmament and nonproliferation lobbies—that the United States and United Kingdom could “lead by example” by reducing

their nuclear arsenals and other nuclear powers will follow suit—is demonstrably false. In fact, during the past 20 years (a period of dramatic nuclear reductions by the United States and Russia and significant reductions by the United Kingdom and France), Indian and Pakistani nuclear arsenals have continued to grow, North Korea has become a nuclear weapons state, Syria began a clandestine nuclear weapons program, and Iran is on the verge of beginning such a program.

While the US and UK administrations have been reducing the role of nuclear weapons in their respective national strategies, the Russian government has placed them at the very heart of its national security strategy. Additionally, the Kremlin publicly threatened to use nuclear weapons against Russia's neighbors over the past three to four years, including an exercise in the fall of 2009 which simulated nuclear attacks against Poland. It authorized Russian strategic bombers to repeatedly undertake highly provocative flights near and into UK, US, and other NATO airspace and published a "military doctrine" which named NATO as a military threat and suggested preemptive strikes against NATO ballistic missile defense (BMD) sites.

Consequently, in a world where nuclear-armed states use their nuclear weapons for coercion and intimidation, the United States must maintain a capable, secure, and credible nuclear deterrent.

Elements of a Capable, Secure, and Credible Deterrent

Academic literature often suggests that deterrence can be accomplished in two ways: "deterrence by denial" or "deterrence by punishment." This distinction misunderstands the reality of the nuclear deterrent. *Deterrence by denial* suggests that an effective defense can blunt an aggressor's attack, causing it to recognize eventually that the planned aggression will not succeed. By extension, this suggests that a superb conventional defense, augmented by a highly effective missile defense, is a substitute for nuclear deterrence and that such a conventional deterrent alone is sufficient to prevent aggression, even against an aggressor armed with weapons of mass destruction (WMD).*

*To be clear, ballistic missile defenses play a key role in US and allied security by complicating an aggressor's risk calculus, successfully defending against small-scale attacks, and by limiting damage should an attack occur. The point here is that such defenses are a complement to, not a substitute for, nuclear deterrence.

But this plays into the fallacy of a stand-alone conventional deterrent—a determined enemy will work to negate the conventional defenses and missile defenses and, having done so, can then attack. What distinguishes nuclear deterrence is the inevitability of a devastating response, even if the victim is about to be defeated on the battlefield.

An effective nuclear deterrent consists of five key pillars:

1. A clear determination of what the deterrent is designed to prevent (an attack on a country's homeland, an ally's homeland, or on other critical assets, such as reconnaissance systems?);
2. An understanding of what constitutes the potential aggressor's vital assets which loss through nuclear retaliation would negate any benefits that aggression might hope to achieve;
3. A deterrent force structure manifestly capable of delivering a devastating attack against the aggressor's most valued assets;
4. A deterrent force structure which cannot be destroyed or fatally weakened by a preemptive attack; and
5. A declaratory policy which is credible in the mind of the potential aggressor's leadership and creates no doubt that certain forms of aggression *will* draw a nuclear response.

What is its Purpose?

For the most part, national nuclear deterrents in the twenty-first century are intended to deter either direct conventional or nuclear attack on the possessor's homeland or to prevent nuclear blackmail. The policy of the United States makes clear our nuclear weapons serve not only to deter attack on our homeland, but to protect our allies' security as well. The United States has "extended" its deterrent to cover NATO, Japan, the Republic of Korea, and Australia. This places additional demands on our force structure and strategic flexibility.

What does the Adversary Leadership Value?

Understanding what a potential adversary's leadership values is fundamental to having a credible deterrent policy. Democracies are fairly transparent, and it is relatively easy for a potential aggressor to determine what types of nuclear threats might be used to intimidate freely elected governments. Deterring authoritarian states, however, is more difficult. Authoritarian regimes usually do not share the same values as democracies. They tend to focus on preserving the mechanisms used to

control their society and ways to maintain those societies even in time of war. The worst mistake US policymakers can commit in this regard is to “mirror image”—that is, to impute their own value structure to a potential enemy’s leadership.

Manifest Capability

A deterrent force must be seen as capable by potential adversaries. While it is important that a possessor government be confident its deterrent can carry out its intended mission, even in extremis, this is a necessary but insufficient condition of deterrence. The potential aggressor must recognize this as well. This requires conducting sufficient exercises, including test-firings where appropriate, to ensure that technical capability, as well as operational proficiency, is widely perceived as equal to the task. Former Defense Secretary Robert McNamara (who, while serving in office, strongly supported nuclear deterrence but later recanted his views and obfuscated his government record) probably summed this up best when he told the US Senate Armed Services Committee in 1963, “any force that has such characteristics that it cannot be thought of as an operating force cannot serve as a deterrent, and therefore, unless one has a force that has capabilities for actual operations and a force for which one has an operational plan, one, in my opinion, does not have a credible deterrent.”

Survivability

A nuclear force which an enemy can destroy preemptively is a target and an invitation to surprise attack, not a deterrent. A true deterrent must have at least one force element capable of surviving a preemptive attack and retaliating effectively. In today’s world, the safest means of achieving this is to deploy a portion of the force—or in some nations, the entire force—on submarines, at least one of which is continuously at sea. Having multiple types of deterrent forces increases the overall survivability of a deterrent.

A Credible Declaratory Policy

A credible policy is one which ties the protection afforded by the nuclear deterrent to a believable set of objectives in the eyes of one’s own people, allies, and potential enemies. Nuclear weapons are not, and never were intended to be, all-purpose deterrents. It would not be credible, for example, to threaten nuclear retaliation in response to a proxy guerilla war in some foreign territory, a lamentable but small-scale conventional attack

on one's own forces, or even the loss of one or several orbiting satellites. Recall, for example, the North Korean seizure of the USS *Pueblo* or the Iraqi attack on the USS *Stark*. Nuclear responses are credible when linked directly to the defense of a nation's vital interests and territorial integrity and, where undergirded by treaties and decades of demonstrated commitment, to the defense of allies' vital interests and territorial integrity. A potential adversary who believes that a deterrent has been linked to the defense of something which is not worth risking national survival through the military employment of nuclear weapons is likely to test that proposition.

The Nuclear Triad: A Deterrent Force Which Has Stood the Test of Time

The US nuclear triad of land-based ICBMs, submarine-based ballistic missiles, and heavy bombers is a deterrent force which for decades has provided a survivable and manifestly capable deterrent. While its birth was unintentional (the product of interservice rivalry), the triad has shown, in its combination of basing modes, delivery systems, and war-head types, an overall capability which ensures that no enemy attack could prevent effective US retaliation. In essence, the triad has been modernized twice—in the early 1960s by the Kennedy administration and in the 1980s by the Reagan administration. As discussed below, each of the systems will require significant modernization or replacement in the next two decades.

ICBMs

The very first Minuteman I was deployed in 1963. The current system, the Minuteman III, was first deployed in 1970. Currently 450 Minuteman IIIs are deployed at three ICBM bases: F. E. Warren (Wyoming), Minot (North Dakota), and Malmstrom (Montana). The Minuteman III has received several generations of sustainment and modernization, most recently focusing on propulsion replacement, guidance replacement, and Mk21 fuse refurbishment. These last three are designed to support Minuteman III service life through 2030. The Air Force has embarked on a process to determine future ICBM needs; this will support the decision for the MM III SLEP (service life extension program) or new ICBM development in the 2015 time frame.

SLBMs

Trident D5 SLBMs are carried aboard 14 *Ohio*-class SSBNs, 12 of which are operational with about half the force at sea on any given day. Currently, 241 Trident D5 SLBMs are deployed. Each missile is estimated to carry four warheads—either the W76 or the larger, more modern W88. There is a life extension program (LEP) for the W-76 which is slated to be completed by 2018; approximately 1,200 warheads are expected to be refurbished. The Trident D5 SLBM also is undergoing an LEP that will modernize guidance systems and missile electronics and build additional D5 missiles. The *Ohio*-class submarines are undergoing cycles of refurbishment and modernization to maintain them for several more decades. As currently envisioned, they will be replaced by 12 new *Ohio* replacement program (ORP) submarines with 16 launch tubes each. The first of the new submarines was originally slated to go into service in 2029, and the last of the original *Ohio*-class submarines is to be retired by 2040. The FY-2013 budget delayed delivery of the first new SSBN by two years. This will cause the number of operational SSBNs to fall to 10 in the 2030s.

Bombers

The United States has two bombers assigned to nuclear missions—the B-2 stealth bomber and the venerable B-52H, the most “modern” of which was built in 1962. The B-2s, first deployed in 1997, carry nuclear gravity bombs. B-52s carry the AGM-86B air-launched cruise missiles first deployed in 1980. The 2010 *Nuclear Posture Review* stated that a study was seeking alternatives for a new long-range bomber. More-recent statements by the Air Force leadership state the plane will have a nuclear mission but probably not when it initially becomes operational. The Air Force has begun a program to procure a new long-range stand-off (LRSO) weapon to replace the AGM-86B, but it is not yet clear whether the program, as structured, will be affordable.

How Much is Enough?

One of the classic questions confronting defense analysts and military planners is how large a nuclear stockpile is required to be an effective deterrent. The discussion frequently focuses on a false dichotomy of what is needed to hold at risk so-called war-fighting or counterforce targets (e.g., military forces, leadership sites, and war-supporting industry) versus what is required to hold at risk countervalue targets (e.g., cities). Some

even believe, mistakenly, that US policy in the 1960s was countervalue-oriented. The simple fact is that deterrence is highly complex and rests on convincing any potential aggressor that the devastation created by our retaliation would far outweigh the benefits of any aggression, so that attacking us or our allies becomes unthinkable. This means, as noted above, that an effective deterrent requires holding at risk that which a potential enemy's leadership values most. Given the world in which we live, US deterrence requirements are driven primarily by the need to deter a future Russian leadership, should it develop hostile intent, and secondarily, by the need to deter a future Chinese leadership in the same circumstances. While other deterrence requirements exist, they can be treated as lesser included cases from a force structure and force sizing standpoint.

The recently retired commander of US Strategic Command, Gen Kevin Chilton, USAF, testified to Congress in 2010 that he was “comfortable with the force structure that we have” provided by the New START treaty, as it is “adequate for the mission that we’ve been given, and is consistent with NPR.” That means a force of about 1,550 *deployed* strategic nuclear weapons, which translates into about 2,200–2,500 actual weapons due to the treaty’s “counting rules.” While some additional reductions may be justified by future positive international developments, it should be clear that radically deep reductions to only a few hundred weapons would be wholly inadequate. Such a small force would fail almost all of the requirements of a capable, secure, and credible deterrent discussed above for two reasons: First, it would not deter a direct attack on the United States, let alone threats to and blackmail of our allies, because it would be too small to threaten retaliation against the most valued assets of a Russia or China gone bad; and second, it would be too small to be survivably based and most likely would have to be deployed in a single basing mode rather than a triad. Put another way, it would be susceptible to an enemy preemptive first strike.

Conclusion

In the 300 years following the Treaty of Westphalia in 1648 and the emergence of the modern nation-state, the great powers of Europe went to war with one another an average of seven times per century. Even the horrific carnage of World War I, “the war to end all wars,” which resulted in 15 million dead and 20 million wounded and decimated a generation of European males, was insufficient to prevent World War II.

But after 1945, the great powers in Europe, and elsewhere around the world, have not engaged in direct military conflict with one another.

Human nature has not changed; witness the atrocities committed in the “civilized and modern” Yugoslavia once that country imploded into civil war or the unspeakable crimes committed by terrorists over the last decade. But something else did change: nuclear weapons have made war among the great powers too dangerous. As a result, they have moderated the behavior of the great powers toward one another. But this stability is fragile.

If the United States were to reduce its nuclear deterrent to a point where it could not be extended to its allies—or even to a point where it was perceived to be unable to threaten the vital interests of potential enemy leaderships—we could see a return to the dangers of the “nuclear-free world” which preceded 1945. On the other hand, a strong and modernized deterrent will allow this nation to continue to maintain the peace and to provide for our own and our allies’ security. We must not fail to ensure the peace. We must maintain a modern nuclear deterrent.

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Space

Tomorrow and Beyond

The growing Department of Defense (DoD) dependence on space has reached the point where a solid plan for the future is a must. The Air Force Space Command is focused on improving resiliency and bringing down costs by using smaller satellites, simpler designs, and fewer on-board systems.¹ Similarly, the Space and Missile Systems Center commander, Lt Gen Ellen Pawlikowski, is looking ahead to a simpler, more-affordable constellation made possible by disaggregating current capabilities. She has predicted that “military space capability of the future likely will rely less on constellations of sophisticated military-specific satellites and more on some level of simplified military spacecraft coupled with supplemental on-orbit capability like payloads hosted on commercial satellites.”²

A strong space future is possible but only if the United States embraces the challenge. My objective assessment of what the future holds for space includes key challenges for current programs, next-generation programs, and future architectures. It offers a framework for a realistic, affordable, step-by-step plan for sustaining current performance as the national security space (NSS) architecture evolves over the next 50 years. The overarching requirement is to maintain capabilities adequate to keep up with a rapidly evolving threat—a task made more difficult by a fiscal environment where budgets are unlikely to grow. The process itself is relatively straightforward: establish the starting point, set the goal, fix what we already know we will need, allow for surprises, and build for the future.

Start from Where We Stand

Because world economies today face a growing dependence on space, there is concern that our space assets are increasingly vulnerable and a nearly universal agreement that the procurement process must be streamlined to reduce the time from development to production. We need to understand how to maximize production efficiencies, even when fiscal constraints preclude economical order quantities; how to provide budget flexibility to keep up with evolving threats; and how to sustain strategically vital architectures that cannot be allowed to fail. A 50-year future starts with today’s realities: a growing threat in a near-peer

environment, continuing budget constraints, new technology, and a motivated workforce.

The Growing Threat

In discussing operational implications of the new Air-Sea Battle concept, chief of naval operations, ADM Jonathan Greenert, and then-Air Force chief of staff, Gen Norton Schwartz, highlighted the value of the global commons and the need to be able to counter threats in these domains, noting that “free access to the ungoverned ‘commons’ of air, maritime, cyberspace and space is the foundation of the global marketplace.”³ Today, realistic threats cover a wide spectrum of possibilities that threaten that global marketplace. At one extreme is a protracted armed conflict with a near-peer adversary; at the other, inadvertent denial of service caused by something as simple as a backhoe accidentally cutting a fiber-optic cable. In between are widely available basic jamming techniques, invisible but pervasive cyber attacks that could cause widespread outages, dramatic acts of terrorism, and even kinetic destruction caused either intentionally by an adversary or accidentally by orbital debris.

China’s destruction of its own satellite demonstrated it could probably destroy an adversary’s satellite as well. Jamming of any space vehicle is also in the capability mix. Earlier this year, there were reports that Iranian spoofing of global positioning system (GPS) signals caused a classified US drone to crash. More recently, North Korea is reported to have jammed GPS signals affecting maritime shipping and commercial airline flights.

It is time for a full-spectrum, risk-versus-consequence analysis of the threat; development of cross-stovepipe, interservice solutions; and greater consideration of allied support. The focus of this reevaluation—greater resilience—is likely to involve a more-robust architecture that includes improved space situational awareness (SSA), greater functional redundancy across a wider variety of platforms, international cooperation across missions, and additional self-protection for satellites.

Budget Constraints

For the next several years, US space programs will be engaged in an intense search for more-affordable solutions. The fallout from sequestration and continuing resolutions (CR) is likely to make the budget picture worse. One approach to the mismatch, called *disaggregation*, includes cost, schedule, performance, and risk implications that have not yet been addressed. New starts of smaller satellites are frequently alleged

to be less expensive than upgraded programs of record (POR). Recent studies by the Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) office suggest that a constellation of smaller satellites large enough to match current capabilities could be far more expensive, especially when launch, command and control, data integration, infrastructure, and conversion costs are included. For any new start, independent of size, the actual cost is extremely hard to predict and likely much greater than expected. Additionally, under CRs, new starts are few to none.

These unanswered questions strongly suggest that the near future of space development must be an evolutionary one. At the same time, we are in an affordability hole and unable to climb out by continuing business as usual. We cannot fail to invest in space; therefore, we must rethink *how* we invest to make certain we are acquiring efficiently, leveraging our current investments, and inserting new capabilities only when needed. We must identify the real problems and the real gaps, and then “reach for the attainable,” perhaps by exploring next-generation solutions that can be implemented at lower cost because the initial research and development has already been paid and the technology has matured. Above all, we need a plan that leverages current programs, evolves to new capabilities without creating gaps in performance, and minimizes risks to ongoing military operations.

New Technology

Realistic technology forecasts typically underestimate both the speed at which technology changes and the culture shifts that result. Companies that have anticipated the speed and magnitude of technology change are today the largest and most successful in the private sector. The history of space operations is replete with examples of quantum improvements in capability as programs have evolved. A realistic (and probably underestimated) space technology forecast for the next 20 years includes a dramatic increase in knowledge density, laser communications, component miniaturization, and more efficient networking—all of which will reduce even further the SWaP (size, weight, and power) requirements for the same or greater capability. Now is the time to explore evolving technologies that will maintain capability in the near term while evolving to a better future by enabling new systems, derivative technologies, and capability insertions through progressively more demanding testing, exercises, and operational evaluations.

Motivated Workforce

Realistic program objectives and an enthusiastic workforce can reenergize the nation's industrial base and contribute to an "image makeover" for the aerospace industry. The nation has never failed to supply qualified, innovative scientists and engineers when there has been a national sense of urgency, whether for the high production rates of World War II, the secret physics of the Manhattan Project, General Schriever's development of the intercontinental ballistic missile, the national imperative to counter improvised explosive devices (IED), or the exponential increase in remotely piloted aircraft (RPA) operations. What matters now is focusing on objectives that offer utility to the war fighter heretofore only imagined in science fiction novels and that capture comparable benefits for mankind.

Establish a Goal

If you don't know where you are going, any road will get you there.

—Lewis Carroll, *Alice in Wonderland*

In the next 50 years, space will become even more valuable to mankind, as will its utility to the war fighter. As space communications, navigation, and ISR (intelligence, surveillance, and reconnaissance) capabilities have improved over the years, more and more users have become dependent upon products, services, and capabilities from space. The conundrum we still face, however, is the difficulty of building capabilities that should be based on new—and unknown—threats and requirements. What we do know are the kinds of "functions" that will be required, such as communications, navigation, precision timing, ISR, weather observation, threat warning, and damage assessment. We also know the directions technology is taking us—smaller, faster, more-capable, more-integrated, better-networking, more-resilient architectures, and the "cloud." We know as well that it would be a mistake to design based on today's technology.

Discussions with space leaders over the past several months identified at least six goals for future-space we should be striving toward, some of which have not yet been formally recognized by senior decision makers.

Goals for Future-Space	
Freedom of Operations	Freedom to operate in space and, if needed, to deny that ability to an adversary.
Universal Support	Ubiquitous, transparent, secure support to our forces and to those of our allies, including dependability, reliability, maintainability, survivability, and information security.
Balanced Resilience	Support as resilient as the forces space supports—space should never be the weakest link.
Look-Ahead Knowledge	“Feed-forward” intelligence available “before” demand. If a user needs information, a video, or an image, the system should be primed to put an answer at their fingertips. The goal should be to get intelligence to the users before they even know they need it. No one should ever be surprised, after the fact, that there was space support available they did not know about.
Seamless Functionality	If a user wants “a picture,” that picture should include all known sources of data, such as satellite imagery, airborne imagery, full-motion video, SIGINT, HUMINT, etc., from the military as well as the intelligence community, and in an easy-to-use format. This goal is absolutely key to the “look-ahead knowledge” goal.
Sentient Partnership	The past 50 years have shown the utility of space for communications, navigation, ISR, environmental monitoring, disaster response, and resource management. More recently, space has become an integral part of logistics, supply, maintenance, and even medicine, banking, and retail sales. We are witnessing a steady migration of space into the central nervous system of the world’s economies, and at speeds we would never have imagined in the twentieth century. What we do on Earth today, we will be doing in space as well by 2030—and probably sooner. In that sense, space is destined to become an intelligent—sentient—partner for the world.

Taken in aggregate, these goals provide a vision for future space: *the right-sized force multiplier, mankind’s greatest ally, and the war fighter’s best friend*—ubiquitous, reliable, accurate, and responsive.

- Right-sized. Enough to do the job—and not a machine screw more; balanced resilience.

- Force multiplier. Our forces are stronger with space than without it. At an operational level, space really does let our forces do more with less.
- Mankind's greatest ally. Space makes Earth a better planet.
- The war fighter's best friend. The key will be when every war fighter knows deep down inside that space effects will be there when needed, even better, that space will be there before one even knows it is needed.

Fix What We Must

The third step is to fix only that which we can afford to fix and that we will need for the future. Deliberate planning will make future architectures more attainable with lower risk. While much of the supporting information is classified, the NSS architecture is on solid footing during a peacetime or nonhostile space environment, but we do not appear to be prepared for overt conflict with a near-peer adversary. Beyond that, our lack of "last mile" connectivity and our continuing mission data stove piping do not encourage look-ahead knowledge or seamless functionality.

The Future of National Security Space Communications and ISR

Goals for the future (see above)	Attainable through current programs?	Attainable through out-year budgets?
Freedom of Operations	Yes , at least in conventional conflicts (e.g., Iraq, Afghanistan).	At risk . Given growing threat and no change in architecture, freedom of operations will be less assured than it is today.
Universal Support	No . Not secure, not ubiquitous, not transparent—"last mile" and disadvantaged user problems.	At risk . Despite improvements in peacetime tactical communications, basic "last mile" and disadvantaged user problems will remain.
Balanced Resilience	No . Generally vulnerable if attacked.	No . Increased vulnerability as adversaries develop better weapons.

The Future of National Security Space Communications and ISR (continued)

Goals for the future (see above)	Attainable through current programs?	Attainable through out-year budgets?
Look-Ahead Knowledge	No. Stovepipe information paths—response time in minutes to hours.	No, but better. Same problems but commercial options will improve peacetime response.
Seamless Functionality	No. Stovepipe dissemination relies on stickies and sneaker nets for much of the integration.	Improving by default as processing software grows in capability and throughput.
Sentient Partnership	No. Not secure, not integrated, not in anyone's plans.	No. No change expected from today's stovepipes.

What must we do to turn the “No” and “At risk” items to “Yes”? The fastest, safest path is to augment today’s foundation and sustain current production and operations as we move toward new capabilities. This path mitigates risk in schedule delays as well as in cost growth. A 50-year architecture requires moving forward aggressively but in steps measured by the art of the possible and the science of the real world.

At US Strategic Command, Gen Bob Kehler is stressing the value of working with our allies in future space operations. In addition to the operational advantages of his initiative, there is the potential for cost sharing. “What we know from looking at every military operation that we undertake is that there is value in combined and coalition operations. It’s time for us to bring those concepts to space,” he observed.⁴

We must look to the future realistically: “Eyes on the stars, feet on the ground.” Take advantage of what is already available and recapitalize what we already have. Regardless of what the future may hold, now is not the time to abandon what we have in favor of something new but unproven—for two reasons.

First, we can take advantage of existing production programs that are already demonstrating quantum improvements in capability. As these new systems are coming online, we have much to learn about them, not only how they behave in routine operations, but also how we can use them beyond their original intent. We have just begun to figure out all the ways we can use these new capabilities. Innovative applications—a perpetual strength of our nation—are particularly noteworthy in space programs. At the same time, we can continue to pursue capability

insertions, one-of-a-kind experiments, and preproduction prototypes that look toward operational requirements of 2050. Avoid future Nunn-McCurdy breaches by taking time now to improve the technology readiness level (TRL), determine the full cost of replacement architectures, assess the risk associated with each increment, and quantify full-scale production requirements.

Second, there is no backup today if proposed replacements do not come to fruition as quickly as promised. Previously, when the DoD replaced an entire constellation, we had backups when development of replacements took longer than expected. We had spare defense meteorological satellite program weather satellites to tide us over while we waited for an NPOESS (national polar-orbiting operational environmental satellite system) program that was ultimately cancelled. Several defense support program (DSP) missile-warning satellites sustained the nation's highest-priority ISR program while the SBIRS (space-based infrared system) was developed. More-durable DSCS (defense satellite communications system) satellites—lasting 5–10 years beyond their design lifetimes—helped provide coverage while wideband replacements were developed. Backup Milstar strategic communication satellites protected a “launch on need” capability while the AEHF (advanced extremely high frequency) satellite was developed.

Today there are no spares, no backups. The replacement for the cancelled NPOESS is still in discussion. The SBIRS is barely into its initial deployment and has not yet reached IOC (initial operational capability). AEHF satellites, the MUOS (mobile user objective system), and WGS (wideband global SATCOM) have just begun operations; spares are budgeted, but the satellites have not been in operation long enough to tell how well they will perform over the long haul. This is not the time to be changing horses midstream, especially when we know from history that once the operators get their hands on a new space system, they find new and often astonishing ways to use it that even the designers hadn't thought about. Fortunately, Congress has recognized the potential break in capability, and the House Appropriations Committee has added language supporting additional SBIRS and AEHF satellites.

We have to build on what we have today—a prudent approach until we have the technology and the processes in place to make the next leap to the future. New systems should be developed as capability insertions are proven. Unfortunately, we do not have the luxury of compounding affordability problems by adding developmental funding for yet-to-be-proven programs.

At this stage, then, it is extremely important that we fix what war fighters have indicated they are likely to need in future conflicts:

- ubiquitous ISR over denied areas, even in the presence of a near-peer adversary;
- secure communications for tactical forces on the move;
- improved mission data processing to facilitate seamless functionality;
- greater architectural resilience, networking existing capabilities, and improved space situational awareness and spacecraft protection; and
- more affordable systems of systems and families of systems

Ubiquitous ISR

The growth in the military's demand for intelligence, surveillance, and reconnaissance information continues unabated. Adding to the wealth of ISR data, more and more combat forces are bringing their own tactical platforms with them into combat, allegedly to reduce their dependence on national systems that are perceived to be unresponsive. With the ISR evolution underway, we need to open the trade space and include off-ramps to what could be a more resilient overhead persistent infrared (OPIR) architecture than a wide-field-of-view (WFOV) approach offers based on third-generation infrared surveillance (3GIRS) technology. Other digital focal plane arrays may provide a clearer path toward our objectives—their technology demonstrators should be part of the future program.

Secure, Protected, Tactical Communications

While strategic communication remains the highest priority, now is the time to move toward secure, protected, communications for tactical forces facing growing threats, whether basic jamming, kinetic attacks, or cyber disruption. In the military communications world, the single biggest operational shortfall is the paucity of secure, protected, tactical communications to the war fighter on the “front lines” (recognizing, of course, that the “front line” has never been so poorly defined as it is on today's battlefield).

To fix this shortfall, initiatives are being considered that will add communication transponders in orbit, either on dedicated military satellites or using military payloads hosted on commercial communication satellites. Just putting more transponders into space may not be sufficient.

What we need are more platforms integrated in a high-capacity network of communications elements—in space as well as in other layers. We are not taking advantage of a broader set of options to provide greater access to more-secure tactical communications. To evolve as rapidly as possible, we need to explore emerging approaches for providing widespread protected communications to tactical forces, including the integration of the space layer with non-space contributors and the use of smaller “repeater” communications satellites where appropriate. These “inserts” may be key to evolving an affordable 2050 space architecture.

There is every reason to believe that the same or better service can be provided at less cost—if we take a network approach. The problem is that there is no incentive for anyone with a vested interest in the status quo to support a change. There is no “benevolent dictator” with the authority to divert the next dollar in space to an integrated network architecture that will benefit war fighters and other operational users. The way ahead, then, begins by putting a “crew chief” in charge of networking platforms to create new and improved capabilities. Next, develop a migration strategy to achieve the architecture while funding programs that demonstrate progress toward our objectives; kill programs that do not. Coordinate the new network with the aerial and ground segments. Demonstrate the cost-effectiveness by tallying the *full* cost associated with a space program—including the ground entry points and user terminal costs.

Once the layers have achieved some level of interoperability, tailor redundancy and assign network management to the appropriate layer. For example, signal processing currently being done onboard a satellite may be accomplished in another layer at less cost. Consider transmitting a signal in a different form through an airborne communications node (ABN) over a battlefield if there are insufficient radios capable of receiving the satellite signal directly.

Improve Mission Data Processing

One of the five tasks given Air Force ISR chief Lt Gen Larry James by Secretary Donley was to develop a roadmap for intelligence processing, exploitation, and dissemination (PED) tools, including what investment opportunities may exist in the future.⁵ This is no easy task. In some ways, the PED issue is more *déjà vu* than anything else. Remember when a significant portion of the overhead imagery was ignored because there was simply too much of it to work with—the “left on the cutting room floor” complaint? We are there again, only this time more digital, more voluminous, and far more complicated. The solution then was to

improve the software, expand automated processing, and give the analyst more sophisticated workstations. This time, it is more of a personnel issue—how to recruit, train, and retain sharp, capable people who are up to a daunting task that is going to get even more complicated. The ground layer, aerial layer, and space layer will need to be integrated, as will nontraditional ISR sources. We need to pursue customized user applications—with ready access to information domains—just as Apple changed the multimedia domains for music and books. It may turn out that much like iPhones and Wikipedia, processing improvements will be developed as apps by the users themselves, evaluated, approved, and embedded on the SIPRNET—a terrifying prospect for the information security (INFOSEC) mavens, but a logical fallout from today's e-generation.

Greater Resilience

Today's air, land, and maritime forces are highly dependent on space systems, and the result is almost astonishing. We can hold any target on the face of the earth at risk—if it is not moving too fast. That is not a guaranteed capability, however, particularly if we were to engage with a near-peer adversary. The command and control of RPAs, for example, uses commercial satellite communications (SATCOM) vendors, and the mission intelligence produced by the RPAs is relayed via unprotected SATCOM. Passing military data through commercial pipelines is a vulnerability that will become more critical as we place greater reliance on RPAs and the concurrent bandwidth required to support them. In fact, any unprotected link adds vulnerabilities that we must consider when looking at force-on-force scenarios. The Army's soldier radio, for example, uses an unprotected GPS link that is subject to jamming, hence the urgent requirement for making protected communications available to tactical forces.

Military forces facing an uncertain future will require greater resilience in space operations. It is time now to start working on balanced resilience. Since the threat isn't binary, resilience should not be either. Make resilience more affordable by starting with what we already have available: greater interconnectivity of existing programs, more capable networks, and more backup services. "More space," if achieved solely by disaggregation, is not necessarily the best answer. Cost/utility/resilience trades must be done systematically and analytically. Analyze cross-domain and networking approaches for their contribution to resilience; likewise, space situational awareness and self-protection initiatives. Resilience to nontraditional threats—such as cyber—must also be considered, as should contributions from international and commercial platforms.

More-Affordable Systems of Systems and Families of Systems

The challenge of improving the government's weapon system acquisition process could—and no doubt will—keep a small army of designers, builders, managers, and overseers busy for the next millennium.⁶ Because of the magnitude of the problem, it is extremely important to get this right. Fortunately, we appear to be making some progress, as government and industry have worked hard to overcome shortcomings.

Air Force leaders expect to save at least 10 percent of the often billion-dollar price tag of new satellites with the implementation of the Evolutionary Acquisition for Space Efficiency (EASE) initiative, one element of the Efficient Space Procurement (ESP) process. ESP is comprised of proven tenets: block buys of satellites, stable research and development investment in foundation programs, fixed-price contracting, a modified full-funding approach, and capability insertion into the foundational program of record. This could be the single most important acquisition reform undertaken by the Air Force, because it targets core issues that have driven acquisition problems for decades.

Beyond ESP, if we have any hope of a brighter future, we must work toward a space acquisition strategy that balances cost and risk. We need an “acquisition makeover” that will allow processes to keep up with changes in requirements. This will require not only changes to the “how we buy,” but also changes in how we “buy smarter.” The result will revitalize our industrial base as industry seizes the initiative to help the government reduce cost. Part of these savings will come from the commoditization of space and part from the utility (and inevitability) of managed services, but the majority will come from the know-how and initiative of the aerospace industry. Acquisition reform must enhance program cost efficiencies while retaining quality control and program mission assurance. One solution would be to standardize component certification criteria across the industrial base so second- and third-tier suppliers do not have duplicative processes for the same component. Another would be to bundle processes across programs managed by a single prime contractor, which would increase buying power, improve visibility into supply chain performance, and incentivize innovation at the second- and third-tier levels. Other efficiencies may accrue from “normalizing” space logistics into a more traditional Air Force Materiel Command-like structure. Still other improvements would enable industry to acquire production capacity tailored to capability insertion and technology innovation. The result would be to gain resource and management efficiencies across multiple programs.

Anticipate the Unknown

This step is designed to make allowances—operational contingency planning—for the inevitable adversarial, technological, and political surprises. We must be prepared—in advance—for new threats from potential adversaries, changes in military requirements, advances in technology, and other factors that will demand maximum flexibility in design and minimum time in development. In a technology-dominated world, the surprises ahead will be bigger and will come at us faster than we have ever experienced. That makes it all the more urgent that our conceptual thinking includes a toolkit of look-ahead options for a broader range of contingencies. Smarter architectures, more flexible satellites, better integration with other contributors—all are more possible today than they were even 10 years ago. Three tactical initiatives will help us anticipate the unknown:

1. **Hedge our Bets.** Make allowances for the “known unknowns”—changing threats, changes in technology, and changes in international arrangements. Design for the flexibility to provide a stable mitigation of risk. For example, the “plug-and-play” concept has been around for several years as a means to provide more flexibility in satellite design. The tradeoff has usually shown, though, that the SWaP cost associated with preconfiguring commonality is not worth the postulated flexibility. But what if the satellites themselves were plug-and-play capable inside a more flexible, tolerant, and resilient architecture? Using secure, SIPRNET-based communications and a common command-and-control (C2) architecture, any satellite could be compatible with any ground station. The overall architecture would be more tolerant of developmental delays, resilience would be enhanced, and more companies would be able to compete for block changes and new programs.
2. **Pay for Brainwaves.** Incentivize innovative thinking in all quarters, at all levels. The key here is “incentivize.” In today’s environment, that usually translates to “more money,” but selectively offered.
3. **Create Disruption.** Assume the inevitability of, and begin to plan for, disruptive behavior by a potential adversary. Selectively invest in self-disruption as a hedge.

Build for the Future

The final step is to pursue technologies we know will make a difference by 2050. Evolution to the future is already underway. The Air Staff (AF/A3) is scoping solutions for 2025–30.⁷ The following examples are illustrative of technologies that are “just around the corner.”

- **Progressive Synchronization.** Build a comprehensive enterprise “migration plan” for synchronizing current production programs with the development of lower-cost complements and replacements.
- **Lower-Risk Sensor Technology.** Implement a 10-year, low-risk path for exploiting new technology like the overhead persistent infrared (OPIR) wide-field-of-view (WFOV) sensor.
- **Next-Generation Communications.** Lay the foundation for next-generation communications by making near-term budget decisions consistent with future-space objectives. Any forecast invariably involves more networked constellations using technologies already developed either in industry (e.g., the Cisco Internet Routing in Space program) or on government design boards like the cancelled transformational satellite (TSAT) program.
- **Nontraditional ISR.** We already know the utility of using the amazing onboard ISR electronics of advanced weapons like the F-22 and F-35 to augment other denied-area ISR sensors. One of the unintended benefits from using these systems as sensors as well as shooters is that they become their own blue force tracking (BFT) device, which means they gain BFT utility without adding systems on board. Similar benefits would be available on the ground, where Soldiers’ GPS coordinates would be passed using highly secure circuits through the Cloud to friendly forces (targeters, weapon system operators, search and rescue, etc.).
- **Consolidated Satellite Operations.** In addition to the resilience benefits of cross-domain command and control, sheer economics will force more-efficient satellite C2. Commercial programs already save money by consolidating satellite operations; they have been doing it for years. GPS is one of the few military programs where an entire constellation is managed by a few operators. Getting humans out of the health-and-status loop will save money, reduce workload, and improve efficiency. By 2030, satellite health-and-status

operations will routinely be done autonomously. Tasking operations will be controlled by end users through automatic prioritization and scheduling. By 2050, operations will be even more automated, more integrated, and less labor-intensive.

- **Extending the Cloud into Space.** Expanded networks are an inevitable part of our future—not only within the space layer but also with and across the aerial and ground layers. The users are already demanding more real-time access to information from all domains without being burdened by the “data glut” they experience now. Today’s war fighter uses information from a wide variety of contributors from terrestrial stovepipes. Including the space layer in a secure cloud will increase architectural resilience and make a quantum leap in knowledge available to every war fighter. As General James has noted, “It is an environment where you honestly [won’t] care about what your source of data is. You’re data agnostic. You’re sensor agnostic. But you have the ability to reach into the network, reach into the cloud—however you want to define that—and gather the data you need to get as an analyst to solve the problem that you’ve been given.”⁸
- **Sentient Partnership.** Ground-breaking experiments could establish a prototype feasibly by 2025, fully operational by 2050. We can no longer “talk around” the relationship between military and commercial activities in space. Because space is an economic *and* military center of gravity, the military has a role to play. Gen Howell Estes articulated a vision for space early in his tenure as commander of US Space Command (August 1996–August 1998) when he talked about the emergence of space as an economic center of gravity. In an excerpt from his April 1997 speech to the US Space Foundation’s annual symposium, he stated,

Commercial space . . . will become an economic center of gravity, in my opinion, in the future and as such will be a great source of strength for the United States and other nations in the world. As such, this strength will also become a weakness, [and] vulnerability. And it’s here that the U.S. military will play an important role, for we will be expected to protect this new source of economic strength.

Conclusion

Now is the time to implement the evolution needed to achieve a strong space foundation for the next 50 years. The ideas presented in this article should be our first step toward a dynamic future for national security space, regardless the realities of the present. It all begins with a clear vision:

Space: The right-sized force multiplier—mankind’s greatest ally, and the war fighter’s best friend—ubiquitous, reliable, accurate, and responsive.

Make no mistake, much work lies ahead. But the value of rethinking future-space is clear:

Goals for future-space	Prototype capabilities feasible in 2050 if we start rethinking space today
Freedom of Operations	Yes , with full-up networks, robust resilience, global team-work
Universal Support	Yes – secure, ubiquitous, transparent – “last mile” connectivity, disadvantaged user-friendly
Balanced Resilience	Yes – no advantage to an adversary to attack space first
Look-Ahead Knowledge	Yes – negative response time – there before the war fighters realize they need it
Seamless Functionality	Yes – Wikipedia-like integration – the users contribute to the solution automatically – mission-focused integration flushes the data glut
Sentient Partnership	Almost – beachhead by 2030, operational by 2050

Based on the ideas and proposals in this article, three conclusions are evident. First, we do not have to wait until 2050. A strong 2030 space future is possible—but only if we step up to the challenge. Second, success depends on a national consensus to take the necessary steps. Third, the path to revolutionary space architecture begins with evolutionary thinking. Space is already becoming mankind’s greatest ally. American ingenuity, creativity, and determination are all that are needed to make space the war fighter’s best friend.

Lt Gen Garry Trexler, USAF, Retired

Notes

1. "Commander Looks to the Future at Space Symposium," USAF AIM Points, 20 April 2012.
2. Michael C. Sirak, "Changing the Space Composition," *Air Force Magazine*, 19 September 2011, <http://www.airforcemag.com/DRArchive/Pages/2011/September%202011/September%2019%202011/ChangingtheSpaceComposition.aspx>.
3. Norton A. Schwartz and Jonathan W. Greenert, "Air-Sea Battle: Promoting Stability in an Era of Uncertainty," *American Interest*, 20 February 2012, <http://www.the-american-interest.com/article.cfm?piece=1212>.
4. "U.S. Eyes Combined Space Operations with Allies," *Reuters*, 19 April 2012.
5. Amy McCullough, "Eye on Future ISR," *Air Force Magazine*, 30 April 2012, <http://www.airforcemag.com/DRArchive/Pages/2012/April%202012/April%2030%202012/EyeonFutureISR.aspx>.
6. Interestingly enough, the only guidance that has survived the test of time came from HP co-founder and former deputy secretary of defense David Packard 40 years ago: "Hire the best people you can, give them what they need to get the job done and then get out of their way."
7. McCullough, "Eye on Future ISR."
8. "Lt Gen Larry James: Air Force Will Combine Space, Cyber and Airborne ISR Capabilities," *Inside Defense*, 26 April 2012.

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Lessons from Modern Warfare

What the Conflicts of the Post–Cold War Years Should Have Taught Us

Benjamin S. Lambeth

In late spring of 2012, the US Joint Staff released a substantial interim study aimed at extracting the most useful teachings offered by the collective combat experiences of the preceding decade. This study was produced in response to a tasking issued the previous October by the chairman of the Joint Chiefs of Staff, GEN Martin Dempsey, USA, for the organization's Joint and Coalition Operational Analysis (JCOA) Division to "make sure we actually learn the lessons from the last decade of war." The JCOA study identified 11 "strategic themes" its authors deemed most important among the many emanating from the "enduring lessons" of the preceding 10 years of conflict.¹

As the first serious attempt by any individual or group to make coherent sense of the combined record of US combat experience in recent years, the study represents a commendable step toward offering a cross-cutting synthesis of that experience and its practical import for military professionals in all walks of life. Yet, because of its focus solely on the US combat record, and all but exclusively on the nation's counterinsurgency (COIN) encounters of the past decade, it offers little more than the most modest beginnings of what is actually needed by way of a more comprehensive stocktaking of the world's main conflicts since the Cold War ended. In his foreword to the assessment, Lt Gen George Flynn, USMC, director for joint force development (J-7) on the Joint Staff, declared that the study was informed by inputs from 46 prior analyses

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covering “a wide variety of military operations,” ranging from the three-week major combat phase of Operation Iraqi Freedom (OIF) in 2003 to future regional and global challenges at all levels of the conflict spectrum.² Despite that fleeting upfront assertion toward all-inclusiveness, however, what actually followed was solely consideration of US COIN operations in Iraq and Afghanistan since major combat in both countries ended in mid-2003.

To its credit, the JCOA study highlights the manifold failures of US defense leaders, both military and civilian, to have adapted quickly and effectively to the new COIN reality. More specifically, it grapples frankly with the US defense establishment’s failure to understand the true nature of its operating environments after major combat ended in Iraq and Afghanistan, its initial fixation on a conventional-war paradigm in the face of newly emergent COIN challenges, its slowness to grasp the importance of effective strategic communication in quest of legitimacy (what the study rightly calls “the battle of the narrative”), and its early mismanagement of the important transitions from major combat to COIN. After acknowledging these key failings, however, the study turns almost instantly to narrow implementation concerns over relatively small-bore challenges at the margins of US combat involvement since 2003. Rather than seeking first to arrive at a more profound and all-inclusive understanding of what has distinguished the broader record of global combat in recent years, it instead proposes mostly procedural recommendations for here-and-now “ways ahead” for dealing with largely low-level problems identified in the study.³ Among its expressed concerns in this regard are the need for better integration between special operations forces (SOF) and conventional general-purpose forces, more open and transparent interagency coordination, greater harmony in coalition operations, improved host-nation partnering, and better responses to the state use of proxies, such as Iran’s support to insurgent forces in Iraq and Afghanistan and the emergence of “super-empowered threats” made possible by nonstate actors exploiting modern technology.⁴

This narrow COIN-centric focus of the study is reasonable enough as far as it goes, considering that the nation’s most acute combat-related headaches throughout the past decade have been almost exclusively COIN-related in the absence of a more overarching US national strategy and with scant discussion of the actual pertinence of COIN to our most vital strategic interests. However, the JCOA recommendations amount

to little more than a “how-to” manual for enabling the US services to cope more effectively in future COIN engagements at a time when any such engagements will, in all likelihood, represent only one of many types of challenges they will face across the conflict spectrum in years to come. As such, they have avoided addressing the most likely demands of the twenty-first century’s second decade and beyond.

The discussion that follows reaches substantially beyond the JCOA study’s assigned charter by taking a more expansive and higher-level view of the core strategic teachings of the main conflicts that have occurred worldwide throughout the post–Cold War era, starting with the first Persian Gulf War of 1991. It aims, in particular, to correct the study’s most significant failure in not having recognized and duly appreciated what one informed observer called the “asymmetric [US] advantages that were truly game-changing in both Iraq and Afghanistan,” most notably, “the integration of persistent sensors on the ground, at sea, in the air, and in space with precise and lethal force application options in the form of remotely piloted and manned aircraft in airspace untouchable by our adversaries.”⁵ Beyond that, by exploring the broader sweep of major armed conflicts, not just by US forces but by other significant players throughout the past two decades, the ensuing discussion seeks pertinent conclusions at a higher level of aggregation from the more diverse spectrum of combat experiences that have unfolded around the world since the Cold War.

Throughout those two eventful decades, the United States and its allies have, in fact, engaged not just in two concurrent COIN wars, but in *six* major exercises in force employment offering instructive value. The first, Operation Desert Storm (ODS) in early 1991, was a limited and ultimately successful coercive campaign to compel Saddam Hussein to withdraw his occupying troops from Kuwait. The second, Operation Deliberate Force in the summer of 1995, was likewise a limited and ultimately successful coercive effort against Serbian human rights violations in Bosnia-Herzegovina. The third, Operation Allied Force, NATO’s 78-day air war for Kosovo in 1999, was yet another successful coercive response to continued human-rights abuses by Serbian strongman Slobodan Milosevic.

In the aftermath of those three limited and purely coercive precedents, the major combat phases of Operation Enduring Freedom (OEF) against the Taliban and al-Qaeda in Afghanistan in 2001 and OIF against

Saddam Hussein's Ba'athist dictatorship in 2003 were substantially different. They sought, and eventually achieved, the complete takedown of the regimes being fought. Once those two campaigns devolved into more slow-motion wars of attrition against the internal resistance movements that subsequently arose in each country, however, they transitioned into COIN efforts aimed at ensuring the establishment of needed domestic conditions allowing the emergence of stable successor regimes. The ultimate outcomes of these last two costly efforts, less now in the case of Iraq and ever more so in the case of Afghanistan, remain to be fully determined. Finally, for more than seven months from mid-March through the end of October 2011, the United States and NATO, first in the brief US-led Operation Odyssey Dawn and then in the more prolonged NATO-led Operation Unified Protector, engaged in a successful air-only campaign conducted by a coalition of 14 NATO members and four additional partner nations to prevent Libyan dictator Moammar Gaddafi from committing atrocities against domestic rebel forces and innocent civilians during the civil war that had erupted earlier that year.

In addition to these US and allied combat involvements, India conducted a little-known but consequential 74-day counteroffensive in the Himalayas in 1999 to drive out more than a thousand Pakistani troops who had surreptitiously occupied a portion of Indian-controlled Kashmir. This so-called Kargil War was largely overlooked in the West because it occurred more or less concurrently with NATO's more attention-getting Kosovo campaign in the Balkans. But it too offers an illuminating case study in post-Cold War high-intensity warfare. Finally, Israel conducted two coercive wars in Lebanon and Gaza in 2006 and 2008–09, respectively, each aimed at bringing a halt to intolerable armed provocations against Israeli civilians by the radical Islamist movements that dominate those areas, Hezbollah in Lebanon and Hamas in the Gaza Strip.⁶

If one considers OEF and OIF as two separate campaigns, each having had an initial major combat phase followed by a more protracted COIN phase, these examples add up to a total of 11 significant combat encounters since the Cold War's end that lend themselves to useful dissection and analysis. There is enough of both cross-cutting consistency and uniqueness in these cumulative experiences, moreover, to yield a rich menu of insights into recurrent global patterns of force employment over the past two decades. When it comes to the many pitfalls that abound in seeking definitive generalizations from such events, however,

one must honor a cautionary note offered by the British military historian Sir Michael Howard, who wrote in 1991 that “history, whatever its value in educating the judgment, teaches no ‘lessons,’ and professional historians will be as skeptical of those who claim that it does as professional doctors are of their colleagues who peddle patent medicines guaranteeing instant cures. Historians may claim to teach lessons, and often they teach very wisely. But ‘history’ as such does not.”⁷

With that point duly noted, the following assessment offers a dozen generalizations from the combined record of force employment worldwide starting in 1991 that have clear implications for future decision makers regarding core questions of strategy and force development choice. In their breadth of coverage, level of analysis, and express focus on big-picture considerations, these conclusions look well beyond the more process-oriented findings—all US-specific and narrowly COIN-related—highlighted in the JCOA study. Because the majority of the world’s conflicts since the Cold War have been dominated by air operations, the first six of the conclusions outlined are inescapably air-centric in nature. However, the ensuing review is not intended principally as a treatise on airpower, but rather on the more all-embracing lessons suggested by the overall pattern of post–Cold War global conflicts. In the case of US experiences, all have entailed indispensable joint and combined force involvement to varying degrees.⁸ Some lessons, notably those featuring the most high-technology air warfare applications, are relatively recent and, as such, can be said to be unique to the post–Cold War era. The remainder, in contrast, are more timeless and constitute long-known, proven lessons US leaders should have remembered.⁹

Airpower Will Inevitably Be Pivotal in Future Wars

This is by far the most preeminent unifying theme to emerge from the collective global combat experiences of the past two decades. Although it may sound so obvious as to seem almost truistic, it nonetheless bears highlighting as the most abiding feature of global conflict since Operation Desert Storm. During that epochal campaign, coalition airpower was the *only* significant contributor to joint and combined combat operations against the Iraqi army for 38 straight days until a four-day air-aided land offensive was unleashed to finish the job against what were by then severely degraded Iraqi ground troops.¹⁰ Even more so during

both Operations Deliberate Force and Allied Force in the Balkans in 1995 and 1999, allied airpower was likewise the sole force element that played any active combat role.¹¹ Similarly, during the major combat phase of OEF in Afghanistan from early October through December 2001, allied airpower, facilitated solely by some 300 Central Intelligence Agency (CIA) operators and coalition SOF troops, allowed the indigenous Afghan Northern Alliance to drive out the ruling Taliban who supported al-Qaeda's presence in the country with no allied conventional ground involvement.¹² Finally, Operations Odyssey Dawn and Unified Protector conducted over Libya by the United States and NATO in 2011 were air-only engagements by actual prior design, with the enabling United Nations Security Council Resolution (UNSCR) 1973 having expressly ruled out any allied ground combat involvement. Pres. Barack Obama repeated that ruling a day later by declaring categorically that "the United States is not going to deploy ground troops into Libya."¹³

Unlike Desert Storm a dozen years before, the air and ground offensives in OIF were unleashed roughly concurrently in March 2003. However, the air component of US Central Command (CENTCOM), thanks to its unblinking overhead intelligence, surveillance, and reconnaissance (ISR) capability, assured allied ground commanders their unprotected flanks were secure. That contribution, along with the relentless precision bombing of fielded Iraqi ground forces independently of land component action, was indispensable to the unimpeded ground race from Kuwait to the outskirts of Baghdad within days and to regime collapse in just three weeks. The air portion of the campaign actually began in a gradual and unannounced way as early as the summer of 2002 when US and British aircraft patrolling the southern no-fly zone over Iraq first began systematically picking apart the Iraqi integrated air defense system (IADS) by attacking fiber-optic cable nodes that connected its command centers, radars, and weapons. Once full-scale combat operations began in earnest, the resultant availability of air superiority over southern Iraq obviated the need for allied aircrews to conduct precursor defense-suppression operations and freed them to concentrate almost immediately on the Republican Guard.¹⁴

During the more protracted COIN phases of OIF and OEF, CENTCOM's air component took a backseat to allied ground troops as the predominant force element. Even then, however, airpower remained both indispensable and central to the war effort through its mostly nonkinetic

but still key enabling contributions by way of armed overwatch, on-call close air support, inter- and intra-theater mobility, medical evacuation, and ISR. For example, in both countries, the constant overhead presence of US aircraft armed with precision weapons made it infeasible for enemy insurgents to concentrate, thus limiting the threat they could pose to coalition forces. Such a presence has been especially helpful in Afghanistan, where NATO forces over time have evolved a strategy entailing numerous small units scattered about the countryside in isolated outposts. Without omnipresent airpower to provide resupply, ISR, and on-call strike, those outposts would not be viable, preventing allied forces from securing large parts of the country.¹⁵

Likewise in India's earlier 1999 Kargil War, what began as an attempt by the Indian army to go it alone soon encountered enough enemy resistance that it was obliged to call on India's air force for help once difficulties mounted.¹⁶ Because both the ground and air players in India's Kargil campaign figured prominently in driving out the invaders, it is hard to say which was the more decisive force element. That question in this particular case is comparable to asking which blade in a pair of scissors is more responsible for cutting the paper. Against nearly a quarter of a million artillery rounds fired by Indian army units, India's air force only dropped around 500 general-purpose munitions and fewer than a dozen laser-guided bombs (LGB). So the army was clearly predominant from a simple weight-of-effort perspective. However, the air contribution was disproportionately effective in its interdiction and psychological roles by cutting off enemy resupply, preventing any evacuation of enemy wounded, and demoralizing the intruders.

The future naturally remains uncertain regarding what the next test of strength for the United States and its allies may entail. In the remote event the nation should ever need to defend Taiwan against Chinese military action, US airpower will be not just pivotal, but predominant because of the open-ocean arena in which such conflict would take place. The associated tyranny of distance would place a unique premium on long-range strike capabilities to counter China's increasingly sophisticated offensive and defensive force posture in the region.¹⁷ Yet, even in the most land-centric future challenges at the opposite end of the conflict spectrum, the ISR, mobility, and strike offerings of airpower will remain indispensable ingredients in the pursuit of joint and combined force success. For example, at the same time the widely acclaimed surge

of US troop strength in Iraq in 2007 saw a 20-percent increase in the number of US ground combatants fielded to the war zone, it also saw a far-less-heralded 1,000-percent increase in the average daily weight of air-delivered ordnance dropped on insurgent targets as an integral part of GEN David Petraeus's COIN strategy for the campaign.¹⁸ In a similar vein, the persistent predominance of US airpower as an asymmetric advantage at all levels of conflict was amply borne out by the intercepted radio complaint of a senior Taliban commander in Afghanistan that the opposing US "tanks and armor are not a big deal. The planes are the killers. I can handle everything but the jet fighters."¹⁹ We can conclude with total confidence that airpower will inevitably figure centrally, albeit to varying degrees depending on the circumstances, in any conflicts during the next decade and beyond.²⁰

Airpower Alone Can Sometimes Achieve Desired Goals

Not only will air operations figure importantly in any wars in the decade to come, at least two combat experiences since the Cold War have shown they can achieve desired objectives essentially singlehandedly if conditions are right. To be sure, no responsible airman has ever proclaimed such a capability will be borne out in every case or as something that airpower's future development should strive for as its ultimate performance standard. Yet, based on the facts, one can say unequivocally that allied airpower singlehandedly achieved NATO goals in both Operation Allied Force over Serbia in 1999 and the successive Operations Odyssey Dawn and Unified Protector over Libya in 2011.

In the first case, for all of its shortcomings by way of excessive gradualism and irresolution, NATO's air war for Kosovo represented the first time ever when airpower coerced an enemy leader to yield with no supporting land involvement. Heated arguments later ensued between some airmen and land warriors over the extent to which Milosevic feared a possible NATO ground invasion and whether this was the main consideration behind his decision to accept NATO demands. Perhaps most notably in this regard, the overall commander of Operation Allied Force, GEN Wesley Clark, himself later claimed in his memoirs that by mid-May, "NATO had gone about as far as possible with the air strikes" and that in the end, it had been the prospect of a NATO ground intervention

that, “*in particular*, pushed Milosevic to concede” (emphasis added).²¹ This imputed ground threat, however, had no basis whatsoever by way of actual allied preparations for an invasion. Milosevic knew that. He also knew NATO’s precision bombing of key infrastructure targets in Belgrade could continue indefinitely. In fact, allied airpower was the only force element that actually figured in the campaign from start to finish.²² To that extent, one can honestly say that for the first time in history, the use of airpower alone forced the wholesale withdrawal of an enemy force from disputed terrain. British military historian John Keegan, long an avowed doubter of airpower, freely admitted that the looming settlement represented “a victory for airpower and airpower alone.”²³ In accepting that revelation, he added he felt “rather as a creationist Christian being shown his first dinosaur bone.”²⁴ NATO’s air-only achievement roundly repudiated a declaration made just the year before by former Army chief of staff GEN Gordon Sullivan that “we are now out of the era—if we were ever in it—of airpower being able to cause someone to do something.”²⁵

Similarly, US and NATO air operations against Gaddafi’s regime in 2011 aided indigenous rebel forces in successfully resisting the predations of that regime against innocent civilians during the Libyan civil war. In that campaign as well, airpower proved decisive in actually toppling the regime and facilitating Gaddafi’s death without any allied ground combat involvement, even though regime collapse was never an avowed objective of NATO’s campaign. Unlike most major combat operations conducted by the United States and its allies and partners throughout the past two decades, this offensive not only began with a determined US effort to neutralize Libya’s IADS, but sought further “to produce an immediate impact on the ground.”²⁶ French Air Force Rafale and Mirage 2000 fighters destroyed several government armored vehicles in the outskirts of Benghazi on 19 March during opening attacks to head off an imminent threat of beleaguered rebel forces being massacred by Gaddafi’s army. There were unconfirmed reports that small teams of British Special Air Service and Special Boat Service SOF troops offered covert help to allied airstrikes by conducting on-the-ground target location, identification, and designation.²⁷ However, any such involvement would have entailed an infinitesimal ground presence at best, rendering the Libyan campaign, like NATO’s air war for Kosovo a dozen years before, yet another joint and combined offensive in which airpower

alone achieved desired campaign goals.²⁸ As an asymmetrical NATO advantage, allied airpower forced the Libyan army into dismounted formations that could not mass, thereby enabling rebel forces ultimately to consummate the final defeat. To that extent, friendly ground involvement was indeed an essential contributor to the campaign's overall course and outcome. Nevertheless, NATO airpower in Operation Unified Protector enabled the desired outcome without the need to commit any NATO ground troops to the fighting.

Campaign planners in no way can routinely *count* on airpower alone being the decisive force element in major operations. Yet in future show-downs featuring such permissive circumstances as those in the Balkans and in Libya, the air weapon has now become so precise and effective that it offers every promise of yielding a welcome situation in which friendly ground troops will no longer need to go head to head in large numbers at the outset against well-armed opposing forces and suffer needless casualties as a result.²⁹

A Ground Input Will Usually Enhance Airpower's Potential

Although modern airpower has demonstrated the ability to effect desired combat outcomes by itself in *some* circumstances, repeated examples during the past two decades have shown that a ground component to joint and combined strategy is bound to make airpower more effective, even if friendly ground troops are not actually committed to combat in the end. In the case of Operation Desert Storm, the logic behind this point was best expressed by the British national contingent commander, Air Chief Marshal Sir Patrick Hine of the Royal Air Force (RAF). He was asked afterwards whether he felt the coalition's impending air offensive might well have had the desired effect on Saddam Hussein without any need for serious ground fighting. When pressed on that very question by CENTCOM commander GEN H. Norman Schwarzkopf, Hine replied: "Was it sensible to rely on that? Frankly, while I was confident that allied airpower would prove very effective, if not decisive, I felt that the risks of going to war with . . . an adverse ground force ratio were too high. . . . So I favored further reinforcement."³⁰ By the same token, when asked whether he had hoped that the Iraqis would cave in before a coalition ground offensive was necessary, CENTCOM's air commander,

Lt Gen Charles Horner, replied, "Of course. I'm an airman."³¹ But he placed little stock in the likelihood of such an outcome and also was a determined supporter of the ground contribution to the campaign plan.

In the more telling case of Kosovo, when allied airpower indeed *did* prove to have been the sole force element committed to the fight, former Air Force chief of staff Gen Merrill McPeak reflected afterward that the Clinton administration and NATO having ruled out any combat involvement of ground forces from the start was

a major blunder. I know of no airman, not a single one, who welcomed that development. Nobody said, "Hey, finally, our own private war. Just what we've always wanted!" It certainly would have been smarter to retain all the options. . . . Signaling to Belgrade our extreme reluctance to fight on the ground made it less likely that the bombing would succeed, exploring the limits of airpower as a military and diplomatic instrument.³²

In a similar vein, the RAF's chief of staff later faulted NATO's decision to rule out a ground option as "a strategic mistake" that allowed Serb forces to forgo preparing defensive positions, hide their tanks and artillery to make maximum use of deception against air attacks, and conduct their ethnic cleansing of Kosovo with impunity.³³

As for the concern voiced by many over the likelihood of sustaining intolerable friendly losses if NATO chose to back up its air offensive with a serious ground threat, there would most likely have been no need for the alliance to actually *commit* troops to combat in the end. By simply being there, a substantial forward presence of NATO troops along the Albanian and Macedonian borders would have made the Serbs more easily targetable by airpower. Because of the absence of such a ground threat, the air war had almost no effect on the Serbian Third Army's campaign of ethnic cleansing, and the number of Serbian tanks destroyed by NATO air attacks in the end was strategically inconsequential.

To expand on this point, NATO initially claimed that it had disabled 150 of the estimated 400 Serbian tanks in Kosovo. General Clark later scaled back that number to 110 after determining that many tanks assumed to have been destroyed had, in fact, been decoys the Serbian army had skillfully fielded in large numbers. A subsequent assessment concluded that "only a handful" of enemy tanks, armored personnel carriers, and artillery pieces could be determined to have been catastrophically damaged by air attacks.³⁴ The marginality of the tank issue to what ultimately mattered in Operation Allied Force was most convincingly

explained by Brig Gen Daniel Leaf, commander of the 31st Air Expeditionary Wing at Aviano Air Base, Italy, when he declared in the immediate aftermath of the cease-fire that “counting tanks is irrelevant. The fact is they withdrew, and while they took tanks with them, they returned to a country whose military infrastructure has been ruined. They’re not going to be doing anything with those forces for a long time.”³⁵

Still, a combat-ready NATO ground presence might have aided the air war and helped deter, or at least lessen, the ethnic cleansing by giving the Third Army a more serious threat to worry about. It might also have allowed a swifter end to the campaign. This suggests an important corrective to the seemingly unending argument between airmen and land warriors over the relative merits of airpower versus boots on the ground. Although Kosovo confirmed that friendly ground troops no longer need to be committed to early combat in every case, it also confirmed that airpower, in most cases, cannot perform to its fullest without the presence of a credible ground component to the campaign strategy—even if only as a passive shaper of desired enemy behavior.

Likewise in Operation Deliberate Force, which also was successfully conducted solely by allied airpower, a combination of other factors played an important, if more indirect, role in driving Serbia’s leaders to the negotiating table. Those additional factors included the growing possibility of a Croatian ground attack against Serbian forces. Without question, it was NATO’s precision bombing—with *no* complaints of inadvertent civilian casualties—that figured most centrally in bringing about the Dayton Accords that ratified an end to Serbia’s hostilities against Bosnia-Herzegovina. Assistant Secretary of State Richard Holbrooke, who negotiated the accords, later wrote that while it had taken the outrage of the Serbian shelling of innocent civilians in Sarajevo to force NATO to launch its air offensive in the first place, the carefully measured but effective bombing made a “huge difference” in producing an acceptable outcome.³⁶ Yet at the same time, the mounting possibility of Croatian ground involvement against the Serbs as the campaign unfolded almost certainly helped allied airpower in eventually convincing Milosevic to cease his human rights abuses and to accede to a negotiated settlement in Dayton not long thereafter.

Finally on this point, the major combat phase of OEF in Afghanistan was, as noted above, also almost entirely an air war in terms of US combat involvement.³⁷ Yet, in that instance as well, it took the supporting

participation of small teams of CIA paramilitary operators and coalition SOF troops on the ground working in close harmony with indigenous Afghan Northern Alliance forces, both empowered by US aerial strike operations, to dislodge the Taliban. The decisive role played by US airpower in that initial phase of CENTCOM's Afghan campaign could not have achieved its ultimate goal without the indispensable enabling contribution of friendly ground troops in enough numbers and with enough combat prowess to leverage the air input to the fullest in consummating the assigned mission.

Airpower Won't Always Be Preeminent in Joint Warfare

Without question, the 12 intervening years between the first Persian Gulf War of 1991 and the three weeks of major combat in Operation Iraqi Freedom in 2003 were truly a triumphal time for US airpower. By the end of that period, the nation's air weapon had finally matured in its ability to deliver the sort of outcome-determining results airpower pioneers had long promised. The years since that unbroken chain of successes, however, have entailed a different kind of fighting and, accordingly, a less front-and-center role for airpower. Since early 2003, the sort of high-end challenges presented by the first Gulf war and by the two subsequent Balkan campaigns have been displaced, at least until recently, by lower-intensity COIN operations in which air attacks have taken a decided backseat to ground engagements as the most visible force activity.

In the eyes of some, the nation's most recent COIN involvements have cast air operations—or at least kinetic air operations—in a seemingly permanent subordinate role.³⁸ If we take a longer view, however, and think about airpower not just in terms of how it is being used *today*, but in the broader sweep of time in which its payoff will be delivered, one will quickly see how its relevance is neither universal nor unchanging. Rather, it is wholly dependent on the particular circumstances of a situation. Put more directly, kinetic airpower can range from being singlehandedly decisive to being largely irrelevant to a combat challenge, depending on operational exigencies of the moment. Because its relative import, like that of all other force elements, is directly related to a

joint force commander's most immediate needs, airpower need not disappoint when it is not the main producer of desired combat results.

Indeed, the idea that airpower should be able to determine war outcomes by itself is as absurd a notion as it would be if applied to any other force element.³⁹ Worse yet, it is an asserted belief airpower critics have falsely ascribed to airmen by suggesting they have somehow uncritically bought into the early views of the Italian general Giulio Douhet, who famously—and wrongly—claimed in the first serious treatise on airpower, published in 1921, that the dawning age of military aviation had made it both “necessary—and *sufficient*—to be in a position in case of war to conquer the command of the air” (emphasis added).⁴⁰ In like manner, critics have charged airpower advocates essentially with guilt by association in pointing to the Air Force's continued institutional adulation of US Army Air Service Brig Gen William “Billy” Mitchell, who, in his roughly concurrent public activism on behalf of airpower, was a no less passionate believer in the preeminence of the air weapon over all other instruments of warfare.⁴¹ No responsible senior Air Force leader has ever given official voice to such overdrawn claims. Yet by spotlighting Douhet and Mitchell and their exaggerated forecasts of what the airplane could do singlehandedly in war and ascribing those forecasts without foundation to today's airmen, parochial ground-force proponents have adroitly kept alive the contrived issue of whether airpower can win wars independently of other forces. As a result, airmen have allowed themselves to be cast into losing positions in doctrinal debates by not sufficiently countering false intimations from others that they believe in the promise of airpower in *all* circumstances of conflict that it can only make good on with fullest effectiveness in *some*.

Granted, although kinetic air employment on a large and sustained scale has been temporarily overshadowed in today's COIN engagements by the greater cost in casualties and effort required by more-ground-centric activities, there will surely be future challenges that again test the nation's air assets to the fullest extent of their deterrent and combat potential. Notwithstanding the natural tendency of Americans to fixate on the here and now to the exclusion of all else, there is an infinite amount of future waiting to present new threats of a different order. Accordingly, whether airpower should be regarded as “supported by” or “supporting of” other force elements is not a question that can ever have an unchanging answer. On the contrary, context will rule in every case,

with the answer invariably hinging on the predominant circumstances of combat at any given moment.

The Major Combat Roles of Air and Land Power Have Been Reversed

Another revelation that has emerged from US post–Cold War combat experiences has been that when it comes to major conventional warfare against modern mechanized opponents like the former Iraqi army or North Korea today, the classic roles of airpower and land power have changed places. In this role reversal, *ground forces* have now come to do most of the shaping and fixing of enemy forces, with *airpower* now doing most of the actual killing of those forces. This apparent change has stemmed, first and foremost, from airpower’s around-the-clock, all-weather, precision standoff attack capability. It has been made possible by accurate munitions in large numbers, electro-optical and infrared sensors in targeting pods, synthetic aperture radars, and ground moving-target indicators.⁴²

This newly emergent changed relationship between air- and ground-delivered firepower was first showcased during Desert Storm’s Battle of al-Khafji, when coalition air assets singlehandedly shredded two advancing Iraqi armored divisions by means of precision night standoff attacks. Those attacks put enemy armies on notice that they could no longer count on a night sanctuary. They further served notice that any attempt by enemy land forces to move en masse, whether in daytime or at night, would ensure a prompt and deadly aerial response. In so doing, precision attack laid the groundwork for a new role of airpower that entailed saving friendly lives by substituting for ground forces. More generally, the ability of the air war to wear down a well-endowed enemy army in ODS to a point where allied ground troops could achieve a virtually bloodless win in just a hundred hours of fighting made for an unprecedented achievement in the history of warfare.

This changed phenomenon of joint warfare in the past two decades is not simply a matter of the notional “hammer” of friendly airpower smashing enemy forces against the “anvil” of friendly ground power. Rather, as one former Army colonel explained, it more entails “a case of ground power flushing the enemy, allowing airpower to maul his forces, with ground power finishing the fight against the remnants and control-

ling the ground dimension in the aftermath of combat. . . . The operational level of warfighting against large conventional enemy forces [in Desert Storm] was dominated by flexible, all-weather, precision strike airpower, enabled by ISR,” whereas “the tactical level of war and the exploitation of the operational effects of airpower were the primary domains of [allied] ground power.”⁴³ As summarized on a chart posted in the air campaign planning cell at the height of the war’s counter-land phase by the chief air operations planner, then–Lt Col David Deptula, “We are not ‘preparing’ the battlefield, we are *destroying* it.”⁴⁴

The same performance applied to Iraq’s fielded ground troops during the three-week major combat phase of OIF in early 2003. In a testament to this, CENTCOM’s air component commander, then–Lt Gen T. Michael Moseley, in his first meeting with the media toward the campaign’s end, said: “Our sensors show that the preponderance of the Republican Guard divisions that were outside of Baghdad are now dead. We’ve laid [*sic*] on these people. I find it interesting when folks say we’re ‘softening them up.’ We’re not softening them up. We’re killing them.”⁴⁵ In a later ground affirmation of this testament, a platoon leader at the leading edge of the final push to Baghdad by the 1st Marine Expeditionary Force, Lt Nathaniel Fick, wrote: “For the next hundred miles, all the way to the gates of Baghdad, every palm grove hid Iraqi armor, every field an artillery battery, and every alley an antiaircraft gun or surface-to-air missile launcher. But we never fired a shot. We saw the full effect of American airpower. Every one of those fearsome weapons was a blackened hulk.”⁴⁶

What largely has accounted for this role reversal between land and air forces in major conventional warfare is that fixed-wing airpower has, by now, shown itself to be substantially more effective than ground-warfare capabilities in creating the necessary conditions for rapid offensive success. In the most telling example of that change, throughout the three weeks of major combat in OIF, the US Army’s V Corps launched only two deep-attack attempts with a force consisting of fewer than 80 AH-64 Apache attack helicopters. The first came close to ending in disaster, and the second achieved only modest success.⁴⁷ Similarly, Army artillery units expended only 414 of their longest-range battlefield tactical missiles, primarily because of the wide-area destructive effects of that weapon’s submunitions and their certain prospects of causing unacceptable collateral damage. In marked contrast, CENTCOM’s air component during the same three weeks generated more than 20,000 strike sorties, enabled by

a force of 735 fighters and 51 heavy bombers. In all, those aircraft struck more than 15,000 target aim points in direct and effective support of the allied land campaign.⁴⁸

In light of that experience, it is fair to say that evolved airpower in its broadest sense, to include its indispensable ISR adjuncts, has fundamentally changed the way the United States and its closest partners might best fight any future large-scale engagements through its ability to carry out functions traditionally performed at greater cost and risk, and with less efficiency, by more traditional ground-force elements. Most notable in this regard is modern airpower's repeatedly demonstrated ability to neutralize an enemy's army while incurring a minimum of friendly casualties and to establish the conditions for achieving strategic goals almost from the very outset of fighting. Reduced to basics, modern airpower now allows joint force commanders both freedom *from* attack and freedom *to* attack—something fundamentally new in the last two decades.

Carrier Airpower Can Sometimes Substitute for Land-Based Fighters

In still another post–Cold War revelation, this one of singular and unique pertinence to the United States, the major combat phase of OEF in late 2001 showed convincingly for the first time that sea-based strike capabilities can, *in extremis*, effectively compensate for land-based fighters when access to forward land basing is unavailable. For a time after the nation's combat involvement in Vietnam ended in 1973, the US Navy's aircraft carriers figured mainly in an open-ocean sea-control strategy directed against opposing Soviet naval forces. For lesser contingencies, the principal purpose of the carrier battle groups was to provide a forward military "presence" for the nation. When it came to actual force employment, however, carrier airpower was used only in occasional demonstrative applications against targets located in fairly close-in areas, such as the strikes conducted against Syrian forces in Lebanon in 1983 and Operation El Dorado Canyon against Libya's Gaddafi in 1986. True enough, during the 1990s, US naval air assets also took part in ODS and in the two Balkan wars, as well as in Operation Southern Watch for a dozen years to enforce the southern no-fly zone over Iraq. Yet those, too, were fairly limited littoral operations conducted within easy reach of their targets that did not place overly onerous demands on US carrier aviation.

The terrorist attacks of 11 September 2001, however, fundamentally changed all that. For the US Navy, they created a demand for a deep-strike capability in the remotest part of Southwest Asia where the United States had *no* access for forward land-based fighter operations. True enough, US Air Force heavy bombers also played a major part in the takedown of the Taliban and al-Qaeda in Afghanistan by flying from the British island base of Diego Garcia in the Indian Ocean and, in the case of the B-2, nonstop from the United States to their assigned targets and back. They dropped nearly three-quarters of all the satellite-aided joint direct attack munitions (JDAM) that were delivered throughout the campaign. Air Force F-15Es and F-16s also played a part starting 10 days later, once adequate beddown arrangements had been secured, by flying extremely long-duration (in one case more than 15 hours) and ultimately unsustainable combat sorties from available bases in the distant Persian Gulf.

Nevertheless, during the major combat phase of OEF, carrier-based fighters operating from the North Arabian Sea and supported by US Air Force and RAF tankers substituted almost entirely for what would have been a far larger percentage of land-based fighters in other circumstances. In all, six carrier battle groups participated in the initial Afghan campaign, with five on station at the same time in December 2001. They conducted around-the-clock strikes against a land-locked country whose southern border was more than an hour and a half's flying time north of the carrier operating areas. Carrier-based fighters accounted for almost 5,000 of the strike sorties flown during that period—three quarters of the total. And their carriers could have generated even more, had additional sorties been needed to meet CENTCOM's target coverage requirements. Such operations would have been unsustainable over the long haul by land-based fighters alone—given the uniquely uncongenial forward-basing arrangements in that demanding scenario—until later in the campaign.

Likewise during the major combat phase of OIF a year and a half later, although there was no potentially show-stopping shortage of land bases in neighboring countries, US carrier-based fighters still flew nearly half of the more than 20,000 strike sorties flown by coalition forces, much in the same manner as over Afghanistan the year before. Those sorties ranged at times to the northernmost reaches of Iraq on missions that lasted sometimes as long as 10 hours, with multiple inflight refuelings.

In clear testimony to the nation's continued status as the world's sole surviving superpower, no other navy in the world could have turned in such a performance.⁴⁹

To be sure, that stellar performance hinged on an active inventory of 12 deployable carriers and 10 carrier air wings, which allowed the Navy to have five carrier strike groups on station and committed to the impending war, a sixth en route to the war zone as a timely replacement for one of those five, and a seventh also forward-deployed and holding in ready reserve—an unprecedented achievement in US carrier surge experience. In the early aftermath of Iraqi Freedom's major combat phase, however, the US Department of Defense (DoD) elected to reduce the Navy's carrier force from 12 to 11 by retiring USS *John F. Kennedy* 13 years before that ship's scheduled decommissioning to help pay for global contingency operations and to reduce the federal deficit. At that time, the Navy's leadership concluded that it could still maintain the carrier surge capability demonstrated on the eve of OIF with only 11 deployable carriers and 10 air wings, but that any further cuts in carrier and air-wing strength could make such a goal unattainable as a practical option.⁵⁰ Today, that goal is challenged in the extreme by caps on discretionary spending that afflict the entire spectrum of US combat capability as a result of the budget sequestration that went into effect in early 2013. Should this oppressive state of affairs be allowed to persist for any sustained time, the vice chief of naval operations, ADM Mark Ferguson, has foreseen an impending fleet shrinkage by at least two carrier strike groups and air wings, a prospective body blow that, he warned, "will fundamentally change our Navy."⁵¹

Effects-Based Operations Outperform Simple Attrition Every Time

Another key conclusion suggested by the combat experiences of the past two decades is that striving for clearly defined and sought-after combat effects from force employment is almost certain to be more fruitful in achieving desired campaign results than merely going after some predetermined level of target destruction for its own sake. This approach first gained currency within the innermost circle of General Horner's hand-picked air campaign planners during the final preparations for ODS. It has since been codified in formal Air Force doctrine, which

defines the approach as one that “starts with the [desired] end state and objectives, determines the effects that must be created to achieve them and the means by which achievement is to be measured, [and] then matches resources to specific actions in order to create those effects.”⁵² It also has been broadly accepted throughout the joint community. For example, in testimony before the House Armed Services Committee not long after major combat in Iraq ended in 2003, the commander of US Joint Forces Command, ADM Edmund Giambastiani, remarked that “our traditional military planning and perhaps our entire approach to warfare have shifted . . . away from employing service-centric forces that must be deconflicted on the battlefield to achieve victories of attrition to a well-trained, integrated joint force that can enter the battlespace quickly and conduct decisive operations with both operational and strategic effects.”⁵³ A similar view was subsequently reflected in the Joint Staff’s doctrinal observation that “massing effects of combat power, rather than concentrating forces, can enable even numerically inferior forces to produce decisive results and minimize human losses and waste of resources.”⁵⁴

To be clear on this point, effects-based operations (EBO) could not be simpler in their essence. Reduced to basics, they are merely measures aimed at tying tactical actions to desired strategic results and undertaken to ensure military goals and combat actions aimed at achieving them are relevant to a commander’s most overarching strategic needs. They are not about inputs, such as the number of bombs dropped or targets destroyed. Rather, they are about outcomes related to desired enemy behavior. As such, they serve to remind commanders to stay focused on the results sought rather than falling into the trap of believing the most easily quantifiable inputs, such as number of sorties flown per day or tons of bombs dropped, offers a measure of anything other than simple weight of effort.⁵⁵

Effects-based operations are also often about second-order (or higher-order) rather than first-order results. A classic illustration is selectively bombing enemy assets to induce paralysis or to inhibit their use rather than attacking them just to achieve some predetermined level of destruction. For example, during Operation Desert Storm, CENTCOM’s defense suppression effort was able to neutralize Iraq’s radar-guided surface-to-air missiles (SAM) not by physically destroying them wherever they could be targeted, but rather by intimidating their operators to a point where they were deterred from emitting with their radars. That same

approach worked again during the Kosovo campaign, as well as in the SAM suppression effort during the major combat phase of OIF.

Likewise, in its attacks against Iraqi ground forces both during Desert Storm and again in 2003, allied airpower showed the potential for defeating an enemy army through *functional* effects rather than through more classic attrition. During the counter-land portion of the first Persian Gulf War, that potential was best reflected in what came to be called “tank plinking” by F-111s and F-15Es during night attacks against buried Iraqi tanks using 500-pound LGBs. That novel tactic was made possible by a long-known phenomenon of physics whereby tanks stand out on an attacking aircraft’s infrared sensor display between sunset and midnight because their rate of heat dissipation is slower than that of the surrounding desert sand—even if the tanks are buried up to their turrets in the sand.

The combat effectiveness of that attack tactic was profound. Before, the Iraqis thought they could survive the air war by digging in during the day and massing only at night. Tank plinking, however, showed that even if armies dig in, they still die. The impact on Iraqi troop behavior was to heighten the individual soldier’s sense of futility. Many Iraqi tank crews simply abandoned their positions once it became clear their tanks could be turned into death traps without warning. Viewed at the individual shooter-to-target level, tank plinking may have appeared at first glance to be only tactical. Yet as a concept of operations, it was most decidedly strategic in its consequences. By some accounts, it allowed a peak kill rate of more than 500 Iraqi tanks per night and remained in that range for several nights in a row.⁵⁶ Whatever the still-indeterminate nightly number may actually have been, however, there is no denying it was well into the hundreds. On several occasions, two F-15Es, each carrying a total of eight GBU-12 LGBs, destroyed 16 Iraqi armored vehicles on a single two-ship mission.⁵⁷ In past wars, such targets would have been largely unthreatened by aerial attacks. The overall net effect was not the attrition achieved per se, but rather its impact on the morale of Iraqi tank crews once it became clear to them that their tanks were not their friends but magnets for coalition LGBs. During the major combat phase of OIF 12 years later, this use of mass precision was actually driven by conscious effects-based thinking for the first time, as campaign planners sought specific combat results and not just some arbitrary level of destruction.

The same phenomenon was a characteristic feature of India's Kargil War in the Himalayas in 1999. Although the Indian air force did not consciously pursue effects-based operations in its targeting during that campaign, its attacks against Pakistani positions did produce important second-order results that bore heavily on Pakistan's ultimate decision to withdraw, especially toward the endgame, once LGBs were introduced. After the first LGB attack, Indian targeting pod imagery showed enemy troops abandoning their positions at the very sound of approaching Indian fighters.⁵⁸ That response on their part offered yet another tacit illustration of the cascading effects the purposeful application of precision firepower can achieve in the pursuit of campaign goals with the greatest economy of force.

Coercion Works Best with Modest Goals and Expectations

On this important point, by no means unique to the post-Cold War years but repeatedly borne out throughout them, Operation Desert Storm was so successful as a military campaign because, in considerable part, it had the limited objective of compelling Saddam Hussein to withdraw his forces that had invaded and occupied Kuwait nearly six months before. CENTCOM's strategy did not seek to bring down his regime, force him to end his suspected effort to develop weapons of mass destruction, or anything else more extravagant by way of a desired outcome. As Pres. George H. W. Bush and his national security advisor, Brent Scowcroft, later wrote presciently in this regard, "Had we gone the invasion route, the United States could still be an occupying power in a bitterly hostile land."⁵⁹ Likewise with Operations Deliberate Force and Allied Force in the Balkans in 1995 and 1999, NATO's airstrikes against Serbian military and infrastructure targets sought solely to get Milosevic to stop killing innocent civilians. They did not seek more ambitious goals, such as insisting he relinquish his position in the Serbian leadership.⁶⁰

Perhaps the clearest recent example in which attempted coercion did *not* succeed as initially hoped may be found in Israel's flawed campaign against Hezbollah in Lebanon in July and August 2006 in response to a brazen provocation by a Hezbollah hit team against an Israel Defense Forces (IDF) border patrol on 12 July. Less than a week after the IDF's

retaliatory counteroffensive against the terrorist organization was set in motion, Israel's prime minister, Ehud Olmert, declared in a speech to the Knesset, almost as a throwaway line and with no apparent prior deliberation within his cabinet, that his government's goals included an unconditional return of the two IDF soldiers kidnapped during the raid and a crushing of Hezbollah as a viable military presence in southern Lebanon. Not surprisingly, those extravagant goals proved unattainable by *any* military means Israeli and international opinion would be likely to countenance. For that reason, they remained elusive throughout the 34 days of fighting. Once Olmert declared getting the two soldiers back as his goal, all Hezbollah's leader Hassan Nasrallah had to do to claim victory was to refuse to return them. And that he did masterfully in controlling the campaign's narrative after the fighting ended.

For his part, the IDF chief of staff, Lt Gen Dan Halutz of the Israeli Air Force, wanted to teach Nasrallah a lesson he would not forget. That was a reasonable enough intention as far as it went. Yet the Olmert government's chosen response was not fully explored in all its ramifications before being unleashed. As a result, the IDF launched headlong into its counteroffensive without having given adequate thought to the likely endgame and to a suitable strategy for completing the campaign on a high note. The price paid for that failure was high. In the end, Israel's second Lebanon war of 2006 entailed the most inconclusive combat performance by the IDF ever, in that it represented the first time in which a major regional conflict ended without a clear military victory on Israel's part.⁶¹

The single most harmful aspect of the campaign's conduct that undermined the *appearance* of Israel's combat effectiveness against Hezbollah was the asymmetry between the exorbitant goals initially declared by the prime minister and the unwillingness of his government to pay the price needed to achieve them. Not only did those goals get progressively ramped down as the campaign slogged along; they created initial public expectations that had no chance of being fulfilled. Had the declared goals been more modest and achievable *before* the campaign was fully launched, such as merely dealing Hezbollah a disproportionately painful blow in punitive response to its border provocation, Israel's second Lebanon war might have ended with greater success.

To its credit, the IDF two years later conducted a more satisfactory campaign against Hamas in the Gaza Strip that was disciplined by the

more limited and realistic objective of forcing Hamas to cease firing rockets into Israeli population centers and nothing beyond that.⁶² The Olmert government went far toward restoring Israel's image of deterrence that had been so badly tarnished by the IDF's less-effective performance in 2006. It also reaffirmed the obvious commonsense truism that coercion works best when one has overwhelming military power and the willingness to use it in pursuit of achievable goals.

For Regime Change, Planning just for the Takedown Won't Suffice

The single most costly and sobering lesson US leaders should have learned from their combat experiences of the past two decades, most notably from OIF, is that if a campaign's overarching goal is not just to coerce but to supplant an existing regime, then simply planning for successful major combat will not achieve that goal. Whether or not one believes in retrospect that going to war against Iraq was a wise policy choice in the first place, the overwhelming consensus among Americans today is that the second Bush administration's campaign plan failed utterly to anticipate and hedge adequately against the needs of post-campaign stabilization. It ignored the most fundamental principle of democratic nation-building put forward by the late Prof. Samuel Huntington at Harvard University more than four decades ago, which holds that an indispensable precondition for successful political modernization must be the establishment and nurturing of effective institutions of state governance.⁶³

Without question, toppling Hussein's regime had the welcome effect of ending not only the iron rule of an odious dictator, but also a situation that had made for a decade-long US and British presence in Southwest Asia to enforce the no-fly zones over northern and southern Iraq. The flawed manner in which the Bush administration pursued that goal, however, reminded us once again that no plan, however elegant, survives initial contact with the enemy. More important, it taught us—or should have taught us—that any truly complete strategy for regime change must anticipate and duly plan against the most likely political hereafter in addition to the campaign's major combat phase.

On this important point, Frederick Kagan in 2006 spotlighted what he called “the primacy of destruction over planning for political outcomes”

that had prevailed in US military thought since the first Persian Gulf War. That focus, he wrote, led to “a continuous movement away from the political objective of war toward attention in planning to merely destroying things.” This was best reflected, he said, in the telling label “Phase IV,” which was the anticipated follow-on to the major combat phase of Iraqi Freedom, “Phase III.” That characterization treated post-war stabilization almost as an afterthought to the “decisive operations” that had come to be thought of by US planners as the main mission.⁶⁴

That approach worked more than adequately for ODS and for the two Balkan wars, which entailed limited efforts aimed at coercing desired enemy behavior but not at the more demanding goal of replacing one regime with another. However, as Kagan rightly argued, if any future combat involvement by the nation is ever again to be directed toward the difficult and costly goal of regime change, as was clearly the case in Afghanistan and Iraq, then the first concern must be determining the desired end state and then duly planning for it ahead of time. Bringing down an incumbent leadership is only a buy-in condition for achieving the ultimate goal. That means that “Phase IV,” or however one elects to label the regime replacement activity, cannot be subordinate to, or even equal to, “decisive operations.” It must *predominate* in campaign planning.

Even the Best Force Imaginable Can’t Make Up for a Flawed Strategy

This important teaching, also not unique to the post–Cold War era but clearly borne out throughout it, was spotlighted most vividly in the early aftermath of NATO’s air war for Kosovo. It was best summed up by ADM James Ellis, commander of Allied Forces South and US combat operations during the Kosovo campaign. In reflecting on the campaign experience, he declared in a subsequent briefing to US military leaders that *luck* played the main role in ensuring the air war’s success. More to the point, he charged that NATO’s leaders “called this one absolutely wrong” by relying on hope that just a few nights of bombing might lead Milosevic to accede to NATO’s demands. Their failure to anticipate what might happen if they were proven wrong led directly to most of the ensuing downside consequences for the alliance over the course of the campaign. Admiral Ellis concluded that the need for consensus within NATO had resulted in an incremental war rather than more decisive

operations. He further remarked that excessive concern over avoiding collateral damage had created both sanctuaries and opportunities the enemy successfully exploited. He also suggested that the absence of a credible NATO ground threat probably made the air war last longer than necessary to achieve its goals.⁶⁵

The importance of a well-founded strategy from the very start of a joint and combined campaign was again highlighted by the rude awakening the second Bush administration experienced when its just-completed major combat phase of Iraqi Freedom mutated within days into an ugly domestic sectarian struggle and eventual insurgency. The insurgency dominated the world's headlines for four years until an appropriate strategy allowed for an eventual stabilization of daily life in that long-embattled country. That harsh lesson was borne out yet again when Israel overreached in its initial goals in Lebanon in 2006 and implemented a strategy that relied, at the outset, entirely on standoff air and artillery attacks against preselected Hezbollah targets throughout Lebanon. As the IDF's counteroffensive ground on without visible progress, its leaders knew full well air and artillery strikes alone would not bring an end to Hezbollah's retaliatory rocket fire into northern Israel. Nevertheless, there was a widely felt compulsion throughout the country to keep putting off the move to a ground counteroffensive for as long as possible out of deep-seated concern over the likelihood of incurring troop casualties in unacceptably high numbers.

The main problem with the Olmert government's chosen strategy, however, was the disparity between its initially expressed goals and the IDF's actual wherewithal for achieving them. More to the point, Israel's time-sensitive air attacks against Hezbollah's short-range rockets as they were detected and geolocated in real time were ineffectual in the absence of a concurrent and determined ground invasion to locate and destroy their hidden storage sites. Two other related problems entailed the government's not having defined more-attainable goals from the start and not having implemented more-aggressive measures thereafter to yield a more-positive result. Those two failings made it easy for Nasrallah to boast after the cease-fire went into effect that he had won a "divine victory," as he called it, just by virtue of Hezbollah's having successfully weathered Israel's attempts to beat it down.⁶⁶ In the case of Israel's subsequent war against Hamas in the Gaza Strip two years later, the Olmert government did a better job of controlling expectations. It worked especially hard to

ensure its combat operations would be as brief as possible once under way. It also took care to set more realistic and attainable goals, rejecting all temptations to seek regime change in the Gaza Strip, to disarm Hamas, or to reoccupy the area with an open-ended IDF troop presence.

The most important and enduring conclusion to be drawn from these examples is that neither the most capable air weapon nor, for that matter, *any* combination of force elements can ever be more effective than the strategy and campaign plan it is intended to serve. As Colin Gray has well observed in this regard, for airpower's inherent advantage "to secure strategic results of value, it must serve a national and . . . overall military strategy that is feasible, coherent, and politically sensible. If these basic requirements are not met, [then] airpower, no matter how impeccably applied tactically and operationally, will be employed as a waste of life, taxes, and, frankly, trust between the sharp end of [a nation's] spear and its shaft." More to the point, he insisted, a nation's overall campaign strategy can be so dysfunctional that it "cannot be rescued from defeat by a dominant airpower, no matter how that airpower is employed."⁶⁷

Mission Creep Usually Comes at a High Price

As the United States learned the hard way from its long and ultimately failed combat experience in Vietnam more than a generation ago, the high cost of what has come to be called "mission creep" is the main lesson the Israeli government should have drawn from its 34-day war against Hezbollah in 2006. Israel's forces initially struck back almost reflexively in response to Hezbollah's border provocation on 12 July, but without any clearly defined counteroffensive goals in mind. During the first week of mainly standoff air and artillery strikes against preselected targets, the Olmert government gave little systematic thought to *why* it was engaged against Hezbollah or to what it hoped to accomplish by its combat operations. Then, on the campaign's sixth day, as noted above, Prime Minister Olmert declared, almost in passing, that among his government's aims were to get the two abducted soldiers returned unconditionally and to crush Hezbollah once and for all as a viable fighting force in southern Lebanon. That declaration instantly put Olmert and the IDF's chief, General Halutz, in a de facto divergence of avowed objectives. Halutz rightly understood from the start that getting the two soldiers back was a practical impossibility using military force alone and

that any attempt to draw down Hezbollah's military presence in southern Lebanon to a point of insignificance would be far too costly to be practicable. It also gave rise to expectations among Israel's rank and file that predictably set the country up for an appearance of having lost once it failed to achieve those two goals.

Ultimately, the cease-fire brokered by the UN brought an end to Hezbollah's unrelenting rocket barrages into Israel. To that extent, the Olmert government *did* achieve something for its effort. But the IDF's combat operations did not yield an immediate return of the two soldiers as Olmert had demanded.⁶⁸ They also left Hezbollah's military organization intact to fight another day. That less than ringing outcome left Israel with a clear appearance in the eyes of many that it had promised more than it could deliver and had accordingly gone to war in vain.

In much the same way, the United States and NATO have increasingly had a comparably unhappy experience in Afghanistan throughout the past decade since the major combat phase of OEF. The administration of Pres. George W. Bush went into Afghanistan in October 2001 in the first place with the noble and limited goal of destroying al-Qaeda's base of operations and driving out the ruling Taliban who had given Osama bin Laden safe haven. After less than three months, the administration achieved that limited goal.

There also was an implied notion in the campaign plan that by bringing down the Taliban, the administration would open a path toward a democratic alternative for Afghanistan over time by establishing a successor regime under Hamid Karzai. Such an outcome, however, was never the campaign's main intent. The administration's most overarching goal was simply to smash al-Qaeda and to unseat the Taliban. After achieving that goal, it promptly lost focus on Afghanistan and turned its attention and commitment to Iraq. Once the United States appeared to have lost interest in Afghanistan, the Taliban saw a chance to regenerate from its new sanctuary in Pakistan and to make a determined bid to regain control.

As a result, what started out as a narrow and masterfully conducted US effort aimed mainly at dealing a death blow to al-Qaeda's armed presence in Afghanistan became transformed over time into a NATO-led COIN campaign in vain pursuit of democratic nation-building in that primitive tribal land. That so far fruitless shift in mission focus has given the United States its longest war ever, with still no clear resolution

in sight. The change in strategy and goals that occasioned it did not occur as a result of any studied prior leadership deliberation in Washington. Instead, by all signs, it simply occurred by its own organizational and bureaucratic momentum. Today, a decade later, a growing US consensus holds that the effort has been an abject failure and also has come at an exorbitant price. On that point, former Air Force chief of staff Gen Ronald Fogleman summed up well what matters most, when he declared flatly in April 2012 that “the American public’s patience for this war is over. It was a dream that you could take an area of the world that wasn’t a functioning country and turn it into a functioning country on the time lines required to satisfy the American public. It just wasn’t going to happen.”⁶⁹ For that grim result, we can thank uncontrolled mission creep entirely. It comes close to being at the top of the list of post–Cold War US strategic misjudgments.

We Don’t Get to Pick our Wars that Matter Most

This final conclusion drawn from the collective combat experiences of the past two decades may sound at first like yet another blinding flash of insight into the obvious. Yet, it bears remembering and honoring all the same. As far back as the days of the Prussian General Staff, Carl von Clausewitz warned of the danger of confusing the war one is in with the war one would like it to be.⁷⁰ More recently, we have been reminded how the conflict situations that defense leaders actually had to deal with were ones the scenario writers somehow forgot to include in their assumptions and predictions.

Operation Desert Storm was just the first of such examples. When Saddam Hussein was making his final covert preparations to invade and occupy Kuwait, the United States was fixated on the worst-case contingency of a head-to-head showdown against Soviet and Warsaw Pact forces in Central Europe. The nation’s fielded general-purpose forces were postured mainly to meet that demanding combat challenge. Had any serious US defense analysts predicted in July 1990 that within six months, the nation would be at war in the Persian Gulf against a different opponent in its most high-intensity combat involvement since Vietnam, they would have been dismissed by their peers as eccentrics.

Four years later, NATO’s first-ever combat experience in Europe in 1995 was triggered not by Soviet malfeasance, against which the alliance

had long planned and trained, but rather by the Balkan civil war that erupted in the early 1990s as a result of the breakup of Yugoslavia. Both Operation Deliberate Force in 1995 and the subsequent Operation Allied Force in 1999 were unanticipated reactions to a surprise post-Cold War development that eventually begged for a forceful NATO response.

One can say much the same about the remaining global conflicts of recent years. India's Kargil War, which unfolded in the Himalayas while NATO's Kosovo campaign was under way, was a totally improvised response to an unanticipated Pakistani incursion into Indian-controlled Kashmir that bordered on shock to the Indian government. For its part, OEF stemmed entirely from the terrorist attacks of 11 September 2001, which likewise came completely without warning. Of course, one can say that the subsequent three-week major combat phase of OIF was anything but a surprise, since the Bush administration had been planning that optional war for more than a year before the first bomb fell on Baghdad. But for sure, the sectarian turmoil and domestic insurgency that ensued in its wake and that consumed the nation for six years thereafter was most definitely something for which the administration had not planned, even though more than a few informed observers both in and out of the US government had repeatedly warned of such a result. Finally, Israel's counteroffensive against Hezbollah in 2006 was likewise an impromptu response to a surprise border provocation at a time when the IDF's attention had been focused since 2000 entirely on the Palestinian uprising in the occupied territories.

In 2008, Secretary of Defense Robert Gates admonished the US Air Force leadership harshly when he insisted on an all but total concentration of the nation's defense effort toward the demands of supporting our then-ongoing ground-centric COIN wars in Iraq and Afghanistan. He contrasted those onerous demands with an alleged Air Force proclivity toward remaining "stuck in old ways of doing business," as he put it, by pursuing its fifth-generation F-22 air dominance fighter as its main force development priority.⁷¹ For his part, Gates' inclination was to regard concern about tomorrow's threats as being infected by what he dismissed airily as "next war-itis."⁷² Today, changed leadership in the Pentagon has issued new defense guidance that stresses very different priorities than those the nation has been accustomed to for the last eight years. In his cover letter promulgating that new guidance, Secretary of Defense Leon Panetta stressed that tomorrow's US defense posture will

fixate mainly on the Asia-Pacific region. He further declared that henceforth, the US defense enterprise will shift “from emphasis on today’s wars to preparing for future challenges.”⁷³ If that declaration can be taken at its word, it tells us that “next-war-itis” is finally back in vogue again—as well it should be.

Yet, however right-minded it may be in principle for the United States to have swung its main attention and focus to the Asia-Pacific region, the world remains a dangerous place in which challenges to the nation’s core interests can come from anywhere. On the other side of the planet, Syria has been aflame in civil war against the dictatorial regime of Bashar Assad for more than two years and most recently has been dominated by mounting instabilities that could spread beyond its borders in multiple untoward ways. Israel has understandable concern over Iran’s nuclear ambitions, along with an equally understandable determination to do something decisively about them, should worse come to worst. For their part, the radical Islamist organizations Hezbollah and Hamas have now accumulated enough short-range rockets from their Syrian and Iranian providers (more than 70,000 in all) to make life intolerable for Israel should another round of unconstrained attacks against its civilian population centers emanate from Lebanon and the Gaza Strip.

Any of these tinderboxes, along with numerous others one can imagine, could potentially lead to future US combat involvement of one sort or another anywhere in the world, irrespective of the current administration’s avowed determination to concentrate now mainly on the Asia-Pacific region. It follows from the foregoing that if the United States intends seriously to preserve its current privileged status as the world’s sole surviving military heavyweight, it will have no choice but to keep its forces capable of effective and credible employment across the entire conflict spectrum. Unlike most countries, the United States lacks the luxury of choosing either its wars of inevitability or its preferred way of fighting.⁷⁴ *That* is the ultimate bounding reality the nation faces in its security planning both for now and for the foreseeable future. As Deputy Assistant Secretary of Defense David Ochmanek observed in this regard before the latest looming regional tests for the United States had fully crystallized, “We are a superpower. We have important interests in the Persian Gulf, in Europe, in Northeast Asia, and the East Asian littoral. We face challenges to those interests. So if we’re going to continue to underwrite security alliances in those regions, we can’t just focus on one part of

the world.”⁷⁵ It behooves us as well to remember that the *only* reason our enemies have turned to unconventional fourth-generation warfare is because our conventional forces, first and foremost the nation’s air weapon, dominate absolutely.⁷⁶ Accordingly, as we continue our ongoing effort to extricate ourselves cleanly from our now decade-long enmeshment in Afghanistan, we should remain no less mindful of the need to preserve and further improve our current monopoly of asymmetrical advantages against the possibility of future showdowns against more able opponents who can be counted on to test us for higher stakes in years to come. On this count, the late Amb. Robert Komer often cautioned Pentagon planners that in hedging against tomorrow’s most likely wars, they should take care not to forget about hedging also against the one we could lose.

Looking to the Future

The United States now finds itself in a situation disturbingly akin to one we faced more than a generation ago that brought the nation’s force modernization to a virtual halt while we were fixated on our war in Southeast Asia. During the eight years we were bogged down in Vietnam between 1965 and 1973, the Soviet Union, encouraged and abetted by Washington’s consuming distraction, carried out a massive and unchecked expansion of its nuclear and general purpose forces. In the realm of intercontinental and submarine-launched ballistic missiles, Moscow achieved acknowledged parity with the United States in both numbers of fielded launchers and overall force capability and quality. During the same period, the Soviets also upgraded their conventional forces opposite NATO into a daunting juggernaut overshadowing Western Europe. That development confronted Western defense planners with a threat picture that ultimately included some 50,000 main battle tanks arrayed against the North German Plain and, for a time, the introduction of third-generation MiG-23 and Su-24 combat aircraft into the Soviet air order of battle at a rate of a US fighter wing—equivalent a month. Those challenges, prompted largely by our failure to hold up our end of the more-enduring competition with the Soviet Union, imposed new and weighty demands on US combat forces across the board. It took nearly two decades of focused effort by the US defense establishment to reverse those odds.⁷⁷

Today, having been similarly drained of equipment, resources, and societal energy by nearly a decade of more recent COIN involvement in Iraq and Afghanistan, the United States finds itself facing a comparable situation in the presence of new looming challenges around the world. Iran is increasingly within reach of a credible nuclear capability, while an opaque and despotic regime in North Korea is ever closer to becoming yet another troublemaker of great potential consequence. In addition, an emerging China with both regional and global ambitions inimical to US interests has acquired an increasingly robust anti-access and area denial force posture to back them up. These are but three of the many concerns that will dominate the second decade of the twenty-first century and beyond. In light of this, US defense leaders face a far more momentous roster of competing demands for their attention than simply getting better at COIN, as the JCOA study seemed to counsel.

To be sure, the problem is not so much with our *existing* power projection capability. As Lt Gen David Deptula rightly noted shortly before retiring from the USAF in late 2010,

the United States dominates the air today. We attain air superiority by penetrating wherever we desire, denying use of airspace to our foes, and moving stealthily where and when we wish with real-time command and control. We strike with precision from a variety of platforms and bases and with a wide range of munitions. We acquire and develop comprehensive knowledge from the air, space, and cyberspace through cutting-edge [ISR]. And we move these forces and resources anywhere on the globe with robust tanker and lift fleets. These systems are synergistically linked and effective in all contingencies we currently face.⁷⁸

Rather, the problem is with the long-stalled progress of force development for continued US dominance in the face of likely *future* mission needs at the higher end of the conflict spectrum. To note just one example, the investment emphasis over the past decade on meeting the here-and-now demands of COIN and our associated heightened reliance on slow and vulnerable remotely piloted aircraft and on lighter manned ISR platforms such as the propeller-driven MC-12 have reflected a mindset that presumes we will always enjoy permissive and uncontested airspace.

In the face of the unprecedented constraints on available funding that have come to limit the DoD's freedom of investment choices, simply complaining about this predicament will never offer useful guidance by way of suggesting a workable program for force recapitalization. One promising step already at hand toward addressing that challenge is the joint Air Force and Navy Air-Sea Battle initiative aimed at negating attempts

“to prevent access to parts of the ‘global commons’—those areas of the air, sea, cyberspace, and space that no one ‘owns’ but upon which we all depend” by better leveraging the cross-service and cross-domain integration of our air and naval forces and operating routines so as to ensure US “access to places where conflict is most likely and consequential.”⁷⁹ Steadily growing anti-access and area denial challenges will make successful power projection ever more difficult in certain contested areas of the world, most notably the Persian Gulf and Western Pacific. Unifying Air Force and Navy efforts toward countering those challenges is one way of seeking near-term synergies that are both effective and affordable.

An important recent joint statement in this regard by the chief of naval operations, ADM Jonathan Greenert, and the USAF chief of staff, Gen Mark Welsh, on ways of best leveraging cross-service synergies frankly acknowledged that in light of recent draconian cuts in the nation’s defense spending, “our military will have to adjust to getting fewer dollars to protect our nation’s security interests.” They added, in an equally candid and realistic admission, that their most consuming challenge of the moment is to “improve our combined capability to assure access without expensive new investments.”⁸⁰ Just how this seemingly insurmountable feat of joint force development will be accomplished by our financially beset service leaders and their civilian superiors remains to be seen.

For the time being, perhaps the first challenge facing the US defense establishment entails finding a way of successfully leaping across the chasm of public skepticism regarding the need for immediate recapitalization of high-end combat strength in what remains by far the world’s most robust fighting force in all mission areas at a time of near-unprecedented economic crisis. To land safely on the other side, one cannot escape facing squarely the profound resource pinch the defense sector now faces—and will continue to face for the next decade and most likely beyond. Defense professionals with legitimate concern over the depth of the nation’s current security predicament must first accept that buying more of *all* needed hardware equities is simply not a realistic option. In contrast, buying such equities *only* as hedges against future high-end contingencies or, as has been the preferred trend throughout the past decade, *only* to address today’s most pressing COIN needs may be more serviceable, but it too is not a responsible approach to resource apportionment. The inescapable truth here is that the nation’s towering federal deficit and severely curtailed funds for discretionary spending as

a result of sequestration are both real, and they will only become more constraining until dealt with as a first order of business at the expense of all else that also matters. General Welsh expressed this point with uncompromising candor in a recent meeting with reporters: “We’ve entered a period from which we must first recover before we can think about what else might be possible down the road.”⁸¹

After coming to effective grips with the reality of today’s resource limitations, a useful next step might then entail exploring best ways of optimizing force-development investment choices against future needs with due appreciation of that constraint. In the face of what will clearly be a much-diminished top line on available funds for the acquisition of next-generation systems, such optimization will, in turn, mean incrementally pursuing capabilities in a manner that will offer the greatest robustness for accommodating the largest spectrum of future challenges and their relative consequentiality for the nation should they occur. One possible middle course targeted toward the long haul could entail deemphasizing the exorbitant manpower-intensive spending that characterized the bulk of the US defense effort centered on sustaining our occupying land forces in Iraq and Afghanistan throughout the past decade. Instead, the Air Force and Navy must seek a force mix that positions the nation, in the fullness of time, beyond its current middle-weight composition of power-projection assets that is ill-configured for tomorrow’s most likely demands. Today’s force consists mainly of short-range multirole fighters that are best suited for large-scale conventional campaigns in Europe, Asia, or the Middle East. Although one can never wholly discount a repeat of such classic wars of the recent past like the major combat phase of OIF, there is a far greater likelihood future US combat embroilments will more often present themselves as the sorts of lower-intensity challenges like the ones we face today in our war against Islamist extremism and as higher-stakes confrontations such as anti-access and area denial challenges over long oceanic distances—a potential showdown with China over the future of Taiwan, for example. During their impressive surge performance during the major combat phases of OEF and OIF, the US Navy’s aircraft carriers had the advantage in each case of a benign operating environment, both at sea and in the air. More challenging future scenarios may not share this welcome feature and could severely limit the carriers’ contribution to sustained power projection. To remain a pivotal player in such situations, the Navy will need to address emerging

higher-end threats to its carriers and acquire more survivable low-observable strike platforms, both manned and unmanned, if its air arm is to continue to be as relevant in the future as in the recent past.

In the meantime, as the services analyze their resource-constrained alternatives for meeting tomorrow's needs, and as their leaders work toward a force mix configured to meet future demands qualitatively different from those of the preceding three decades, it will be incumbent on them to hedge against plausible challenges at *both* the high and low ends of the conflict spectrum to the greatest extent available resources will allow. True enough, low-intensity irregular warfare of the sort addressed in the JCOA study may be the only form of combat that our nation is beset with today. It may even be one wave of the future when it comes to the likely shape of most conflicts yet to come. Yet the era of bigger wars against more capable opponents who could pose existential threats to the United States has not ended for all time. One need not specify *who* those opponents may be to argue cogently that if we fail to hedge prudently against such possibilities until the need arises, it will be too late. In a speech at the International Institute for Strategic Studies in London three years ago, the RAF chief of staff, Air Chief Marshal Sir Stephen Dalton, summed up the force-planning consequences of this observation concisely: "For the sake of our future security, Afghanistan must serve as a prism to view the future, not as a prison for our thinking. A bespoke [built-to-order] counterinsurgency force with niche capabilities will not provide . . . political decision makers with a flexible military lever of power for the mid-to-long term."⁸²

In clear testimony to this, novel tests of our strength from rising powers like China, Russia, Iran, North Korea, and possibly others yet to emerge could include such sophisticated threats as improved air and missile defenses, resultant denial of access to the most heavily defended target areas, and determined efforts to hinder our freedom of operations in space and cyberspace. Even if the United States never comes to blows with China or Russia directly, we can surely count on the proliferation of their latest fighters and other high-technology weapons to countries we are more likely to confront. Against such more likely challenges at the higher end of the conflict spectrum, what will be needed—and what the nation now lacks—is a larger number of long-range ISR and strike platforms, both manned and unmanned, capable of operating across transoceanic distances and possessing the attributes needed to survive,

persist, and perform effectively in the most heavily defended airspace. By the same token, there will likely also be a need for new platforms optimized for lower-intensity warfare, such as an improved successor to the current uninhabited MQ-9 Reaper and a relatively cheap manned light attack aircraft to be operated either by the USAF or by supported host-nation air arms that would allow more affordable battlespace persistence and effectiveness than today's higher-end combat aircraft, now worn out from a decade of unrelenting COIN overuse, and tomorrow's even more costly F-35s in countering the less demanding hybrid challenges that will tend to predominate at the lower end of the future threat environment.⁸³

As for the more specific teachings offered by the global conflicts of the past two decades, three abiding considerations warrant emphasis. First, it will be important to recognize and remember the difference between those combat operations that succeeded because US and allied forces were uniquely capable and strong and those that succeeded because the adversary was comparatively weak and inept. Notably, almost all of the 11 cases of global conflict throughout the past two decades discussed above entailed substantial mismatches in opposed force capability and combat prowess. These differences must warn the United States against complacency as it considers future challenges.

Second, the United States would do well to heed a recent injunction offered by the president of the Council on Foreign Relations, Richard Haass, who wisely counseled the importance, in light of our costly combat experience of the past decade, of "resisting wars of choice where the interests at stake are less than vital and where there are alternatives to the use of force."⁸⁴ More than 6,000 US servicemen and women lost their lives during the nation's protracted ground-dominated COIN engagements in Iraq and Afghanistan since 2003, to say nothing of the thousands more who were wounded in combat, many gravely.⁸⁵ As for the costs, both wars together are expected eventually to become the most expensive in US history, with some \$2 trillion already spent—more than half of the entire US government budget for fiscal year 2013—and with an estimated final outlay totaling from \$4 to \$6 trillion in decades yet to come when one includes long-term medical care and disability compensation, needed military equipment replenishment, and associated social and economic costs.⁸⁶ The United States cannot select the wars that most fundamentally threaten its core interests, but those over

which it *does* enjoy the luxury of choice should be approached more diffidently in the future if the costly experience of our past decade of COIN warfare offers any guide. The persistence of the sectarian violence and insurgency against the allied occupation, seemingly without end for a time, that followed the successful major combat phase of OIF in 2003 led former secretary of defense Melvin Laird, who oversaw the endgame of US involvement Vietnam, to remark more than two years later that “getting out of a war is still dicier than getting into one.”⁸⁷ With fewer dollars available to vouchsafe the nation’s security, it will be essential for the United States to forego optional and avoidable land wars in years to come and to seek smarter ways of ensuring our access to those parts of the world where unavoidable conflicts are most likely to occur.

Finally, in that respect, although the United States faces no peer competitor today, at least on the near-term horizon, or any current existential threat to its survival, it is fair to suggest that the nation is entering a less safe global environment in the decade ahead. In light of that, a worthy goal for the nation’s leaders in preparing for conflicts yet to come would be to learn from our costly and painful ground combat experiences of the past decade by relying to the greatest extent possible henceforth on our clear comparative advantages in global mobility, standoff ISR, and air-delivered precision strike capability so as to be poised whenever necessary to project US power without at the same time projecting US vulnerabilities. **SSQ**

Notes

1. *Decade of War*, vol. 1: *Enduring Lessons from the Past Decade of Operations* (Washington: DoD Joint and Coalition Operational Analysis Division, Joint Staff J-7, 15 June 2012), v, 2.

2. *Ibid.*, v.

3. In commenting on the study’s narrow fixation on tactical-level details of US COIN involvement since 2003 in general disregard of the larger strategic lessons one might draw from the full sweep of combat experience worldwide since the Cold War’s end, a former president of the National Defense University and later president of the Air Force Association wrote, “If I were asked, about half of the [study’s] eleven recommendations wouldn’t even make my Tier 3 list, let alone be in the top eleven.” Lt Gen Michael M. Dunn, USAF, retired, e-mail to author, 7 June 2012.

4. To expand on this last point, Israel’s experience with Hezbollah in Lebanon in 2006 and its more successful effort dealing with Hamas in the Gaza Strip in December 2008 and January 2009 put clear handwriting on the wall for a more demanding sort of low-end challenge the United States may have to contend with in the next decade and beyond. This challenge entails nonstate players with the kinds of capabilities typically associated with conventional armed

forces and operating as forward proxies for hostile powers like Iran. Such proxy arms will increasingly gain effective leverage from what has come to be called the G-RAMM threat (for guided rockets, artillery, mortars, and missiles) intended to hold civilian populations at risk, as Hezbollah and Hamas did to Israel in the Lebanon and Gaza wars. Israel's operations against the two organizations showcased a new form of asymmetric warfare that is likely to persist throughout the second decade of the twenty-first century and beyond. As one commentator aptly pointed out three years later, the first of those two experiences "was the proverbial canary in the coal mine. It suggested that a new, more deadly form of irregular conflict—known as 'irregular warfare under high-technology conditions'—may be emerging." Andrew F. Krepinevich Jr., "The Pentagon's Wasting Assets," *Foreign Affairs* 88, no. 4 (July/August 2009): 24.

5. Lt Gen David A. Deptula, USAF, retired, "Missing from Our Two Wars: Clear Goals, Joint Forces," *defense.aol.com*, 1 October 2012.

6. It bears noting here that Israel conducted a second counteroffensive against Hamas in November 2012, this time relying on air attacks alone, in response to a resumption of rocket fire by Hamas into populated areas of southern Israel. In that brief and successful operation, in contrast to its earlier experiences in Lebanon in 2006 and in Gaza in 2008 and 2009, the Israeli government took special care to ensure that overarching political goals and diplomatic efforts aimed at achieving them would be the main determinants of IDF actions, and it treated its latest showdown with Hamas as more an armed negotiation than a war. Its response featured, for the first time ever in sustained combat, the effective use by the Israeli Air Force (IAF) of a fielded missile defense system that effectively negated nearly 90 percent of the incoming Hamas short- and medium-range rockets aimed at inhabited areas. The remarkable performance of that system, called "Iron Dome," figured centrally in inducing Hamas to accept a negotiated cease-fire arrangement after eight days of punishing precision bombing by the IAF. In addition to more than 400 short-range rockets fired by Hamas, the Iron Dome system also, for the first time, intercepted a medium-range Iranian-supplied Fajr 5 rocket headed for Tel Aviv. For a good synopsis of the system's performance throughout the eight-day Israeli counteroffensive, see Ernesto Londoño, "For Israel, Iron Dome Is a 'Miracle' Breakthrough," *Washington Post*, 3 December 2012.

7. Michael Howard, *The Lessons of History* (New Haven, CT: Yale University Press, 1991), 11.

8. The term *joint*, in standard military usage, refers to the cooperative involvement of two or more of a nation's armed services in a combat, peacekeeping, or humanitarian operation. *Joint and combined* refers to both multiservice and allied participation in such operations.

9. For example, the post-Cold War teachings addressed below having to do with the criticality of applying sound strategy, the importance of pursuing achievable goals, and the pitfalls of mission creep have clear antecedents in Vietnam and earlier US combat experiences. I am grateful to my CSBA colleague Andrew Krepinevich for calling my attention to this important point.

10. The most thorough and authoritative overview assessment of this experience is Thomas A. Keaney and Eliot Cohen, *Revolution in Warfare? Air Power in the Persian Gulf* (Annapolis, MD: Naval Institute Press, 1995). See also Williamson Murray, *Air War in the Persian Gulf* (Baltimore, MD: Nautical and Aviation Publishing Co. of America, 1995).

11. For the most complete account of the first Balkan war, see Col Robert C. Owen, USAF, ed., *Deliberate Force: A Case Study in Effective Air Campaigning* (Maxwell AFB, AL: Air University Press, 2000). On the second and more significant of the two, see Ivo H. Daalder and Michael E. O'Hanlon, *Winning Ugly: NATO's War to Save Kosovo* (Washington: Brookings Institution Press, 2000); and Benjamin S. Lambeth, *NATO's Air War for Kosovo: A Strategic and Operational Assessment* (Santa Monica, CA: RAND, 2001).

12. The best account of the CIA and SOF-assisted contribution to the opening round in the Afghan campaign is Gary C. Schroen, *First In: An Insider's Account of How the CIA Spearheaded the War on Terror in Afghanistan* (New York: Presidio Press, 2005).

13. The precise language of UNSCR 1973 on this count authorized "all necessary measures" for protecting Libyan civilians under threat of attack, "while excluding a foreign occupation force of any form on any part of Libyan territory." UN Security Council, "Security Council Approves 'No-Fly Zone' over Libya, Authorizing 'All Necessary Measures to Protect Civilians, by a Vote of 10 in Favour with 5 Abstentions,'" SC/10200, 6498th Meeting [night], UN Department of Public Information, 17 March 2011. See also Karen DeYoung, "U.S., Allies' Jets Poised to Fly over Libya as Other Nations Mull Strategy," *Washington Post*, 19 March 2011.

14. A full chronicling and assessment of this combat experience may be found in Benjamin S. Lambeth, *The Unseen War: Allied Air Power and the Takedown of Saddam Hussein* (Annapolis, MD: Naval Institute Press, 2013).

15. I owe thanks to my former RAND colleague David Ochmanek for reminding me of this important point.

16. For the essential details regarding this rocky start of India's ultimately successful joint campaign in the Himalayas, see Benjamin S. Lambeth, *Airpower at 18,000': The Indian Air Force in the Kargil War* (Washington: Carnegie Endowment for International Peace, 2012), 9–13. The best assessment of all aspects of that campaign is contained in Peter R. Lavoy, ed., *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict* (Cambridge, UK: Cambridge University Press, 2009).

17. An informed assessment of why even today's US air posture would face great challenges in such a situation is presented in David A. Shlapak et al., *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute* (Santa Monica: RAND, 2009). This analysis goes so far as to argue that "a credible case can be made that *the air war for Taiwan could essentially be over before much of the Blue* [i.e., the defending US and Taiwanese] *air force has even fired a shot*" (emphasis in original). *Ibid.*, 85, 89.

18. Richard Andres, "The New Role of Air Strike in Small Wars," *Small Wars Journal*, July 2008.

19. Quoted in Lt Gen David A. Deptula, USAF, "Air Force ISR in a Changing World: Changing Paradigms While Optimizing 'Low Density' to Meet 'High Demand,'" presentation to the Air Force Association's Global Air and Space Symposium, Los Angeles, CA, 21 November 2008.

20. As used here, *airpower* refers not just to air vehicles and systems, but also to airpower's space, information, intelligence, command and control, and cyberspace adjuncts, all of which are equally important to delivering combat effects from the third dimension. It also refers not just to US Air Force airpower, but also to the contributions of all of the services that operate and fight in and from the third dimension.

21. GEN Wesley K. Clark, *Waging Modern War: Bosnia, Kosovo, and the Future of Combat* (New York: Public Affairs, 2001), 425.

22. In a similar instance of highly limited operational objectives, Israeli airpower alone successfully negated Iraq's incipient nuclear weapons manufacturing capability in 1981 when eight IAF F-16s destroyed the Osirak reactor in a well-planned surprise airstrike. For the essential details of this successful covert air attack, see Rodger W. Claire, *Raid on the Sun: Inside Israel's Secret Campaign that Denied Saddam the Bomb* (New York: Broadway Books, 1984). See also Shelomoh Nakdimon, *First Strike: The Exclusive Story of How Israel Foiled Iraq's Attempt to Get the Bomb* (New York: Summit Books, 1987).

23. Quoted in Elliott Abrams, "Just War, Just Means?" *National Review*, 28 June 1999, 16.

24. John Keegan, "Modern Weapons Hit War Wisdom," *Sydney Morning Herald*, 5 June 1999.

25. Quoted in Sean D. Naylor, "Army Panels Warn of Technology Dependence," *Defense News*, 31 August–1 September 1998.

26. Christian F. Anrig, "Allied Air Power over Libya: A Preliminary Assessment," *Air and Space Power Journal* 25, no. 4 (Winter 2011): 89–90. The IADS takedown and establishment of a no-fly zone over the entire northern stretch of Libya from border to border featured coordinated attacks against Gaddafi's surface-to-air missile defenses by 110 ship-launched Tomahawk cruise missiles and strikes by three US Air Force B-2 stealth bombers against 45 Libyan hardened aircraft shelters. Jeremiah Gertler, *Operation Odyssey Dawn [Libya]: Background and Issues for Congress* (Washington: Congressional Research Service, 28 March 2011), 7. By the end of the campaign's third day, the overall commander of US theater operations reported that these and related attacks had "rendered Gaddafi's long-range air defenses and his air force largely ineffective." ADM Samuel Locklear, USN, press briefing, 22 March 2011.

27. "Operation Odyssey Dawn" at <http://www.globalsecurity.org/military/ops/odyssey-dawn.htm>.

28. This is not to suggest, however, that NATO's air war against Gaddafi was flawlessly executed by any means. Although many today believe that the campaign was a resounding success, the performance of allied air assets, as in the earlier case of Operation Allied Force against Serbia in 1999, was in fact bedeviled by manifold deficiencies having to do with munitions availability, interoperability problems, and other organizational, equipment, and political issues that will require attention and rectifying if NATO is ever again to undertake a similar air campaign for higher stakes. For a well-informed synopsis of these deficiencies, see Maj Jason R. Greenleaf, USAF, "The Air War in Libya," *Air and Space Power Journal* 27, no. 2 (March–April 2013): 28–54.

29. Even the most outspoken land power advocates have increasingly come to understand and accept this newly emergent fact of military life. For example, retired Army major general Robert Scales, no airpower enthusiast by any means, remarked after the major combat phase of OIF ended that "the American way of war substitutes firepower for manpower. We expose as few troops as possible to close contact with the enemy. We do that by killing as many enemy as we can with precision weapons," thereby making the most of their long-distance lethality. Quoted in Dennis Cauchon, "Why U.S. Casualties Were Low," *USA Today*, 21 April 2003.

30. Air Chief Marshal Sir Patrick Hine, RAF, retired, "Air Operations in the Gulf War," in *The War in the Air 1914–1994*, ed. Alan Stephens (Canberra: RAAF Air Power Studies Centre, 1994), 307.

31. Quoted in Keaney and Cohen, *Revolution in Warfare?* 79.

32. Gen Merrill A. McPeak, USAF, retired, "The Kosovo Result: The Facts Speak for Themselves," *Armed Forces Journal International*, September 1999, 64.

33. Michael Evans, "Ground War 'Error,'" *London Times*, 24 March 2000.

34. Tim Butcher and Patrick Bishop, "NATO Admits Air Campaign Failed," *London Daily Telegraph*, 22 July 1999, 1.

35. Quoted in Michael Ignatieff, *Virtual War: Kosovo and Beyond* (New York: Henry Holt and Co., 2000), 106.

36. Richard Holbrooke, *To End a War* (New York: Random House, 1998), 104.

37. For a full account of that combat experience, see Benjamin S. Lambeth, *Air Power against Terror: America's Conduct of Operation Enduring Freedom* (Santa Monica: RAND, 2005).

38. At least one purveyor of this outlook has gone so far as to suggest that as a result of the onset of so-called fourth-generation warfare, as exemplified by the COIN phases of OEF and OIF, "air power clearly is in real trouble" today and that, given the likelihood that the wars of the twenty-first century will continue to be "mainly of the low-intensity kind . . . there

probably is no compelling case [any longer] for independent air power at all.” Martin van Creveld, “The Rise and Fall of Air Power,” in *A History of Air Warfare*, ed. John Andreas Olsen (Washington: Potomac Books, 2010), 369–70.

39. The best recent development of this balanced and sensible view is presented in Colin S. Gray, *Airpower for Strategic Effect* (Maxwell AFB, AL: Air University Press, 2012).

40. Giulio Douhet, *The Command of the Air*, trans. by Dino Ferrari (New York: Coward-McCann, Inc., 1942), 28. A good example of such false charges was the suggestion by one airpower critic in the early aftermath of the 1991 Gulf War that some airmen had persuaded themselves that the war’s successful conclusion “proved” that the sort of air campaign that largely swung Desert Storm’s outcome was “universally applicable” and that airpower could now “decide international disputes, not simply without costly ground campaigns but even without deployment of any credible ground threat.” Jeffrey Record, “Gulf War’s Misread Lessons,” *Baltimore Sun*, 9 July 1991.

41. For more on both, see David MacIsaac, “Voices from the Central Blue: The Air Power Theorists,” in *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton, NJ: Princeton University Press, 1986), 624–47.

42. An early airing of this proposition may be found in Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000), 320–21. For a later treatment, see David E. Johnson, *Learning Large Lessons: The Evolving Roles of Ground Power and Air Power in the Post–Cold War Era* (Santa Monica: RAND, 2006).

43. Johnson, *Learning Large Lessons*, 115, 140.

44. Quoted in Diane T. Putney, *Airpower Advantage: Planning the Gulf War Air Campaign, 1989–1991* (Washington: Air Force History and Museums Program, 2004), 356.

45. Lt Gen T. Michael Moseley, USAF, “Coalition Forces Air Component Commander Briefing, April 5, 2003,” DoD news transcript, 5 April 2003.

46. Nathaniel Fick, *One Bullet Away: The Making of a Marine Officer* (New York: Houghton Mifflin, 2005), 289.

47. After that failed attempt, the Army’s vice chief of staff, GEN John Keane, pointedly asked, “Does our doctrine still make sense?” General Keane admitted that the Apache formation “ran into an [enemy] organization that was much more spread out” than had been expected and that as a result, “we are taking a look at aviation doctrine and how to use Apaches at long distances.” Quoted in “Army to Reevaluate Apache Tactics,” *Air Force Magazine*, October 2003, 15. In a similar vein, the commander of the Army’s V Corps during the campaign, LTG William Wallace, later granted that the attempted operation “did not meet the objectives that [he] had set for that attack” and that “deep operations with Apaches, unless there’s a very, very, very clear need to do it, are probably not a good idea.” Quoted in Rowan Scarborough, “General Tells How Cell Phone Foiled U.S. Attack in Iraq,” *Washington Times*, 8 May 2003; and Rick Atkinson, *In the Company of Soldiers: A Chronicle of Combat* (New York: Henry Holt and Co., 2004), 154.

48. Jody Jacobs et al., *Enhancing Fires and Maneuver through Greater Air–Ground Joint Interdependence* (Santa Monica: RAND, 2009), 6.

49. For more on this demonstrated combat capability, see Benjamin S. Lambeth, *American Carrier Air Power at the Dawn of a New Century* (Santa Monica: RAND, 2005), 9–58.

50. Senior officers in OPNAV N78 and N81 (Office of the Chief of Naval Operations), interviews by the author, 19–20 April 2005.

51. Quoted in Sandra I. Irwin, “Aircraft Carriers: Symbols of American Power and Budget Dysfunction,” *Hook*, Spring 2013, 8.

52. Air Force Doctrine Document 2, *Operations and Organization*, 3 April 2007, 14.

53. Statement by ADM Edmund P. Giambastiani Jr., commander, US Joint Forces Command, before the House Armed Services Committee, Washington, DC, 2 October 2003.

54. Joint Publication 3-0, *Joint Operations*, 11 August 2011, A-2.

55. For an early tutorial on this construct by its principal creator, see Col David A. Deptula, USAF, *Firing for Effect: Change in the Nature of Warfare* (Arlington, VA: Aerospace Education Foundation, 1995). The cursory definition of EBO presented above bears special emphasis because of an undue misrepresentation that the construct has suffered since 2008 at the hands of some senior figures in the US land-warfare community, owing mainly to its close association with airpower and the latter's repeated achievements since Desert Storm. The best-known example was the peremptory declaration in 2008 by Gen James Mattis, USMC, then-commander of US Joint Forces Command, that his command would no longer "use, sponsor, or export" the construct because it was, in his view, "fundamentally flawed" as a result of its alleged failure to show proper obeisance to the "time honored principles and terminology that our forces have tested in the crucible of battle." In more recent months, the corporate Air Force has finally begun to push back with a determined reaffirmation of the construct's validity at every opportunity. For an informed and fair discussion of this issue, which unfortunately still percolates in the US joint arena, see John T. Correll, "The Assault on EBO," *Air Force Magazine*, January 2013, 50–54.

56. See, for example, Maj Gen Jasper A. Welch Jr., USAF, retired, "Technology and Military Strategy: Looking Forward to the Uncertainty of the 1990s," paper prepared for a discussion series on airpower and the new security environment, Washington Strategy Seminar, RAND Corporation, Washington, DC, 14 November 1991, 4.

57. Maj Michael J. Bodner and Maj William M. Bruner III, USAF, "Tank Plinking," *Air Force Magazine*, October 1993, 31.

58. Pushpinder Singh, *Himalayan Eagles: History of the Indian Air Force*, vol. 3: *World Air Power* (New Delhi: Society for Aerospace Studies, 2007), 124.

59. George H. W. Bush and Brent Scowcroft, *A World Transformed* (New York: Alfred A. Knopf, 1998), 489.

60. For amplification on this point, see Benjamin S. Lambeth, *Air Operations in Israel's War against Hezbollah: Learning from Lebanon and Getting It Right in Gaza* (Santa Monica: RAND, 2011).

61. Israel's first Lebanon war entailed 18 costly and nonproductive years of previous occupation of the country from 1982 to 2000, during which time the IDF sustained more than 600 troop losses, almost as many as during the Six-Day War of 1967. For Israelis, the Lebanon occupation was and remains the IDF's Vietnam.

62. A fuller account of that more commendable combat experience is presented in Benjamin S. Lambeth, "Israel's War against Hamas: A Paradigm of Effective Military Learning and Adaptation," *International Security* 37, no. 2 (Fall 2012): 81–118.

63. Samuel P. Huntington, *Political Order in Changing Societies* (New Haven, CT: Yale University Press, 1968).

64. Frederick W. Kagan, *Finding the Target: The Transformation of American Military Policy* (New York: Encounter Books, 2006), 358–59. Phase I entailed the initial planning for the campaign, and Phase II was the flowing of forces to the impending war zone.

65. Elaine M. Grossman, "For U.S. Commander in Kosovo, Luck Played Role in Wartime Success," *Inside the Pentagon*, 9 September 1999.

66. Speech in south Beirut by Hassan Nasrallah broadcast on *al Manar* television, 17 February 2007, cited in William M. Arkin, "Divine Victory for Whom? Air Power in the 2006 Israel-Hezbollah War," *Strategic Studies Quarterly* 1, no. 2 (Winter 2007): 123. It bears stressing here,

however, that viewed with the benefit of seven years' hindsight, Israel's war against Hezbollah in 2006 was by no means the strategic failure that many viewed it to have been at the time, considering that Nasrallah has remained deterred from firing rockets into Israel's northern population centers ever since. For a fuller development of this point, see Benjamin S. Lambeth, "Israel's Second Lebanon War Reconsidered," *Military and Strategic Affairs*, December 2012, 45–63.

67. Colin S. Gray, *The Airpower Advantage in Future Warfare: The Need for Strategy* (Maxwell AFB, AL: Airpower Research Institute, 2007), 15, 18, 20.

68. Only after the war ended did it become clear that the two abducted soldiers had died, either during the abduction operation or not long thereafter. Two years after the war's onset, on 16 July 2008, in a long-negotiated prearranged exchange, representatives of Hezbollah transferred coffins containing the remains of the two soldiers to Israeli security officials in return for the convicted and incarcerated terrorist murderer Samir Kuntar, four Hezbollah militants, and the bodies of around 200 other Lebanese and Palestinian militants who had previously been captured or killed in firefights with the IDF. "Regev and Goldwasser to Receive Funerals Thursday," *Haaretz Daily* (Tel Aviv), 17 July 2008.

69. Gen Ronald Fogleman, USAF, retired, in an address to an Air Force Association group in Washington, DC, 11 April 2012, as quoted in John A. Tirpak, "The Patience Reservoir," *airforce-magazine.com*, 13 April 2012. In a similar vein, a former commander of Air Combat Command suggested at about the same time that one sensible solution to the problem created by this mission creep would be for the US leadership simply to recognize the mistake made and turn the clock back to the original goal that took the nation into Afghanistan in the first place. Gen John Michael Loh, USAF, retired, "Stop Terrorists with More Airpower," letter to the editor, *Wall Street Journal*, 25 April 2012.

70. His exact formulation of this seminal point was: "The first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish the kind of war on which they are embarking, neither mistaking it for, nor trying to turn it into, something that is alien to its nature. This is the first of all strategic questions and the most comprehensive." Carl von Clausewitz, *On War*, trans. and ed. by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 88–89.

71. Secretary of Defense Robert M. Gates, "Remarks to Air War College," speech, Maxwell AFB, 21 April 2008.

72. Robert M. Gates, "Remarks to the Heritage Foundation," speech, Colorado Springs, 13 May 2008.

73. *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington: DoD, January 2012).

74. For a thoughtful post hoc reflection on the first count, see Richard N. Haass, *War of Necessity, War of Choice: A Memoir of Two Iraq Wars* (New York: Simon & Schuster, 2009).

75. Quoted in Robert S. Dudley, "The Strategy's Last Stand?" *Air Force Magazine*, July 2009, 2.

76. As one of the best assessments of this burgeoning form of post–Cold War conflict has put it, fourth-generation warfare "uses all available networks—political, economic, social, and military—to convince the enemy's political decision makers that their strategic goals are either unachievable or too costly for the perceived benefit. . . . It does not attempt to win by defeating the enemy's forces. Instead, via the networks, it directly attacks the minds of enemy decision makers to destroy the enemy's political will." Col Thomas X. Hammes, USMC, retired, *The Sling and the Stone: On War in the 21st Century* (St. Paul, MN: Zenith Press, 2006), 2.

77. For a detailed review of the many Air Force and Navy initiatives in force development, concepts of operations, and training and tactics undertaken throughout those two decades, see Lambeth, *Transformation of American Air Power*, 54–102.

78. Lt Gen David A. Deptula, USAF, “Preserving America’s Air Dominance,” unpublished manuscript.

79. ADM Jonathan Greenert, USN, and Gen Mark A. Welsh III, USAF, “Breaking the Kill Chain: How to Keep America in the Game When Our Enemies Are Trying to Shut Us Out,” *ForeignPolicy.com*, 16 May 2013. For the first unclassified summary of the classified Air-Sea Battle Concept, version 9.0 dated May 2012, and the Air-Sea Battle Master Implementation Plan (FY-13) dated September 2012, see *Air-Sea Battle: Service Collaboration to Address Anti-Access and Area Denial Challenges* (Washington: Joint Chiefs of Staff, Air-Sea Battle Office, May 2013).

80. Greenert and Welsh, “Breaking the Kill Chain.”

81. Gen Mark A. Welsh III, USAF, statement at a Pentagon press briefing on the state of the Air Force, 24 May 2013.

82. Air Chief Marshal Sir Stephen Dalton, RAF, “Air Power Is Not a Niche,” *Aviation Week & Space Technology*, 22 February 2010, 58.

83. For a thoughtful amplification on this last point, see Col Russell J. Smith, USAF, retired, “Common Sense at the Crossroads for Our Air Force,” *Air and Space Power Journal* 26, no. 2 (March–April 2012): 90–117. An important qualification needs to be added. Today’s F-16s and F/A-18s and tomorrow’s F-35s may indeed embody exceedingly costly overkill for most future COIN scenarios we may confront. One must remain mindful, however, of the possibility that tomorrow’s COIN environment could include high-capability SAMs that are absent from today’s COIN fight and that would render a light attack aircraft nonsurvivable. I am indebted to David Deptula for bringing this cautionary note to my attention.

84. Richard N. Haass, “The Second American Century? It’s Already Here,” *Washington Post*, 28 April 2013.

85. “Day-by-Day Fatalities in the War in Iraq,” *Washington Post*, 18 December 2011; and Shashank Bengali, “U.S. Fatalities in Afghanistan Declining,” *Los Angeles Times*, 14 February 2013.

86. Linda J. Bilmes, *The Financial Legacy of Iraq and Afghanistan: How Wartime Spending Decisions Will Constrain Future National Security Budgets*, Faculty Research Working Paper 13-006 (Cambridge, MA: John F. Kennedy School of Government, Harvard University, March 2013).

87. Melvin R. Laird, “Iraq: Learning the Lessons of Vietnam,” *Foreign Affairs* 84, no. 6 (November/December 2005): 22.

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Missile Defenses and Nuclear Arms Reductions

Moving Deterrence Forward, or Backward?

Stephen J. Cimbala

The deployment of missile defenses in Europe proposed by the United States and NATO and Russia's reactions to those proposals contributed to a deterioration of US-Russian relations in 2012 and cast a shadow over hopes for progress in 2013.¹ A NATO-Russia Council meeting tentatively scheduled for May 2012 in Chicago was canceled in March, and Russia's defense ministry attributed Russian disinterest to the lack of progress in missile defense talks.² In addition, newly inaugurated Russian president Vladimir Putin declined to attend a summit of G8 leaders in Maryland in May, postponing an expected meeting with US president Barack Obama.³ President Obama reassured outgoing Russian president Dmitri Medvedev in March 2012, in controversial off-mike remarks, that his administration could be more flexible on missile defense after the November presidential elections. On the other hand, newly minted US ambassador to Russia Michael McFaul emphasized in the same month that "we are going to accept no limitations on that [missile defense] whatsoever because the security of our people, of our allies, is the number-one top priority."⁴ And NATO's secretary-general, anticipating the alliance's declaration of the start of an "interim capability" for its European missile defense plan, noted at its 20–21 May 2012 summit in Chicago that NATO "will continue to expand the system toward full operational capability."⁵ Protests in Russia in the fall of 2011

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and spring of 2012 against the return to Putin-ocracy led to crackdowns on dissidents and more regime nervousness, adding uncertainties to the mix of Russian domestic and security policies.

In the discussion that follows, we first consider some of the political and military background pertinent to the relationship between Russian and US strategic nuclear arms limitations and missile defense. Next, we analyze several cases of candidate “New START–minus” agreements allegedly under study by the Obama administration, including the possible implications of missile defenses for deterrence stability under post–New START reductions. Finally, we draw conclusions about how ambitious the United States and Russia can be in reducing strategic nuclear forces, not only in terms of their own security and defense requirements, but also with respect to the involvement of other nuclear weapons states.

Political Thickets

New START, which came into force in February 2011, requires both states to reduce their nuclear weapons deployed on intercontinental or transoceanic launchers to a maximum of 1,550 warheads and 700 launchers by 2018.⁶ The ratification of New START was a contentious issue within the US national security establishment and among members of Congress.⁷ Nevertheless, the United States reportedly will seek additional reductions in long-range nuclear forces as part of presidential guidance to the Department of Defense, deemphasizing the role of nuclear weapons in US national security and defense strategies.

US and Russian officials recognized in 2012 that further progress on nuclear arms control was hostage to the agenda-setting mandates of a presidential election year in both countries. Influential Russian academician Sergei Rogov noted that some American election-driven political rhetoric “is increasingly beginning to comply with the propaganda standards of the Cold War,” while at the same time, “jingoism is going off the scale in our country too.”⁸ Therefore, the expectation in both defense establishments was that formal negotiations toward the accomplishment of a post–New START regime would be delayed until 2013. In March 2012, President Medvedev offered carrots and sticks when he stated in the same interview that the “door is not closed for talks on missile defense” and that Russia and NATO “still have time, but it is running out.”⁹ Vladimir Putin’s return to the Russian presidency in May

was greeted by assertive street protests against the United Russia Party “of thieves and scoundrels,” against rigged elections, and against the tandem shuffle of offices between Putin and Medvedev.¹⁰

Despite these uncertainties, President Obama reportedly tasked the Pentagon to develop planning scenarios for further reductions in US strategic nuclear forces. These scenarios include three options for cuts in the number of US operationally deployed long-range nuclear weapons below New START levels: 1,100, 800, or 400 weapons.¹¹ The more ambitious among these options will require cooperation not only between Russia and the United States, but also among other nuclear weapons states. Whereas one might imagine the United States and Russia reaching agreement on a limit of 1,100 deployed strategic nuclear weapons without third or “nth” party participation, the political baggage for more drastic limitations would be a hard sell within both US and Russian national security establishments—unless, or until, other nuclear weapons states were brought into the consultations. The shift from a two-sided to a multisided negotiating forum for nuclear arms reductions presents both political and military challenges to governments, especially for defense planners and arms control negotiators.

Nuclear Arms Reduction and Missile Defenses

Evaluating the political or military value of missile defenses in current and prospective policy terms requires that we acknowledge new possibilities and new dangers. Compared to the Cold War era, the United States and Russia now have fewer deployed long-range nuclear offensive weapons. In addition, missile defense technologies are of interest not only to the United States and potentially Russia, but also to other states that feel threatened by the spread of ballistic missiles outside of Europe. For example, Japan—although its government would prefer neither to join the ranks of nuclear weapons states nor to enter into a regional nuclear arms race—is nevertheless very interested in missile defenses. Japan is already cooperating with the United States in developing and deploying theater missile defenses for its state territory and contiguous waters. This stance is not unreasonable from Japan’s perspective, considering its proximity to North Korea, China, and other Asian nuclear powers. Missile defenses might provide an alternative “deterrent by denial” for countries like Japan or South Korea instead of a nuclear deterrent by threat of

unacceptable second-strike retaliation. Such defenses could also serve as an insurance policy against accidental launches or unauthorized rogue attacks.

On the other hand, missile defenses have also complicated the US-Russian relationship with respect to nuclear arms control and disarmament. Pres. George W. Bush's decision to withdraw from the ABM Treaty, announced in 2001, did not at first draw return fire from the government of Pres. Vladimir Putin. To the contrary, in 2002 the United States and Russia concluded the Strategic Offensive Reductions Treaty (SORT) that called for the two states to reduce their operationally deployed intercontinental weapons to within a range of 1,700 to 2,200 each by 2012. SORT was, of course, superseded by New START, but it was an intriguing way station. Unlikely bedfellows from the standpoint of political ideology, Bush and Putin nevertheless accomplished significant nuclear reductions in SORT compared to previous levels. They did so despite Russia's clear policy statements, then and subsequently, that its strategic nuclear deterrent was the military backbone of its international security and great-power status.¹²

By the second terms of Bush and Putin, the political winds had shifted, and Russia engaged in diplomatic demarche over the Bush plan to deploy elements of a US global missile defense system in Poland and the Czech Republic. Russia's objections were as much political as military. Russia disliked the presence of US missile defenses so close to its borders and in former Soviet space which it regarded as part of its sphere of special interest. The years 2007 and 2008 were also times of jockeying for power and position within the Kremlin as the arrangements for succession to Putin after two terms as president were being developed. Putin's administration therefore took a hard line against US missile defenses in Europe until the departure of the Bush administration and arrival of the Obama administration with its "reset" policy.

The Obama reset led to the conclusion of the New START agreement on offensive force reductions and to a temporary thaw in US-Russian and Russian-NATO relations on the issue of missile defenses. But the thaw on missile defenses was temporary, and animosity over this issue returned in 2011–12 as the Obama missile defense plan for Europe became clearer in its implications and as US and Russian presidential elections loomed larger.¹³

Russia maintains that the US-proposed European Phased Adaptive Approach (EPAA) potentially threatens its strategic nuclear deterrent, especially in the latter phases. Therefore, Russia wants either a change in the US plan or a Russian level of involvement and participation in designing the European ballistic missile defense (BMD) system that satisfies its nervous military leaders and politicians as to US and NATO intentions and capabilities. Russian leaders, including then-president Medvedev, have indicated that if Russia is dissatisfied with European missile defenses, it will decline further cooperation in offensive nuclear arms reductions and possibly deploy missiles capable of launching non-strategic nuclear weapons closer to its borders with NATO.¹⁴

Some of Russia's angst is posturing and positioning for future arms control negotiations. As Stephen Blank has pointed out, influential Russian policymakers and military analysts regard the US-Russian dialogue on strategic nuclear arms control as a net "positive" for several reasons. First, it helps commit the United States to an arms control paradigm of mutual assured destruction or assured retaliation based on offensive forces. Second, it projects the global impression of US-Russian nuclear strategic parity regardless the ups and downs of Russia's military modernization process. Third, the impression of nuclear strategic parity with the United States has spillover diplomatic benefits that support Russia's self-portrait for international audiences.¹⁵ That portrait emphasizes Russia's status as a major power in the emerging multipolar international system that will eventually displace the unipolar US dominance of the post-Cold War years. Although it might seem contradictory according to some interpretations of international relations theory, in this case the second point supports the third. The appearance of nuclear strategic parity between the United States and Russia supports the latter's perceived quest for a multipolar international system in which (ultimately) the United States is less influential and Russia more so.

On the other hand, Russia is less amenable to the US view of missile defenses, although Medvedev's statement quoted above notably does not close the door to an agreed resolution of this matter. His references to the United States and NATO as "partners" and his expressed desire for NATO to allow Russia into the tent of missile defense planning suggest a post-election possibility for security cooperation with respect to European missile defenses. A NATO-Russia agreement permitting two fingers on the trigger of NATO's missile defenses is unacceptable to

the alliance. But other options present themselves. NATO and Russia could share early warning information about missile launches for tests or attacks. The two parties could also exchange military personnel at their respective command centers to monitor the launches of any European missile defense system and reassure themselves of launch trajectories and objectives. A third possibility would be a shared functionality in which Russian aerospace defense systems (established as a separate command within the Russian armed forces in 2011) would receive handoff data from the EPAA system to provide for missile intercept over Russian but not NATO territory. Regardless the mechanics of NATO-Russian cooperation on missile defenses, it will require collaboration and sensitivity on both sides.

NATO-Russian cooperation on missile defense is a necessary condition for improved collaboration on nuclear nonproliferation. Although Russian and US perspectives on the prevention of nuclear weapons spread are not identical, they are potentially convergent on some important issues. Russia does not want to encourage nuclear weapons spread in general, but it takes a selective approach to dealing with miscreant potential or actual proliferators. The United States, on the other hand, is more likely to oppose categorically the entry of any new states into the nuclear club and insists (correctly) on reversing the North Korean membership. A second difference between the approaches to nonproliferation is that Russia distrusts the efficacy of economic sanctions and fears their blowback on its interests, as in Iran, more than does the United States. A third difference between Russia and the United States (as well as between Russia and some leading EU and NATO members) is that Russia is more skeptical about the outcomes of multilateral military interventions, whether authorized by the United Nations or (even worse) undertaken by coalitions of the willing, especially if those coalitions are led by the United States and/or its allies. The US and allied intervention in Iraq in 2003 to depose Saddam Hussein was illegitimate from Russia's perspective, as was NATO's air war against Serbia over Kosovo in 1999. The US justification for Operation Iraqi Freedom—that Saddam Hussein had weapons of mass destruction that he might use or pass along to terrorists—was duly noted by Russian leaders, who are in principle wary of abridgments of sovereignty.

These differences in perspective are not necessarily insurmountable obstacles to US-Russian cooperation on nuclear nonproliferation. As

Blank has noted, Russia “evaluates proliferation issues not according to whether the regime is democratic or not, but on the basis of whether a country’s nuclearization would seriously threaten Russia and its interests.”¹⁶ US-Russian disagreements are therefore likely to be more about tactics than about the seriousness of the threat posed by, say, a nuclear Iran or by other Middle Eastern states reacting to an apparent Iranian nuclear weapons capability. Here the missile defense issue intersects with the nonproliferation concerns of both the United States and Russia. The United States sees the European missile defense system as contributory to nonproliferation by discouraging the spread of nuclear weapons without requiring aggressive counterproliferation measures—such as the bombing of nuclear weapons complexes and nuclear infrastructure, or the imposition of regime change by military intervention. Russia fears that a NATO missile defense system initially “good enough” to deter or deflect an attack from Iran or other regional nuclear powers could grow into a larger and more robust system capable of nullifying Russia’s nuclear deterrent.

This three-way entanglement among offensive nuclear arms reductions, missile defenses, and nonproliferation poses challenges to US-Russian and Russian-NATO security cooperation during President Obama’s second term. How steep is this mountain? The next section discusses the parameters of alternative post-New START regimes and their implications.

Methodology

Nuclear arms control is an aspect of military strategy and national security policy, not a thing in itself. US and Russian decisions about nuclear arms reductions also have implications for the other states in the international system—especially for current or aspiring nuclear weapons states. On one hand, the gap between US and Russian capabilities and those of everyone else helps to impose some predictability and discipline on international practices related to arms control and nonproliferation. On the other hand, the continuing reliance by the United States and by Russia on nuclear weapons and nuclear deterrence encourages other nuclear weapons states to move cautiously on disarmament. It also advertises the putative value of nuclear weapons for deterrence, defense, and diplomatic support missions.

Measuring the Problem

Could Russia and the United States, given favorable political conditions permissive of such steps, reduce their numbers of operationally deployed nuclear weapons on intercontinental launchers below New START levels and still fulfill their national security objectives in deterrence, defense, and nuclear arms control and disarmament? The apparently obvious answer to this question is “yes” because of the incredibly destructive power of nuclear weapons. However, the question “how far?” is more complicated. The step from the New START upper limit of 1,550 deployed warheads to 1,100 is an incremental one that would presumably involve no major changes in roles, missions, or force structure. Below that level, to a limit of 800 or 400 deployed weapons, difficult tradeoffs may ensue for military planners and for proponents of further accomplishments in nuclear arms control and disarmament.

The analysis that follows presents the implications of US-Russian strategic nuclear force reductions at various levels.¹⁷ It proposes notional force structures for the period 2018–20 for the two states and subjects them to nuclear force exchange modeling.¹⁸ Each state is assigned a balanced triad of strategic nuclear forces deployed on intercontinental ballistic missiles (ICBM), submarine-launched ballistic missiles (SLBM), and heavy bombers. The analysis of performance for each Russian and US force level of deployment uses four operational conditions: (1) forces are on generated alert and launched on warning of attack (Gen-LOW), (2) forces are on generated alert and ride out the attack before retaliating (Gen-RO), (3) forces are on day-to-day alert and are launched on warning (Day-LOW), and (4) forces are on day-to-day alert and ride out the attack (Day-RO).

For each simulation at maximum deployment levels of 1,100, 800, or 400 strategic nuclear weapons, the modeling incorporates an alternative scenario with missile defenses added into the equation for both states. This step poses considerable challenges to the investigator, since no one really knows how well strategic antimissile weapons will perform against prospective attackers. Therefore, the analysis assigns an arbitrary sliding scale of defense intercept effectiveness relative to second-strike retaliating warheads and establishes four levels of defense competency relative to offenses: missile and air defenses together successfully intercept or otherwise destroy (I) some 20 percent of retaliating warheads, (II) 40 percent, (III) 60 percent, and (IV) 80 percent of retaliating war-

heads, respectively. Estimates of defense effectiveness relative to offenses include both missile and air defenses for the two states, plausible since future missile and air defense technologies may be combined in layered defenses as simulated here.

Data Analysis and Findings

Figures 1–6 summarize the forces in the analysis and the outcomes for each of the nuclear force exchanges. Figure 1 summarizes the number of surviving and retaliating second-strike weapons for each state for a 1,100 prewar deployment limit. Figure 2 displays the impact of defenses at various levels of success (I–IV) on the outcomes shown in figure 1. Figures 3 and 4 provide similar information for the 800 weapon case, and figures 5 and 6 provide data for the 400 deployment limit.

If these are the relevant numbers, what inferences do they suggest? First, both Russia and the United States can fulfill their deterrent and defense missions at deployment levels below New START–agreed figures. Even the 400-limit forces for the two states include a considerable amount of retaliatory destruction, especially if weapons are concentrated against cities or other “soft” targets. Second, as forces descend the ladder from

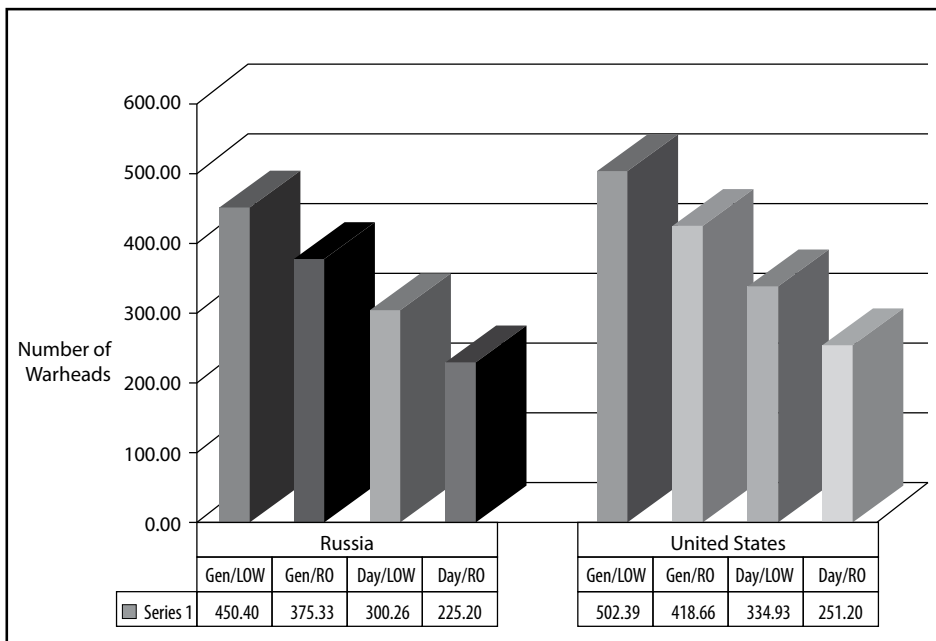


Figure 1. US-Russia surviving and retaliating warheads—1,100 deployment limit

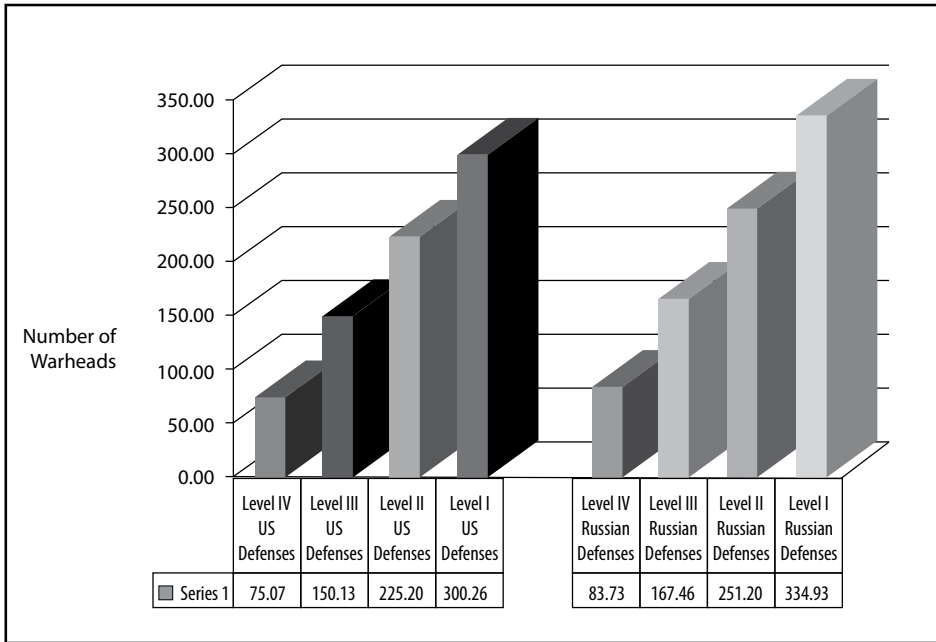


Figure 2. US-Russia surviving and retaliating warheads—1,100 deployment limit (defenses added)

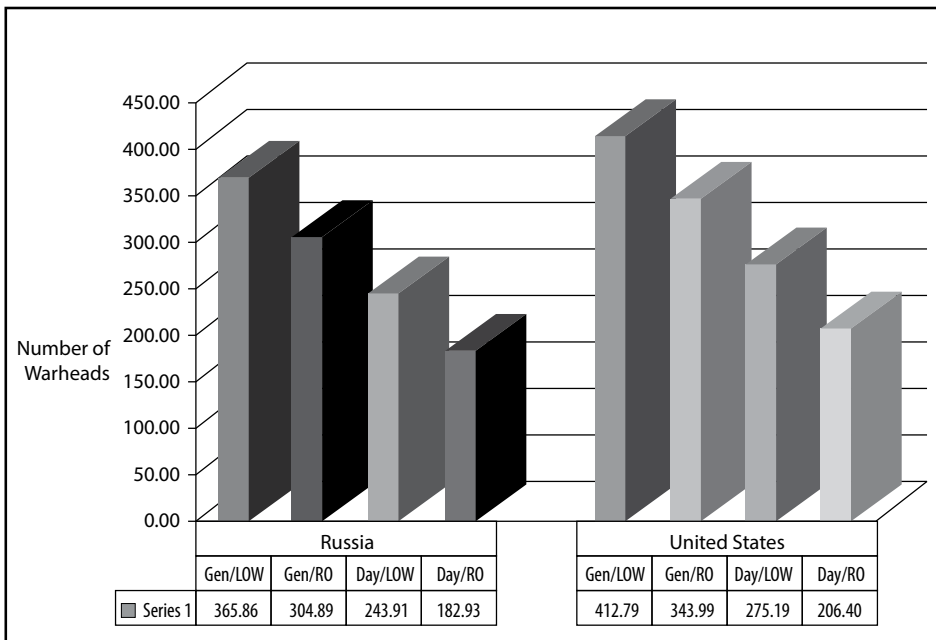


Figure 3. US-Russia surviving and retaliating warheads—800 deployment limit

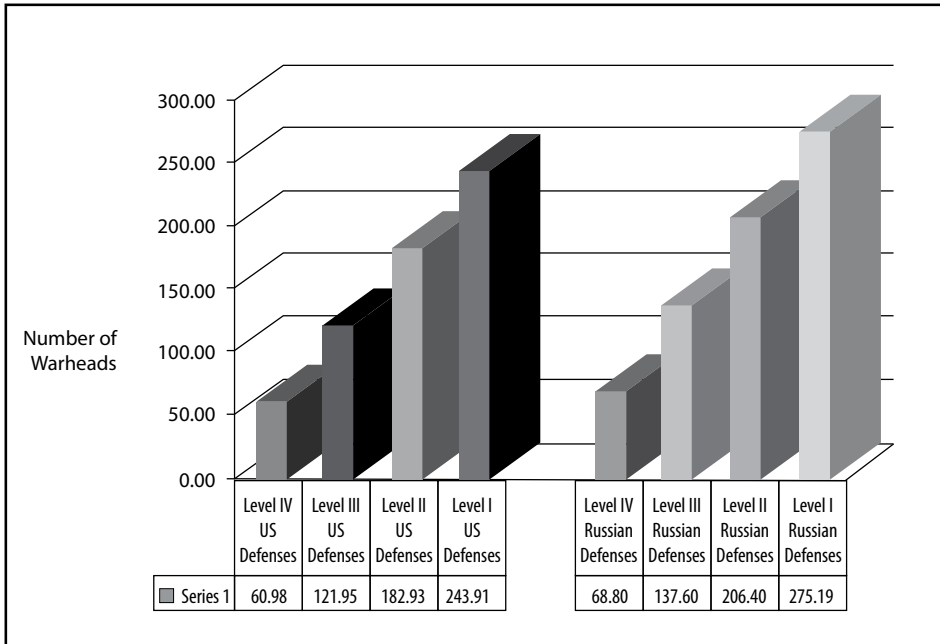


Figure 4. US-Russia surviving and retaliating warheads—800 deployment limit (defenses added)

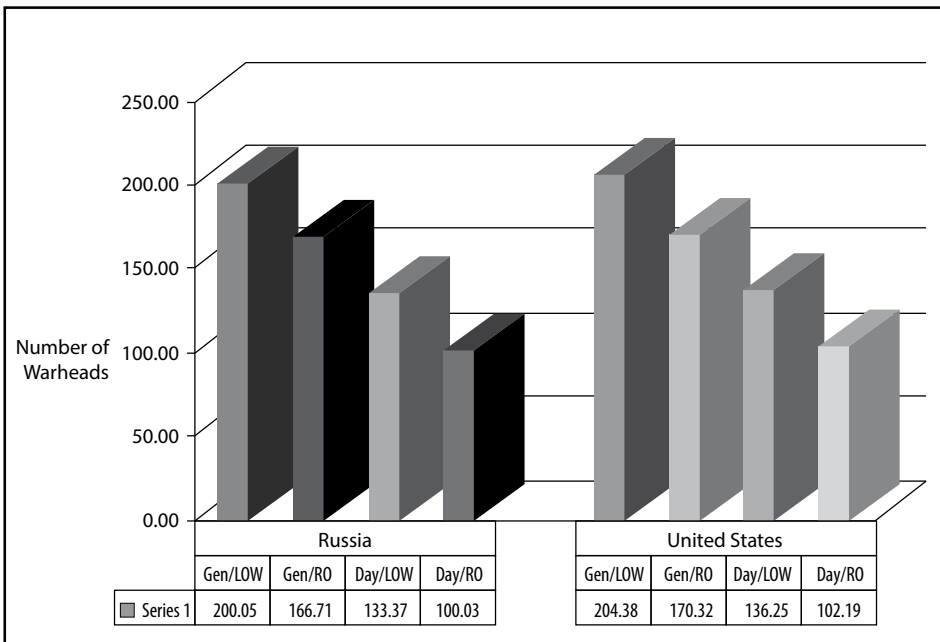


Figure 5. US-Russia surviving and retaliating warheads—400 deployment limit

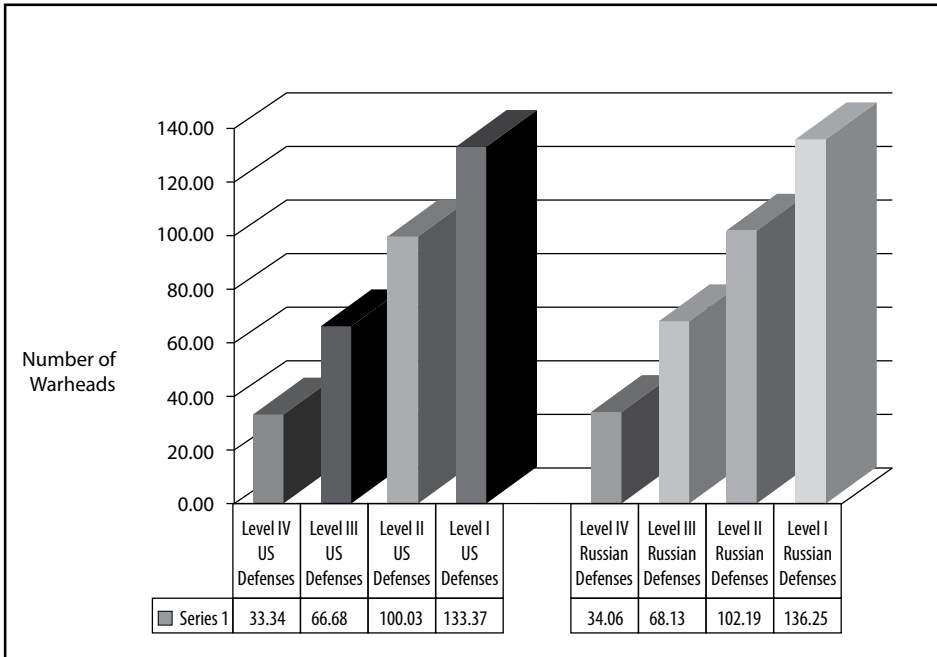


Figure 6. US-Russia surviving and retaliating warheads—400 deployment limit (defenses added)

1,550 to 400 operationally deployed weapons, the options for nuclear target planners will be progressively more restricted. A deployed force at or below 400 weapons invites an almost exclusive focus on countercity or countervalue targeting. A possible alternative to countercity targeting is to emphasize the targeting of defense-related and other critical infrastructure. An infrastructure-emphatic targeting plan would still kill many civilians but perhaps not so deliberately as would attacks targeted against populations.

Third, some persuading will be required to get the United States or Russia to agree to reductions below the 800 deployment limit unless the additional reductions are discussed on a multilateral basis that includes the other nuclear weapons states. The United States and Russia will have mixed motives in this regard: improving the security of their relationship and disposing of unnecessary nukes on the one hand, but, on the other hand, maintaining their roles as the dominant nuclear weapons states unless, or until, other countries have signed onto a commitment for serious and verifiable reductions of their own. Getting the major nuclear weapons states of Asia into this multilateral agreement will be crucial, if challenging of patience.

Fourth, missile defenses figure ambiguously into this mix of possibilities for Russian-US offensive nuclear force reductions. US missile defenses provide talking points for Russian politicians and defense hawks, but Russians should not deceive themselves by overselling the performances of emerging US defense technologies. For this decade, at least, the EPAA or the national missile defenses deployed in the continental United States can mitigate the consequences of small nuclear attacks. But preclusive theater or strategic missile defenses against larger attacks will require breakthroughs in technology development and in the affordable deployment of new weapons and new launch platforms. Doubtless there are some innovative ideas about missile defenses now incubating in research laboratories and think tanks.¹⁹ Nevertheless, the offense-defense arithmetic in nuclear scenarios does not favor the defender, because even a few nuclear weapons can do so much infernal damage.

Conclusions

Russia and the United States could reduce their numbers of operationally deployed strategic nuclear weapons to 1,100, 800, or even 400 and maintain stable deterrence based on second-strike retaliation. How far they can descend on this scale depends partly on the level of political trust and military cooperation between Washington and Moscow. Mutual disarmament also depends upon the cooperation of other nuclear weapons states that may have to agree to freeze or reduce their own arsenals.²⁰ Missile defense technologies are arguably improved compared to their Cold War predecessors. However, missile defenses as proposed in the Phased Adaptive Approach for Europe are not game changers for US-Russian strategic nuclear stability. Russian defense modernization will have more to do with the viability of its nuclear deterrent than will US and NATO missile defenses. Further, the missile defense issue should not be hijacked by ideologues or partisans in Washington or Moscow. Both political and technical cooperation between NATO and Russia are possible and, in fact, desirable. Such cooperation has already been taking place for many years between NATO and Russia on theater missile defenses. What is needed going forward is a better BMD template for a politically wired world which has marched beyond the Cold War and is altogether subversive of technical and political follies. **SSQ**

Notes

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12. Nikolai Sokov, "The New, 2010 Russian Military Doctrine: The Nuclear Angle," Center for Nonproliferation Studies, Monterey Institute of International Studies, 5 February 2010, http://cns.miis.edu/stories/100205_russian_nuclear_doctrine.htm. See also: Vladimir Putin, "Being Strong: National Security Guarantees for Russia," *Rossiiskaya Gazeta*, 20 February 2012, <http://rt.com/politics/official-word/strong-putin-military-russia-711/>; and "Russia Retains Right to Play Nuclear Card—Gen-Staff Chief," <http://rt.com/politics/russia-nuclear-card-general-371/>.
13. The Obama phased adaptive approach to missile defense will retain and improve some technologies deployed by the George W. Bush administration but shift emphasis to other interceptors, supported by improved battle management—command control communications (BMC3) systems and launch detection and tracking. See Frank A. Rose, deputy assistant secretary, Bureau of Arms Control, Verification, and Compliance, "Growing Global Cooperation

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15. See Blank, *Arms Control and Proliferation Challenges*, passim.

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17. Notional force structures are the author’s. For expert estimates, see: Hans M. Kristensen, *Trimming Nuclear Excess: Options for Further Reductions of U.S. and Russian Nuclear Forces*, Special Report No. 5 (Washington, DC: Federation of American Scientists, December 2012), www.FAS.org, downloaded 23 January 2013; Joseph Cirincione, “Strategic Turn: New U.S. and Russian Views on Nuclear Weapons,” New America Foundation, 29 June 2011, http://newamerica.net/publications/policy/strategic_turn; and Pavel Podvig, “New START Treaty in Numbers,” from his blog, *Russian Strategic Nuclear Forces*, 9 April 2010, http://russianforces.org/blog/2010/03/new_start_treaty_in_numbers.shtml.

18. Grateful acknowledgment is made to Dr. James J. Tritten for use of his model for calculations and graphs in this study. Dr. Tritten is not responsible for any of the analyses or arguments here.

19. For example, a study by Global Zero discusses the possibility of missile defenses augmented by passive defenses (such as hardening and sheltering) and advanced US conventional missions against regional adversaries such as Iran or North Korea. See Global Zero’s US Nuclear Policy Commission Report, “Modernizing U.S. Nuclear Strategy, Force Structure and Posture,” May 2012, <http://www.globalzero.org/en/us-nuclear-policy-commission-report>.

20. On the need for a multilateral approach to nuclear arms reductions, see *ibid.*, esp. 3–4.

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Scramble in the South China Sea

Regional Conflict and US Strategy

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The recent pivot in US foreign policy to the Asia-Pacific region acknowledges new geopolitical realities: the center of the global economy has shifted, and the region is struggling for balance amidst contending powers. The fact that Asia will dominate this century economically is clear—its economies are projected to expand to 37 percent of world GDP in 2014,¹ and the region will top the West in all measures of economic power by 2030.² Unfortunately, Asia lacks a comprehensive security arrangement, and nowhere is the need for cooperation and regional stability more pressing than in the South China Sea (SCS). Despite its modest size, the sea is “a mass of connective economic tissue where global sea routes coalesce” around the demographic hub of the twenty-first-century world economy.³ As Southeast Asian states interact with growing Chinese diplomatic, economic, and military power in the region, the SCS is likely to become a strategic bellwether for continued US leadership in the western Pacific along with unfettered global access to the sea.⁴

A number of issues in the SCS—natural resource development, freedom of navigation, and sovereignty disputes—create a backdrop of strategic regional competition against which the coastal nations, in figure 1 below, must balance a rising Chinese neighbor and a distant US hegemon. Current US strategy for the region is largely rhetorical and unlikely to solve any of the aforementioned core issues. Other than promising future adjustments to force posture, US leaders have not outlined clear, common, regional objectives or shown any interest in trailblazing toward a long-term solution.⁵

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Scramble in the South China Sea



Figure 1. Map of South China Sea. *Reprinted from CIA files, <http://www.southchinasea.org/files/2011/08/Southeast-Asia-Political-Map-CIA-2003.jpg>.*

The United States should take a much more proactive role in pursuit of a peaceful and balanced end state. An SCS strategy of sustainable engagement would focus on facilitating resolution of sovereignty issues and promoting equitable resource distribution. Such a strategy would also seek to build partner capacity to more effectively and efficiently secure the maritime commons while realistically engaging China as a regional power and hedging against its long-term intentions. The need to energize US efforts in the SCS is acute—the geopolitical and economic stakes for twenty-first-century America overwhelm the anemic engagement to date.

This new course through the troubled waters of the SCS focuses on six states—the People's Republic of China (PRC), Vietnam, the Philippines, Taiwan, Malaysia, and Indonesia. It begins with a concise examination of those states' competition for natural resources and maritime access and then explores the sovereignty disputes that have driven both historical and current conflicts. Finally, the national strategies and relationships of each player are detailed and analyzed in both regional terms and in light of a fresh, proactive approach to US involvement that raises its efforts to match the stakes involved.

Competition in the South China Sea

Although the quest for energy security will likely dominate the long-term pattern of SCS conflict, the need to balance marine resources drives persistent near-term tension. Competition for marine resources and fishing rights will continue as the most likely SCS flashpoint for three reasons. First, these resources have a significant economic impact; the PRC, for example, is both the world's largest consumer and exporter of fish.⁶ Regional demand is also unusually high—almost 70 percent of Southeast Asia's population of 593 million are coastal dwellers who consume fish from the SCS.⁷ Second, unsustainable practices have brought SCS fisheries to a state of near collapse, according to the United Nations Environmental Program.⁸ The Southeast Asian Fisheries Development Center reports that the growing number of vessels, improved fishing technology, and illegal, unregulated fishing "obstruct all efforts of the region to conserve and maintain fish habitats and stocks for long-term sustainability."⁹ Third, regional governments are offering their fishermen incentive fuel and equipment upgrades to work further afield where fish

stocks are more robust and where contact with foreign law enforcement and naval vessels is also more likely.¹⁰ Historically, more than half of SCS military clashes have involved fishing boats or marine resources.¹¹ The spring 2012 standoff near Scarborough Shoal between a Philippine warship and Chinese surveillance vessels over fishing boats in disputed waters caps a long line of similar incidents.¹²

While marine resources drive persistent volatility, the competition for SCS hydrocarbon resources holds more strategic merit for regional players. Although undersea oil and gas deposits are currently ambiguous in scope, their importance grows continually. Estimates of potential reserves vary widely—from 28 billion barrels (bbl.) of oil by the US Geological Survey to 213 billion bbl. by Chinese sources.¹³ As a point of comparison, Saudi Arabia held 265 billion bbl. of proven oil reserves at the end of 2011.¹⁴ Unlike the resources of the Saudi desert, however, deep-water SCS oil and gas deposits require superior technology to exploit and can cost significantly more to extract.¹⁵ Figure 2 shows the distribution of undiscovered hydrocarbons in the nine basins around the SCS. These potential energy sources are significant because Asia's remarkable economic ascent has pushed demand well past regional supply. If economic growth holds constant, Asian oil imports in 2030 will approach 30 million bbl. per day, 80 percent of total global demand and just slightly less than the total production capacity of the Middle East. This growth is severely testing regional governments' abilities to sustain real-time energy needs and to secure future import streams.¹⁶

Province	Oil	Gas	Province	Oil	Gas
Pearl River Basin	567	8,078	South China Sea Platform	2,192	13,151
Song Hong Basin	183	10,599	Greater Sarawak Basin	618	34,083
Phu Khanh Basin	116	10,679	Baram Delta Basin	4,056	12,546
Cuu Long Basin	1,599	487	Palawan Shelf Basin	226	984
Nam Con Son Basin	643	11,488			

Figure 2. Undiscovered SCS oil and gas resources by province (oil in millions of bbl. and gas in billion cubic feet; numbers represent a 50 percent chance of discovering at least the amount shown). *Adapted from* US Geological Survey, "Assessment of Undiscovered Oil and Gas Resources of Southeast Asia, 2010," World Petroleum Resources Assessment Project, 2010, <http://pubs.usgs.gov/fs/2010/3015/>.

This competition for energy security is dependent on unhindered commercial access to the global commons, and the sea lines of communication

(SLOC) in the SCS are at the center of the network. In 2011, 15.2 million bbl. of oil per day transited the Malacca Straits, just 10 percent less than the Strait of Hormuz.¹⁷ In addition, \$5.3 trillion dollars of waterborne trade (half of the global total by gross tonnage and one-third by monetary value) moves across SCS SLOCs every year, with \$1.2 trillion belonging to the United States.¹⁸ The security of that trade and unhindered access to the waterways has been sustained since World War II by US military dominance.¹⁹ The US Navy's current maritime strategy declares that it "will not permit conditions under which our maritime forces would be impeded from freedom of maneuver and freedom of access, nor will we permit an adversary to disrupt the global supply chain by attempting to block vital sea-lines of communication and commerce."²⁰

Sovereignty Disputes

This current focus on the importance of SCS SLOCs and resources has added tremendous intensity to sovereignty disputes that have afflicted the region since WWII. Small, uninhabited rocks, islets, and reefs have become crucial as the legal basis for both territorial assertions over the right to develop resources and maritime assertions over rights of navigation.²¹

By virtue of status and regional power, the starting point for sovereignty discussions must be the PRC's claim to almost the entire SCS. This claim, shown in figure 3 as a dashed line, is based on historical usage and descends from the commonly referenced nine-dashed line map first used by nationalist China in 1947.²² The largest disputed island chain is the Spratlys, claimed by the PRC (7 occupied reefs), Taiwan (1 islet), Vietnam (24 islets and reefs), Malaysia (5 reefs), the Philippines (8 islets), and Brunei.²³ Historically, Taiwan claims the entire Spratly chain on the same basis as mainland China, and Vietnam asserted a similar right in 1975 based on history and occupation.²⁴ Although the Spratlys make up the bulk of the South China Sea Platform Basin shown in figure 3, there are no proven hydrocarbon reserves there due to a lack of exploratory drilling to date.²⁵

The Paracels, shown on figure 1, are claimed by the PRC, Taiwan, and Vietnam. Practically, however, the PRC established local sovereignty over the eastern islands in 1956 and then seized the remainder from Vietnam in 1974 using military force.²⁶ Like the Spratlys, hydrocarbon deposits in the Paracels are only postulated.²⁷ Conversely, the final area

of current contention is a section of the northern Natuna Gulf where Indonesia is actively producing oil. PRC claims overlap with Indonesia's Exclusive Economic Zone (EEZ) in the area, and the Chinese began contracting for exploratory drilling in 1994.²⁸

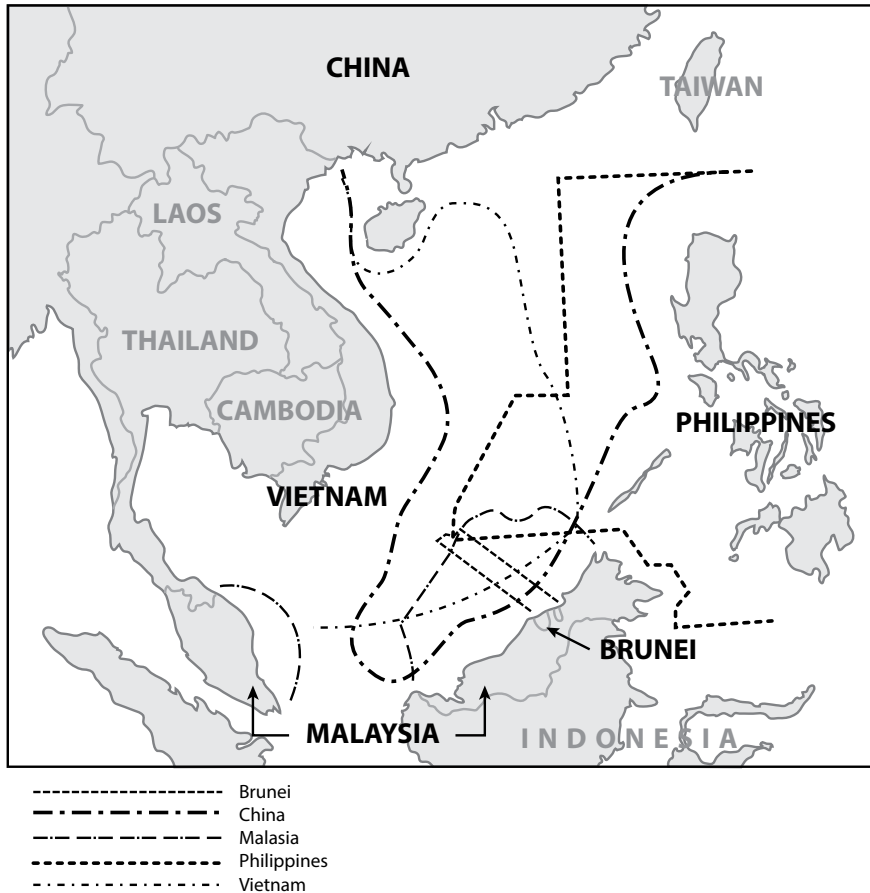


Figure 3. South China Sea boundaries and sovereignty disputes. *Adapted from www.southchinasea.org. Additional text on disputed claimants added by the author.*

States have bolstered their SCS territorial assertions in many ways: occupying and fortifying islets, building up submerged features, establishing structures and markers, incorporating islands into governmental jurisdictions, and granting surrounding marine concessions to oil companies.²⁹ The legal foundation for maritime boundary delimitation, however, springs from the 1982 UN Convention on the Law of the Sea (UNCLOS) which came into force in 1994; all of the SCS-adjacent nations are

parties. The UNCLOS allows coastal states to establish maritime zones; territorial seas out to 12 nautical miles (nm) have full sovereignty, while EEZs out to 200 nm and continental shelves out to 350 nm have rights to marine resources, drilling, and scientific research.³⁰

Unfortunately, three factors conspire against the UNCLOS as a complete maritime sovereignty solution for the SCS. First, provisions for certain activities, like military exercises and commercial surveys, were left intentionally ambiguous in certain maritime zones. Second, the complicated geography of the SCS as a semi-enclosed sea with disputed island features and archipelagos (archipelagic states like the Philippines and Indonesia have much more liberal criteria over their territorial seas) makes legal interpretations problematic. Lastly, SCS nations use loose legal interpretations of UNCLOS territorial sea baselines to maximize sovereignty, dampening prospects for cooperation and resolution.³¹ Concerned outside interests, including the United States, have suggested that SCS disputes should be fully resolved through international law according to the UNCLOS. This entails binding options—decisions by the International Court of Justice or third-party arbitration—that are uncertain and potentially counterproductive for many of the parties, the PRC in particular, based on existing case law.³²

More active attempts at conflict resolution have proceeded along the paths of official negotiation and diplomacy, largely under the aegis of various ASEAN (Association of Southeast Asian Nations) forums. Both the 1992 Declaration on the South China Sea and the 2002 Declaration on the Conduct of Parties in the South China Sea arrived at basic principles to avoid disputes, but they sidestepped questions of geographic scope and a basis for enforcement.³³ Both documents envisioned an eventual binding code of conduct, but progress has been elusive.³⁴ As of the November 2012 East Asia Summit, the PRC continued to use inter-ASEAN political maneuvers to keep discussion on a code of conduct off the official agenda, to the consternation of the United States and most regional leaders.³⁵

National Strategies

With little prospect of a breakthrough on sovereignty disputes, and high stakes for freedom of navigation and resource development, each of the states concerned has deployed dynamic strategies for this important

contest. However, the PRC stands out for a number of reasons—its claims are much more extensive, its ambitions for regional power status are more dramatic, and its capabilities dwarf those of its neighbors.³⁶

People's Republic of China

Inside the PRC, the number of often competing and poorly coordinated domestic actors that implement SCS strategy has proliferated to 16 different government, military, and law enforcement agencies.³⁷ This creates inconsistencies at the tactical level of application and blurs the lines on how much policy is driven top-down and how much is reactionary. Despite this, Chinese strategy at the national level has been remarkably deliberate and consistent since the 1970s.³⁸

The PRC's public statements and its strategic actions highlight three key interests in the SCS: asserting sovereignty over all geographical features and possibly even the entire maritime space, ensuring access to natural resources, and securing critical SLOCs within the geographic domain.³⁹ These interests, all interrelated, are driven by domestic concerns that revolve around a common theme—internal social and political stability. China's preoccupation with sovereignty is partially a result of history and nationalism. The nation's dismantling and humiliation by Western powers and Japan over the previous 150 years drives the popular passions and civil unrest that often accompany territorial disputes in the SCS.⁴⁰ In addition, many commentators note that the Chinese Communist Party's ruling mandate is largely tied to the economy. The need for mass employment has led to an emphasis on low-end manufacturing and a heavy reliance on exports. Thus, secure access to the SLOCs that feed this export-dominated economy is intrinsically tied to domestic stability.⁴¹

Likewise, the Chinese quest for energy security is also "rooted in the leadership's concerns that disruptions of oil supply could undermine the economic growth and job creation that underpin . . . stability."⁴² Indeed, the need for additional offshore domestic resources in the SCS and for secure SLOCs to the Middle East is acute. In 2011, the PRC relied on imported oil for 56 percent of its total needs.⁴³ By 2025, 65 percent of those needs will pass through the Malacca Straits and the sea lanes of the SCS.⁴⁴ Taken together, all of these domestic issues—popular passions surrounding sovereignty issues, the criticality of both manufactured exports and energy imports, and the need for additional domestic energy sources—tie Chinese SCS interests directly to internal political

and social stability. Thus, the reasons behind China's policy and its lack of compromise are evident—Beijing's moves in the SCS are beholden to the Communist Party's core interest in domestic stability. Leadership changes, like the one in 2012, are unlikely to result in greater flexibility.

Most pundits agree that China has been using a dual-track strategy to leverage national power toward its SCS interests. US leaders would call it smart power—the hard power of military means lashed to the soft power of public diplomacy and economic integration.⁴⁵ Some Southeast Asian officials have called it “talk and take.” The result is a whole-of-government approach that seeks to prolong diplomacy to maintain the status quo while simultaneously consolidating territorial claims and building military and economic power toward an end state that remains ambiguous. Diplomatically, Beijing insists on intentionally unproductive bilateral discussions while vehemently rejecting the “internationalization” of the issues. The result is effective—almost no US involvement, no coherent multilateral opposition, and no compromise to Beijing's key SCS interests.⁴⁶ Although a recent tactical shift toward multilateral engagement through the ASEAN Regional Forum (ARF) and other ASEAN venues generated promise,⁴⁷ the PRC has consistently stalled any moves to implement real change.⁴⁸

Implementation of the strategic track based on hard power is a work in progress, but the gravity of China's efforts and the opacity of its ultimate intentions have generated considerable regional controversy. Most notably, the PRC has steadily increased its physical presence in the SCS, primarily through civilian law enforcement agency vessels, but also with warships of the People's Liberation Army Navy (PLAN).⁴⁹ Economic coercion has been employed in territorial disputes, most recently in the quarantine of imported Philippine fruit during the Scarborough Shoal confrontation previously mentioned.⁵⁰ In addition, Beijing is actively building a series of strategic partnerships cemented around zones of forward Chinese presence—dubbed a “string of pearls” by Western analysts—that extends through the SCS and west to the Middle East.⁵¹ This burgeoning forward presence is meant as an accompaniment to a robustly expanded and modernized PLAN capable of localized sea control.⁵² The first successful landing of an indigenously produced J-15 fighter on the PRC aircraft carrier *Liaoning* in November 2012 symbolizes this effort.⁵³ “Even assuming it meets no countervailing responses in the region, however, China is at least a decade from amassing the type of preponderant naval power that can reliably

deter U.S. intervention while cowing Asian navies,” according to a prominent naval analyst. Thus, the military track of Beijing’s smart power application is uncertain, tied to the economic prosperity that underwrites naval expansion, the difficulties inherent in organizing and training a dominant naval force, and the reciprocal force responses of other states.⁵⁴

The ASEAN

The remaining states of interest—Taiwan, the Philippines, Vietnam, Malaysia, and Indonesia—are by no means a consolidated block (Taiwan is not a member of the ASEAN and is considered a renegade province, not a state, by the PRC). However, as small states in a regional system dominated by larger ones, each nation shares a common dilemma in balancing its own SCS interests against both the challenges and opportunities presented by the PRC’s rise and the shifting regional attention of the United States.⁵⁵ The ASEAN and its various fora, such as ASEAN + 3 (Japan, the PRC, and the ROK) and the ARF, have been the multilateral institutions of choice for substantive discussions on the SCS.⁵⁶

The concept of complex engagement through a lattice of networks and relationships focuses on creating interdependence between the ASEAN and the PRC, as well as shifting China away from a confrontational perspective in regional security matters. Importantly, the ASEAN’s consensual style drives distinct emphases on relationship building over coercion and deterrence.⁵⁷ This consensual style, along with the divergent interests of non-SCS ASEAN members like Cambodia and Laos, is the primary reason that the ASEAN has failed to move China any closer to the elusive binding SCS Code of Conduct mentioned previously. Even so, such a code would only be a dispute management tool; none of the parties expect ASEAN dialogue to solve the deeper issues that underlie SCS friction.⁵⁸ Furthermore, the individually disparate experiences and uncoordinated efforts of the states under consideration, detailed below, highlight the need for a new regional strategy with increased US involvement.

First, Vietnam’s territorial claims overlap the most with the PRC’s, and it has been the most assertive ASEAN state, waging two military battles over disputed islands (in 1974 and 1988) and engaging in a series of tense action-reaction conflicts since 2009. Paradoxically, the PRC has become Vietnam’s largest overall trading partner, and China frequently uses economic coercion to influence SCS events.⁵⁹ Vietnam’s strategy has been to apply all its instruments of power scattershot while moderating

their intensity to not overly antagonize China. This involves expanding and modernizing its naval forces, along with developing a tentative defense relationship with the United States. In addition, Vietnam has used diplomacy and public communications across all avenues—bilateral negotiations with the PRC, multilateral efforts through ASEAN venues, and attempts to internationalize the issue by involving the United States.⁶⁰ Along with Vietnam, the Philippines, although a weaker and less assertive claimant, is the other crucial ASEAN swing state in terms of the national importance it places on the SCS dispute.⁶¹ Philippine thinking was significantly influenced by the 1995 discovery of Chinese-built structures on Mischief Reef in the Spratlys, which it had claimed as its own territory. Coming on the heels of the 1992 departure of US military forces from Philippine bases, the seizure weakened policymakers' confidence in diplomacy, highlighted the Philippines as the most vulnerable actor in the SCS, and prompted discussion of military modernization.⁶² Strenuous diplomatic efforts, both bilateral and ASEAN-brokered, are a highlight of the Philippines' renewed bid to "exercise its sovereign rights, including enforcement of its fisheries code and oil and gas exploration, within its EEZ."⁶³

Taiwan's territorial claims mirror those of the PRC, but there are a number of reasons that the island state is an outlier in the context of the SCS. First, Taiwan's own sovereignty issue with the mainland makes multilateral ASEAN negotiations, or even bilateral diplomacy with states other than the PRC, impossible. Second, Beijing sees reunification with Taiwan as inevitable, so Taiwanese claims like Taiping Island (also called Itu Aba), the largest of the Spratlys, will eventually default to PRC sovereignty in Beijing's view. Overall, Taiwan faces far more diplomatic constraints than the other claimants. Its strategy, then, is to aggressively cling to Taiping Island, where a Taiwanese military garrison is stationed, and to use its limited power instruments short of military force to avoid being left empty-handed if a grand bargain is ever struck.⁶⁴

Malaysia's interests, on the other hand, align the most closely of all the ASEAN claimants with those of the PRC, and its territorial dispute has not been confrontational. Malaysia has a dominant economic relationship with the PRC, its largest trading partner; there is little domestic political pressure against China; Malaysia does not regard the SCS as a core interest; and Beijing holds Malaysia in high regard.⁶⁵ Malaysia's strategy is to draw closer to China politically and economically by pursuing bi-

lateral dialogue and to refrain from criticism of the PRC in regards to its SCS actions.⁶⁶

Indonesia's strategy has been to play the role of honest broker and mediator, both as the *de facto* leader of the ASEAN and in the context of regional tensions over the SCS. It has no claim over any of the islands, and its relatively small EEZ overlap with China's claim has not been a source of significant friction.⁶⁷ In fact, Indonesia has led regional workshops on SCS conflict management since 1990, and Indonesian authorities continue to take the lead role in mediating inter-ASEAN and ASEAN-PRC issues concerning the SCS.⁶⁸

The United States

The heightened US interest in the region is a result of the Obama administration's Asia-Pacific rebalancing, a policy shift that has been directed primarily toward Southeast Asia since 2009.⁶⁹ The United States certainly has vital economic and security interests in preserving the key elements of the status quo: free trade, secure SLOCs, and freedom for all nations to interact regionally and globally within the current rules-based international system.⁷⁰ The \$1.2 trillion of US trade that flows through the SCS annually has already been mentioned; conflict in the SCS could divert that cargo to other routes with longer transit times and increased insurance costs, harming the United States and its allies. In fact, secure SLOCs are at the heart of several abiding US interests. Partners in the region count on the United States to guarantee safe passage and freedom of navigation in the SCS and to uphold international maritime laws and norms.⁷¹ In its 2012 Report to Congress, the US-China Economic and Security Commission notes that "should China continue to press for acceptance of its interpretation of freedom of navigation within an EEZ, maritime security in Asia—fostered by a reliable US military presence for decades—could be seriously undermined."⁷²

Furthermore, the United States is committed by treaty to defend the Philippines. In reference to the Scarborough Shoal incident, Secretary of State Clinton reaffirmed the 1951 treaty in May 2012. However, US officials have declined to discuss publicly how it would apply to Philippine claims in the SCS,⁷³ although the United States is bound to respond to "attacks on Philippine armed forces, public vessels and aircraft." The Taiwan Relations Act, which governs official commitments

to Taiwan, does not formally commit the United States to defense of the island, although the two countries share a strong defense relationship.⁷⁴

In terms of pursuing these interests and commitments, the most recent articulation of US strategy came in November 2012 from then national security advisor Tom Donilon. Diplomatically, the United States will work toward a stronger relationship with the ASEAN and continue to support that organization's efforts to develop a SCS code of conduct. In addition, US officials continue to reinforce key principles: "the need for peaceful resolution of disputes, freedom of navigation, and a rejection of the threat, or use of, force or economic coercion to settle disagreements." Militarily, the United States will add both presence and capability to the region by building up Guam as a strategic hub in the western Pacific, basing up to four littoral combat ships in Singapore, developing maritime security partnerships, and eventually positioning 60 percent of the US Navy fleet in the Pacific.⁷⁵ With the exception of marginal changes to force posture on the periphery of the area, then, this strategy contributes nothing new to the ASEAN-led impasse of the previous 20 years. The United States must create a more robust strategy of sustainable engagement where it would address remedies to sovereignty and resource disputes while building partner capacity and engaging China. The risks of a regional military conflagration drawing in US forces and the economic costs associated with SCS conflict justify this approach through more intrusive diplomatic efforts.

US Sustainable Engagement Strategy— Sovereignty and Resources

The sovereignty issues that have plagued geopolitics in the SCS are not only tied to the long-term interests of the United States, but they are at the core of flashpoints that have the potential for armed conflict. First, and most likely, America could be drawn into conflict with China over a Philippine-PRC skirmish. In the case of an armed attack on a Philippine warship or aircraft, Manila would likely invoke its US defense treaty. Philippine plans to develop natural gas deposits around Reed Bank in the coming years set the conditions for such a scenario. Second, US military operations in China's EEZ could provoke an armed response based on the PRC's nontraditional interpretation of freedom of navigation mentioned

above. The 2001 US Navy EP-3 collision off Hainan Island and the 2009 harassment of the USNS *Impeccable* and USNS *Victorious* are examples that could have evolved into more hostile confrontations.⁷⁶

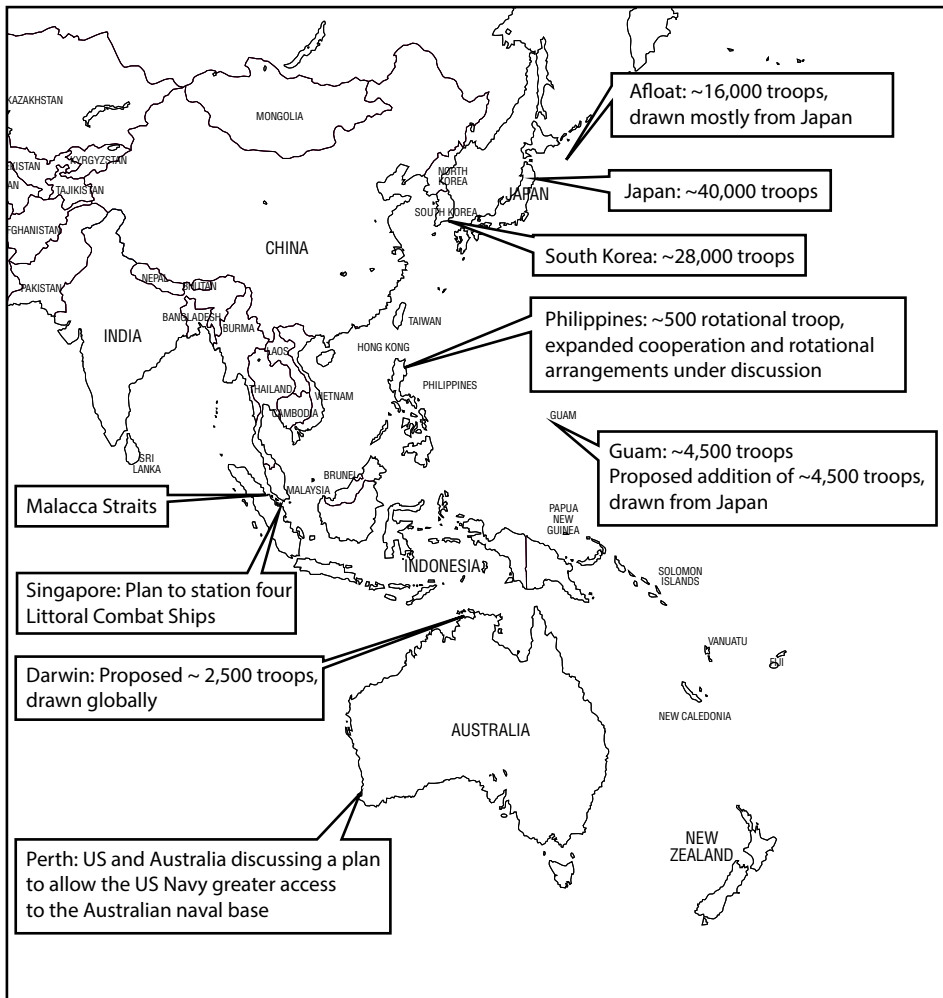


Figure 4. Projected Asia-Pacific force structure based on Obama administration rebalance Reprinted from Mark E. Manyin et al., "Pivot to the Pacific? The Obama Administration's 'Rebalancing' Toward Asia," CRS Report for Congress R42448 (Washington: CRS, 28 March 2012), 3.

The ASEAN has proven itself unwilling to broker a settlement, and the economic stakes for trading nations are too high for the United States to rely on a strategy of restating key principles with increasing intensity. Both the Philippines and Vietnam have stepped up efforts to

encourage US leadership and presence in the dispute to counterbalance the PRC, and Chinese economic and military power will only continue to grow while the United States waits to engage.⁷⁷ There are some examples of win-win solutions in the SCS that could accommodate mutual national interests. Establishing “regional sovereignty” over the islands is one; such an arrangement envisions a political mechanism to efficiently and effectively manage the territory on behalf of all the claimants.⁷⁸ Commentators suggest that the pursuit of joint energy resource development could spur a process of wider collaboration toward this type of regime.⁷⁹ Another avenue of approach is to grant primary sovereignty to the PRC while giving resource-related rights to the other claimants. The 1920 Treaty of Spitsbergen is an example—that particular compromise over the island of Svalbard gave primary sovereignty to Norway but allowed resource-related rights to all signatories, of which there are currently more than 40.

In terms of jurisdiction, collaborative regimes worldwide have been established to share jurisdiction over natural resources—the Northwest Atlantic Fisheries Organization is one multilateral example that manages a rich fishing ground outside any EEZ in the combined interests of all its members.⁸⁰ Only the United States wields diplomatic and economic levers of sufficient quantity and strength to push the disputants toward one of these compromises in what could be a second-term centerpiece of the Obama administration’s Asian pivot strategy. Using a combination of Trans-Pacific Partnership negotiations, World Trade Organization disputes, currency valuations, budding defense relationships, Taiwan policy, and similar levers, the administration should press forward on multilateral negotiations, facilitated by a third-party neutral, toward a sovereignty and jurisdictional solution.

Build Partner Capacity

Although current US strategy is dedicated to bolstering force posture in the western Pacific, it is not possible for one nation to provide security throughout the theater.⁸¹ To be “sustainable” from a US perspective in light of future fiscal constraints, the regional order must be anchored by US partners. Starting with current bilateral ties and building trust and confidence through partnering exercises to counter piracy and prevent terrorism, the United States can build a more distributed set of relationships and capabilities focused on burden-sharing. It should support the

growing network of alignment that includes not only ties among Southeast Asian nations but also links between Southeast Asia and other US partners like Japan, Korea, Australia, and India. Building such a cooperative security architecture while increasing the maritime capacity of partners around the SCS could provide safety and security to critical SLOCs less provocatively and at lower cost than other options.⁸² In addition, these relationships could result in more strategic forward ports and basing opportunities for US forces, like U-Tapao Airfield in Thailand, Cam Ranh Bay in Vietnam, and Subic Bay in the Philippines.⁸³


Engage China from a Foundation of Strength

In addition to building partner capacity, the United States should pursue a more engaged policy of *realpolitik* with the PRC. While both sides should expect the political and diplomatic competition that accompanies China's rise, the mutual suspicion of long-term strategic intent denies reciprocal acceptance of each other's military security policies. "America's role as East Asia's security guarantor is an aspect of US policy and strategy that feeds Beijing's suspicions," while the United States remains perennially suspicious of China's ultimate strategic intentions.⁸⁴ The best course of action is a hard-headed, even assertive, realism with respect to China "that actively supports rules-based cooperation; it avoids military conflict but not diplomatic confrontation."⁸⁵ In the context of the SCS, such a policy would engage the PRC at all levels: naval port visits, bilateral and multilateral sea exercises, officer exchange programs, and strategic dialogue at the highest government levels. The goal would be to reduce strategic distrust of long-term intentions and drive Beijing to become a "responsible stakeholder . . . with a responsibility to strengthen the international system that has enabled its success."⁸⁶

A successful US strategy should lead with diplomatic and economic power, but it must be backed by credible military force. US capabilities to project power into the SCS, both directly from the sea and from mainland and Asian bases, are fundamental to the US role as a security guarantor and to all the other aspects of its strategy.⁸⁷ It must maintain a credible sea control capacity of the SCS SLOCs against the PRC's emerging anti-access and area-denial capabilities. Failure to do so would drastically change strategic assumptions and realities across the region.⁸⁸

Conclusion

Thus, a US strategy of sustainable engagement would better serve American interests in the region by tackling the underlying sources of friction *before* conflict can shut down trade routes or engulf friendly militaries. The strategy envisions a more practical engagement with the PRC across all levels to ameliorate strategic distrust, recognize China's desire to lead regionally, and further its transition to responsible stakeholder status. In addition, burden-sharing and partner development would help to create a new, sustainable paradigm for the maintenance and security of the common spaces in the SCS. Most importantly, however, robust engagement and US leadership on the key drivers of conflict and tension—sovereignty and resource distribution—could create win-win scenarios of compromise.

US interest in achieving a durable outcome should be paramount. The SCS is the epicenter of seaborne trade and commerce for the new center of the global economy, and it holds lifelines of energy security for many of America's closest allies. Moreover, it has become a test of American power and will to continue to provide freedom and security to the common areas that have enabled global prosperity since WWII. Yet, regional tensions flare almost daily—over fishing boats, half-submerged rocks, and the like—creating opportunities for disaster. Only the United States has the diplomatic power and leverage to chart a course for peace amidst the scramble in the South China Sea. 

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Astroimpolitic

Organizing Outer Space by the Sword

Matthew Burris, Major, USAF

Such mystical conservatism was particularly detestable, since it seemed to him to evade the central question by merely restating it, concealed in a cloud of pompous rhetoric, as the answer.

—Isaiah Berlin, *The Hedgehog and the Fox*

This article is a rejoinder to “New Frontiers, Old Realities” by Dr. Everett Dolman, published in the Spring 2012 edition of this journal, in which he portends, “the coming war with China will be fought for control of outer space.” In support of this argument, Dolman divines the lessons of history as viewed through the inseparable lenses of neo-classical geopolitical theory and realist theory.¹ The proposed solution is the disquieting nostrum advanced a decade earlier in his book *Astro-politik*; namely, the United States should preemptively seize low Earth orbit, weaponize and dominate the domain, and thereafter reign as a benign space hegemon—a global police force for the heavens (hereinafter, “space hegemony”).² What is novel about “New Frontiers, Old Realities” is the perceived problem driving this solution—an ascendant China and the hegemonic war with the United States that will inevitably result.³ It is with this connection that the seductively simple, yet deeply flawed, logic of inevitability triggers a dangerous orthodoxy—one that could lead to an entirely unnecessary and preventable self-fulfilling prophecy.⁴ While future Sino-US relations will likely be marked by intense competition, war with China is *not* inevitable, whether for control of outer space or otherwise.

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The Tyranny of Small Decisions

John Sheldon and Colin Gray have rightly described space hegemony as “implausible.”⁵ To be sure, it gained little traction during the Bush administration despite a US withdrawal from the 1972 Anti-Ballistic Missile (ABM) Treaty and the pro-weaponization findings of Donald Rumsfeld’s 2001 National Security Space Commission.⁶ So why respond to “New Frontiers, Old Realities”? Isn’t the fortress being attacked already in ruins?⁷ Arguably not.

First, space hegemony is instantiated by the discourse and numbers among the panoply of space security strategies the United States could pursue. Indeed, while not all serious treatments of the subject acknowledge it as a strategy worthy of consideration, others most certainly do.⁸ Thus, implausible or not, space hegemony remains a potential Trojan horse within the proverbial gates of the broader US space security enterprise.⁹

Second, as Air University’s first “space theorist” and a faculty member of the School of Advanced Air and Space Studies (SAASS), Dolman is directly influencing the next generation of Air Force leaders.¹⁰ Given the complexity of our world, military planners and advisors crave simplicity. As such, the *deus ex machina* for outer space offered in “New Frontiers” could garner acolytes within these circles. Three decades ago, President Reagan’s military advisors convinced him of the need to weaponize space to tip the balance against the Soviets.¹¹ It is not inconceivable a similar scenario could play out with some future president balancing against the Chinese.

Third, the Chinese regularly track the ongoing space weaponization debate within the United States—particularly when that debate invokes a war in which they are the belligerent. It is likely a People’s Liberation Army (PLA) strategist has read “New Frontiers,” attempting to elicit some “truer version” of intent for outer space than is indicated in US declaratory policy.¹² US commentators certainly seize upon the most bellicose comments of Chinese officials for this purpose, as when Gen Xu Qiliang, PLA, indicated during a 2009 trip to the United States that weapons in space were an inevitability, or words to that effect.¹³ While then-president Hu Jintao swiftly repudiated the remarks, Dr. Peter Hays and Dennis Danielson nonetheless noted that “the general’s statements . . . undoubtedly reflect the position of the PLA and other important stakeholders within the Chinese government, and represent an inherent part of the context for space security about which the US and China must develop better shared understanding.”¹⁴ Mirror-imaging aside, it follows

that certain segments of the Chinese security establishment could be saying precisely the same thing about Dolman's space hegemony strategy.

On this issue, Henry Kissinger notes, "[China and the United States] would do well to recognize that their rhetoric, as much as their actual policies, can feed into the other's suspicions."¹⁵ Clearly, words matter in this relationship—whether those words are uttered or written by a policy-maker, uniformed military member, or military academic.¹⁶ Bellicose statements afford ideologues on both sides the opportunity to draw context-free conclusions about the other to support preferred or predetermined arguments—whether involving inevitable war, space weaponization, or otherwise. At all events, to borrow a diplomatic phrase from now-retired Gen Norton Schwartz, statements of this variety are “unhelpful.”¹⁷

Finally, space is the domain of experts. Here, the potential exists for a lay reader to be overwhelmed (epistemically) by the arguments of an expert.¹⁸ This potential is increased in “New Frontiers,” as its thesis operates in three expert domains simultaneously: space, military strategy, and international relations theory. This rather unique intersection of domains makes Dolman's scholarship difficult to unpack and critique. It is imperative to do so, however, as both his diagnosis (inevitable war) and prescription (space hegemony) are flawed.¹⁹

The Dog that Did Not Bark

This “coming war with China” over control of outer space—which Dolman suggests “may already have begun”—what is it about?²⁰ This is arguably the first question to be asked of anyone portending war. The answer should prompt a series of deductive questions that expose the theory behind, and theoretical assumptions of, the portent. It can be a tedious process, *obscurum per obscurius*, depending on the sophistication of the argument. But to the extent that theory and theoretical assumptions ultimately reveal no plausible purpose for the war, the usefulness of the portent must be called into question. Michael Howard illustrated this point perfectly in his Cold War-era essay, *On Fighting Nuclear War*:

When I read the flood of scenarios in strategic journals about first-strike capabilities, counterforce or countervailing strategies, flexible response, escalation dominance and the rest of the postulates of nuclear theology, I ask myself in bewilderment: this war they are describing, *what is it about?* The defense of Western Europe? Access to the Gulf? The protection of Japan? If so, why is this

goal not mentioned, and why is the strategy not related to the progress of the conflict in these regions? But if it is not related to this kind of specific object, what are we talking about? Has not the bulk of American thinking been exactly what Clausewitz described—something that, because it is divorced from any political context, is “pointless and devoid of sense?”²¹

If we accept this Clausewitzian notion, the question then becomes, what is the political end sought by either China or the United States in this space war that may or may not already have begun? Within the answer lies the keystone theory supporting Dolman’s entire thesis: the war he describes need not have a political end because it is “inevitable.” He claims, “whenever an extant international order is challenged by a rising power, the reigning hegemonic authority is obligated to respond.”²² In other words, and in the tradition of neoclassical geopolitical and realist theories, the United States, as the “reigning hegemonic authority,” is somehow preordained to respond militarily to an ascendant China.²³ No “or else” is contemplated. The only solution—the one temporary respite from this inevitable clash—is space hegemony. As recounted by Dolman, “Almost 2,500 years ago Thucydides foresaw the inevitability of a disastrous Peloponnesian war due to ‘the rising power of Athens and the fear it caused in Sparta.’”²⁴ And so it will be, he contends, for the United States and China, thanks largely to this impenetrable analogy and its progeny.

This begs the question, is the fourth-century-BC world of Pericles an appropriate exemplar for our own? Dolman believes so. Espousing a realist internationalist point of view, he identifies modern-day “geopolitical forces” and “less venerable theories of conflict and cooperation” favoring continued peaceful Sino-US relations but finds these wanting, in light of “theories that have survived millennia in their basic forms” and the purportedly irreconcilable interests facing the United States and China in the “incompatible, uncompromising realm of outer space.”²⁵

To be sure, great-power wars have occurred since the emergence of the Westphalian system and despite the presence of varying degrees of “internationalism,” including the Crimean War, the Franco-Prussian War, and both world wars.²⁶ But noted international relations theorist G. John Ikenberry considers our post–World War II Western order “historically unique.” He posits, “The rise of China does not have to trigger a wrenching hegemonic transition. The U.S.–Chinese power transition [were it to occur] can be very different from those of the past because China faces an international order that is fundamentally different from

those that past rising states confronted.”²⁷ This is an order “built around rules and norms of non-discrimination and market openness” in which national interests are, at times, tempered by international interests and the vast array of supranational organizations that give voice to the latter: the United Nations (UN), its organs, and specialist agencies; the World Trade Organization; the International Monetary Fund; the International Atomic Energy Agency; the Conference on Disarmament; the North Atlantic Treaty Organization; the European Union; and the Association of Southeast Asian Nations, among many, many others.²⁸ This order, with its concomitant treaties, agreements, and understandings, offers both off-ramps to and structural bulwarks against war. So, while states may continue to grapple with seemingly irreconcilable interests, war (to state the obvious) is not the only recourse toward resolution of these interests. Causation-correlation issues aside, the absence of great-power wars during the last seven decades tends to support Ikenberry’s thesis.

Reconciliation of the purportedly irreconcilable is also not without precedent—even within the “incompatible, uncompromising realm of outer space,” as Cold War commentator Peter N. James sounded precisely the same irreconcilable interest alarm with regard to the implacably secretive Soviets in his 1974 book, *Soviet Conquest from Space*.²⁹ The Soviet space technology, that so worried James, is today shuttling US astronauts to the International Space Station and powering the first stage of the Atlas V rockets that propel National Reconnaissance Office and USAF payloads into orbit.

More fundamentally, however, ours is not a world in which the alternative to victory in war is “immediate slavery,” as Pericles so vividly described it to the Athenian polis;³⁰ neither is ours a world of nineteenth-century “Bismarckian politics.”³¹ Indeed, slavery and empire building are as counter-modern as the policies and politics that urged great-power wars of the past. The same can be said for the inherently racist (and, in the case of Nazi Germany, genocidal) aims of the Tripartite Pact signatories during World War II.³² Again, that the consequences and aims of these wars appear anachronistic to present-day thinking and divorced from present-day great-power politics tends to support Ikenberry’s thesis. Our ever-shrinking and increasingly interconnected world *is* historically unique; it simply defies strained analogies to the past.

This is equally true in terms of the stakes of modern hegemonic conflict. The fact that no two nuclear-armed states have ever engaged in a

“full-scale war” against each other would seem a rather important consideration for anyone portending war between the United States and China.³³ That the issue of nuclear weapons and deterrence is avoided entirely in “New Frontiers” is evidence of the analytical weight Dolman affords the inevitability postulate and historical determinism more broadly. Yet a history impervious to modernity is tyranny, and “history is not tyranny.”³⁴

Anticipating this liberal internationalist line of rebuttal, Dolman gives voice to his supposed ideological opposites, indicating, “The cruelly consistent narrative of history need not be eternally retold. Nothing is inevitable, counter the idealists. The world can be made different; the world today *is* different.”³⁵ This rather clever straw man argument is intended to persuade readers to accept his argument as their own, based on a perceived a priori ideological linkage; to disagree with Dolman is to side with the “idealists.” He obscures the fact that there is sufficient room for disagreement with the inevitability postulate within the realist school. As Charles Glaser contends, “a more nuanced version of realism provides grounds for optimism. China’s rise need not be nearly as competitive and dangerous as the standard realist argument suggests, because the structural forces driving major powers into conflict will be relatively weak. . . . Conflict is not preordained.”³⁶ Kissinger agrees, arguing that “the rise of powers has historically often led to conflict with established countries. But conditions have changed.”³⁷ Nothing is inevitable, counter the *realists*!

Eschewing the sober assessments of Ikenberry, Glaser, Kissinger, and others is essential for the remainder of Dolman’s arguments, which are afforded great latitude as a result of being untethered from modernity or the rational or reasonable political aims of either China or the United States. It is likely the same latitude afforded those described by Michael Howard, who, and with just as much apparent reason, also believed war with the Soviets was inevitable.

Chance’s Strange Arithmetic

[W]hen it comes to predicting the nature and location of our next military engagements, since Vietnam, our record has been perfect. We have never once gotten it right, from the Mayaguez to Grenada,

Panama, Somalia, the Balkans, Haiti, Kuwait, Iraq, and more—we had no idea a year before any of these missions that we would be so engaged.

—Secretary of Defense Robert M. Gates (February 2011)

Employing Kepler's laws, one can accurately predict the ephemeris of an orbiting space object with a high degree of certainty. Employing the tenets of political science, one cannot accurately predict the path of world politics or the probabilities of war and peace with any reasonable degree of certainty. The reasons are fairly straightforward: the former system is linear, characterized by "its predictability and the low degree of interaction among its components, which allows the use of mathematical methods that make forecast reliable;" the latter system, in contrast, is complex and characterized by "an absence of visible causal links between the elements, masking a high degree of interdependence and extremely low predictability."³⁸ This is not to say that political science, with its emphases in both historical study and theory, is not useful in understanding world politics or the probabilities of war and peace. It is only to say there are limits to its usefulness. The error, therefore, is not in attempting to make sense of complex systems utilizing any and all available analytical tools appropriate for the system. Rather, it is in believing the relative certitude of linear systems is translatable or transferrable to complex systems.

"War," Clausewitz insists, is "the realm of chance."³⁹ Yet, with his assertion that "the coming war with China will be fought for control of outer space," Dolman erroneously conflates the linear and the complex. Such is the fatal flaw of historical determinism and the notion of inevitability—the course of world politics and the probabilities of war or peace cannot be reduced to mere variables in an equation.

But for the advice of McGeorge Bundy, President Kennedy reportedly would have ordered an airstrike rather than a naval blockade during the Cuban missile crisis. What was the advice that potentially averted World War III? Simply that the president had more time than was first anticipated to make a decision; namely, seven days rather than two.⁴⁰ That fateful estimate may—among an infinite number of other minute and undiscoverable causes—be the only reason hundreds of millions of Americans, Europeans, and Russians lived to see 1963. These are the stakes, both then and now, and no *immutable lesson of history*, no *venerated*

theory could have predicted Bundy's estimate or Kennedy's reaction to it. In this realm, there are decision points for leaders, not inevitabilities. To this precise point, but in the realm of space weaponization, Dr. Karl Mueller has warned, "anybody who tells you with absolute certainty that they know what is going to happen if we build space weapons doesn't know what they are talking about or hasn't thought the problem through very clearly."⁴¹ It is with this admonition in mind that we turn our attention to theory.

The Unifying Theory Trap

"Understanding that ordinary explanations, predictions, and evaluations are inescapably theory-based is fundamental to self-consciousness about knowledge."⁴² Likewise, understanding that the assumptions of a theorist underpin the theory he or she is marshaling to explain, predict, and evaluate is fundamental to self-consciousness about theory. These are critical points, as the inscrutable language of scholarship can mask the reality that no theory produces revealed truths and no theorists make pure intellectual judgments in crafting the assumptions underpinning their theory. Neoclassical geopolitics or orthodox geopolitics, the theory Dolman employs to portend a Sino-US space war wears just such a mask. What it conceals is the face of Machiavelli and the notion that all means, given a worthwhile end, are ultimately justifiable.⁴³ Orthodox geopolitics *is* power politics.⁴⁴

Dr. Gearóid Ó Tuathail describes geopolitics' adherents as those who "attempt to reduce the irredeemably global problems of a risk society to an 'either-or' logic and represent risks as enemies, draw boundaries against this enemy, and then apply instrumental rationality to 'solve' the threat they pose."⁴⁵ He adds that "the contemporary geopolitical condition exceeds 'either/or' reasoning of orthodox geopolitics with its proclivity for us/them, inside/outside, domestic/foreign, near/far binaries and its reliance on mythic binaries from the geopolitical tradition like the heartland/rimland, land power/sea power and East/West."⁴⁶ Yet just such binaries support the theoretical assumptions underpinning Dolman's thesis, which then proceed exactly as Ó Tuathail describes: representing an imagined risk to space as the Chinese enemy; drawing boundaries against the Chinese at the undefined edge of sovereign airspace; and then applying instrumental rationality to "solve" the Chinese

threat to space by preemptively seizing, weaponizing, and dominating the domain.

Dolman's first binary is "Western Action versus Eastern Timing." He argues, "The Western strategist too often seeks to force changes through positive steps," whereas "the Eastern strategist bides time until the moment to strike is ripe." He restricts his theoretical assumption, without explanation, to the space domain, arguing a lack of transparency and engagement by the Chinese (East) will heighten the security dilemma for the United States (West).⁴⁷ Arguing that this assumption is helpful, there is no explanation as to why this particular ideological impasse will lead to a Sino-US space war where others have not. There is no discussion of the fact that *space itself is transparent* and with the right sensors it is difficult to conceal nefarious activities, thus reducing the severity of the security dilemma—particularly for the United States which operates the most robust and geographically distributed space surveillance network in the world. There is no analogy as to how today's lack of transparency is different than the lack of transparency in the space domain displayed by the United States and Soviet Union during all but a few years of the Cold War. Most importantly, there is no explanation as to the political ends either the United States or China might seek to achieve via a war in space. But again: this is the convenience of the inevitability postulate—we need not trouble ourselves with such complexities if war is inevitable.

The second binary is less nuanced, harkening back to the most horrible, and ultimately unfounded, imaginings of the Cold War. Dolman avers, "To those who would argue that China is as eager to avoid a damaging war in space as any other space-faring state, especially given its increasing integration into the world economy and dependence on foreign trade for its continuing prosperity, do not discount the capabilities of its authoritarian leadership. This is the same regime that embraces the deprivations of government-induced cyclical poverty to spare its populace the moral decadence of capitalist luxury."⁴⁸ The implication, one has to assume, is that the leaders of the Chinese Communist Party are neither rational nor reasonable—nor is the party "a risk-prone opportunity maximizer . . . motivated primarily by its external situation."⁴⁹ This argument, unaccompanied by any analysis and in light of four decades of countervailing evidence, is underdeveloped, to say the least.

The third binary attaches malign motives to Chinese activities in space—this in spite of the fact the United States has engaged in the

same activities, all peaceably, for more than six decades. According to this worldview, imitation is not the sincerest form of flattery—it is a threat. Dolman claims, “China’s increasing space emphasis and its cultural antipathy to military transparency suggest a serious attempt at seizing control of space.”⁵⁰ Two proofs are offered in support of this argument.

The first proof offered is the 2007 Chinese antisatellite (ASAT) test.⁵¹ In the past, Dolman has called this test “criminal.”⁵² While it was short-sighted, irresponsible, and counterproductive, it was not criminal. Yet, neither was it exceptional. The United States, often against the advice of scientists, engaged in environmentally destructive activities in space throughout the Cold War (e.g., Starfish Prime, Project West Ford, destructive ASAT tests).⁵³ The critical distinction between US space activities during the first three decades of the space age and the Chinese ASAT test, aside from the development of international law that would now proscribe some of these activities, is the contemporary appreciation for the fact that the space environment cannot afford for emerging space-faring nations to make the mistakes made by its earliest adopters. Orbital debris issues aside, Kissinger rightly points out that “if the United States treats every advance in Chinese military capability as a hostile act, it will quickly find itself enmeshed in an endless series of disputes on behalf of esoteric aims.”⁵⁴ Space hegemony is arguably just such an esoteric aim.

The second proof offered in support of this binary is the empirical equivalent of the inevitability postulate: “Technology *X*.” Dolman describes it as “an unknown capability . . . that would allow a hostile state to place multiple weapons into orbit quickly and cheaply.”⁵⁵ Like the inevitability postulate, Technology *X* is wholly imagined and therefore unfalsifiable. It is also offered as a justification for the United States to pursue a space hegemony strategy now—before it is too late. The pattern emerging is this: if the reader does not accept the factual theoretical assumptions offered in “New Frontiers,” then an unfalsifiable proof is offered as a fallback. Either way the theory appears to be supported—a *fait accompli*.

“New Frontiers” thus endeavors to identify a threat as an enemy that is at once “the other,” potentially irrational and unreasonable in conducting foreign intercourse and developing into a threatening space power—all to justify a preemptive US space hegemony strategy. To the extent these assumptions are not accepted by the reader, the inevitability postulate, or Technology *X*, seeks to force the same conclusion. By all

appearances, however, an enemy has been conjured up to support a pre-ordained military solution—a solution that, in Dolman’s own writings, predates the supposed Chinese threat by a decade or more.

Sovereignty and Imperialism

The most paradoxical line of argument within “New Frontiers” relates to the conceptual cousins, sovereignty and imperialism. What is immediately striking about Dolman’s approach is that he is as optimistic about the world’s reception to US space hegemony as he is pessimistic about the future of Sino-US relations. Indeed, he views benign US space hegemony as neither imperialistic adventurism nor a threat to the sovereignty of other nations, positing that

the cost to weaponize space effectively will be immense. . . . It will come at the expense of conventional military capabilities on the land and sea and in the air. . . . And most importantly, it will come from personnel reduction—from ground troops currently occupying foreign territory. In this way, the United States will retain its ability to use force to influence states around the world, but it will atrophy the capacity to occupy their territory and threaten their sovereignty directly. The era of US hegemony will be extended, but the possibility of US global empire will be reduced.⁵⁶

Concerning the reaction of other states to US space hegemony, Dolman indicates, “if the United States were to weaponize space, it is not at all sure that any other state or group of states would find it rational to counter in kind. . . . As long as the United States does not employ its power arbitrarily, the situation would be accommodated initially and *grudgingly accepted over time*” (emphasis added).⁵⁷ He further argues that space hegemony could, in fact, usher in “a new space regime, one that encourages space commerce and development.”⁵⁸ Dolman describes these on-orbit space weapons as having the “capacity to deny, ground-, sea-, and air-based antisatellite weapons from space” and offering an “omnipresent threat of precise, measured, and unstoppable retaliation.”⁵⁹

Assuming such space weapons are technologically feasible, what are other states doing while the United States flight-tests and fields these constellations of undefeatable space weapons? Are we to assume they are patiently awaiting the completion of an “unstoppable” constellation of space weapons? If not, how shall the United States defend against potential terrestrial armed responses—which would arguably be countenanced under either Article 51 of the UN charter or the doctrine of

preemption—when our combined arms budget has been sacrificed in pursuit of space hegemony? Employing Dolman’s own power politics thesis, isn’t he precipitating the very war he is attempting to prevent by displacing the extant balance of power and so thoroughly threatening the sovereignty of other states?

Drs. Raymond Duvall and Jonathan Havercroft have argued quite convincingly that space-based military technologies will impact world political order, and in particular, “its foundational ontology, sovereignty.”⁶⁰ They argue “[US] control of an effective missile defense system would markedly re-inscribe its territorial ‘hard shell’ and its sovereignty in exclusively shielding it from the threat of (missile-based) attack by others. The sovereignty of one state is re-inscribed, while that of the other states, most notably ‘great powers’ that have depended thus far on their deterrent capabilities, is eroded.”⁶¹ According to Duvall and Havercroft, this would put the United States at “the centre of a globally extensive, late-modern empire,” making it “a sovereign of the globe.”⁶² By extension, a state unable to defend itself under this new order would effectively lose the ability to independently conduct its internal and external affairs—particularly if those affairs are at odds with the wants of the extant hegemonic power. Dolman would seem to agree, indicating, “state power, expressed in terms of capacity for violence, is the ultima ratio of international relations . . . [however, a] state employing offensive deterrence through space weapons can punish a transgressor state, but is in a poor position to challenge that state’s sovereignty.”⁶³ These two ideas cannot be true simultaneously unless (1) one views coercive punishment levied from space as somehow distinct from coercive punishment levied from the domains of air, sea, or land and (2) one views the concept of sovereignty as only encompassing the exercise of exclusive jurisdiction over the *physical territory* of a state. Both views are incorrect.

To the former, coercive punishment of a “transgressor state” would necessarily involve a territorial incursion by a space-based missile, laser, or electromagnetic jammer of some variety. That the locus of the weapon delivery system is beyond the sovereign territory of the transgressor state is irrelevant. No one would argue, for instance, that a cruise missile launched from the deck of a ship on the high seas does not breach the sovereignty of a so-called transgressor state when the missile impacts within the territory of that state. The same is true for weapons originating from space.

To the latter, intervening in the affairs of a transgressor state through coercive punishment violates its sovereignty. The duty of nonintervention is a *sine qua non* of sovereignty and is not breached by foreign occupation or territorial incursion alone.⁶⁴ As discussed in detail below, space hegemony would proscribe activities countenanced by both treaty and customary international law, thereby curtailing the right of sovereign states to exercise political independence within the international system. It is telling that Kenneth Waltz, the same neorealist thinker who fathered the “ultima ratio” notion adopted by Dolman, also wrote, “short of a drive toward world hegemony, the private use of force does not threaten the system of international politics, only some of its members.”⁶⁵ It follows that Dolman’s optimism about the acceptance of US space hegemony—which is perhaps more appropriately dubbed “world hegemony,” if the Duvall and Havercroft argument is accepted—is misplaced.

This optimism should also be blunted by the fact that, irrespective of intentions, a move toward US space hegemony would almost assuredly be viewed as imperialistic adventurism by the rest of the world. Arthur Schlesinger Jr. describes imperialism as “what happens when a strong state encounters a weak state, a soft frontier or a vacuum of power and uses its superior strength to dominate other peoples for its own purposes.”⁶⁶ Outer space is just such a soft frontier—and a vacuum of power results, in part, from the permissive legal regime governing the domain. This brand of imperialism is classically categorized as *apologia*, the essence of which is the “claim of a civilizing mission.”⁶⁷ With space hegemony, the purported mission is both to delay the inevitable war with China and to usher in a new era of commerce and development in outer space. The mission presupposes the superiority of the imperialist power to shepherd the space seized, else the *mission civilisatrice* (“civilizing mission,” e.g., colonization) would not be necessary.⁶⁸ Shepherding the commerce and development of outer space must therefore be examined in terms of the perception of other states currently exploiting the commercial benefits of space and those developing states aspiring to do so in the future. To be sure, in the context of the security dilemma, Charles Glaser points out,

A state’s military buildup can change the adversary’s beliefs about the state’s motives, convincing the adversary that the state is inherently more dangerous than it had previously believed. More specifically, the state’s buildup could increase the adversary’s assessment of the extent to which it is motivated by the desire to expand for reasons other than security, which I will term greed. . . . A

rational adversary will therefore have reasons to expect a pure security seeker to engage in a threatening arms buildup and consequently will not automatically conclude that such a buildup reflects greedy motives.⁶⁹

To the extent space hegemony is secondarily rooted in the commercial exploitation of space—and the United States as the reigning hegemonic power effectively picks winners and losers among competing commercial interests within the domain—greedy motives will undoubtedly be imputed. The United States would not be viewed as a pure security seeker or a “benign space hegemon,” but rather as a state proffering a straw man threat to exploit or monopolize the commercial potentialities of outer space. Under these circumstances, the notion that certain states would not actively employ all elements of power to rebalance vis-à-vis the United States appears unrealistic.

This analysis begs two questions. First, if one accepts the notion that US space hegemony is an imperialistic *mission civilisatrice* that threatens the sovereignty of other states, is it a strategy that can be pursued without sacrificing the liberal democratic values of the United States? To the extent those values encompass the notion that the United States is not the only country entitled to a declaration of independence⁷⁰—even among those whose values and interests differ—then the answer is “no,” barring some existential necessity that has not here been proved. Second, even if one does *not* accept the notion that US space hegemony is an imperialistic *mission civilisatrice* that threatens the sovereignty of other states, does the purported threat posed by the Chinese and the prediction of a “grudging acceptance” of US space hegemony, which may usher in a new era of commerce and development, appear provident or tilting toward wishful thinking? To paraphrase the venerable statesman George Kennan, the likely answer is that you know where you begin, but you never know where you will end.

Combined Arms Theory

Another peculiar notion advanced in “New Frontiers” is the apparent abandonment of combined arms theory. Again, the on-orbit space weapons underwriting US space hegemony “will come at the expense of conventional military capabilities on the land and sea and in the air. . . . And most importantly, it will come from personnel reduction—from ground troops currently occupying foreign territory.”⁷¹ Colin Gray points out

the folly of this strategy from a historical perspective, arguing, “the merit in combined arms, as contrasted with the placing of near exclusive faith in some, usually novel, allegedly ‘dominant weapon,’ is an ancient principle.”⁷² Indeed, it is the principle underlying the distinct missions and capabilities of the Army, Air Force, Navy, and Marines, as well as the logic behind the nuclear triad. Combined arms not only afford decision makers a scalable range of options to address problems requiring a military response, but also redundancy in the event a defender employs effective countermeasures against one or more of the aggressor’s offensive capabilities.

In contrast, near exclusive reliance on space weapons would create a targetable Achilles’ heel for states seeking to balance against US hegemony. Assuming space hegemony is achievable, the only means of countering it would entail the “negation” of on-orbit US space weapons.⁷³ The question is the lengths to which a threatened state would be willing to go to achieve this end. As Duvall and Havercroft point out, “historically, every advance in the weaponry of imperial powers has been met with an advance in counter hegemonic strategy.”⁷⁴ The materiel manifestation of this strategy could be a variant of existing technology or some theoretical Technology X. Ironically, Dolman raises the issue of Technology X only in the context of advocating *for* US space hegemony (i.e., the United States must develop on-orbit weapons before China does so); he makes no mention of a state developing the terrestrially based technology to effectively *counter* US space hegemony. This is a significant omission given that a space hegemony strategy, pursued at the expense of combined arms, would represent a potential single point of failure for the national security of the United States.

International Space Law

Finally, space hegemony, whether pursued by the United States or any other nation, is proscribed by international law. While Dolman only alludes to a new legal regime for space,⁷⁵ he has elsewhere prescribed a US withdrawal from “the current space regime” along with the regime’s abolition and replacement.⁷⁶ This prescription indicates a lack of understanding both of international law and the feasibility of effectuating a “new regime” within the current international system.

First, unilateral US withdrawal from the current space regime would have no impact on the legality of a space hegemony strategy, as the provisions of international law proscribing such a strategy are enduring—irrespective of a state's consent to be bound—or, in the lexicon, customary international law.⁷⁷ The corpus of positive international space law is composed of four multilateral treaties negotiated and concluded in the 1960s and 1970s under the aegis of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS)—a committee the United States has staunchly supported since its founding in 1959.⁷⁸ The treaty most relevant to the present discussion is generally known as the 1967 Outer Space Treaty or OST.⁷⁹ This treaty, which reflects the core principles on the organization and use of outer space by and among its states' parties, was preceded in time by a 1963 General Assembly resolution which first articulated these principles. This was, of course, preceded by the launch of Sputnik in 1957.

The core principles of the OST began to be solidified by state practice—a precursor to customary international law—during Sputnik's first orbit. Indeed, while Sputnik was a cause for deep concern among the US national security establishment and the American public, “from the standpoint of international law, [it] was an unmitigated blessing.”⁸⁰ Soon, the violation of sovereign airspace for purposes of intelligence gathering would become passé. Unlike sovereign airspace, the whole of outer space would be governed by the “freedom principle,” wherein overflight for intelligence gathering or otherwise would be fully countenanced. The lack of objection by the United States on the first-observed pass of Sputnik—over the protests of some within the military establishment⁸¹—and by every subsequent pass of every foreign space object since, set the course of customary international space law in motion.

Some would argue the core principles codified in the OST became customary international law years *before* the OST was drafted.⁸² Even adopting a conservative approach to the issue, the OST is among the most widely acceded treaties in the international system, with more than 100 state parties as of 2012, and supported by 55 years of state practice that is, almost without exception, consistent with its core principles. Today, these core principles are unquestionably customary international law (i.e., binding whether a state is party to the OST or not).⁸³ This is due in large part to the actions and advocacy of the United States—

which championed the idea of the OST in the 1960s and continues to be among its aggressive proponents.

The core principles of the OST and customary international law that space hegemony would offend include, *inter alia*, the “freedom principle” and the “non-appropriation principle,” which are codified in OST Articles I and II, respectively. Article I indicates, in relevant part, “Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.”⁸⁴ In contrast, space hegemony connotes an impermissible measure of control over the space domain, including denying “any attempt by another nation to place military assets in space.”⁸⁵ Such a denial of either access to or use of space for this purpose or others would constitute a violation of Article I of the OST and customary international law (which mirrors Article I). “Military assets” presumably include foreign intelligence, surveillance, and reconnaissance (ISR) assets, as well as space weapons. Given that space-based ISR has been critical to maintaining international peace and security between peer and near-peer powers for the past five decades,⁸⁶ denying these states access to space for this purpose would be unwise from a security policy standpoint, as well as violative of international law.

It is important to note that, with the exception of the placement of nuclear weapons or other WMD on-orbit or the placement of any weapon on the moon or other celestial body, weaponizing space is theoretically lawful.⁸⁷ The legality of the act of placing weapons in space must therefore be distinguished from the legality of space hegemony. The question is one of employment and turns on whether the legal rights of others are impinged. For example, a weaponization strategy that does not deny others access to or movement in space would more likely be found lawful than space hegemony, which does not.


Article II of the OST, which embodies the non-appropriation principle, indicates, “outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”⁸⁸ Space hegemony entails “policing the heavens”—from both a national security as well as a commercial and resource exploitation standpoint.⁸⁹ Irrespective of the intentions of the United States or its benignity, space hegemony would violate the principle of non-appropriation—if not by claim of

sovereignty, then certainly by means of use or occupation. Outer space is simply not the United States' to police under international law.

Second, on the feasibility of effectuating a "new regime" within the current international system, a fundamental tenet of international law is consent. With few exceptions (e.g., customary international law absent persistent objection, *jus cogens*), to be bound under international law, a sovereign state must consent to be bound. The United States is powerful, but it cannot force consent. The idea that any state, even a close ally, would consent to a new legal regime whose philosophy rests, in Dolman's own words, upon the notion that "the United States is preferentially endowed to guide the whole of humanity into space, to police any misuse of that realm, and to ensure an equitable division of its spoils" is unrealistic.⁹⁰ Put simply, unless states consent to a new legal regime, the United States must operate in accordance with the enduring provisions of the current legal regime or operate outside the law. Since states are unlikely to consent to a new regime that is inequitable or inimical to their interests—as any regime countenancing US space hegemony would surely be—Dolman's prescription is neither realistic nor achievable.

Conclusion

Calls to exercise military control of outer space are as old as space exploration itself. Within weeks of the launch of Sputnik, Air Force chief of staff Gen Thomas White indicated, "whoever has the capability to control the air is in a position to exert control over the land and seas beneath. I feel that in the future whoever has the capability to control space will likewise possess the capability to exert control of the surface of the earth."⁹¹ It is telling that in the security environment of fall 1957—with the expansionist Soviets possessing the hydrogen bomb and a new and unprecedented weapons delivery system—General White only called for the *capacity* to control space; he did not indicate it *should* be controlled.⁹² Despite the benefit of a half-century's hindsight not afforded General White and a security environment any national security professional of the late 1950s or early 1960s would happily trade for their own, Dolman's approach to space security is less nuanced. The prospective and even retrospective explanatory limits of history and theory can either lead one to accept these limits—muddling through as best we can—or seek an analytical framework that purports to transcend these limits. Dolman has chosen the latter, but his overly deterministic theory is

illusory. The potential danger of this illusion is that “if men define situations as real, they are real in their consequence.”⁹³ 

Notes

1. Everett C. Dolman, “New Frontiers, Old Realities,” *Strategic Studies Quarterly* 6, no. 1 (Spring 2012): 78, 80.
2. Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (New York: Frank Cass, 2002) 157, 94.
3. Ibid., 78. An earlier, unpublished version of “New Frontiers, Old Realities” appears online. See Everett C. Dolman, “The Case for Weapons in Space: A Geopolitical Assessment,” *Social Science Research Network*, 2010, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1676919.
4. Charles Glaser, “Will China’s Rise Lead to War?” *Foreign Affairs* 90, no. 2 (March/April 2011): 89; Joseph S. Nye Jr., “China’s Rise Doesn’t Mean War,” *Foreign Policy*, January/February 2011, 66; and Andrew J. Nathan and Andrew Scobell, “How China Sees America, The Sum of Beijing’s Fears,” *Foreign Affairs* 91, no. 5 (September/October 2012).
5. John B. Sheldon and Colin S. Gray, “Theory Ascendant? Spacepower and the Challenge of Strategic Theory,” in *Toward a Theory of Spacepower: Selected Essays*, eds. Charles D. Lutes et al. (Washington: National Defense University Press, 2011), 10.
6. Article V of the ABM Treaty had long presented a legal stumbling block to space weaponization by proscribing space-based ABM systems. “Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems, 26 May 1972,” <http://www.state.gov/www/global/arms/treaties/abm/abm2.html>. The 2001 National Security Space Commission report indicated, “we know from history that every medium—air, land and sea—has seen conflict. Reality indicates that space will be no different. Given this virtual certainty, the U.S. must develop the means both to deter and to defend against hostile acts in and from space. This will require superior space capabilities.” *Report of the Commission to Assess United States National Security Space Management and Organization*, 11 January 2001, x, <http://www.dod.mil/pubs/space20010111.pdf>.
7. Richard K. Ashley, “The Poverty of Neorealism,” *International Organizations* 38, no. 2 (Spring 1984): 226.
8. For example, Bruce M. DeBlois et al., “Space Weapons: Crossing the U.S. Rubicon,” *International Security* 29, no. 2 (Fall 2004): 50–84, esp. 55; Karl P. Mueller, “Totem and Taboo: Depolarizing the Space Weaponization Debate,” *Astropolitik* 1, no. 1 (Summer 2003); and James Clay Moltz, *The Politics of Space Security: Strategic Restraint and the Pursuit of National Interests* (Stanford, CA: Stanford University Press, 2008) 263–64.
9. Whether this is viewed as a positive or negative depends, of course, on whether one is ideologically a citizen of Troy or a Greek.
10. Dr. Dolman’s book, *Astropolitik*, is required reading at SAASS.
11. Ronald Reagan, “Star Wars” speech, 23 March 1983, <http://www.youtube.com/watch?v=ApTnYwh5KvE>.
12. “To Chinese analysts trying to make sense of the cacophony of views expressed in the US policy community, the loudest voices are the easiest to hear, and the signals are alarming,” Nathan and Scobell, “How China Sees America,” 37.
13. Dr. Joan Johnson-Freese, “The Imperative of Space Cooperation in an Environment of Distrust: Working with China,” *High Frontier* 6, no. 2 (February 2010): 20.

14. Peter L. Hays and Dennis L. Danielson, "Improving Space Security through Enhanced International Cooperation," *High Frontier* 6, no. 2 (February 2010): 17.

15. Henry A. Kissinger, "The Future of U.S.–Chinese Relations," *Foreign Affairs* 91, no. 2 (March/April 2012): 50.

16. I am *not* suggesting curtailment of debate or limits to academic freedom in any way. I am simply suggesting that words matter, and we ought to choose them wisely when invoking a war that could potentially result in tens or hundreds of millions of casualties.

17. Greg Jaffe, "U.S. Model for a Future War Fans Tensions with China inside Pentagon," *Washington Post*, 1 August 2012, http://www.washingtonpost.com/world/national-security/us-model-for-a-future-war-fans-tensions-with-china-and-inside-pentagon/2012/08/01/gJQAC6F8PX_story.html.

18. Richard E. Neustadt and Ernest R. May, *Thinking In Time: The Uses of History for Decision Makers* (New York: Free Press, 1986): 66. While a pinpoint citation is offered here, this entire book is extremely helpful in analyzing the prognostications of so-called experts.

19. To this end, John LeCarré's admonition is illuminating: "When the world is destroyed, it will be destroyed not by its madmen but by the sanity of its experts and the superior ignorance of its bureaucrats. John le Carré, *The Russia House* (New York: Alfred A. Knopf, 1989), 207.

20. Dr. Dolman later indicates, "war, as inevitable as it might be, is not imminent." This, of course, is inconsistent with the notion that the war "may already have begun." Dolman, "New Frontiers," 82, 78.

21. Michael E. Howard, "On Fighting Nuclear War," *International Security* 5, no. 4 (Spring 1981): 9.

22. Dolman, "New Frontiers," 78.

23. *Ibid.*, 78, 79.

24. *Ibid.*, 78.

25. *Ibid.*, 78, 82.

26. See Mark Mazower, *Governing the World: The History of an Idea* (New York: Penguin Press, 2012), esp. Part I, "The Era of Internationalism."

27. G. John Ikenberry, "The Rise of China and the Future of the West, Can the Liberal System Survive?" *Foreign Affairs* 87, no. 1 (January/February 2008), <http://www.foreignaffairs.com/articles/63042/g-john-ikenberry/the-rise-of-china-and-the-future-of-the-west>.

28. *Ibid.*; and Mazower, *Governing the World*, xvii.

29. Peter N. James, *Soviet Conquest from Space* (New Rochelle, NY: Arlington House, 1974) 29–30, 119–23, 204.

30. Thucydides, *History of the Peloponnesian War*, trans. by Rex Warner (New York: Penguin Books, 1954), 157.

31. Michael Walzer, *Just and Unjust Wars* (New York: Basic Books, 1977) 64, 65–66; and Henry A. Kissinger, *Diplomacy* (New York: Simon & Schuster, 1994) 120–36.

32. "The governments of Germany, Italy and Japan, considering it as a condition precedent of any lasting peace that all nations of the world *be given each its own proper place*" (emphasis added). Three-Power Pact between Germany, Italy, and Japan, signed at Berlin, 27 September 1940, <http://avalon.law.yale.edu/wwii/triparti.asp>.

33. Kenneth Waltz, "Why Iran Should Get the Bomb," *Foreign Affairs* 91, no. 4 (July/August 2012): 5. Waltz is here distinguishing "full-scale war" from cross-border clashes between nuclear powers, including the unfortunately named "Kargil War" (1999) and the Sino-Soviet conflict of 1969.

34. Ironically, in response to his critics in the "anti-space weaponization lobby who have drawn parallels between space weapons and nuclear weapons," Dolman has counseled, "history

is not tyranny. Today's context is not the same as yesterday's, and too forced an analogy makes small-minded hobgoblins of us all." Everett C. Dolman, "Astropolitics and *Astropolitik*: Strategy and Space Deployment," in *Harnessing the Heavens: National Defense Through Space*, eds. Paul G. Gillespie and Grant T. Weller (Chicago: Imprint Publications, 2008) 131–32.

35. Dolman, "New Frontiers," 79.
36. Glaser, "Will China's Rise Lead to War?" 81.
37. Kissinger, "Future of U.S.–Chinese Relations," 46.
38. Nassaim Nichols Taleb and Mark Blyth, "The Black Swan of Cairo," *Foreign Affairs* 90, no. 3 (May/June 2011): 35–36.
39. Quoted in Colin S. Gray, *Maintaining Effective Deterrence* (Carlisle, PA: US Army War College, Strategic Studies Institute, August 2003), 26.
40. Graham Allison, "The Cuban Missile Crisis at 50," *Foreign Affairs* 91, no. 4 (July/August 2012): 16.
41. Everett Dolman, Peter Hays, and Karl P. Mueller, "Toward a U.S. Grand Strategy in Space," roundtable, George C. Marshall Institute, Washington, DC, 10 March 2006, 21, <http://www.marshall.org/pdf/materials/408.pdf>.
42. Graham Allison and Phillip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis*, 2nd ed. (New York: Longman, 1999), 7.
43. Niccolò Machiavelli, *The Prince*, trans. by W. K. Marriott (New York: Alfred A. Knopf, 1908); and Fraser MacDonald, "Anti-Astropolitik: Outer Space and the Orbit of Geography," *Progress in Human Geography* 31 (October 2007): 592–615, esp. 606–9. This article owes much to MacDonald's "Anti-Astropolitik."
44. Gearóid Ó Tuathail, "Understanding Critical Geopolitics: Geopolitics and Risk Society," *Journal of Strategic Studies* 22, no. 2–3 (1999): 108.
45. *Ibid.*, 121.
46. *Ibid.*, 108.
47. Dolman, "New Frontiers," 82, 83.
48. *Ibid.*, 92.
49. Allison and Zelikow, *Essence of Decision*, 47.
50. Dolman, "New Frontiers," 92.
51. Perhaps this was the first salvo in the space war that "may have already begun," according to Dolman. If so, then this is a very cold war indeed.
52. Everett C. Dolman and Henry F. Cooper Jr., "Increasing the Military Uses of Space," in *Toward a Theory of Spacepower*, 106.
53. Moltz, *Politics of Space Security*, 100, 110, 119.
54. Kissinger, "Future of U.S.–Chinese Relations," 48.
55. Dolman, "New Frontiers," 93.
56. *Ibid.*, 89.
57. *Ibid.*, 93.
58. *Ibid.*, 94.
59. *Ibid.*, 88, 90.
60. Raymond Duvall and Jonathan Havercroft, "Taking Sovereignty Out of this World: Space Weapons and Empire of the Future," *Review of International Studies* 34, no. 4 (October 2008): 757. An unpublished version is available at http://www.ligi.ubc.ca/sites/liu/files/Publications/Havercroft_paper.pdf.
61. *Ibid.*, 764.
62. *Ibid.*, 768.
63. Dolman, "New Frontiers," 80, 91.

64. Ian Brownlie, *Principles of Public International Law*, 7th ed. (New York: Oxford University Press, 2008), 289.
65. Waltz, "Anarchic Order and Balances of Power," 109.
66. Arthur M. Schlesinger Jr., *The Cycles of American History* (Boston: Houghton Mifflin Co., 1986) 155.
67. Ibid., 119.
68. Ibid., 156.
69. Glaser, "Security Dilemma Revisited," 178–79.
70. Howard Zinn, "Machiavellian Realism and U.S. Foreign Policy: Means and Ends," in *Pasionate Declarations, Essays on War and Justice*, ed. Zinn (New York: Harper Perennial, 2003), 15.
71. Dolman, "New Frontiers," 89.
72. Gray, *Maintaining Effective Deterrence*, 52.
73. *Negation* is a doctrinal term, meaning "active and offensive measures to deceive, disrupt, deny, degrade, or destroy an adversary's space capabilities. Negation includes actions against ground, data link, user, and/or space segment(s) of an adversary's space systems and services, or any other space system or service used by an adversary that is hostile to US national interests." Joint Publication 3-14, *Space Operations*, 6 January 2009, II-5.
74. Duvall and Havercroft, "Taking Sovereignty Out of this World," 773.
75. Dolman, "New Frontiers," 94.
76. Dolman, *Astropolitik*, 157, 177.
77. Francis Lyall and Paul B. Larsen, *Space Law: A Treatise* (Burlington, VT: Ashgate, 2009) 54, 59, 70.
78. Available online at <http://www.oosa.unvienna.org/pdf/publications/STSPACE11E.pdf>.
79. "Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies (Outer Space Treaty)," London, Moscow, and Washington, 27 January 1967.
80. William E. Burrows, *This New Ocean* (New York: Random House, 1998) 191.
81. Paul B. Stares, *The Militarization of Space* (Ithaca, NY: Cornell University Press) 49.
82. Walter A. McDougall, *The Heavens and the Earth, A Political History of the Space Age* (New York: Basic Books, 1985), 348 (quoting Senator Albert Gore in 1963, "observation from space is consistent with international law, just as observation from the high seas").
83. Lyall and Larsen, *Space Law*, 54, 59, 70.
84. Outer Space Treaty, Art. I.
85. Dolman, "New Frontiers," 94.
86. For example, William Burrows, *Deep Black: Space Espionage and National Security* (New York: Random House, 1986), vii. In 1967, Lyndon Johnson said of space photography, "tonight we know how many missiles the enemy has and, it turned out, our guesses were way off. We were doing things we didn't need to do, building things we didn't need to build. We were harboring fears we didn't need to harbor."
87. Outer Space Treaty, Art. IV.
88. Ibid., Art. II.
89. Dolman, "New Frontiers," 94.
90. Dolman, *Astropolitik*, 181.
91. Stares, *Militarization of Space*, 48.
92. Mike Moore, "Space Cops: Coming to a Planet near You!" *Bulletin of the Atomic Scientists*, November/December 2003, 52.
93. Quoting Robert K. Merton in Leon Aron, "Everything You Think You Know about the Collapse of the Soviet Union is Wrong," *Foreign Policy*, July/August 2011, 68.

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Book Essay

Decade of War

No Lessons Endure

Richard Szafranski

While preparing to read *Decade of War*, vol. 1, *Enduring Lessons from the Past Decade of Operations*,¹ to discern what its lessons might mean for airpower, I could not help but recall a passage from T. S. Eliot's "Gerontion:"

*History has many cunning passages, contrived corridors
And issues, deceives with whispering ambitions,
Guides us by vanities.*

Volume 1 of the report discusses 11 strategic themes that arose from the study of enduring lessons and challenges of the last decade. It did not deserve my skepticism, as the lessons below are straightforward and valuable.

- **Understanding the Environment:** A failure to recognize, acknowledge, and accurately define the operational environment led to a mismatch between forces, capabilities, missions, and goals.
- **Conventional Warfare Paradigm:** Conventional warfare approaches often were ineffective when applied to operations other than major combat, forcing leaders to realign the ways and means of achieving effects.
- **Battle for the Narrative:** The [United States] was slow to recognize the importance of information and the battle for the narrative in achieving objectives at all levels; it was often ineffective in applying and aligning the narrative to goals and desired end states.
- **Transitions:** Failure to adequately plan and resource strategic and operational transitions endangered accomplishment of the overall mission.
- **Adaptation:** Department of Defense (DoD) policies, doctrine, training and equipment were often poorly suited to operations other than major combat, forcing widespread and costly adaptation.

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- **Special Operations Forces (SOF)–General Purpose Forces (GPF) Integration:** Multiple, simultaneous, large-scale operations executed in dynamic environments required the integration of general purpose and special operations forces, creating a force-multiplying effect for both.
- **Interagency Coordination:** Interagency coordination was uneven due to inconsistent participation in planning, training, and operations; policy gaps; resources; and differences in organizational culture.
- **Coalition Operations:** Establishing and sustaining coalition unity of effort was a challenge due to competing national interests, cultures, resources, and policies.
- **Host-Nation Partnering:** Partnering was a key enabler and force multiplier, and aided in host-nation capacity building. However, it was not always approached effectively nor adequately prioritized and resourced.
- **State Use of Surrogates and Proxies:** States sponsored and exploited surrogates and proxies to generate asymmetric challenges.
- **Super-Empowered Threats:** Individuals and small groups exploited globalized technology and information to expand influence and approach state-like disruptive capacity.²

The Big Lessons: Why Learning is Difficult for Us to Apply

If reflection leads to discernment, then we should begin with three big lessons. The first big lesson is that no lessons endure. It is hubris to think otherwise. We—humankind—are notoriously poor students, especially when it comes to war. The second big lesson regards “lessons learned” efforts themselves. Only a nation expecting to fight again would promulgate lessons for fighting better or more efficiently. That is prudent. The third is that “lessons” are prophylactic: they use the past to advise us to take protective measures to avoid bad things in advance of these bad things occurring in the as-yet-undefined future. This is helpful as long as we guard against a belief in stasis and remain aware that good lessons taken from bad wars may embolden some—“been there, done that”—to undertake bad wars in the future.

Sadly, we each—people, groups, and nations—have to learn for ourselves what it means when we say that war is a mortal contest of wills waged by humans. Lessons learned of any kind join 3,000 books published daily, 144 billion daily e-mails, and scads of articles, blogs, and journals, all resulting in tons of text.³ That may be a cultural bias. Reading, it seems, may neither be necessary nor sufficient for learning about war. We paragons of animals—even the illiterate—bring whatever strengths and weaknesses we have into this contest of wills. The struggle is dominated by the alpha males and alpha females in government and

in the armed forces on all the sides. On our side, their will becomes our will, whether that will is good or wrong-headed, vacillating or steadfast. Thus, there is no assurance that we can apply what we learn if the leaders will otherwise.⁴

Humans live, grow, learn, forget, and die, with newer and slightly different alphas eventually replacing the older ones. Military rookies are formed by the adapted survivors from the “last war” that formed them. These survivors and their followers advance in rank if they match the attributes of those advancing them. It is a system that runs the risk of perpetuating mental monocultures. The alphas in elected government must govern, raise money,⁵ and please both their constituents and their political party to remain in office. Military service, respectfully, is not a credential they must have, nor need to have.⁶ Our senators and representatives do the best they can to oversee—to check and balance—the executive, the generals and admirals, and department and agency heads that constitute the leadership of our combat and combat support armed forces.

So, given this very complex arrangement, what are the lessons airpower should draw from a decade of war? References to airpower in *Decade of War* are catholic, and not all are service-specific. They include:⁷

- High and often conflicting demands—damage assessment, delivering aid, search and rescue—for air assets (p. 4).
- Value of manned expeditionary intelligence, surveillance, and reconnaissance (ISR) platforms in Task Force ODIN and Project Liberty (p. 4).
- Availability of precision air-based weapons made to precise and discriminatory engagements (p. 8).
- Value at the unit level of increased ISR support to determine positive identification and screen for potential collateral damage (p. 8).
- Need to prevent civilian harm from airstrikes (pp. 20, 27).
- Difficulties aircrews encountered in providing air support when those from different nations had different caveats limiting what actions they could support (p. 29).
- Different and non-interoperable systems limiting the utility of available capabilities among coalition nations in exchanging information, leading to incomplete operating pictures, reduced battlespace awareness, and increased risk to forces (p. 29).
- US possession of the majority of valuable types of ISR assets as well as precise, low-collateral-damage weapons (p. 30).
- Partner nations (some of them) lacked ISR capabilities and airpower, which limited both mobility and responsiveness to threats (p. 30).
- Reliance of host nations on US- or coalition-provided key enablers such as air support, logistics, or ISR capabilities (p. 33).

Those are useful even though they omit the damage (possibly irreparable damage, post-sequester) done to airpower's airlift, rotary-wing, air refueling, strike, and unmanned platforms resulting from a mechanically brutal operations tempo. Other noteworthy airpower contributions included air base defense, convoy security, and medical support. As the author of the *Decade of War* summary notes, "The scope of the lessons identified in this report is broad, and many of the ideas are difficult to translate into concrete action."⁸

Returning to the 11 lessons advanced in *Decade of War*, the following is my list of those most appropriate for airpower. While they do not profess to be durable, they may well help airpower contribute even more to the next fight.

Lesson 1. Understanding the Environment: *Microenvironments Matter*

In war, entire social systems take on entire social systems, and each system contains an almost indeterminate number of complex and interacting subsystems. Parsing these into buckets like geographical, informational, social, political, ethnic, tribal, cultural, religious, and economic does only a little to unravel the complexity or interactivity. The carbon (humans) and silicon (equipment) elements in the microenvironments are what really matter, and these cannot be well understood from the top down. They have to be understood from the inside out and the bottom up. It is in the small bits and at the seams that the vulnerabilities manifest. The regimen for training and developing airpower leaders does not do a good job preparing them to understand and exploit microenvironments; it never has. So we should change it and create incentives for immersion into other systems. Airpower needs more folks in embassies, in intelligence, and in the field with the others who rely on airpower. We should also have closer ties to the *ground* and *naval* elements of *foreign* militaries. It is they who need to understand the *value* of airpower, and it is we who need to understand what they don't understand.

Lesson 2. Conventional Warfare Paradigm: *Every Big Fight is a Bunch of Little Fights*

The big fight is system versus system. The little fights at the subsystem component level can change the outcome. Targeting looks for centers of gravity, key nodes, and choke points. Each person involved in the creation of airpower should become a "targeteer" and an expert in some subcomponents of the opposing system. Operational planning succeeds if it is joint, and joint improves if it includes current and immersed microenvironment experts. Understanding the desired outcome of the big fight illuminates how each and every targeteer working in concert can win each small fight. Attacking the network is inferior to attacking the analogs of the "bios" or the "kernel." Getting hung up on putting the name of the contest into the right bucket—conventional, COIN, irregular, and so forth—need not be an airpower thing. Airpower's thing is acquiring knowledge about how air, space, and cyber can dismantle or befuddle

any opposing system top-down, taking it apart by preying on its bottom-up vulnerabilities. Getting the technology to do the impossible is also an airpower thing.

Lesson 3. Battle for the Narrative: *Tell the Truth to the Good People and Lie to the Bad*

Perhaps it's less about the "battle for the narrative" than it is about doing right things right and for the right reasons. Among the opposition—at the subsystem component level—are some "good" people. Airpower's cyber can help make sure they get the truth. Likewise, within our system—at similar levels—is what some would characterize as "bad" carbon. Yet, because they are within our system, they are "good," even if they are unhelpful. We must make sure they get the truth. Denial, deception, misdirection, and other forms of the *ruse de guerre* are well within the rules of the struggle; they are merely ways of not admitting a sensitive truth to the "bad." A system may have to conscience some smarmy things in war, but smarmy cannot be illegal or unauthorized in our country. Nor can it be carpet bombing in the age of precision weaponry. Airpower, by the admissions of many generals and admirals from wars past, saves friendly lives. Airpower leaders should be assertive to the point of being outspoken (obnoxious?) that *mors ab alto* always saves—and often can even substitute for—"boots on the ground." *That* particular truth needs to be understood by *every* mom in the United States.

Lesson 4. Transitions: *Wars End*

The purpose of fighting always has been to end the fighting. What may be both new and may endure is that social activism is global now—and air-delivered munitions have huge potential destructiveness—so airpower application needs to be done with diligence.⁹ For example, if the war requires that our airpower destroy an adversary's airpower, military and civil aviation and infrastructure, electrical power distribution networks, communications, and bridges, then airpower should know that the "you break it, you buy it" rule may be invoked when the fighting ends. The lesson for airpower is that while it may be unpopular in the joint setting, airpower is obligated always to think two or three moves ahead and dissent when the boss—rarely an airpower officer—wants shock and awe without having evaluated or wanting to accept potential longer-term consequences.

Lesson 5. Adaptation: *Is "Doctrine" That Isn't Working Really More Like "Dogma"?*

The lesson for airpower is to always be open to reexamining both airpower doctrine and joint doctrine that is not quickly and repeatedly delivering success. Doctrine can be nightmarishly complicated, overheating fiber to sluice information, making satellites gasp for energy, or destroying forests for more paper.¹⁰ Airpower must understand—and contribute to everyone's understanding—of

the nature and character of the fight we're in, and airpower must then adjust to deliver positive results in *that* environment. The environment could change overnight. John Boyd called this understanding "the big 'O': Orientation. Adapt doctrine to survive and succeed.

Lessons 6, 7, 8, and 9. Special Operations Forces—General Purpose Forces Integration, Interagency Coordination, Coalition Operations, Host-Nation Partnering: *One Team, One Fight*

We cannot afford—in multiple dimensions—to go it alone in the future. So, accept that we have special operations forces, land-sea-undersea-air-subspace-space-cyber-intelligence general purpose forces (along with their various and often incompatible information-sharing and cooperation protocols); we have diplomats, allies, coalitions, friends, spectators, churches/temples/mosques, national and international nongovernmental organizations, industries (and export controls), consultants, media, electorate, academe, and our "wingers," both left and right. Each department also has its own interagency processes (and caveats), so it is going to be unavoidably complicated.

Integrating the diverse carbon and silicon components of these subsystems into one cooperative—or "as cooperative as possible"—system is table stakes for the future. Who are the airpower experts and "names" among any of these domains today? Who are the airpower experts who understand and can influence these multitudinous microenvironments? It would be very valuable if airpower attended to this.

Lessons 10 and 11. State Use of Surrogates, Proxies, and Super-Empowered Threats: *Expect Bad People to Be Bad, and Potent*

The under-appreciated on the planet¹¹—the disenfranchised, the wronged, the struggling, the potentially suicidal, the greedy, the outlaws—are among us. They always have been. Now, however, technology can connect them and unite them in common purpose. To be "appreciated," some or many are willing to become what we would call "evil" and add their energy and talent to the things that bring them attention, glory, salvation, or wealth. We can address the sources of discontent—the absence of world peace and harmony—or we can protect ourselves by being diligent and knowledgeable enough to avoid rude surprises. We can also do both. In all cases, leaders need to recognize that there may be lone wolves lurking everywhere airpower is generated, from the lab and the factory to the runway.

Beefing up airpower's counterintelligence capabilities and more closely connecting them to operational airpower and to airpower counterintelligence counterparts would be a start. We also should understand that the same technologies that connect and help unite evil also inform evil about ways to hurt: for example, pressure-cooker bombs. Some ways to hurt airpower can hurt big: incapacitated operators, maintenance technicians, munitions handlers, security forces, and

medics can stop the daily production of airpower at its generative points. It would be wise to expect bad people to be bad, and it would be advisable to expect them to try to be powerfully bad in the future.

What Does All This Mean?

It means we can and must extract concrete value from a *Decade of War*. Any “lessons learned” are rebuttable hypotheses on conventional consensus wisdom that, even if unrebutted, require reflection, seasoning, and tempering to be useful to individual players and the nation as a whole. Airpower needs its own voice and its own perspective to inform its chewing before it swallows. Our leaders need to assert the lessons *they* derive from the facts. Their followers—airpower’s Iron Majors—need to be supported in resisting homogenization into some kind of a mediocrity of thinking. We all need to be committed to doing right things right and for the right reasons. “Lessons” are a great place to start the dialogue.

Notes

1. Summarized in Elizabeth Young, “Decade of War: Enduring Lessons from a Decade of Operations,” *PRISM* 4, no. 2 (2013): 123–41, <http://cco.dodlive.mil/files/2013/06/PRISM-4.2-Final-for-Web.pdf>. The full 50-page report is available at <http://blogs.defensenews.com/saxotec-access/pdfs/decades-of-war-lessons-learned.pdf>.

2. Joint Staff J-7 Joint and Coalition Operational Analysis (JCOA), *Decade of War*, vol. 1, *Enduring Lessons from the Past Decade of Operations* (Suffolk, VA: JCOA, 15 June 2012), 2.

3. See <http://royal.pingdom.com/2013/01/16/internet-2012-in-numbers/>.

4. A flaw of the “enduring lessons” may be that they are insufficiently inclusive and comprehensive because they fail to assess and learn from the *domestic* consequences of a decade of war. What will be the longer-term social consequences of the casualties, the physically disabled, the large number of post-traumatic stress disorder victims, an increased suicide rate among veterans, and other domestic social developments arising from a decade of war?

5. “House members, on average, each raised \$1,689,580, an average of \$2,315 every day during the 2012 cycle. . . . Senators, on average, each raised \$10,476,451, an average of \$14,351 every day during the 2012 cycle.” Mike Masnick, “How Much Does It Cost to Win Election to Congress?” 14 March 2013, <http://www.techdirt.com/articles/20130313/02101422307/how-much-does-it-cost-to-win-election-to-congress.shtml>. Other sources cite similar numbers. See Jon Terbush, “What It Costs to Win a Congressional Election,” *The Week*, 11 March 2013, <http://theweek.com/article/index/241194/what-it-costs-to-win-a-congressional-election>.

6. It may be that a lack of military experience among the overseers capitalizes on diversity and injects novelty and promotes innovation within the armed forces. Innovation in the armed forces, one might hypothesize, seems to be inversely proportional to the percentage of lawmakers with military service. “In 2013, just 19% of the 535 combined members in the U.S. House and Senate will have active-duty military service on their resume, down from a peak in 1977 when 80% of lawmakers boasted military service. In the current Congress, 22% are military veterans.” Julie Snider and Tony Hargo, “Number of Veterans in Congress Continues to Decline,” *USA Today*,

20 November 2012, <http://www.usatoday.com/story/news/nation/2012/11/20/fewer-congress-vets/1716697/>.

7. JCOA, *Decade of War*, vol. 1, page numbers as indicated.

8. Young, "Decade of War," 140.

9. For example, every spectator has an opinion on what ought to be the obvious distinction—but apparently is not—between felonious offenses and whistleblowing, and many express their opinions and act on them.

10. "This accursed war [World War II] will surely be over by 1948 because by then there'll be no more paper left on the planet!" Attributed to Field Marshal Bernard Law Montgomery, 1st Viscount Montgomery of Alamein, <http://www.celebritytypes.com/quotes/bernard-montgomery.php>.

11. From the Latin *appretiatius*, meaning "estimate the quality of," generally with a sense of "high estimation."

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Book Reviews

Tomorrow's Air Force: Tracing the Past, Shaping the Future by Jeffery J. Smith. Indiana University Press, October 2013, 272 pp., \$35.00.

Col Jeffery J. Smith, recipient of a PhD in political science from Washington State University and current commandant of Air University's School of Advanced Air and Space Studies (SAASS), attempts to fulfill two objectives in *Tomorrow's Air Force*. First, he examines in historical perspective the question of "how and why . . . organizational change occurred" within the US Air Force and its predecessors. Second, he focuses his analysis on "understanding and anticipating the possibility of future USAF organizational change."

This two-fold approach serves as the basis for his argument that the current USAF organizational structure must change if the service is to retain its ability to contribute to US national security interests in a meaningful and effective way. Underscoring the imperative for such a change, Smith claims, is the growing disparity between an organizational framework grounded in the unique perspective of the USAF dominant culture—that of the fighter community—and the changing contexts of contemporary warfare. Given the current fighter-operations perspective, the Air Force organizational structure is optimally geared for fighting conflicts that place a premium on attaining and maintaining air superiority, that allows for targeting critical infrastructure using precision-guided munitions, and that feature opponents willing to mass fielded forces in the open, making it possible to attrit them from the air. Wars that easily fit into this paradigm are increasingly rare, however. Instead, asymmetric conflicts of the kind with which Americans have become painfully intimate over the last decade now serve as the dominant context of warfare.

The book's historical survey of USAF principal operations in the last two decades—the period that coincides with the institutional dominance of the fighter-operations perspective—demonstrates the limitations of that perspective in asymmetric, unconventional, irregular, or urban contexts. In such environments, Smith notes, "the dominant and most important capabilities required of the USAF do not come from the fighter-operations community." Instead, they are provided by Airmen "responsible for intelligence, surveillance, and reconnaissance [ISR], together with space-based capabilities, cyberspace operations, logistics, tactical airlift, and special operations" (p. 215).

Smith does not dismiss the need for developing and honing capabilities associated with the fighter-operations perspective; time and again he emphasizes this will remain a crucial component of the Air Force's mission. But the USAF will have to enlarge its spectrum of capabilities to "consider all of its systems under a larger strategic vision of *synergistic operations*" (p. 219) that will embrace both regular and irregular conflicts. In turn, he predicts, such a synergistic viewpoint will emerge as the dominant USAF perspective in the next two decades. This process will both require and generate profound

organizational and cultural changes requiring the USAF leadership to consider a range of initiatives intended to ensure the service's continued relevance and effectiveness. These include continued development of unmanned and remotely operated vehicles, cultivation of senior leaders whose promotion is based on broad strategic and intellectual acumen rather than on operational specialty alone, increased emphasis on interoperability, and greater acceptance of the USAF support role provided to the other services.

To anticipate and predict just what form these organizational changes might take, Smith analyzes the nature of analogous transformations in the Air Force's historical development using insights borrowed from theoretical models of organizational change. At least twice in USAF history, its structure successfully adapted and readjusted to changing contexts. In the first half of the twentieth century, its institutional predecessors gradually moved away from the ground-operations perspective that reflected the imperatives of the parent service, the US Army. A combination of external pressures from two world wars, internal cultural changes, and key decisions by senior leaders resulted, by the 1940s, in the emergence of a bomber-operations perspective as the dominant organizational and cultural paradigm that provided the impetus for a USAF institutional independence. Similarly, the advent of limited conventional wars in Korea and Vietnam during the Cold War, combined with the changing cultural dynamics of its officer corps and senior leadership, facilitated the emergence of the fighter-operations perspective as the cornerstone of USAF organizational identity by the early 1990s. In each case, Airmen successfully adapted to changing circumstances, ensuring the continued relevance and effectiveness of their service.

Smith's splendid analysis is a worthy successor to Carl Builder's examination of Air Force culture (*The Icarus Syndrome*, 2002). To be sure, Smith's conclusions are likely to generate considerable unease among those Airmen whose professional and personal identities pivot around the fighter-operations perspective. As Smith himself acknowledges, one retired general who read an advanced copy of the manuscript "refused to provide any comments more than to say he completely disagreed with my findings and that he could not endorse the work" (p. xiii). That, however, is all to the good because no one can deny the changing contextual realities and their implications which Smith analyzes with clarity and rigor. As Flannery O'Connor once put it, "the truth does not change in accordance to our ability to stomach it." With the Air Force bracing itself for a future of tight budgets, rapid technological change, and strategic uncertainty, its leaders at all levels must begin asking themselves and each other some tough questions about the direction their service is headed. Those Airmen willing to actively engage in such discussions would do well to read this book as the basic point of departure for debates concerning the intricate relationship between the past, present, and future US Air Force.

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Nuclear Deterrence in the 21st Century: Lessons from the Cold War for a New Era of Strategic Piracy by Thérèse Delpech. RAND, 2012, 196 pp., \$24.95.

Nuclear Deterrence in the 21st Century examines changes in the global strategic environment since the end of the Cold War. The bipolar balance of power no longer exists: the former Soviet Union is in decline, while China is on the rise. The acquisition of nuclear weapons by nations such as India and Pakistan and the emergence of Iran and North Korea as nuclear powers call for a fresh examination and new perspectives. The late French strategic thinker and internationally renowned expert on nuclear issues, Thérèse Delpech, ably provides these perspectives in this excellent study.

The author evaluates the relevance of Cold War deterrence concepts—such as extended deterrence (the “nuclear umbrella” protecting US allies), self-deterrence (restraint), mutually assured destruction (MAD; retaliatory capabilities that made the use of nuclear weapons unthinkable), and second strike (the ability to retaliate)—in a contemporary context. Terms such as *parity* (a nuclear “balance of terror”), *vulnerability* (to an adversary’s nuclear arsenal), *credibility* (the will to use nuclear weapons), *launch on warning* (immediate response to detected nuclear attack), and *uncertainty* (an opponent’s willingness to take seemingly unacceptable risks) are also discussed. During the Cold War, both the Soviet Union and the United States exercised responsibility and restraint. Emerging nuclear powers such as Iran or North Korea might not do so, thus creating an atmosphere of increased uncertainty and instability.

The chapter entitled “Lessons from Crises” cites numerous examples. The most important is that “Leadership Lies at the Very Core of Deterrence,” for, as the author states, “It is dangerous to disregard the importance of personalities in the nuclear decision-making process” (p. 87). Delpech also notes that “compromises, concessions, and negotiations are not necessarily recipes for peace. In some circumstances, they can lead to war” (p. 88).

In many ways, the twenty-first century is “The Age of Small Powers.” Pakistan’s nuclear arsenal—as well as Iranian, North Korean, and Syrian efforts to obtain one—creates an atmosphere in which “U.S. allies are under increased pressure from reckless neighbors” (p. 112). Regional powers that acted as proxies for the Cold War superpowers are independent actors increasingly willing to take risks, especially when, as in the case of North Korea, there seems to be no adverse consequences to aggressive behavior. The sinking of South Korea’s navy corvette *Cheonan* and bombardment of Yeonpyeong Island in 2010 are open challenges to the Obama administration’s policy of “strategic patience.” Delpech points out that “the answer future historians might get to their legitimate question (‘How did North Korea gather so much power?’) lies partly in the terrifying weapons developed by this otherwise international dwarf, partly in the disguised protection provided by China, and partly by the West’s willingness to look the other way in the hope that things will eventually improve somehow. They won’t” (p. 103).

This study scrutinizes China's increasing status as a world power coincident with the decline of the former Soviet Union. Although China officially maintains a "second strike" (retaliatory use only) policy, it continues to increase the size of its nuclear arsenal, supplementing mobile, land-based ICBMs with submarine- and air-launched weapons. These developments, combined with the continued modernization of China's conventional forces, are causes for concern. Delpech cites Sr Col Liu Mingfu's book *The China Dream* (2010), which declares, "China's big goal in the 21st Century is to become number one, the top power. . . . If China cannot become number one, cannot become the top power, then inevitably it will become a straggler and cast aside." She also quotes Col Dai Xu, who avers that "China cannot escape the calamity of war, and this calamity may come in the not-too-distant future, at most in 10 to 20 years" (pp. 121–22). According to the Department of Defense's 2010 *Nuclear Posture Review Report*, "China's nuclear arsenal remains much smaller than the arsenals of Russia and the United States. But the lack of transparency surrounding its nuclear programs—their pace and scope, as well as the strategy and doctrine that guide them—raises questions about China's future strategic intentions" (NPRR, p. iv; Delpech, p. 129).

Delpech also considers the emerging threats to space assets and cyber warfare. Again, Chinese capabilities in these areas require serious attention, as do those of Russia, smaller nations, and nonstate actors. Nuclear command and control systems might very well be targeted. She notes that "In the whole world, the United States is the nation-state that has the most to lose in both space and cyberspace. *How it can secure its space and cyberspace advantage for its own sake and that of its allies is one of the most important security questions at the beginning of the 21st century*" (p. 144; emphasis in original).

Thérèse Delpech's *Nuclear Deterrence in the 21st Century* has much to recommend it. Incisive and clearly written, it serves as an invaluable guide to the transition from Cold War to contemporary deterrence issues. Political and military leaders, analysts, academics, and citizens concerned with defense and international relations will all find it worthwhile reading. Scholarly yet pragmatic, it deserves a place on professional reading lists, appropriate library collections, and the desks of decision makers.

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China, the United States and 21st Century Sea Power: Defining a Maritime Security Partnership, edited by Andrew S. Erickson, Lyle J. Goldstein, and Nan Li. Naval Institute Press, 2010, 568 pp., \$47.95.

This collection of essays, organized into five parts, analyzes China's rise to power on the world's oceans and the subsequent restructuring of the global balance of power. The fourth book in the series, "Studies in Chinese Maritime Development," published jointly by the China Maritime Studies Institute and the Naval Institute Press, it draws from the US Naval War College China Maritime Studies Institute's third conference. Editors Andrew S. Erickson, Lyle J. Goldstein, and Nan Li all advocate that a maritime partnership between China and the United States is paramount in maintaining the reliability and efficacy of seaborne transport of energy. While such a partnership may have an influence in the maritime realm, both nations embrace a core interest in protecting the global maritime trading system. Yet the question remains, whether this is an issue of economic partnership or adaption? A global partnership and adaption will be necessary for the survival in a global economy.

The first section surveys shared pursuits of the United States and China in the global maritime community. Commenting on China's maritime development, Zhuang Jiannzhong emphasizes that "Beijing intends to pursue both a full range of development and security interests at sea as well as cooperation with other stakeholders such as the United States." Former president Hu states, "We must implement the military strategy for the new period, accelerate the revolution in military with Chinese characteristics, ensuing military preparedness and enhance the military's capacity to respond . . . We are determined to safeguard China's sovereignty, security and territorial integrity and help maintain world peace" (pp. 3–4). Gabriel B. Collins deploys detailed figures and statistics to demonstrate the criticality of the global maritime commons to China's economic development, as exemplified by the People's Liberation Army Navy's (PLAN) counterpiracy deployment to the Gulf of Aden. Collins purports a variety of ways in which the United States may further integrate China into the international maritime systems as well as ensure that its core interests are acknowledged. David N. Griffiths attests on the challenges and predominant contributions to peace and stability.

The second section overviews how the oceans may best be monitored and managed in support of a robust US-China maritime partnership. Erickson examines the Container Security Initiative (CSI), its genesis, and its practical value to the United States and China, concluding that CSI has succeeded by "linking robust economic and security interests, introducing new technologies and commercial opportunities, facilitating access to the U.S. market, and allowing for true reciprocity." Paul J. Smith explores how China's vulnerability to terrorism has increased with its international profile. He further demonstrates that the United States and China have substantial shared interest in this sphere, and "their collaboration has deepened, particularly since the September 11, 2001 terrorist attacks against the United States." In subsequent chapters, Goldstein and CAPT Bernard Moreland discuss the supremacy

of cooperation opportunities in the civil maritime governance domain. Goldstein offers an in-depth analysis of the respective roles and their prospects for eventual consolidation. He discovers China's civil maritime organizations, like the US Coast Guard, may serve "as a kind of buffer between states in crisis, circumventing the intensification of crises that may result from rapid naval deployment" (p. xxiii). Moreland enumerates the "rationale for, and accomplishments of, bilateral civil maritime cooperation" and further validates that the United States and China have achieved far more in this discipline than in the past.

The third section researches both maritime legal issues and humanitarian operations. The first two contributors offer Chinese and US viewpoints on paramount aspects of the Law of the Sea. Julie Xue details the differing legal perspectives China and the United States have concerning the Law of the Sea and observes the divergent strategic interests and national histories from which these perspectives emerge. These two nations share too many similar concerns to allow "obstacles to stand in the way of cooperation" (p. xxii); both China and the United States have a "common responsibility" to cooperate to achieve peace and development. Peter A. Dutton ascertains the proposal that the US-China cooperation must respect both nations' sovereign interests and legal perspectives, thereby allowing each participant the "freedom to define the scope of authorities it views as legitimate to employ."

No one nation has all the resources required to address the maritime challenges and to provide safety and security throughout the entire world maritime domain. As the largest developed country and the largest developing country, the United States and China bear special responsibility for safeguarding world and regional peace, stability and security by suppressing common threats such as piracy, terrorism, weapons, proliferation, drug trafficking, and other illicit activities (p. 185).

RADM Eric A. McVadon, USN, retired, offers a historically informed tour of US-China cooperation in humanitarian assistance and disaster relief. Goldstein and Murray acknowledge security concerns and strongly advocate that an "increase [in] Chinese participation under the aegis of the International Submarine Escape and Rescue Liaison Office would be [a] valuable confidence-building measure whose advantages would outweigh any costs" (p. xxiv). Erickson concludes the section by asserting the prospects of joint US-China efforts to combat avian influenza.

The fourth section provides a regional context for shared efforts. Michael J. Green assesses the responses of China's neighbors to its naval development and cooperation with the United States. He purports that the two nations need to enforce their commitment to "insulate maritime cooperation from capricious political retaliation, to test and strengthen agreements like the MMCA, and to increase reciprocity" (p. xxiv). Dr. Wu Shicun of the National Institute of South China Sea Studies proposes a broad overview of China's interests and maritime claims in the South China Sea region. Zhu Huayou provides an in-depth discussion of cooperation in the South China Sea to date and potential areas for future initiatives, including efforts to combat proliferation of weapons of mass destruction, environmental pollution as well as challenges to sea lane security. James R. Holmes and Toshi Yoshihara conclude the section with an analysis of the prospects

for cooperation among the United States, China, and India in the Indian Ocean and introduce the “strategic triangle” of great power relations.

The fifth section concludes the volume by assessing the prospects for maritime security cooperation between the two nations in the future. Nan Li initiates the discussion by comparing US and Chinese naval education systems. He further advocates that shared concerns may open avenues of opportunity for US–China naval education cooperation which will expand the learning curve; this in turn may enhance confidence building and improve crisis management. Andrew S. Erickson states that the new emphasis on “humanitarian operations, especially, offers opportunities for bilateral cooperation to build mutual trust.” Rear Admiral Yang Yi concludes by affirming a Chinese naval perspective on maritime security cooperation between China and the United States by advocating for “gradual trust building [to] reduce suspicions and misjudgment.” Furthermore, “the navies of China and the United States can promote mutual trust by strengthening bilateral exchanges and joint actions such as sea rescue and antipiracy operations to enhance cooperation and coordination of bilateral naval strategies” (p. 485).

This is a definitive text that is highly recommended to all those involved in political science as well as establishing international relations. Advocates of strategic policy, maritime leadership, and academic researchers are likely to benefit from Erickson, Goldstein and Li’s exemplary contributions in defining a maritime security partnership between China and the United States through challenging pursuits. Furthermore, this volume is intended to be a guidebook for practitioners in charge of edifice and nurturing the nascent Sino American maritime partnership.

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Unmanned Combat Air Systems: A New Kind of Carrier Aviation by Norman Friedman. Naval Institute Press, 2010, 280 pp., \$52.95.

Dr. Norman Friedman's *Unmanned Combat Air Systems* takes a theoretical approach to addressing the role of pilotless aircraft in tomorrow's Navy. Friedman's discussion focuses on the concept of the unmanned combat air systems (UCAS) operating in swarms involving multiple aircraft cycling to and from their host carrier. They cooperatively utilize their sensors in a networked environment, increasing processing power to determine the optimum means to engage a target. According to Friedman, humans will have a decreased role in this environment in making operational employment decisions, as "control is distributed between the unmanned aerial vehicles (UAV)." Friedman contends that while individual UAVs have limited ordnance and fuel, the swarm as a group represents a "sustainable air presence capable of mounting strikes as they are required" (p. 4).

The heart of Friedman's argument is that current airpower applications require aircraft to spend much of their time transiting to mission areas, resulting in pilot fatigue. Unmanned aircraft operating in a primarily autonomous mode do not require a human pilot, so fatigue is not a factor—a distinct advantage over their manned counterparts. Without the pilot and associated life-support systems, more fuel and ordnance can be carried. Further cost savings accrue from the lack of training mission requirements.

A valuable inclusion in *Unmanned Combat Air Systems* is the comprehensive inventory of military air vehicles. This appendix is the largest single section of the book and provides a detailed breakout of each nation's combat air vehicles.

Unmanned Combat Air Systems attempts to expound on the future role of UCASs in the US Navy. The author's ideas of networking sensors together in a collaborative environment, while interesting, is not new. The text is repetitive and appears to lack focus with topics, such as repeated discussion of pilot fatigue. While this reviewer acknowledges the book is theoretical, the author falls short of proving his point by repeatedly using phrases such as "would most likely be able to" or "probably." While there is certainly no definite conclusion as to what combat capabilities a UCAS will bring to the battlefield, a more affirmative presentation of the author's theory would have strengthened his case.

Additionally, the book is marred by conceptual errors. When presenting the idea that a UCAS is better for air-to-air missions, Friedman sights how a "lack of pilot judgment proved disastrous in the 1988 *Vincennes* incident" (p. 7) where the "problem reflected unstated assumptions in the way in which the fighter's cockpit displays [used to display position information] worked" (p. 54). The USS *Vincennes* was a Navy surface warship that shot down an Iranian civilian airliner, not an airplane with a pilot. Thus, it is unclear how a lack of pilot judgment resulted in the shoot down or if this example makes a UAV less suited for this mission.

Friedman's UCAS argument is also flawed in the air-to-ground arena, where he claims that in "actual warfare" future UAVs would be well suited for this mission because weapons "are guided to set coordinates" (p. 7). This concept is counter

to the human role in providing safe deconfliction when troops are in contact. Friedman later appears to contradict this earlier argument when discussing the accidental bombing of Canadian troops in Afghanistan, noting that most targets in Afghanistan are “pop-ups” and that this is the most likely scenario in the future: hard-to-identify pop-up targets. He offers no solution as to how a UCAS would solve this problem and only notes that the target will be “far less difficult . . . as long as systems like GPS work” (p. 54).

While exposing the reader to the theoretical concept of US Navy carrier aviation becoming primarily UCAS-based, *Unmanned Combat Air Systems* disappointingly falls well short of its target. The work appears to both repeat and contradict itself. The author’s arguments are not clearly presented, thus leaving the reader confused. The appendix on the world’s military combat air vehicles is helpful but does not overcome the flaws in the earlier text. Bottom line, the book fails to convince the reader that “Unmanned Combat Air Systems” are “a new kind of carrier aviation.”

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The Long Shadow of 9/11: America's Response to Terrorism, edited by Brian Michael Jenkins and John Paul Godges. RAND, 2011, 218 pp., \$19.95.

The Long Shadow of 9/11 is an anthology of essays that build a foundation of thought around five categories formulated by editors Brian Jenkins and John Godges. Both are qualified to edit a text of this nature due to their respective experience in the fields of terrorism and publication. Jenkins, a senior advisor to the RAND Corporation president, initiated RAND's research division of terrorism in 1972 and has authored three books on the subject. Godges serves as editor in chief for RAND and has also authored one book. The editors have arranged this work in five parts encompassing the political, social, economic, and moral implications for Americans in the wake of 9/11, with the fifth part providing a next-step approach. All essays are written by RAND field correspondents, psychologists, analysts, or political scientists. Together, they encapsulate the US response to global terrorism following 9/11.

Part 1, entitled "Humbled by Hubris," sets the mood for what is to follow. It describes the US reaction to 9/11 and supplanting a model of government in Afghanistan that would work in the aftermath of that reaction. It also discusses the consequences of tribal networking in Afghanistan and intervention in both Iraq and Afghanistan. One author concludes we reacted out of sheer emotion, as anyone could imagine, rather than relying on clear, concise information about a network that shifted dynamics to maintain its secrecy. Another concludes that supplanting a government with Western ideals can be difficult without the support and structure of the host nation, problems experienced in Iraq as well. This section opens a "long war" outlook that introduces other variables to reinforce strategy.

Terrorism is supported through a variety of means, as discussed in Part 2, "Hopeful amid Extreme Ideologies and Intense Fears." One is ideological in nature, while others include the use of propaganda and fear to control. The clash between the United States and al-Qaeda generated the question in the West and within Islam whether the wide use of propaganda and, of course, nuclear terrorism is a cause for concern for most in addition to ideology. This work demystifies the latter and implies that acquiring nuclear technology is not as easy as the propaganda would suggest. Social and psychological implications to the US response are conveyed in "Torn Between Physical Battles and Moral Conflicts." Along with the economic output of military involvement, the social and psychological perspectives of US involvement shifted considerably within the past decade. Media outlets published daily reports of improvised bombings, troop engagements, or other violence in Iraq or Afghanistan that would not only affect service members, but also the support from Americans at home. These implications not only applied to Americans, but it is argued that al-Qaeda also had its own internal conflict that affected its goals and agenda.

Our future steps to detect, deter, and defend—terms suggested in an outside work by expert Paul Kamolnick but not identified in this work—against terrorist activities at home and abroad are researched through the study of US infrastructure and policies in the concluding sections, "Driven by Unreasonable Demands" and "Inspired to Build a Stronger America." Incorporating airline security techniques to implement and maintain security of other means of transportation opens the field of cargo shipping for further investigation and analysis. Based on counterfactual

information, there is a need for multiple government functions to mobilize in the event a terrorist attack occurs, and this is suggested through a look into the public health system. There must be a constant line of communication between law enforcement and counterintelligence officials so information is communicated in a timely and efficient manner so deterrence could be effective. The constant revitalization of policy and diplomacy must be revisited frequently to create a defense network against terrorists. If we are constantly moving diplomatically on the issue, then the enemy will have to adjust.

The Long Shadow of 9/11 incorporates the workings of experts in the field, but the bias is that this work is entirely from an American perspective. The use of RAND affiliates work would suggest that RAND incorporates an environment of “involvement” from within. This work could be used as a college text or supplement, or be added to a scholarly collection, or for an expert in the field. Further reading should suggest the work of Colin Gray on *Hard and Soft Power* and Paul Kamolnick, both outside professors and writer’s on strategy and terrorism.

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How the Cold War Ended: Debating and Doing History by John Prados. Potomac Books, 2011, 320 pp., \$60.00.

Examining the end of the Cold War can provide two benefits. First, it can inform the reader on the details of how this half-century political-economic-cultural conflict came to the end. It can also provide an outstanding primer on how the history of international relations is developed and delivered to scholars and general readers—a historiography case study. The current work argues that the fall of the Soviet Union can be attributed primarily to factors internal to that state and the United States had only a marginal effect. It also concludes that international relations is an exceedingly complex discipline and that the triumphalists who attribute the end of the Cold War to the actions of Pres. Ronald Reagan oversimplify the story.

It is hard to imagine a scholar better qualified to write such a work. John Prados holds a PhD in political science from Columbia University. He clearly does his homework and sees the necessity of deep research into primary sources as a foundation for his conclusions. To him, history for the sake of history is inadequate—to be complete the scholar must draw conclusions as to what this documentation means. He understands that the story is necessarily complex and must fully explore a host of factors. Yet, all of them cannot be given equal weight in the conclusions, and judgment calls on relative importance must be made. Prados' splendid writing style makes this work a pleasure to read. The published works of this giant among international relations scholars are too numerous to list here, but among the most significant is *Vietnam: The History of an Unwinnable War*. He is associated with the National Security Archive in Washington.

Prados asserts the USSR fell mostly because of internal factors. One was economic—its heavy reliance on oil and gas exports with their falling prices during the 1980s. Another was technological—the failure to make necessary investments in modernization of its petroleum industry. Also, the rigidities of the Stalinist system resulted in slowness to change and in false reporting that prevented the leadership from really knowing what was occurring. This was also a factor in the disintegration of the Warsaw Pact—the cost of subsidies and other support was more than the system could bear. Further, the human rights movement (which Prados says did not arise from Presidents Carter or Reagan) was a worldwide phenomenon that proved incompatible with the Soviet system. Cultural factors spread to the USSR from Europe and America, further undermining the system. Worldwide communications improvements along with rising educational levels within the USSR stimulated discontent. The Soviet military was not as responsive to SDI and Reagan's military buildup as the triumphalists around him argued. The Euromissile crisis of the 1980s was a factor, but a major dimension of this was the antimissile movement among Western Europeans. Prados asserts the United States and the Soviet Union came close to war in 1983 in the wake of the shoot-down of a Korean airliner, but in the end cooler heads prevailed on both sides.

Intelligence analysis and spying did have some effects, but neither was decisive. CIA activities in Afghanistan hurt the Soviet military substantially, but according to Prados the war there was not a major factor—the USSR would have collapsed without Afghanistan. Soviet activities elsewhere (e.g., Cuba and Africa) were a relatively minor cost to their system and had even less impact than the Afghanistan War.

The Great Man approach to history has lost much of its impact, but our author does argue that sometimes the individual can make a difference. Though President Reagan was influenced by the “hawks” around him, he did rise above them in *some* crucial circumstances—principally in arms control and in the 1983 war scare. More influential, however, was the rise of Mikhail Gorbachev at almost the right moment in history. His reformist attitude was rare in earlier days, but he did manage some important changes with perestroika and glasnost that rationalized the USSR system some and opened the culture more than it had been to change. He came close to saving the USSR, but the Warsaw Pact was already gone, and the nationalities problem proved beyond his control.

How the Cold War Ended is a great case study on how international relations work and what humanity can do to *try* and control it. Politics, ideology, economics, culture, technology, personality, political structure, military force, religion, and pure accident are among the factors that combine in unpredictable ways to govern outcomes. There will always be self-serving individuals to claim credit for good outcomes, but the best that strategists can do is to reduce the number of unknown factors to improve the odds their final guesses will be correct—or more correct than those of the adversary. We can hope they will also strive to build their decision-making structure to be more flexible than that of the Stalinists and react more quickly to unpredictable events.

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From Kabul to Baghdad and Back; The U.S. at War in Afghanistan and Iraq

by John R. Ballard, David W. Lamm, and John K. Wood. Naval Institute Press, 2012, 367 pp., \$42.95.

The market is currently awash with books about Operation Enduring Freedom and Operation Iraqi Freedom by journalists with varying degrees of impartiality; they usually emphasize the negative. Others are by veterans, often written in dramatic terms emphasizing the miseries and heroics of war. The former tend toward the political and strategic levels; the latter mostly focus on the tactical or operational aspects of the wars. Some are based on personal observation—necessarily limited views. Others lean heavily on published sources and sometimes interviews. None is yet definitive, but *From Kabul to Baghdad and Back* does do a good job of relating military operations to the politics of war—the main message being that fighting two wars at once is difficult and risky.

One would be hard pressed to find a trio of authors with better experience and academic credentials for writing such a book. All three have ample military experience and graduate education to support their work. They are all currently associated with the National Defense University and have substantial military service including both combat and command. The tome is well-written and understandable to the nonspecialist.

From Kabul to Baghdad is not “drum and trumpet” history though. It gives enough on military operations to support the strategic and political aspects of the struggles. It does cover the battles of Fallujah in 2004 in a summary way but does not dwell on every combat. The tale uses a chronological pattern in general, starting with 9/11 and then OEF. It agrees with the usual interpretation that the Afghanistan operation went exceedingly well notwithstanding the tactical disappointments of Tora Bora and Anaconda. It also agrees with a substantial part of current literature on the wars to the effect that the fruits of the victories of 2001–02 were lost when the strategic focus shifted from Afghanistan to Iraq in 2003. To some extent, the losses were salvaged by the surges in both places, but the final outcomes are yet to be known.

After the experiences of Kaiser Wilhelm and Adolph Hitler in the last century, and that of Napoleon before, it is remarkable scholars find it necessary to warn us of the difficulties in fighting two conflicts at once. But the scale of things then was so different from the current world situation that many would counter with the “history does not repeat itself” argument, also citing past cases where dual wars *were* won. But *Kabul to Baghdad* does recognize that the world has changed and is changing in unpredictable ways. The Westphalia system founded in the seventeenth century, wherein the state was the determinant of outcomes, was still operationally dominant in Napoleon’s and Hitler’s days. But now, these authors agree, it is changing because of technology, the Internet, and globalization. Now nonstate actors are becoming increasingly important, and the dominance of the state is diminishing. One consequence is that though conventional forces remain important and need to be sustained, irregular warfare is and will remain on the rise, and a different capability to face that problem must also be supported.

Book Reviews

From Kabul to Baghdad and Back is a first-class work. If the military professionals have time to read but one book this year, they would be well advised to make this the one.

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The National Security Enterprise: Navigating the Labyrinth, edited by Roger Z. George and Harvey Rishikof. Georgetown University Press, 2011, 384 pp., \$33.00.

Navigating the Labyrinth argues that national security planning needs to be more coordinated and effective based on the challenges found in this century. Each contributing author examines specific components and cultures that make up the national security enterprise. In three distinct sections, they describe the interagency process within the executive branch, the role of Congress and the Supreme Court, and, finally, the outside players, including lobbyists, think tanks, and the media. The editors of *Navigating the Labyrinth* are both professors at the National War College and previously served in executive-branch agencies.

Each author acknowledges there can be no structural fix for the bureaucratic maze unless there is an awareness of the specific components that make up the current system of national security policy planning and execution. The lack of understanding of other components clearly harms the overall effectiveness of US projection of hard military power, economic statecraft, and soft-power diplomacy. One author notes that unfortunately, “civil servants too often see few professional benefits from involvement in interagency activities, which take them out of sight of their day-to-day management.”

A fundamental tension described repeatedly is that cabinet secretaries are too busy running and representing their departments to effectively coordinate government-wide policies. There have been attempts to alleviate this situation, most notably the National Security Act of 1947 and creation of the National Security Council. Among the variables that shape an agency’s dynamics are the nature of the threat environment, constitutional frameworks, leadership quality, and access to technology.

A successful bureaucracy is partially measured by the ability to create a link between policy and resources. Former Secretary of State Hillary Rodham Clinton is credited with beginning the Quadrennial Diplomacy and Development Review (QDDR), a parallel mechanism to the Quadrennial Defense Review completed at the Pentagon. The need for an overarching strategic policy document is not new. Secretary of Defense James Forrestal in 1947 was so concerned that the OSD would be ineffective in steering a department-wide policy that he remarked, “This office will probably be the biggest cemetery for dead cats in history.”

Since the 9/11 attacks, Congress has reorganized the federal bureaucracy significantly to address threats. The creation of the Department of Homeland Security combined 22 federal agencies and 170,000 workers. Another new office, the Director of National Intelligence (DNI), is charged with coordinating the programs and findings of the intelligence community (IC) and monitoring the work of the National Counterterrorism Center. The book conveys the challenges that impede cooperation when six cabinet departments host intelligence community elements. The goals of information sharing, greater use of open source (unclassified) information in analyses, and improved cooperation with law enforcement have been difficult to reach. A positive step is that now the DNI can communicate directly to the president if and why there are analytic disagreements on a specific topic.

Agencies clearly can work together. For example, the CIA identifies targets for drone strikes in Afghanistan, but CENTCOM gives the go-ahead for coalition forces to conduct the strike. Issues such as cyber security involve even more

stakeholders—the National Security Agency, FBI, and Department of Commerce, to name just a few. Now more than ever, mission overlap and bureaucratic hurdles should be tackled.

This book could be improved with more in-depth case studies that test the current bureaucratic decision-making framework, especially countering cyber security threats. Although the differing priorities and approaches of each military service are considered, it would be helpful to recommend concrete approaches for working together. Closer collaboration among service branches and the OSD is equally important for policymaking and budget requests.

Some presidential administrations have chosen to use special envoys to cut across traditional agency and departmental divisions. This weakens the power of cabinet secretaries and bolsters White House control over major policy initiatives. The reader is left wondering, when is this helpful with diplomacy and national security?

Personnel in many different agencies will find this book insightful. Financial management analysts will find the chapter about the role of the Office of Management and Budget useful in understanding the cycle of agency budget submissions. Younger civil servants would find several of the recommendations contained in the book applicable to their own careers. The authors make the case for more rotations across the national security structure for both civilians and military at intervals throughout a career in government. Congressional staffers will likely be surprised that the DHS is currently overseen by 86 congressional committees and subcommittees.

Too often the national security enterprise involves a process of overcoming bureaucratic battles, incompetence, limited budgets, and misaligned priorities. Understanding how the national security “puzzle pieces” are unique is the first step to make them work in tandem. In this way, events around the world can be shaped to US security advantage.

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From A to B: How Logistics Fuels American Power and Prosperity by David Axe. Potomac Books, 2012, 245 pp., \$24.50.

More than a decade of war in Afghanistan is winding down, so it is both timely and appropriate to examine the multifaceted logistics system that got much of the “stuff” there and will now bring some of it back to the United States. A broader issue, however, is how our grasp of the complexities of the logistics and transportation system enabled success in a war far from the US homeland. *From A to B* addresses these issues.

This highly readable volume focuses on logistics—the planning and practice of moving raw materials, equipment, and even people from one place to another—by covering the spectrum of US capabilities that no other nation on earth can match. In aggregate these capabilities constitute a form of power and a center of gravity for national security, will, and prosperity which provide the basis for much of the international influence the United States enjoys.

Author David Axe, a well-traveled and widely published freelance war correspondent, takes the reader on a journey that, at first glance, seems to only be about the military. Yet, after reading a couple of chapters, it becomes apparent it is so much more. Axe is not only a prolific author of books and magazine and newspaper articles, but has also appeared on broadcast media such as BBC Radio, C-SPAN, and PBS. His new book on logistics bridges a gap between what made the United States great and powerful over the past 100 years and how that power is put into practice—whether for supporting war, commerce, or even humanitarian efforts. As the author states in the preface, this book offers only snapshots into the logistics and transportation realms—it leaves out much, including America’s extensive rail networks, for example.

Axe’s text begins where the current action is, Afghanistan. He describes some of the unlikely heroes of the wars in both Iraq and Afghanistan—convoy drivers. Before these wars, logisticians were relegated to the background, ensuring that the combat arms share of warfare was sustained, maintained, and ready for anything; yet, they have emerged as battle-hardened veterans engaged in some of the most dangerous military missions today. Readers are treated to a behind-the-scenes view of the hazards of delivering materiel in this hostile environment with the ever-present threat of improvised explosive devices, snipers, mortars, rocket-propelled grenades, and other dangers.

The author describes US innovation leading to advances in robotics and autonomous vehicles. From a logistics standpoint, these advances and their subsequent application to warfare reduce risk that would otherwise put humans in danger. Competitions sponsored by various universities and the Defense Advanced Research Projects Agency (DARPA) fuel the imagination of technology developers and help create cost-effective solutions for reducing the hazard coefficient.

An interesting aspect of hybrid fuels technology is the challenge of adapting it to military vehicles. Where this technology generally succeeds—stop-and-go city driving where braking energy recharges the electric batteries—it fails (so far) to solve the same problem with vehicles in a convoy traveling long distances with very few stops. This activity is still dependent on fossil fuels with very little room for electric engine substitution.

Axe takes us back in history to when Great Lakes coal freighters reigned. Despite advances in transportation technologies, this function remains relatively unchanged after dozens of years. Freighters on the Great Lakes are the most efficient and cost-effective method for moving mass, particularly energy sources such as coal to fuel power plants that dot the lakeshores. Freighters on these freshwater lakes last much longer, too, than their seagoing counterparts which suffer saltwater corrosion.

Staying with the maritime theme, Axe describes the military's floating hospitals—amphibious ships that sail the Western Hemisphere providing free medical care, and more importantly, exporting goodwill. US abilities on the world's seas are unmatched at present, which is why Axe devotes an entire chapter to the Military Sealift Command (MSC). MSC ships are the backbone for sustaining operations in the wars of the last decade, ferrying everything from vehicles to equipment to and from theaters of war. To do so by air costs much more, although it does get there faster.

In the final sections, Axe speaks of another throwback in history which is making a comeback—the airship. With advances in buoyancy technology, airships are anticipated to bridge the transportation gap between large-capacity but slower ships and aircraft, which are faster but are capacity-limited and expensive. He also includes chapters on the ground logistics efforts of the theater aerial ports and the launching of Marines into space to get anywhere on the planet in under two hours via a concept called SUSTAIN—Small Unit Space Transport and Insertion.

Axe concludes by tying many of the aforementioned concepts into practical application by discussing the humanitarian relief effort following the devastating 2010 Haiti earthquake. While in some respects, this was America's finest hour, in others, it simply overwhelmed the tiny island nation and its rickety infrastructure to the point of standstill.

From A to B is a welcome addition to what will surely become a growing collection of logistics writings as the war in Afghanistan winds down. Of course logisticians will enjoy it, yet the audience for other topical areas will broaden that base. This book is definitely worth the read!

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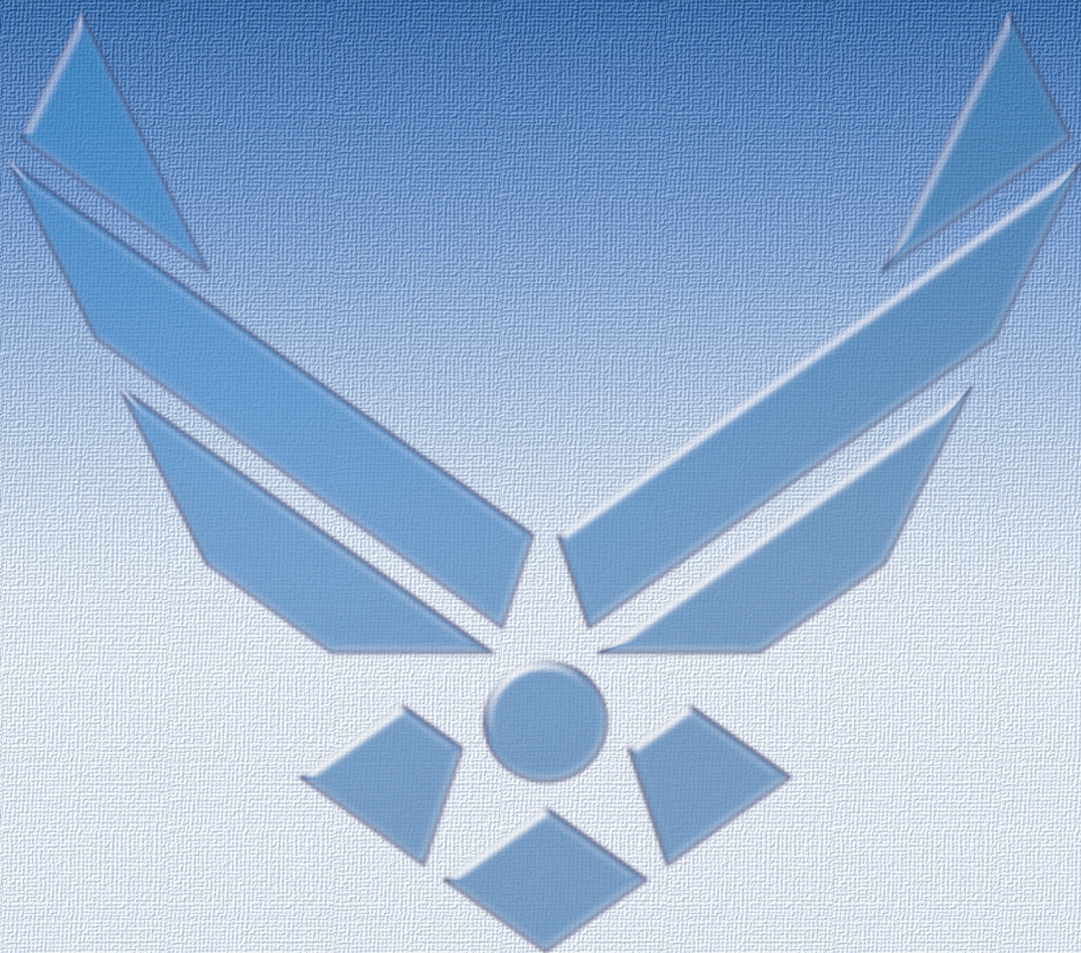
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