

Command of the Commons

Barry R. Posen

The Military Foundation of U.S. Hegemony

Since the end of the Cold War, scholars, commentators, and practitioners of foreign policy have debated what structure of world power would follow the bipolar U.S.-Soviet competition, and what U.S. foreign policy would replace containment. Those who hypothesized a long “unipolar moment” of extraordinary U.S. relative power have proven more prescient than those who expected the relatively quick emergence of a multipolar world.¹ Those who recommended a policy of “primacy”—essentially hegemony—to consolidate, exploit, and expand the U.S. relative advantage have carried the day against those who argued for a more restrained U.S. foreign policy.² One can argue that the jury is still out, the

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The author would like to thank Robert Art, Owen Coté, Etienne de Durand, Harvey Sapolsky, and the anonymous reviewers for their comments on earlier drafts of this article. Previous versions were presented at the U.S. Naval War College Current Strategy Forum, the Weatherhead Center Talloires conference “The Future of U.S. Foreign Policy,” the Institut Français des Relations Internationales, the Centre for Defence Studies at King’s College, and the European University Institute. An earlier version of this article, entitled “La maîtrise des espaces, fondement de l’hégémonie des Etats-Unis,” appears in the spring 2003 issue of *Politique étrangère*, pp. 41–56.

1. The most comprehensive analysis of the extraordinary relative power position of the United States is William C. Wohlforth, “The Stability of a Unipolar World,” *International Security*, Vol. 24, No. 1 (Summer 1999), pp. 5–41.

2. Barry R. Posen and Andrew L. Ross, “Competing Visions of U.S. Grand Strategy,” *International Security*, Vol. 21, No. 3 (Winter 1996/97), pp. 5–53, summarizes the initial phase of the post-Cold War U.S. grand strategy debate. In that article, we discussed a policy called “primacy,” a then popular term in U.S. foreign policy discourse. Primacy is one type of hegemony. A distinction should be made between a description of the structure of world politics—that is, the distribution of power among states—and the policies of a particular nation-state. The United States has more power in the world than any other state, and by a substantial margin. Wohlforth, “The Stability of a Unipolar World.” This has become clear over the last decade. Thus it is reasonable to describe the world as “unipolar.” Though this much power sorely tempts a state to practice a hegemonic foreign and security policy—that is, to further expand and consolidate its power position and to organize the world according to its own preferences—this is not inevitable. In terms of its potential capabilities, the United States has been a great power for at least a century, but it has followed foreign policies of varying activism. The U.S. national security elite (Democratic and Republican) did, however, settle on a policy of hegemony sometime in the late 1990s. The people of the United States did not play a significant role in this decision, so questions remained about how much they would pay to support this policy. The attacks of September 11, 2001, and the subsequent war on terror, have provided an important foundation of domestic political support for a hegemonic foreign policy. Debates between Democrats and Republicans now focus on the modalities of hegemony—whether

International Security, Vol. 28, No. 1 (Summer 2003), pp. 5–46

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“moment” will soon pass, and the policy of hegemony enabled by great power will be fleeting. But the evidence does not support such predictions. Unipolarity and U.S. hegemony will likely be around for some time, though observers do suggest that the United States could hasten its own slide from the pinnacle through indiscipline or hyperactivity.³

The new debate on U.S. grand strategy is essentially about which variant of a hegemonic strategy the United States should pursue. The strategy proposed by President George W. Bush is, in caricature, unilateral, nationalistic, and oriented largely around the U.S. advantage in physical power, especially military power.⁴ This is “primacy” as it was originally conceived. The last years of Bill Clinton’s administration saw the emergence of a strategy that also depended heavily on military power, but which was more multilateral and liberal, and more concerned with international legitimacy. It aimed to preserve the dominant U.S. global position, including its military position, which was understood to be an essential underpinning of global activism.⁵ That strategy has recently been elaborated, formalized, and defended under the rubric of “selective engagement” by Robert Art.⁶ Though this is too big an argument to settle

the United States should work through multilateral institutions to exercise and increase its power or work outside them.

3. Stephen G. Brooks and William C. Wohlforth, “American Primacy,” *Foreign Affairs*, Vol. 81, No. 4 (July/August 2002), pp. 20–33.

4. To be fair, Bush’s *National Security Strategy of the United States of America* contains many allusions to alliances, cooperation, liberal values, and economic and political development. Nevertheless, the oldest and most powerful U.S. allies—the Europeans—are hardly mentioned in the document. Even allowing for the need for stern language to mobilize public support for the war on terror, the document has a martial tone—and is strongly committed to a wide variety of proactive uses of force. Also, the document has a vaguely nationalist flavor: “The U.S. national security strategy will be based on a distinctly American internationalism that reflects the union of our values and our national interests.” Perhaps to drive home this point, the document devotes an entire paragraph to disassociating the United States from the International Criminal Court. President George W. Bush, *The National Security Strategy of the United States of America* (Washington, D.C.: White House, September 20, 2002), p. 30.

5. Posen and Ross, “Competing Visions of U.S. Grand Strategy,” pp. 44–50, dubbed this strategy “selective (but cooperative) primacy.”

6. Robert J. Art, *A Grand Strategy for America* (Ithaca, N.Y.: Cornell University Press, 2003). In the mid-1990s, most proponents of selective engagement had in mind a less ambitious strategy than Art now proposes. Formerly, the criteria for selective engagement were clear: Does an international problem promise significantly to increase or decrease the odds of great power war? Now the purpose of the strategy is to retain U.S. alliances and presence in Europe, East Asia, and the Persian Gulf “to help mold the political, military, and economic configurations of these regions so as to make them more congenial to America’s interests.” Included in the goals of the strategy are protection of the United States from grand terror attack, stopping the proliferation of weapons of mass destruction (nuclear, chemical, and biological), preserving peace and stability in Eurasia, securing access to oil, maintaining international economic openness, spreading democracy, protecting human rights, and avoiding severe climate change. Art does propose priorities among these objectives. See *ibid.*, chap. 7.

on the sole basis of a military analysis, the understanding of U.S. military power developed below suggests that selective engagement is likely to prove more sustainable than primacy.

One pillar of U.S. hegemony is the vast military power of the United States. A staple of the U.S. debate about the size of the post–Cold War defense budget is the observation that the United States spends more than virtually all of the world’s other major military powers combined, most of which are U.S. allies.⁷ Observers of the actual capabilities that this effort produces can focus on a favorite aspect of U.S. superiority to make the point that the United States sits comfortably atop the military food chain, and is likely to remain there. This article takes a slightly different approach. Below I argue that the United States enjoys command of the commons—command of the sea, space, and air. I discuss how command of the commons supports a hegemonic grand strategy. I explain why it seems implausible that a challenge to this command could arise in the near to medium term. Then I review the arenas of military action where adversaries continue to be able to fight U.S. forces with some hope of success—the “contested zones.” I argue that in the near to medium term the United States will not be able to establish command in these arenas. The interrelationship between U.S. command of the commons and the persistence of the contested zones suggests that the United States can probably pursue a policy of selective engagement but not one of primacy.

I purposefully eschew discussing U.S. military power in light of the metrics of the current and previous administrations. The Clinton administration planned to be able to fight two nearly simultaneous major theater wars; the Bush administration’s emerging, and even more demanding, metric is the “4-2-1” principle—that is, deter in four places, counterattack in two, and if necessary, go to the enemy’s capital in one of the two.⁸ These metrics obscure the foundations of U.S. military power—that is, all the difficult and expensive things that the United States does to create the conditions that permit it to even consider one, two, or four campaigns.⁹

7. According to the Center for Defense Information, the fiscal year 2003 budget request of \$396 billion “is more than the combined spending of the next 25 nations.” See www.cdi.org/issues/wme.

8. U.S. Department of Defense, *Quadrennial Defense Review Report* (Washington, D.C.: U.S. Department of Defense, September 30, 2001), pp. 20–21.

9. This article does not review three military theoretical terms that have absorbed much attention over the last decade: the revolution in military affairs, net-centric warfare, and military transformation. To do so would require a major digression. I am trying to build an understanding of the overall U.S. military position and its strategic implications on the basis of a small number of empirical observations about familiar categories of conventional military activity.

Command of the Commons

The U.S. military currently possesses command of the global commons. Command of the commons is analogous to command of the sea, or in Paul Kennedy's words, it is analogous to "naval mastery."¹⁰ The "commons," in the case of the sea and space, are areas that belong to no one state and that provide access to much of the globe.¹¹ Airspace does technically belong to the countries below it, but there are few countries that can deny their airspace above 15,000 feet to U.S. warplanes. Command does not mean that other states cannot use the commons in peacetime. Nor does it mean that others cannot acquire military assets that can move through or even exploit them when unhindered by the United States. Command means that the United States gets vastly more military use out of the sea, space, and air than do others; that it can credibly threaten to deny their use to others; and that others would lose a military contest for the commons if they attempted to deny them to the United States. Having lost such a contest, they could not mount another effort for a very long time, and the United States would preserve, restore, and consolidate its hold after such a fight.¹²

Command of the commons is the key military enabler of the U.S. global power position. It allows the United States to exploit more fully other sources

10. Kennedy distinguishes "naval mastery" from temporary, local naval superiority, or local command of the sea. "By . . . the term 'naval mastery', however, there is meant here something stronger, more exclusive and wider-ranging; namely a situation in which a country has so developed its maritime strength that it is superior to any rival power, and that its predominance is or could be exerted far outside its home waters, with the result that it is extremely difficult for other, lesser states to undertake maritime operations or trade without at least its tacit consent. It does *not* necessarily imply a superiority over all other navies combined, nor does it mean that this country could not temporarily lose local command of the sea; but it does assume the possession of an overall maritime power such that small-scale defeats overseas would soon be reversed by the dispatch of naval forces sufficient to eradicate the enemy's challenge. Generally speaking, naval mastery is also taken to imply that the nation achieving it will usually be very favourably endowed with many fleet bases, a large merchant marine, considerable national wealth, etc., all of which indicates influence at a global rather than a purely regional level." Paul M. Kennedy, *The Rise and Fall of British Naval Mastery* (London: Macmillan, 1983, first published in 1976 by Allen Lane), p. 9 (emphasis added).

11. Alfred Thayer Mahan called the sea "a wide common." *Ibid.*, p. 2.

12. As is the case with much analysis of conventional military issues, for the sake of analytic simplicity, I do not treat the implications of the proliferation of weapons of mass destruction. Insofar as the main accomplishment of weapons of mass destruction is to increase significantly the costs and risks of any hegemonic foreign policy, the proliferation of these weapons for U.S. grand strategy should be considered independently of a treatment of their narrow tactical military utility. That said, broadly speaking the limited diffusion of these kinds of weapons would likely make the contested zone even more contested before they affect command of the commons.

of power, including its own economic and military might as well as the economic and military might of its allies. Command of the commons also helps the United States to weaken its adversaries, by restricting their access to economic, military, and political assistance. Command of the commons has permitted the United States to wage war on short notice even where it has had little permanent military presence. This was true of the 1991 Persian Gulf War, the 1993 intervention in Somalia, and the 2001 action in Afghanistan.

Command of the commons provides the United States with more useful military potential for a hegemonic foreign policy than any other offshore power has ever had. When nineteenth-century Britain had command of the sea, its timely power projection capability ended at the maximum range of the Royal Navy's shipboard guns. The Royal Navy could deliver an army many places around the globe, but the army's journey inland was usually difficult and slow; without such a journey, Britain's ability to influence events was limited. As the nineteenth century unfolded, the industrialization of the continental powers, improvements in land transportation, and the development of coastal warfare technologies such as the torpedo and mine reduced the strategic leverage provided by command of the sea.¹³

The United States enjoys the same command of the sea that Britain once did, and it can also move large and heavy forces around the globe. But command of space allows the United States to see across the surface of the world's landmasses and to gather vast amounts of information. At least on the matter of medium-to-large-scale military developments, the United States can locate and identify military targets with considerable fidelity and communicate this information to offensive forces in a timely fashion. Air power, ashore and afloat, can reach targets deep inland; and with modern precision-guided weaponry, it can often hit and destroy those targets. U.S. forces can even more easily do great damage to a state's transportation and communications networks as well as economic infrastructure. When U.S. ground forces do venture inland, they do so against a weakened adversary; they also have decent intelligence, good maps, and remarkable knowledge of their own position from moment to moment. Moreover, they can call on a great reserve of responsive, accurate, air-delivered firepower, which permits the ground forces considerable freedom of action. Political, economic, and technological changes since the 1980s have thus partially reversed the rise of land power relative to sea power that

13. *Ibid.*, chap. 7.

occurred in the late nineteenth century and helped to erode Britain's formal and informal empire.

THE SOURCES OF COMMAND

What are the sources of U.S. command of the commons? One obvious source is the general U.S. superiority in economic resources. According to the Central Intelligence Agency, the United States produces 23 percent of gross world product (GWP); it has more than twice as many resources under the control of a single political authority as either of the next two most potent economic powers—Japan with 7 percent of GWP and China with 10 percent.¹⁴ With 3.5 percent of U.S. gross domestic product devoted to defense (nearly 1 percent of GWP), the U.S. military can undertake larger projects than any other military in the world. The specific weapons and platforms needed to secure and exploit command of the commons are expensive. They depend on a huge scientific and industrial base for their design and production. In 2001 the U.S. Department of Defense budgeted nearly as much money for military research and development as Germany and France together budgeted for their entire military efforts.¹⁵ The military exploitation of information technology, a field where the U.S. military excels, is a key element. The systems needed to command the commons require significant skills in systems integration and the management of large-scale industrial projects, where the U.S. defense industry excels. The development of new weapons and tactics depends on decades of expensively accumulated technological and tactical experience embodied in the institutional memory of public and private military research and development organizations.¹⁶ Finally, the military personnel needed to run these systems are among the most highly skilled and highly trained in the world. The barriers to entry to a state seeking the military capabilities to fight for the commons are very high.

14. I calculated these percentages from the country entries in Central Intelligence Agency, *The World Factbook, 2001* (Washington, D.C.: CIA, 2001). The purchasing power parity method used by the CIA creates an exaggerated impression of China's current economic and technological capability. Measured by currency exchange rates, the United States had 29.5 percent of gross world product in 1999, Japan had 14 percent, and China had only 3.4 percent. See "World Gross Domestic Product by Region," *International Energy Outlook, 2002*, Report DOE/EIA-0484 (Washington, D.C.: Energy Information Administration, 2002), Table A3, Appendix A.

15. International Institute for Strategic Studies, *The Military Balance, 2002–2003* (London: IISS, 2002), pp. 241, 252–253. My colleague Harvey Sapolsky called this to my attention.

16. Harvey M. Sapolsky, Eugene Gholz, and Allen Kaufman, "Security Lessons from the Cold War," *Foreign Affairs*, Vol. 78, No. 4 (July/August 1999), pp. 77–89.

COMMAND OF THE SEA

U.S. nuclear attack submarines (SSNs) are perhaps the key assets of U.S. open-ocean antisubmarine warfare (ASW) capability, which in turn is the key to maintaining command of the sea.¹⁷ During the Cold War, the Soviet Union challenged U.S. command of the sea with its large force of SSNs. The U.S. Navy quietly won the “third battle of the Atlantic,” though the Soviet successes in quieting their nuclear submarines in the 1980s would have necessitated another expensive and difficult round of technological competition had the Cold War not ended.¹⁸ At more than \$1 billion each (more than \$2 billion each for the new U.S. SSN), modern nuclear submarines are prohibitively expensive for most states. Aside from the United States, Britain, China, France, and Russia are the only other countries that can build them, and China is scarcely able.¹⁹ Several partially built nuclear attack submarines remained in Russian yards in the late 1990s, but no new ones have been laid down.²⁰ Perhaps 20–30 Russian nuclear attack submarines remain in service.²¹ Currently, the U.S. Navy has 54 SSNs in service and 4 under construction. It plans to build roughly 2 new boats every three years. It also has a program to convert 4 Ohio-class Trident ballistic missile submarines into nonnuclear cruise missile-carrying submarines for land attack. The U.S. Navy also dominates the surface of the oceans, with 12 aircraft carriers (9 nuclear powered) capable of launching high-performance aircraft.²² The Soviet Union was just building its first true aircraft carrier when its political system collapsed. Aside from France,

17. The actual wartime missions of SSNs in the canonical major regional contingencies—aside from lobbing a few conventional cruise missiles and collecting electronic intelligence close to shore—are murky at best.

18. Owen R. Coté Jr., *The Third Battle: Innovation in the U.S. Navy's Silent Cold War Struggle with Soviet Submarines* (Newport, R.I.: Naval War College, 2003), pp. 69–78.

19. Construction of a new Chinese nuclear attack submarine has been delayed many times, and one is not expected to be completed until 2005. France does not have a nuclear attack submarine under construction, but it has a program planned for the 2010s. Britain has ordered three new nuclear attack submarines, and one is currently under construction. See A.D. Baker III, “World Navies in Review,” *Naval Institute Proceedings*, Vol. 128 (March 2002), pp. 33–36.

20. According to A.D. Baker III, “Submarine construction in Russia had all but halted by the fall of 1998.” At the time, there were four incomplete Akula-class nuclear attack submarines and one incomplete new-design attack submarine in Russian yards. Baker, “World Navies in Review,” *Naval Institute Proceedings*, Vol. 125 (March 1999), pp. 3–4. See also Baker, “World Navies in Review,” March 2002, pp. 35–36. One of the Akulas was finally commissioned at the end of 2001. One more may yet be completed.

21. IISS, *Military Balance, 2002–2003*, p. 113, suggests 22. Baker, “World Navies,” (March, 2002), suggests about 30. I count Oscar-class cruise missile submarines as attack submarines.

22. For figures on the U.S. Navy and Marine Corps, see IISS, *Military Balance, 2002–2003*, pp. 18–21.

which has 1, no other country has any nuclear-powered aircraft carriers. At \$5 billion apiece for a single U.S. Nimitz-class nuclear-powered aircraft carrier, this is no surprise.²³ Moreover, the U.S. Navy operates for the Marine Corps a fleet of a dozen large helicopter/VSTOL carriers, each almost twice the size of the Royal Navy's comparable (3 ship) Invincible class. To protect its aircraft carriers and amphibious assets, the U.S. Navy has commissioned 37 Arleigh Burke-class destroyers since 1991—billion-dollar multimission platforms capable of anti-air, antisubmarine, and land-attack missions in high-threat environments.²⁴ This vessel is surely the most capable surface combatant in the world.

COMMAND OF SPACE

Though the United States is not yet committed to actual combat in or from space, it spends vast amounts on reconnaissance, navigation, and communications satellites.²⁵ These satellites provide a standing infrastructure to conduct military operations around the globe. According to Gen. Michael Ryan, the chief of staff of the U.S. Air Force, the United States had 100 military satellites and 150 commercial satellites in space in 2001, nearly half of all the active satellites in space.²⁶ According to Air Force Lt. Gen. T. Michael Moseley, air component commander in the U.S.-led invasion of Iraq in March 2003, more than 50 satellites supported land, sea, and air operations in every aspect of the campaign.²⁷ Secretary of Defense Donald Rumsfeld plans to emphasize the military exploitation of space, and has set the military the mission of "space

23. For costs of current U.S. warships, see Office of the Comptroller, U.S. Department of Defense, "Shipbuilding and Conversion," *National Defense Budget Estimates for the Amended FY 2002 Budget (Green Book), Procurement Programs (P1)*, pp. N. 17–18.

24. See <http://www.globalsecurity.org/military/systems/ship/ddg-51-unit.htm>.

25. The Pentagon has been hinting for some time that it would like to put weapons into space both for antisatellite attacks and for attacks on terrestrial targets. Many independent space policy analysts oppose this because the United States gets more out of space than any other state. They acknowledge that this makes U.S. space assets an attractive target, but they argue that hardening satellites, ground stations, and the links between them makes more sense than starting an expensive arms competition in space. Implicitly, they also rely on deterrence—the superior ability of the U.S. military to damage the other side's ground stations, links, and missile launch facilities, as well as to retaliate with nascent U.S. antisatellite systems against the other side's satellites. See, for example, Theresa Hitchens, *Weapons in Space: Silver Bullet or Russian Roulette* (Washington, D.C.: Center for Defense Information, April 19, 2002); Michael Krepon with Christopher Clary, *Space Assurance or Space Dominance? The Case against Weaponizing Space* (Washington, D.C.: Henry L. Stimson Center, 2003), chap. 3; and Charles V. Pena and Edward L. Hudgins, *Should the United States "Weaponize" Space?* Policy Analysis No. 427 (Washington D.C.: Cato Institute, March 18, 2002), pp. 5–10.

26. Vernon Loeb, "Air Force's Chief Backs Space Arms," *Washington Post*, August 2, 2001, p. 17.

27. Jim Garamone, "Coalition Air Forces Make Ground Gains Possible," American Forces Press Service, April 5, 2003, http://www.defenselink.mil/news/APR2003/n04052003_200304053.html.

control."²⁸ For fiscal years 2002–07, the Pentagon plans to spend \$165 billion on space-related activities.²⁹

Other states can and do use space for military and civilian purposes. Though there is concern that some commercial satellites have military utility for reconnaissance and communications, many belong to U.S. companies or U.S. allies, and full exploitation of their capabilities by U.S. enemies can be severely disrupted.³⁰ The NAVSTAR/GPS (global positioning system) constellation of satellites, designed and operated by the U.S. military but now widely utilized for civilian purposes, permits highly precise navigation and weapons guidance anywhere in the world. Full exploitation of GPS by other military and civilian users is permitted electronically by the United States, but this permission is also electronically revocable.³¹ It will not be easy for others to produce a comparable system, though the European Union intends to try. GPS cost \$4.2 billion (in 1979 prices) to bring to completion, significantly more money than was originally projected.³²

28. According to the 2001 *Quadrennial Defense Review Report*, "The ability of the United States to access and utilize space is a vital national security interest." Moreover, "the mission of space control is to ensure the freedom of action in space for the United States and its allies and, when directed, to deny such freedom of action to adversaries." According to the report, "Ensuring freedom of access to space and protecting U.S. national security interests are key priorities that must be reflected in future investment decisions." *Ibid.*, p. 45

29. General Accounting Office, *Military Space Operations: Planning, Funding, and Acquisition Challenges Facing Efforts to Strengthen Space Control*, GAO-02-738 (Washington, D.C.: GAO, September 2002), p. 3. It appears that U.S. military spending on space has nearly doubled since 1998, when it was estimated at \$14 billion. See John Pike, "American Control of Outer Space in the Third Millennium," November 1998, <http://www.fas.org/spp/eprint/space9811.htm>.

30. Pike, "American Control of Outer Space."

31. The United States formerly corrupted the GPS satellite signals to reduce the accuracy that a nonmilitary user terminal could achieve. On May 1, 2000, President Clinton ended this policy due to the vast commercial possibilities of highly accurate positional information. At that time, the U.S. government believed that it could employ new techniques to jam the GPS signals regionally in a way that would prevent an adversary from exploiting them, but not dilute the accuracy elsewhere. See President Bill Clinton: "Improving the Civilian Global Positioning System (GPS)," May 1, 2000, http://www.ngs.noaa.gov/FGCS/info/sans_SA/docs/statement.html.

32. This is the cost of the development and deployment of the system, and the acquisition of sufficient satellites (118), to achieve and sustain a 24-satellite array. By 1997, \$3 billion had been spent on "user equipment," the military terminals that calculate location on the basis of the satellites' signals. See U.S. Department of Defense, "Systems Acquisition Review Program Acquisition Cost Summary as of June 30, 1997." See also General Accounting Office, *Navstar Should Improve the Effectiveness of Military Missions—Cost Has Increased*, PSAD-80-91 (Washington, D.C.: GAO, February 15, 1980), p. 14. The European Union has decided to produce a competing system to GPS, called Galileo. It is estimated that 3 billion euros will be required to buy and operate 30 satellites. European advocates of Galileo explicitly argue that Europe must have its own satellite navigation systems or lose its "autonomy in defense." See Dee Ann Divis, "Military Role for Galileo Emerges," *GPS World*, Vol. 13, No. 5 (May 2002), p. 10.

The dependence of the United States on satellites to project its conventional military power does make the satellites an attractive target for future U.S. adversaries.³³ But all satellites are not equally vulnerable; low earth orbit satellites seem more vulnerable to more types of attack than do high earth orbit satellites.³⁴ Many of the tactics that a weaker competitor might use against the United States would probably not be usable more than once—use of space mines, for example, or so-called microsattelites as long-duration orbital interceptors. The U.S. military does have some insurance against the loss of satellite capabilities in its fleet of reconnaissance aircraft and unmanned aerial vehicles. A challenge by another country could do some damage to U.S. satellite capabilities and complicate military operations for some time. The United States would then need to put a new generation of more resilient satellites in orbit. One estimate suggests that the exploitation of almost every known method to enhance satellite survivability would roughly double the unit cost.³⁵

The United States has had a number of antisatellite research and development programs under way for many years, and some are said to have produced experimental devices that have military utility.³⁶ The planned U.S. ballistic missile defense system will also have some antisatellite capability. U.S. conventional military capabilities for precision attack, even without the support of its full panoply of space assets, are not trivial. It is quite likely that an opponent's own satellites, and its ground stations and bases for attacking U.S. satellites, would quickly come under sustained attack. The most plausible outcome of a war over space is that the United States would, after a period of difficulty, rebuild its space assets. The fight would not only leave the adversary devoid of space capability, but would also cause the United States to insist on the permanent antisatellite disarmament of the challenger, which it would try to enforce. Finally, the United States would probably assert some special interest in policing space.

33. Tom Wilson, Space Commission staff member, "Threats to United States Space Capabilities," prepared for the *Report of the Commission to Assess United States National Security Space Management and Organization* (Washington, D.C.: Government Printing Office [GPO], January 11, 2001). Secretary of Defense Donald Rumsfeld chaired this commission.

34. A technically competent country with limited resources may be able to develop a capability to damage or destroy U.S. reconnaissance satellites in low earth orbit. See Allen Thomson, "Satellite Vulnerability: A Post-Cold War Issue," *Space Policy*, Vol. 11, No. 1 (February 1995), pp. 19–30.

35. This is based on my simple addition of the maximum estimated cost increases associated with hardening satellites, providing them the capability for autonomous operations, giving them some onboard attack reporting capability, making them maneuverable, supplying them with decoys, and providing them with some self defense capability. See Wilson, "Threats to United States Space Capabilities," p. 6.

36. Pike, "American Control of Outer Space in the Third Millennium."

COMMAND OF THE AIR

An electronic flying circus of specialized attack, jamming, and electronic intelligence aircraft allows the U.S. military to achieve the “suppression of enemy air defenses” (SEAD); limit the effectiveness of enemy radars, surface-to-air missiles (SAMs) and fighters; and achieve the relatively safe exploitation of enemy skies above 15,000 feet.³⁷ Cheap and simple air defense weapons, such as antiaircraft guns and shoulder-fired lightweight SAMs, are largely ineffective at these altitudes. Yet at these altitudes aircraft can deliver precision-guided munitions with great accuracy and lethality, if targets have been properly located and identified. The ability of the U.S. military to satisfy these latter two conditions varies with the nature of the targets, the operational circumstances, and the available reconnaissance and command and control assets (as discussed below), so precision-guided munitions are not a solution to every problem. The United States has devoted increasing effort to modern aerial reconnaissance capabilities, including both aircraft and drones, which have improved the military’s ability in particular to employ air power against ground forces, but these assets still do not provide perfect, instantaneous information.³⁸ Confidence in the quality of their intelligence, and the lethality and responsiveness of their air power, permitted U.S. commanders to dispatch relatively small numbers of ground forces deep into Iraq in the early days of the 2003 war, without much concern for counterattacks by large Iraqi army units.³⁹

The U.S. military maintains a vast stockpile of precision-guided munitions and is adding to it. As of 1995, the Pentagon had purchased nearly 120,000 air-launched precision-guided weapons for land and naval attack at a cost of \$18 billion.⁴⁰ Some 20,000 of these weapons were high-speed antiradiation missiles

37. Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, N.Y.: Cornell University Press, 1992), pp. 51–55. For a detailed description of a suppression operation, see Barry D. Watts and Thomas A. Keaney, *Effects and Effectiveness: Gulf War Air Power Survey*, Vol. 2, Pt. 2 (Washington, D.C.: GPO, 1993), pp. 130–145.

38. During Desert Storm, the United States employed one experimental JSTARS (joint surveillance target attack radar system) aircraft, a late Cold War project to develop an airborne surveillance radar capable of tracking the movements of large enemy ground forces at ranges of hundreds of kilometers. The U.S. Air Force has 15 such aircraft. Similarly, U.S. forces employed few if any reconnaissance drones in Desert Storm; the U.S. Air Force now operates both high- and low-altitude reconnaissance drones. Under the right conditions, drones allow U.S. forces to get a close and persistent look at enemy ground forces. For current U.S. Air Force holdings, see IISS, *Military Balance, 2002–2003*, pp. 22–23.

39. Lt. Gen. James Conway, U.S. Marine Corps, “First Marine Expeditionary Force Commander Live Briefing from Iraq,” May 30, 2003, U.S. Department of Defense news transcript, <http://www.defenselink.mil/transcripts/2003/tr20030530-0229.html>.

40. General Accounting Office, *Weapons Acquisition: Precision-Guided Munitions in Inventory, Production, and Development*, GAO/NSIAD-95-95 (Washington, D.C.: GAO, June 1995), p. 12.

(HARMs), designed to home in on the radar emissions of ground-based SAM systems, a key weapon for the SEAD campaign. Thousands of these bombs and missiles were launched in Kosovo, Afghanistan, and Iraq, but tens of thousands more have been ordered.⁴¹

The capability for precision attack at great range gives the United States an ability to do significant damage to the infrastructure and the forces of an adversary, while that adversary can do little to harm U.S. forces.⁴² Air power alone may not be able to determine the outcome of all wars, but it is a very significant asset. Moreover, U.S. air power has proven particularly devastating to mechanized ground forces operating offensively, as was discovered in the only Iraqi mechanized offensive in Desert Storm, the battle of al-Khafji, in which coalition air forces pummeled three advancing Iraqi divisions.⁴³ The United States can provide unparalleled assistance to any state that fears a conventional invasion, making it a very valuable ally.

THE INFRASTRUCTURE OF COMMAND

Two important Cold War legacies contribute to U.S. command of the commons—bases and command structure. Though the United States has reduced the number of its forces stationed abroad since the Cold War ended, and has abandoned bases in some places (such as Panama and the Philippines), on the whole the U.S. Cold War base structure remains intact.⁴⁴ Expansion of the

41. The U.S. military says that it needs 200,000 GPS satellite-guided bombs, the joint direct attack munition or JDAM—7,000 of which were used in the Afghan War. Six thousand five hundred JDAMs were used in the Iraq war. See Lt. Gen. T. Michael Moseley, commander, United States Central Command Air Forces, "Operation Iraqi Freedom—By the Numbers," Assessment and Analysis Division, USCENTAF, April 30, 2003, p. 3, http://www.iraqcrisis.co.uk/downloads/resources/uscentaf_oif_report_30apr2003.pdf. Boeing is producing this weapon at the rate of 2,000 per month, and the military wants to increase production to 2,800 per month. See Nick Cook, "Second-Source JDAM Production Line Moves Closer," *Jane's Defense Weekly*, October 16, 2002, p. 5.

42. Daryl G. Press, "The Myth of Air Power in the Persian Gulf War and the Future of Warfare," *International Security*, Vol. 26, No. 2 (Fall 2001), pp. 5–44, carefully and convincingly demonstrates that despite weeks of bombing, Iraqi mechanized ground forces in Kuwait and southern Iraq were still largely intact when the United States opened its ground attack. Perhaps 40 percent of Iraqi fighting vehicles were destroyed or immobilized by the air campaign, prior to the start of ground operations. Nevertheless, once the coalition ground operation began, Iraqi mechanized units managed to maneuver in the desert, in spite of U.S. command of the air. They did not suffer much damage from U.S. fixed-wing air attacks during the ground campaign. These forces were destroyed or enveloped by U.S. and allied mechanized ground forces. It should be noted, however, that army and marine attack helicopters destroyed much Iraqi armor.

43. *Ibid.*, p. 12; and Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), pp. 267–288.

44. The United States currently has military installations in three dozen foreign countries or special territories. See Office of the Deputy Undersecretary of Defense (Installations and Environ-

North Atlantic Treaty Organization has given the United States access to additional bases in eastern and southern Europe. These bases provide important stepping-stones around the world. The Pentagon has also improved the U.S. military's access in key regions. After the 1991 Gulf War, the United States developed a network of air base, port, and command and control facilities throughout the Persian Gulf, and cycled troops and aircraft through these bases. This base structure allowed the United States to attack Iraq successfully in 2003, despite the unwillingness of long-time NATO ally Turkey to permit the use of its territory to add a northern thrust to the effort. Though U.S. leaders were disappointed by Turkey's stance, it is noteworthy that sufficient bases were available in any case. After September 11, 2001, the U.S. government negotiated access to former Soviet air bases in the now independent states of Kyrgyzstan, Tajikistan, and Uzbekistan.⁴⁵

The U.S. military has taken a number of other steps to improve its ability to send large forces across great distances. Munitions, support equipment, and combat equipment are prepositioned around the world, ashore and afloat. For example, the equivalent of 3 1/3 divisions' (10 brigades') worth of army and marine equipment was prepositioned at key spots in Asia, Europe, and the Persian Gulf during the 1990s. Perhaps 5 brigades of this equipment were employed in March 2003. In a crisis, troops fly to designated airfield-port combinations to marry up with this equipment. Since 1991 the United States has built

ment), Department of Defense, "Summary," *Base Structure Report (A Summary of DoD's Real Property Inventory), Fiscal Year 2002 Baseline*, <http://www.defenselink.mil/news/Jun2002/basestructure2002.pdf>. This report counts only installations in which the United States has actually invested federal dollars. Missing from the list are Kuwait and Saudi Arabia, so a peculiar definition of U.S. base must guide the report. Unfortunately, comparable time series data do not exist to permit comparison to the last days of the Cold War. Secretary of Defense William S. Cohen noted in 1997 that although the DoD had reduced active-duty military forces by 32 percent, it had reduced its domestic and overseas base structure by only 26 percent. See Secretary of Defense William S. Cohen, *Report of the Quadrennial Defense Review* (Washington, D.C.: Department of Defense, May 1997). The vast majority of overseas installations that were either reduced or closed, 878 out of 952, were in Europe. See Department of Defense, "Additional U.S. Overseas Bases to End Operations," Department of Defense, news release, April 27, 1995. From 1988 to 1997, the number of U.S. troops stationed abroad (on land) dropped from 480,000 to 210,000; 80 percent of the reduction came in Europe. See Secretary of Defense William S. Cohen, *Annual Report to the President and the Congress, 2000* (Washington, D.C.: Department of Defense, 2000), Appendix C, p. C-2.

45. Other post-Cold War allies offering overflight, port, or actual basing contributions to the war on terrorism include, among others, Albania, Bulgaria, the Czech Republic, Djibouti, Estonia, Ethiopia, Latvia, Lithuania, Pakistan, and Slovakia. See U.S. Department of Defense, *International Contributions to the War against Terrorism*, fact sheet, June 7, 2002. See also William M. Arkin, "Military Bases Boost Capability but Fuel Anger," *Los Angeles Times*, January 6, 2002, p. A-1, noting that U.S. military personnel were working at thirteen new locations in nine countries in support of the war on terror.

a fleet of 20 large, medium-speed, roll-on/roll-off military transport ships, to facilitate the movement of military matériel. Each ship can carry nearly 1,000 military vehicles and can off load this equipment at austere ports, if necessary.⁴⁶ These ships were extensively employed in the mobilization for the war to topple the Iraqi Ba'ath regime. Similarly, the United States has modernized its fleet of long-range airlift aircraft; 90 C17s of 180 on order have been delivered.⁴⁷ These aircraft are capable of carrying tank-sized cargo into relatively mediocre airfields. They in turn are supported by a fleet of aerial tankers. Finally, it is easy to forget that since World War II the U.S. Marine Corps has specialized in putting large ground and air forces ashore against opposition. The Marine Corps alone has as many personnel as the combined land and air forces of the United Kingdom, and the U.S. Navy operates almost 40 special-purpose combat ships for amphibious operations, roughly the same number of major surface combatants as the entire Royal Navy.⁴⁸

Finally, all this capability is tied together by a seldom-mentioned Cold War legacy: the Unified Command Plan through which the U.S. military organizes the entire world for war. The U.S. military divides the world into both functional and regional commands. In most cases, the regional command elements are based in the theaters in which they would fight. PACOM is based in Hawaii and oversees U.S. forces in the Pacific. EUCOM, based in Europe, manages U.S. forces committed to NATO. CENTCOM oversees the Persian Gulf and Indian Ocean, but does so formally from Florida. Also in Florida, SOUTHCOM oversees Central and South America. These commands are each led by a four-star commander in chief (formerly referred to as a "CinC," pronounced "sink," they are now called "combatant commanders"). These are large multifunction military headquarters, to which are often attached significant operational forces. They engage in military diplomacy among the countries in

46. Military Sealift Command, U.S. Navy, fact sheet, "Large, Medium-Speed, Roll-on/Roll-off Ships (LMSRs)," October 2002. Thirty-three ships of various types, including 9 of the LMSRs, are employed to preposition equipment, ammunition, and fuel. See also Military Sealift Command, U.S. Navy, fact sheet, "Afloat Prepositioning Force," April 2003. A total of 87 dry cargo ships of various kinds, including 11 LMSRs and many other roll-on roll-off ships are based in the United States.

47. "Boeing and U.S. Air Force Sign \$9.7 Billion C-17 Contract," news release, Boeing Corporation, August 15, 2002, http://www.boeing.com/news/releases/2002/q3/nr_020815m.html. This follow-on procurement contract added 60 C-17 Globemaster III transport aircraft to the 120 already on order.

48. IISS, *The Military Balance, 2002–2003*, pp. 18–21, 60–63. It is worth noting that Britain and France are the only two countries in the world, aside from the United States, with any global power projection capability.

their command and arrange joint exercises. They integrate the products of U.S. command of space, with the permissive conditions of command of the air and sea, to develop responsive war plans that can generate significant combat power in the far corners of the world on relatively short notice. That the geographical commands were barely touched by the passing of the Cold War is mute testimony to the quiet consensus among the foreign and security policy elite that emerged soon after the passing of the Soviet Union: The United States would hold on to its accidental hegemony.⁴⁹

MAINTAINING COMMAND

U.S. command of the commons is the result of a Cold War legacy of both capabilities and bases, married to the disparity in overall economic power between the United States and its potential challengers. This disparity permits the United States to sustain a level of defense expenditure that dwarfs the spending of any of the world's other consequential powers. If grand strategists wish to pursue an activist global foreign policy, then they must preserve command of the commons. What then must the United States do? In the very long term, if a country comes to rival the United States in economic and technological capacity, it will be difficult to prevent a challenge, though it may be possible to out-compete the challenger. But in the short and medium terms, a successful challenge can be made highly impractical. In the short term, there is not much any other country can do to challenge the United States. In the medium term, through careful attention and resource allocation, the United States should be able to stay comfortably ahead of possible challengers. Indeed some of the more grandiose aspirations of the Pentagon may be realized: Pentagon documents in the early 1990s talked about deterring any effort to build a capability to challenge the United States.⁵⁰ The first full statement of the grand strategy of

49. Ronald H. Cole, Walter S. Poole, James F. Schnabel, Robert J. Watson, and Willard J. Webb, *The History of the Unified Command Plan, 1946–1993* (Washington, D.C.: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1995), <http://www.dtic.mil/doctrine/jel/history/ucp.pdf>; see especially pp. 107–117.

50. George H.W. Bush's administration reportedly issued draft defense planning guidance to the Pentagon in March 1992 with this objective. "Excerpts from Pentagon's Plan: 'Prevent the Emergence of a New Rival,'" *New York Times*, March 8, 1992, p. 14. For reportage, see Patrick E. Tyler, "U.S. Strategy Plan Calls for Insuring No Rivals Develop," *New York Times*, March 8, 1992, pp. 1, 14; and Barton Gellman, "The U.S. Aims to Remain First among Equals," *Washington Post National Weekly Edition*, March 16–22, 1992, p. 19. For examples of contemporary commentary, see Leslie Gelb, "They're Kidding," *New York Times*, March 9, 1992, p. A17; James Chace, "The Pentagon's Superpower Fantasy," *New York Times*, March 16, 1992, p. 17; and Charles Krauthammer, "What's Wrong with the 'Pentagon Paper'?" *Washington Post*, March 13, 1992, p. A25.

the administration of George W. Bush also declares, “Our forces will be strong enough to dissuade potential adversaries from pursuing a military build-up in hopes of surpassing, or equaling, the power of the United States.”⁵¹ This objective goes well beyond the traditional U.S. goal of deterring attacks. Yet it may be possible to create barriers to entry into the global military power club that are so high as to seem insurmountable.

MAINTAINING COMMAND AT SEA

Though the United States does not face a significant naval challenge to its supremacy in the open ocean, it should nevertheless preserve a scientific and technical capability to resume a sustained, large-scale, open-ocean anti-submarine warfare contest. Similarly, though the United States may not need the numbers of SSNs that it had during the Cold War, or even that it has today, it must nevertheless remain on the cutting edge of SSN design and production.

MAINTAINING COMMAND IN SPACE

In space, the United States has a more complicated political-military task. It benefits from the fact that those states capable of space activities have eschewed putting weapons in space. The United States has made the same decision, on the assumption that if it did, so would others. Ultimately the United States has more to lose than to gain from such a competition. The military does need to work aggressively on techniques to harden, hide, and maneuver satellites in case an adversary does try to interfere. An ability quickly to reconstitute some space capabilities should also be maintained, as should alternative reconnaissance means—aircraft and drones. The United States should also maintain some counteroffensive capabilities for purposes of deterrence and defense. The United States can leverage its long-range conventional attack capabilities to deny others the free use of space if they attack U.S. assets, and to reduce their offensive capabilities—mainly through direct and electronic attacks on an adversary’s space launch, ground control, and tracking facilities. The United States should also maintain some antisatellite weapons research and development programs.

51. Bush, *The National Security Strategy of the United States of America*, p. 30. According to the 2001 *Report of the Quadrennial Defense Review*, p. 12, “Well targeted strategy and policy can therefore dissuade other countries from initiating future military competitions”; see also *ibid.*, p. 36.

MAINTAINING COMMAND OF THE AIR

Perhaps the most contested element of U.S. command of the commons is command of the air. Here, the air force buys weapons as if the principal challenge is adversary fighter aircraft. The U.S. Air Force, Navy, and Marine advantage in air-to-air combat is nearly overwhelming, however. It will be easier for others to challenge U.S. access above 15,000 feet with ground-based surface-to-air missiles of advanced design. The late-Cold War Soviet designs, and their follow-on systems, the so-called double-digit SAMs (with the SA-10 the best known and most lethal system) can offer real resistance to the U.S. military.⁵² Fortunately for the United States, these systems are expensive, and Russian manufacturers sell only to those who can pay cash. China has purchased a significant number from Russia, and other countries will likely follow.⁵³ U.S. SEAD capabilities do not seem to be keeping up with this threat, much less staying ahead of it. The Pentagon needs to put more effort into SEAD if it hopes to retain command of the air.

Command of the commons is the military foundation of U.S. political pre-eminence. It is the key enabler of the hegemonic foreign policy that the United States has pursued since the end of the Cold War. The military capabilities required to secure command of the commons are the U.S. strong suit. They leverage science, technology, and economic resources. They rely on highly trained, highly skilled, and increasingly highly paid military personnel. On the whole, the U.S. military advantage at sea, in the air, and in space will be very difficult to challenge—let alone overcome. Command is further secured by the worldwide U.S. base structure and the ability of U.S. diplomacy to leverage other sources of U.S. power to secure additional bases and overflight rights as needed.

Command of the commons is so much a part of U.S. military power that it is seldom explicitly acknowledged, under this rubric or any other. And

52. Owen R. Coté Jr., "The Future of the Trident Force, Security Studies Program," Massachusetts Institute of Technology, May 2002, pp. 25–29, discusses air defense suppression generally, and the significant problems posed by the SA-10, specifically. See also Owen R. Coté Jr., "Buying . . . From the Sea': A Defense Budget for a Maritime Strategy," in Cindy Williams, ed., *Holding the Line: U.S. Defense Alternatives for the Early Twenty-first Century* (Cambridge, Mass.: MIT Press, 2001), pp. 146–150.

53. IISS, *The Military Balance, 2002–2003*, p. 148, credits China with 144 SA-10s. This implies perhaps a dozen batteries. SA-10 is a NATO designation; Russia calls the weapon S-300. See Federation of American Scientists, "SA-10 Grumble," <http://www.fas.org/nuke/guide/russia/airdef/s-300pmu.htm>.

far too little attention is paid to the strategic exploitation of command of the commons. For example, many U.S. defense policy documents in recent years allude to the need for speed of deployment to distant theaters of operations and speed of decision in the theater contingency.⁵⁴ Among other things, this has caused the U.S. Army to become obsessed with “lightening” itself up, to better travel by air and to limit its logistics tail in the theater. This interest in speed seems misplaced. It underexploits the possibilities provided by command of the commons—the ability of the United States to muster great power; to militarily, economically, and politically isolate and weaken its adversaries; and to probe, study, and map the dimensions of the adversary to better target U.S. military power when it is applied. Full exploitation of command of the commons is rendered doubly necessary by the real problems presented once U.S. forces get close to the adversary. Below 15,000 feet, within several hundred kilometers of the shore, and on the land, a contested zone awaits them. The U.S. military hopes that it can achieve the same degree of dominance in this zone as it has in the commons, though this is unlikely to happen.

The Contested Zone

The closer U.S. military forces get to enemy-held territory, the more competitive the enemy will be. This arises from a combination of political, physical, and technological facts. These facts combine to create a contested zone—arenas of conventional combat where weak adversaries have a good chance of doing real damage to U.S. forces. The Iranians, the Serbs, the Somalis, and the still unidentified hard cases encountered in Operation Anaconda in Afghanistan have demonstrated that it is possible to fight the U.S. military. Only the Somalis can claim anything like a victory, but the others have imposed costs, preserved at least some of their forces, and often lived to tell the tale—to one another. These countries or entities have been small, resource poor, and often

54. The 2001 *Quadrennial Defense Review Report* seems to be preoccupied with swiftness: For example, the DoD seeks forces to “swiftly defeat aggression in overlapping major conflicts” (p. 17); “The focus will be on the ability to act quickly. U.S. forces will remain capable of swiftly defeating attack against U.S. allies and friends in any two theaters of operation in overlapping time frames” (p. 21); and “One of the goals of reorienting the global posture is to render forward forces capable of swiftly defeating an adversary’s military and political objectives with only modest reinforcement” (p. 25; repeated on p. 26).

militarily “backward.” They offer cautionary tales. The success of the 2003 U.S. campaign against the Ba’athist regime in Iraq should not blind observers to the inherent difficulty of fighting in contested zones.

Most of the adversaries that the United States has encountered since 1990 have come to understand U.S. military strengths, and have worked to neutralize them. The U.S. military often uses the term “asymmetric” threats to encompass an adversary’s use of weapons of mass destruction, terrorism, or any mode of conventional warfare that takes into account U.S. strengths. This category is a kind of trap: Smart enemies get a special term, but by subtraction, many are expected to be stupid. This is unlikely to prove true; in any case it is a dangerous way to think about war.

The essential facts are as follows. First, local actors generally have strong political interests in the stakes of a war—interests that may exceed those of the United States. Their willingness to suffer is therefore often greater. Second, however small the local actors are, they usually have one resource in more plentiful supply than the all-volunteer U.S. military—males of fighting age. Though young men are no longer the most important ingredient of land warfare, they do remain critical, particularly in cities, jungles, and mountains. Third, local actors usually have some kind of “home-court advantage.” Just as the U.S. military has built up an institutional memory over decades that has helped it to preserve command of the commons, local actors have often built up a similar institutional memory about their own arenas. They have intimate knowledge of the terrain and the meteorology and may have spent years adapting their military tactics to these factors. This advantage is magnified because the local actors are often on the defense, which permits their military engineers to disperse, harden, and camouflage their forces, logistics, and command and control. Fourth, foreign soldiers have studied how the U.S. military makes war. The Cold War saw a great deal of foreign military education as a tool of political penetration by both the U.S. and Soviet blocs. Potential adversaries have been taught Western tactics and the use of Western weaponry. There are even reports that those who have fought the U.S. forces share information on their experiences. Fifth, the weaponry of the close fight—on land, in the air at low altitudes, and at sea in the so-called littorals—is much less expensive than that required for combat in the commons. A great deal of useful weaponry was left over from the Cold War, especially Warsaw Pact designs, which are particularly cheap. Demand for weaponry has diminished greatly since the Cold War ended, so there is plenty of manufacturing capability look-

ing for markets.⁵⁵ Moreover, the diffusion of economic and technological capabilities in the civil sector is paralleled in the military sector. New manufacturers are emerging, who themselves will seek export markets. Finally, weaponry for close-range combat is also being continuously refined. Old weapons are becoming more lethal because of better ammunition. New versions of old weapons are also more lethal and survivable. Because these weapons are relatively inexpensive, even some of the newer versions will find their way into the hands of smaller and poorer states.

Taken together, these mutually reinforcing factors create a “contested zone.” In this zone, encounters between U.S. and local forces may result in fierce battles. This is not a prediction of U.S. defeat. The United States will be able to win wars in the contested zone, as it did in Afghanistan in 2002 and Iraq in 2003. It is a prediction of adversity. It is a prediction of a zone in which the U.S. military will require clever strategies and adroit tactics. It is a zone in which the U.S. military must think carefully and candidly about its own strengths and weaknesses, and how to leverage the former and buffer the latter.

LIMITS TO AIR POWER

Though U.S. aircraft possess significant potential destructive capacity, clever defenders can make it difficult to realize this potential. A combination of large numbers of inexpensive low-altitude air defense weapons; small numbers of intelligently organized and operated medium-altitude weapons; and systematic efforts at camouflage, protection, and concealment have permitted ground forces to survive the onslaught of modern U.S. air power under some circumstances.

Inexpensive weaponry drives U.S. fighters to high altitudes, where their effectiveness against ground forces is reduced. Below 15,000 feet, expensive tactical fighter aircraft are vulnerable to inexpensive weaponry—light-to-medium automatic cannon (antiaircraft artillery, or AAA) and relatively small and inexpensive short-range SAMS (mainly portable infrared-guided systems similar to the U.S. Stinger). Although some kinds of decoys work against some of the low-altitude SAMs, the effectiveness of AAA is essentially a function of how many weapons the adversary possesses, their location relative to important targets, and how much ammunition they are able and willing to expend. AAA is best thought of as a kind of aerial minefield. Vast numbers of AAA weapons

55. Daniel Williams and Nicholas Wood, “Iraq Finds Ready Arms Sellers from Baltic Sea to Bosnia,” *International Herald Tribune*, November 21, 2002.

were built during the Cold War, especially by the Warsaw Pact, but also in the West. They seem not to wear out.⁵⁶ The majority of U.S. aircraft and helicopters lost in the Vietnam War were brought down by AAA.⁵⁷ Though coalition aircraft losses in the 1991 Persian Gulf War were very low, AAA and short-range infrared SAMs caused 71 percent of the attrition.⁵⁸ Currently, the U.S. military reports only 7 aircraft lost to enemy fire in the 2003 war—6 attack helicopters and an A-10. It is likely that all were victims of short-range air defense weapons.⁵⁹ In the only major success for Iraqi air defenses, 27 of 35 U.S. Army attack helicopters were damaged and one was lost in a single raid—all to AAA.⁶⁰ Even in South Vietnam, where North Vietnamese and Vietcong units had no radars for early warning, these weapons brought down 1,700 helicopters and aircraft between 1961 and 1968.⁶¹ Generally, it is now the strategy of U.S. and

56. Prior to the start of the third Gulf War in March 2003, Iraq was reported to have had 3,000 anti-aircraft guns. Many of Iraq's air defense duels with U.S. aircraft in the no-fly zones during the preceding decade depended on anti-aircraft artillery. Iraq did not shoot down any Western aircraft before the war, but U.S. airmen nevertheless viewed these guns as a serious threat: "For years, the Iraqis used anti-aircraft artillery (AAA), unguided rockets, and surface-to-air missiles against coalition aircraft in both the northern and southern no-fly zones. In fact, they started firing at our aircraft in 1992, and over the last three years Iraqi AAA has fired at coalition aircraft over 1,000 times, launched 600 rockets and fired nearly 60 SAMs." Secretary of Defense Donald H. Rumsfeld and Gen. Richard Myers, chairman, Joint Chiefs of Staff, news briefing, September 30, 2002. See IISS, *The Military Balance, 2002–2003*, p. 106, for Iraq's AAA inventory.

57. According to Kenneth P. Werrell, "Between 1965 and 1973 flak engaged one-fourth of all flights over North Vietnam and accounted for 66% of U.S. aircraft losses over the North." Werrell, *Archie, Flak, AAA, and SAM: A Short Operational History of Ground-Based Air Defense* (Maxwell Air Force Base, Ala.: Air University Press, 1988), p. 102.

58. Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington, D.C.: GPO, 1993), pp. 61–62. Thirty-eight aircraft were lost, and 48 were damaged. In explaining these low losses, Keaney and Cohen note: "Although some crews initially tried NATO-style low-level ingress tactics during the first few nights of Desert Storm, the sheer volume and ubiquity of barrage anti-aircraft artillery, combined with the ability of Stinger-class infrared SAMs to be effective up to 12,000–15,000 feet, quickly persuaded most everyone on the Coalition side to abandon low altitude, especially for weapon release." See also General Accounting Office, *Operation Desert Storm: Evaluation of the Air Campaign*, GAO/NSIAD-97-134 (Washington, D.C.: GAO, June, 1997), Table II.7, p. 94. Fourteen aircraft were destroyed or damaged by radar SAMs, 28 by infrared SAMs, and 33 by AAA. AAA was much more likely than the other systems to damage rather than destroy a successfully engaged target.

59. Moseley, "Operation Iraqi Freedom—By the Numbers."

60. Rowan Scarborough, "Apache Operation a Lesson in Defeat," *Washington Times*, April 22, 2003, p. 1. This was apparently a clever Iraqi ambush. An Iraqi observer watched the helicopters take off and used a cell phone to alert some air defense units. On a prearranged signal, the local power grid was turned off for a few seconds to alert the rest. See Lt. Gen. William Scott Wallace, U.S. Army, "Fifth Corps Commander Live Briefing from Baghdad," May 7, 2003, U.S. Department of Defense news transcript, <http://www.defenselink.mil/transcripts/2003/tr20030507-0157.html>.

61. Between 1961 and 1968, 1,709 U.S. aircraft were lost over South Vietnam, of which 63 percent were helicopters and the rest fixed-wing aircraft. During this period, AAA was the only air defense weapon available to the communists in the South. Werrell, *Archie, Flak, AAA, and SAM*, p. 112.

Western air forces to fly above 15,000 feet to avoid AAA. This reduces losses, but it also significantly reduces a pilot's ability to locate enemy forces on the ground, to distinguish targets from decoys, to distinguish undamaged targets from damaged ones, and more generally to develop a feel for the ground situation. A mobile adversary, with some knowledge of camouflage and deception, operating in favorable terrain, can exploit these problems. Thus inexpensive and simple air defense weapons help to protect ground forces even when they do not down many aircraft.

Operations above 15,000 feet can be further complicated by an integrated air defense system (IADS), which combines a communications system, early warning radars and signals intelligence collection devices, and medium-to-high-altitude SAM systems, as well as AAA.⁶² An IADS does not have to shoot down many aircraft to lend assistance to ground forces. As discussed earlier, U.S. aircraft leverage technological advantages to suppress these integrated air defenses by jamming their radars and communications, by targeting SAMs with radar homing missiles, and by attacking communications nodes. More often than not, direct attacks on SAMs cause the gunners to shut down their radars, which makes the SAMs ineffective. At the same time, it usually ensures that the radar homing missiles fail to destroy the launchers—hence the term SEAD (suppression of enemy air defenses). Since 1972 both the Israeli air force and the U.S. air force(s) have proven this tactic, but it comes at a cost. It is safe to enter enemy airspace only when a host of expensive and scarce special assets are assembled.

Though the United States can command enemy airspace when it musters its SEAD capabilities, it cannot do so without them, and thus an adversary gets three benefits.⁶³ First, the scarcity of suppression assets slows the overall rate of

62. Passive electronic intelligence collection consists of radio receivers that track both radio and radar emissions. Without information on the precise content of coded communications, such systems may still develop an understanding of certain patterns of communications that are associated with certain kinds of operations. Occasional lapses in communications security may provide the actual content of communications to the receiver. Radio direction finding can provide indications of where certain patterns of electronic emissions occur, and where they are going. These can be cross-referenced with what radars may observe. The reports of spies and observers can also be integrated with this information. Over time, a competent adversary may build up a picture of U.S. procedures and tactics, which can prove invaluable. It is likely that this is how the Serbs were able to shoot down a U.S. F-117 stealth fighter in 1999. Because the Serbs destroyed so few U.S. aircraft, the magnitude of this particular achievement is underappreciated.

63. Some believe that the advent of stealth obviates this statement, but that does not seem to be the case. Stealth aircraft missions are generally planned to benefit from air defense suppression, though it appears that these missions rely on somewhat less direct suppressive support than do conventional bombing missions. Little more can be said, as the tactics of stealth missions are highly classified.

U.S. attack to the rate at which they can be assembled and organized.⁶⁴ Second, it is not safe to remain in airspace that is defended by an IADS, because it is difficult to sustain enough pressure to keep the defender's radars "off the air" for more than a short time. Finally, it seems that suppression operations generate lots of patterned activity—much of it emitting electronic signals. A dense network of reasonably good radars and passive electronic intelligence capabilities can develop a picture of such patterned activities, and thus provide early warning of U.S. attacks. Married to a decent communications system, the adversary's forces in the field can be alerted to take cover.⁶⁵ The defender may not shoot down many U.S. or other Western aircraft with this system; indeed the harder it tries, the more likely it is to suffer destruction. But by playing a game of cat and mouse, the defender can survive and achieve its minimum objective—it can ration U.S. attacks and gain useful early warning of those attacks. If patient, the defender may from time to time encounter tactical situations where it can score a kill.

In 1999 the Serb army demonstrated that AAA at low altitudes and a well-constructed, if obsolescent, IADS at medium to high altitudes can offer powerful assistance to an adversary ground force as it attempts to survive the attacks of U.S. air forces. NATO did little damage against Serb field forces in Kosovo in 1999.⁶⁶ It was no doubt discouraging to the adversary's air defense troops that they shot down so few U.S. aircraft. Nevertheless, when air defenses successfully defend key assets, they have done their job. Serbian forces presented a large array of small mobile targets. The adversary could easily camouflage tanks, tracks, and guns and could also offer a wide variety of decoys to attract the attention of U.S. pilots. Serbia's mobile SAMS also largely survived U.S. attempts to destroy them, so the United States was forced to continue mounting

64. Relying on accounts by Adm. James Ellis, commander in chief of Allied Forces Southern Europe during the Kosovo war, Timothy L. Thomas reports the Serbian strategy: "To prevent its air defense assets from being neutralized, the Serbian armed forces turned their assets on only as needed. They therefore presented a 'constant but dormant' threat. This resulted in NATO using its most strained assets (e.g., JSTARS, AWACS, or airborne warning and control system) to conduct additional searches for air defense assets and forced NATO aircraft to fly above 15,000 feet, making it difficult for them to hit their targets. Ellis noted that NATO achieved little damage to the Serbian integrated air defense system." see Thomas, "Kosovo and the Current Myth of Information Superiority," *Parameters*, Vol. 30, No. 1 (Spring 2000), pp. 14–29; quotation on p. 8 of the web version.

65. As Thomas notes, "Their [Serbian] offsets included deception, disinformation, camouflage, the clever use of radar, spies within NATO, helicopter movement NATO couldn't detect, and the exploitation of NATO's operational templating of information dominance activities (e.g., satellites, reconnaissance flights). See *ibid.*, pp. 3, 9 of the web version.

66. On Serbia's air and ground strategies, as well as Serbia's tactical successes, see Barry R. Posen, "The War for Kosovo: Serbia's Political-Military Strategy," *International Security*, Vol. 24, No. 4 (Spring 2000), pp. 54–66.

elaborate suppression operations, providing the Serbs with useful early warning.

There were obvious limits to Serbian success. Large, fixed transportation targets (such as bridges) and economic infrastructure targets (such as power stations) cannot be moved, and they cannot easily be camouflaged. Only truly modern SAMs can possibly defend such targets from high-altitude aircraft armed with precision-guided munitions. In the end, it was the U.S. ability and demonstrated willingness to destroy Serbia's infrastructure and economy that coerced Slobodan Milošević into accepting a deal that satisfied NATO's war aims, but that deviated in important ways from NATO's original demands. The cautionary lesson is that a well-operated, if obsolescent, integrated air defense system can defend a ground force skilled at camouflage and deception.⁶⁷

Iraqi air defenses and ground forces were apparently less successful at this game in 2003 than the Serbs were in 1999. Information is still limited, but several explanations seem plausible. First, Iraqi air defenses were in very poor shape on March 19, when the war officially began. The Iraqi air defense system was badly damaged in the 1991 war, damaged further during eleven years of engagements with U.S. and other Western air forces in the northern and southern no-fly zones, and largely prevented from replacing its losses or improving its technology by the twelve-year arms embargo. Existing Iraqi SAMs also seem to have been in disrepair, perhaps due to their age, the embargo, or operator incompetence.⁶⁸ Second, it appears that Iraqi SAM opera-

67. For a collection of deception tactics and countermeasures that the Serbs are said to have employed, see "Tactics Employed by the Yugoslav Army to Limit NATO Air Strikes' Effectiveness," Associated Press, November 18, 2002. Daryl Press notes that even in the deserts of Kuwait and southern Iraq, U.S. fighter aircraft experienced difficulties attacking a dug-in, camouflaged, ground force. See Press, "The Myth of Air Power in the Persian Gulf War," pp. 40–42. As of this writing, insufficient information has emerged to determine the effectiveness of these techniques in the U.S.-led war with Iraq that began in March 2003.

68. Lt. Gen. T. Michael Moseley, "Coalition Forces Air Component Command Briefing," April 5, 2003, U.S. Department of Defense news transcript, http://www.defenselink.mil/news/Apr2003/t04052003_t405mose.html, alludes to enforcement of the no-fly zones as an opportunity to degrade the Iraqi air defense system. He reports that after the first three or four days of the war, his flyers were able to switch from suppression to destruction of Iraqi air defenses, which suggests that the defenders suffered heavy losses in the early days, perhaps because they turned their radars on too often. Finally he said that "every time they move one of those things [a SAM or radar] they have a tendency to break something on them," which suggests unreliable and/or poorly maintained equipment. After the conventional phase of the war ended, an Iraqi air defense officer, Gen. Ghanem Abdullah Azawi, declared: "There has been practically no air defense since 1991. Nobody rebuilt it. We didn't receive any new weapons." Quoted in William Branigin, "A Brief, Bitter War for Iraq's Military Officers: Self-Deception a Factor in Defeat," *Washington Post*, April 27, 2003, p. A25.

tors were more aggressive in the early days of the war than was sensible, giving U.S. and British pilots excellent engagement opportunities. Third, Iraqi ground forces appear not to have enjoyed as much success at cover, concealment, and camouflage as did the Serbs. The terrain south of Baghdad may not have been favorable to such tactics, though opportunities did exist and much Iraqi equipment survived U.S. and British air attacks.⁶⁹ Perhaps as important, Iraqi forces had to concentrate and sometimes chose to maneuver en masse to try to meet U.S. ground attacks, creating better targets for U.S. aircraft.⁷⁰ Serb ground forces faced neither the necessity to concentrate nor the temptation to maneuver on a large scale because they faced no risk of a NATO ground attack.

The 1999 Kosovo war may provide other lessons as well. Militaries that have fought, or think they might fight, the United States now exchange lessons and technology. Serbs and Iraqis discussed tactics before the war in Kosovo began.⁷¹ Iraq sought commercial communications technology to increase the re-

69. One journalist who toured Iraqi defenses south of Baghdad either in late March or early April reports that Iraqi units were well dispersed, dug in, and camouflaged. He saw some damaged equipment but more that had survived. Robert Fisk, "Saddam's Masters of Concealment Dig In, Ready for Battle," *Independent*, April 3, 2003, p. 1. On April 5, U.S. troops "found herds of tanks abandoned by the Iraqi Army and Republican Guard" in Karbala. See Jim Dwyer, "In Karbala, G.I.'s Find Forsaken Iraqi Armor and Pockets of Resistance," *New York Times*, April 6, 2003, sec. B, p. 4. One postwar report suggests that "fewer than 100 Republican Guard tanks were knocked out in the battles around Baghdad, so coalition officers say hundreds of modern T-72 main battle tanks and BMP infantry fighting vehicles are still to be found." Tim Ripley, "Building a New Iraqi Army," *Jane's Defence Weekly*, April 16, 2003, p. 3. Other journalists toured the same area after the end of conventional fighting and reported the existence of vast, but entirely unused, prepared defensive positions and the destruction of many reasonably well-camouflaged Iraqi combat vehicles, though they kept no count. They note little evidence of dead Iraqi soldiers and suggest that many units melted away. Terry McCarthy, "What Ever Happened to the Republican Guard?" *Time*, May 12, 2003, pp. 24–28. On the whole, it seems that large quantities of Iraqi armored vehicles and weapons survived concentrated Western air attacks, but Iraqi troops abandoned their equipment. One cannot know if better-led, more tactically proficient, and more politically committed troops would have found ways to employ this surviving equipment to offer stronger resistance to U.S. ground forces.

70. William M. Arkin, "Speed Kills," *Los Angeles Times*, June 1, 2003, pt. M, p. 1, suggests that the Iraqis suffered grievous damage when they tried to maneuver under cover of a late-March sandstorm. More generally, a U.S. Marine noncommissioned officer declared, "Every time they try to move their tanks even 100 yards, they get it from our aircraft. We are everywhere." See Matthew Fisher, "Skirmishes in Baghdad: Marines Blow Up Scores of Abandoned Iraqi Tanks and Armoured Vehicles," *Times Colonist* (Victoria, Canada), April 7, 2003, p. A5.

71. Philip Shenon, "The Iraqi Connection: Serbs Seek Iraqi Help for Defense, Britain Says," *New York Times*, April 1, 1999, p. A 16. This appears to have been two-way commerce. Until very recently, any companies in the former Yugoslavia apparently exported military equipment to Iraq in violation of the UN arms embargo. See Williams and Wood, "Iraq Finds Ready Arms Sellers from Baltic Sea to Bosnia."

silence of its air defense communications network.⁷² This assistance seems to have come from Chinese firms, which suggests that Serb, Iraqi, and Chinese air defense experts have compared notes.⁷³ Serbia's mobile SA-6s largely survived NATO attacks, but its immobile SA-3s fared poorly.⁷⁴ Formerly immobile, obsolescent Iraqi SA-3 missiles turned up in domestically built mobile versions on the backs of trucks prior to the 2003 war.⁷⁵ The fact that Iraq did not profit from its contacts with Serbia does not undermine the central point—past and potential U.S. adversaries may exchange information. The Iraqis themselves demonstrated in the 1991 Gulf War that mobility pays: Though coalition forces chased Iraqi truck-mounted Scud surface-to-surface missiles all over the desert, it seems clear that none were destroyed during that war.⁷⁶ Scuds made no appearance in the 2003 war, but Iraq did possess many smaller, short-range tactical ballistic missiles. Though these were priority targets for U.S. forces because of their presumed ability to deliver chemical weapons, many of these systems survived attack. Indeed, on April 7, 2003, after nearly nineteen days of combat, a missile struck the headquarters of the Second Brigade of the 3d Infantry Division, just south of Baghdad.⁷⁷

THE LIGHT INFANTRY CHALLENGE

The 1991 and 2003 Gulf Wars strongly suggest that there are few, if any, ground forces in the world that can challenge the U.S. Army in tank warfare in open country. But there are other possible ground fights—in cities, mountains, jungles, and marshes. And the United States needs to be cognizant of some of the difficulties that may lie ahead. The first is sheer numbers. The two remaining designated members of the “axis of evil,” Iran and North Korea, have conscript

72. A fiber-optic network was reportedly added to Iraq's air defense command and control system. See IISS, *The Military Balance, 2002–2003*, p. 98.

73. Andrew Koch and Michael Sirak, “Iraqi Air Defences under Strain,” *Jane's Defence Weekly*, February 28, 2001. The article also notes that while some Serbs have reportedly helped Iraq militarily over the years, others reportedly provided intelligence about Iraq to the United States and Britain.

74. Department of Defense, news briefing, June 10, 1999. See the slide “Air Defense BDA,” <http://www.defenselink.mil/news/Jun1999/990610-J-0000K-008.jpg>.

75. IISS, *The Military Balance 2002–2003*, p. 98.

76. For reviews of the evidence supporting this point, see William Rosenau, *Special Operations Forces and Elusive Enemy Ground Targets: Lessons from Vietnam and the Persian Gulf War*, MR-1408-AF (Santa Monica, Calif.: RAND, 2001), pp. 40–44; and “The Great Scud Hunt: An Assessment,” Centre for Defence and International Security Studies, Lancaster University, 1996, <http://www.cdiss.org/scudnt6.htm>.

77. Two soldiers and two journalists were killed, fifteen soldiers were wounded, and 17 military vehicles were destroyed. Steven Lee Myers, “A Nation at War: Third Infantry Division; Iraqi Missile Strike Kills Four at Tactical Operations Center,” *New York Times*, April 8, 2003, sec. B, p. 3.

armies: Together these two countries have 13 million males between the ages of 18 and 32.⁷⁸ They do not train all these men for war; the training their soldiers get is almost certainly uneven; and for local political reasons, some of these young men would not necessarily fight. But this total does give some idea of the potentials: These men are an important military resource. This pattern can be expected elsewhere. The world's population is expected to grow from 6 billion to 8 billion by 2025, with most of that growth in the developing world.⁷⁹ Moreover, ground troops should have no trouble finding infantry weapons. According to one study, there are perhaps 250 million military and police small arms in the world, including mortars and shoulder-fired antitank weapons.⁸⁰

U.S. strategists must also be cognizant of the significant police problem that would arise in the event the United States tried to conquer and politically reorganize some of these populous countries. The historical record suggests that stability operations require between two and twenty soldiers and/or policemen per 1,000 individuals, depending on the level of political instability.⁸¹ The low figure is consistent with average U.S. police presence; the high figure with the height of the Troubles in Northern Ireland. Prior to the commencement of hostilities against Iraq in March 2003, many warned that the postwar occupation of the country could require significant troops. Gen. Eric Shinseki, then chief of staff of the U.S. Army, estimated before the Congress in late February 2003 that several hundred thousand troops would be required for several years to occupy Iraq with its 22 million people. Undersecretary of Defense Paul Wolfowitz derided this estimate.⁸² By the end of April 2003, Pentagon planners were projecting that a force of 125,000 would be needed for at least a year.⁸³ As of early June, plans to withdraw troops of the hardworking 3d Infantry Divi-

78. IISS, *The Military Balance, 2002–2003*, pp. 103–105, 153–154, 279, 299. Nearly 10 million are in Iran, which conscripts perhaps only 125,000 of its 950,000 eligible males annually. North Korea appears to conscript virtually all of its eligible males.

79. U.S. Commission on National Security/21st Century, *New World Coming: American Security in the 21st, Supporting Research and Analysis*, September 15, 1999, p. 40.

80. Alexander Higgins, "UN-Backed Study Estimates 639 Million Small Arms in World," Associated Press, June 24, 2002; see also "Red Flags and Buicks: Global Firearm Stockpiles," chapter summary, *Small Arms Survey*, 2002, http://www.smallarmssurvey.org/Yearbook/EngPRkitCH2_11.06.02.pdf.

81. James T. Quinlivan, "Force Requirements in Stability Operations," *Parameters*, Vol. 25, No. 4 (Winter 1995–1996), p. 61.

82. Eric Schmitt, "Pentagon Contradicts General on Iraq Occupation Force's Size," *New York Times*, February 28, 2003, p. 1.

83. Tom Squitieri, "Postwar Force Could Be 125,000," *USA Today*, April 28, 2003, p. 1.

sion, which spearheaded the drive to Baghdad, had been shelved due to the deteriorating security situation, leaving 128,000 U.S. Army troops in Iraq and 45,000 more in Kuwait performing logistics functions. Perhaps another 30,000 U.S. Marines and British troops were also in Iraq. One unnamed U.S. Army officer averred that he has not seen the army so stretched in his thirty-one years of military service.⁸⁴ Yet with nearly 160,000 troops in Iraq, Maj. Gen. Tim Cross, the British deputy head of Reconstruction and Humanitarian Assistance, agreed that there were too few troops to keep order.⁸⁵

U.S. military personnel, however, have almost become too expensive to hire. The Department of Defense completed a detailed study in summer 2002 suggesting that the military services cut 90,000 uniformed personnel.⁸⁶ It considered asking the army to cut one of its ten active divisions. At the time, the U.S. defense budget was going up, and the United States was already heavily engaged in the war on terror. The U.S. government had defined this war broadly, and the Pentagon civilian leadership favored extending it to Iraq. The demand for U.S. personnel would likely rise. Yet the sheer expense of uniformed personnel caused the Defense Department to briefly consider reducing the size of the armed forces.⁸⁷ This suggests that the United States must avoid lengthy military operations that require a large number of ground troops.

It is tempting to believe that heavily armed, high-technology ground forces can easily defeat large numbers of enemy infantry. But two vignettes, one from Somalia and the other from Afghanistan, suggest a different lesson. Elite U.S. Special Operations forces suffered high casualties in a mission gone awry in Mogadishu in 1993.⁸⁸ They were in part a victim of their own mistakes. But Somali gunmen fought with courage, and some skill, and were assisted by the ur-

84. Bradley Graham, "Iraq Stabilization Impinges on Army Rotation, Rebuilding," *Washington Post*, June 6, 2003, p. A21.

85. "'Too Few Troops' in Iraq," *BBC News*, May 26, 2003, http://news.bbc.co.uk/go/pr/fr/-/2/hi/middle_east/2938176.stm.

86. Tom Bowman, "Pentagon to Consider Large-Scale Troop Cuts," *Baltimore Sun*, July 10, 2001, p. 1A. A reduction of almost 90,000 soldiers, sailors, airmen, and marines is contemplated because "with personnel eating up a significant portion of the defense budget, and with Rumsfeld and his aides eager to harness the latest technology and weaponry, the Pentagon has begun to focus on cutting jobs among the 1.4 million people on active duty." See also Robert S. Dudley, "Hyperextension," *Air Force Magazine*, August 2002, p. 2, noting Secretary of Defense Rumsfeld's reluctance to add manpower, which he considered to be "enormously expensive."

87. The final defense authorization for fiscal year 2003 approved a modest increase in the size of the U.S. active force.

88. Mark Bowden, *Black Hawk Down: A Story of Modern War* (New York: Atlantic Monthly Press, 1999), is the source for what follows.

ban environment. They clearly had “gone to school” on U.S. forces in preceding weeks, learning their patterns and tactics.⁸⁹ Their local intelligence apparatus may have provided some warning of the U.S. raids, and a crude communications system allowed them to mobilize and coordinate the movement of their forces.⁹⁰ The Somalis reportedly altered simple, Soviet-pattern RPG-7 antitank rockets to make them more effective weapons against U.S. helicopters.⁹¹ Some observers suggest that al-Qaeda taught them this trick. Soviet AK-47 assault rifles, RPG-7 antitank rocket launchers, and ammunition for both appear to have been plentiful. And no wonder—millions of AK-47s had been manufactured and could be had for as little as \$200 dollars apiece in Somalia.⁹² The Somalis did, however, suffer grievous casualties, perhaps thirty times the eighteen U.S. dead.⁹³ The Somalis may be among the most individually courageous fighters U.S. soldiers have encountered since the North Vietnamese. But even better prepared and better armed urban infantry combatants do exist, as the Russians discovered in Grozny in 1995.

In recent years, the U.S. military has been working assiduously to improve its urban combat capability, but soldiers still expect fights against competent defenders in cities to be costly and difficult.⁹⁴ A military rule of thumb is that it takes one company, one day, and 30–40 percent casualties to take one well-

89. *Ibid.*, p. 21.

90. *Ibid.*, pp. 31, 230.

91. *Ibid.*, pp. 110–111. The RPG-7, intended as a point-detonated antitank projectile, reportedly also has a time fuse to ensure that it will explode somewhere in the midst of the enemy in the event that the shooter misses his target. The Somalis may have somehow shortened the time setting on this fuse, to cause the projectile to burst in the air at relatively short range—essentially turning it into a medium-caliber antiaircraft artillery round. Alternatively, the Somalis may simply have learned the range at which this explosion would normally occur and fired at least some of their RPGs at helicopters at the appropriate range.

92. *Ibid.* p. 109.

93. *Ibid.* p. 333.

94. The 1968 Battle for Hue in South Vietnam offers a cautionary tale that is much studied by the U.S. military. Hue was not a particularly large city, with 140,000 people on sixteen square kilometers, though its heavy stone construction provided excellent defensive positions. It took twenty-five days for 11 South Vietnamese and 3 U.S. Marine Corps infantry battalions, with vastly superior firepower, to evict 16 to 18 Vietcong and North Vietnamese infantry battalions from the city. U.S. Army units assisted with critical supporting attacks outside the city. The U.S. and South Vietnamese troops suffered 600 killed and 3,800 wounded and missing to do so, and the fighting destroyed much of the city. Estimates of communist dead range from 1,000 to 5,000, out of a force of perhaps 12,000. See Abbott Associates, *Modern Experience in City Combat*, Technical Memorandum 5–87, AD-A180 999 (Aberdeen, Md.: U.S. Army Human Engineering Laboratory, 1987), pp. 67–68. Casualty estimates are from Jack Shulimson, Lt. Col. Leonard A. Blasiol, Charles R. Smith, and Captain David Dawson, *U.S. Marines in Vietnam: The Defining Year, 1968* (Washington, D.C.: History and Museums Division, Headquarters, U.S. Marine Corps, 1997), p. 213.

defended city block, which would usually be defended by a platoon one-third its strength.⁹⁵ It is generally believed that casualties of this magnitude would render a unit combat ineffective for some period. After two fights of this kind, it would likely take months to rebuild the unit's combat power—even if the infantry replacements could be found, which seems difficult given the U.S. voluntary recruitment system. The entire U.S. active Army has only about 60 infantry battalions (180 companies), so it would be stressed if it stumbled into a major, extended, urban campaign against an army of even modest size. Saddam Hussein's regime did not prepare to wage such a campaign in Baghdad in 2003, allowing its best units to be destroyed outside of the city.⁹⁶ But Iraqi infantry experienced their only successes in smaller cities across southern Iraq, most notably in an-Nasiriya, where they fought bloody battles with the U.S. Marines.⁹⁷ The marines suffered more than half of the U.S. casualties in the war, though they provided about a third of the ground forces. Their commander, Lt. Gen. James Conway, explained this anomaly as follows: "The forces that we had come up against were pretty much in the villages and towns along the single avenues of approach that we had that led into Baghdad. It was close-quarter fighting, in some cases hand-to-hand fighting."⁹⁸

Captured documents from al-Qaeda training bases in Afghanistan show how competent infantry can be trained with relatively low-technology techniques.⁹⁹ Al-Qaeda trainers, many of whom appear to have served in regular

95. Barry R. Posen, "Urban Operations: Tactical Realities and Strategic Ambiguities," in Michael C. Desch, ed., *Soldiers in Cities: Military Operations on Urban Terrain* (Carlisle, Pa.: Strategic Studies Institute, U.S. Army War College, 2001), pp. 153–154. See also *Combined Arms Operations in Urban Terrain*, FM 3–06.11 (Washington, D.C.: Headquarters, Department of the Army, February 28, 2002), secs. 4–13, 4–37, 5–12.

96. According to Gen. Alaa Abdelkadeer, a Republican Guard officer interviewed after the war, the Iraqis had discussed the details of an urban defense of Baghdad before the war, "but none of this was carried out." Robert Collier, "Iraqi Military Plans Were Simplistic, Poorly Coordinated," *San Francisco Chronicle*, May 25, 2003, p. A-19.

97. Peter Baker, "A 'Turkey Shoot,' but with Marines as the Targets," *Washington Post*, March 28, 2003, p. A1; Dexter Filkins and Michael Wilson, "A Nation At War: The Southern Front; Marines, Battling in Streets, Seek Control of City in South," *New York Times*, March 25, 2003, p. A1; John Roberts, "On the Scene: A Formidable Foe," March 26, 2003, <http://www.cbsnews.com/stories/2003/03/26/iraq/scene/printable546258.shtml>; and Andrew North, "Nasiriya, 0941 GMT," in "Reporters' Log: War in Iraq," *BBC News*, March 31, 2003, <http://www.bbc.co.uk/reporters>.

98. Conway, "First Marine Expeditionary Force Briefing."

99. Anthony Davis, "The Afghan Files: Al-Qaeda Documents from Kabul," *Jane's Intelligence Review*, Vol. 14, No. 2 (February 2002), p. 16. Davis visited Kabul shortly after its fall and collected many al-Qaeda documents. According to Davis, "Much of the literature also underlines the extent to which al-Qaeda was a highly organized military undertaking as well as a committed terrorist network. Detailed training manuals and student notebooks indicate that theoretical and on-the-job training involved not only small arms and assault rifles but a range of heavier weapons, including

forces, gathered tactical manuals from various armies. They distilled the information from these manuals into a syllabus. They lectured from the syllabus and insisted that each aspirant take copious notes, in effect copying a manual for himself. All procedures appear then to have been carefully drilled in the field. Bases were decorated with large training posters on various subjects.

Operation Anaconda (March 2–18, 2002) provides a sense of the success of this training, though it is unclear whether the adversary consisted entirely of al-Qaeda troops trained in Afghanistan.¹⁰⁰ Given the obvious skill of the defenders, it may be that these were the instructors, and not the troops, waging the fight. The adversary proved extremely skillful at camouflage; a motorized column of Afghan allies was ambushed at close range.¹⁰¹ U.S. forces, though supported by reconnaissance and intelligence assets of all kinds, probably located not more than half of al-Qaeda's prepared positions in the Shah-e-Kot valley.¹⁰² In at least one case, U.S. Special Forces helicopters landed practically on top of some of these positions, and were quickly shot up with heavy machine gun and RPG fire.¹⁰³ One Chinook transport helicopter was destroyed and another severely damaged. Every U.S. attack helicopter supporting the operation was peppered with bullet holes; four of seven AH-64s were damaged so severely that they ceased to fly sorties.¹⁰⁴ U.S. infantry were often brought under accurate mortar fire, which produced most of the two dozen U.S. casual-

12.7 millimeter machine guns, AGS-17 automatic grenade launchers, mortars, and even 107 mm BM-1 and BM-12 rocket systems." *Ibid.*, p. 18

100. The section that follows relies largely on journalistic accounts of the battle. I have supplemented these accounts with some information gleaned in private conversations with U.S. military officers. See also the excellent study by Stephen Biddle, *Afghanistan and the Future of Warfare: Implications for Army and Defense Policy* (Carlisle, Pa.: U.S. Army Strategic Studies Institute, U.S. Army War College, November 2002), pp. 28–37.

101. Richard T. Cooper, "The Untold War: Fierce Fight in Afghan Valley Tests U.S. Soldiers and Strategy," *Los Angeles Times*, March 24, 2002, p. 1.

102. In the case of one communications bunker, an army intelligence specialist noted: "You wouldn't see it unless you looked directly on it. Predator wouldn't have been able to see it." The bunker contained a radio set up with "low probability of intercept techniques," which would have made it very difficult for U.S. electronic intelligence assets to detect its presence. See Thomas E. Ricks, "In Mop Up, U.S. Finds 'Impressive' Remnants of Fallen Foe," *Washington Post*, March 20, 2002, p. 1.

103. Cooper, "The Untold War," p. 1; see also Department of Defense, "Background Briefing on the Report of the Battle of Takur Ghar," May 24, 2002.

104. According to one reporter, "Five [AH-64] Apaches were present at the start of the battle, a sixth arrived later that morning and a seventh flew up from Kandahar to join the fight that afternoon. None of the helicopters was shot down, but four were so badly damaged they were knocked out of the fight. The fire the Apaches braved was so intense that when the day was over, 27 of the 28 rotor blades among the seven helicopters sported bullet holes, said Lt. Col. James M. Marye, the commander of the 7th Battalion, 101st Aviation Regiment." Sean D. Naylor, "In Shah-E-Kot, Apaches Save the Day—and Their Reputation," *Army Times*, March 25, 2002, p. 15.

ties on the first day of the fight.¹⁰⁵ After several days of combat, many al-Qaeda troops withdrew under cover of poor weather.¹⁰⁶ Few bodies were discovered in the valley, though U.S. officers believe that many al-Qaeda were killed and obliterated by powerful bombs. As far as one can tell, al-Qaeda waged this fight with the ubiquitous Soviet-pattern AK-47 assault rifle, RPG-7 shoulder-fired antitank grenade launcher, PKM medium machine gun, 12.7-millimeter DShK heavy machine gun, and 82-millimeter medium mortar. (There were no reliable reports of infrared-guided short-range air defense missiles fired, though a good many of them seem to have been found in Afghanistan.) Pictures of caches in Afghan caves often show crates of ammunition for these weapons stacked floor to ceiling.¹⁰⁷ It is important to note that better ammunition for existing Warsaw Pact-pattern infantry weapons will surely appear. Sophisticated, lightweight fire control systems, which can radically increase the lethality of such weapons, have also been designed. In addition, new generations of affordable infantry weapons will start reaching potential adversaries. Even in the Anaconda battle, night-vision devices were reportedly found in abandoned enemy positions.¹⁰⁸ If true, an important U.S. technical and tactical advantage has already waned. In short, large numbers of males of military age, favorable terrain, solid training, and plentiful basic infantry weapons can produce significant challenges for the U.S. military.

LITTORAL COMBAT

Since the Cold War ended, the U.S. Navy has been keen to show that it is relevant to the problems of the day. Thus, early in the 1990s it began to reorient it-

105. Sean D. Naylor, "What We Learned from Afghanistan," *Army Times*, July 29, 2002, p. 10. It appears to me that a problem with al-Qaeda mortar fuses saved some American lives; Soviet shells with point-detonated fuses occasionally bored into the mud without exploding. Western time or proximity fuses would not have had this problem and would have produced a more lethal explosion.

106. Walter Pincus, "Attacks on U.S. Forces May Persist, CIA, DIA Chiefs Warn of Afghan Insurgency Threat," *Washington Post*, March 20, 2002, p. 1. The director of the CIA, George Tenet, testified to Congress, "There are many, many points of exit that people in small numbers can get out. We're frustrated that people did get away." Quoted in *ibid.*

107. Ricks, "In Mop Up, U.S. Finds 'Impressive' Remnants of Fallen Foe" reports "sheaves of rocket-propelled grenades." Commenting on the lessons of the 2003 Iraq war, Col. Mike Hiemstra, director of the Center for Army Lessons Learned, notes, "The Proliferation of rocket-propelled grenades [RPGs] across the world continues to be huge." See "More 'Must-Have' Answers Needed," *Jane's Defence Weekly*, April 30, 2003, p. 25. The RPG was widely used by the Iraqis in the 2003 war; it seems to have been their only effective antiarmor weapon.

108. *Ibid.*; and Cooper, "The Untold War," p. 1, report night-vision devices being found in two separate al-Qaeda positions.

self toward affecting military matters ashore, insofar as it barely had any enemies left at sea. Its first public statements about this project were *From the Sea* and *Forward . . . From the Sea*.¹⁰⁹ The chief of naval operations reemphasized the navy's mission close to the adversary's shore as part of his *Sea Power 21* concept.¹¹⁰ Though the navy leadership understands that combat in the littorals is a different kind of mission from its past specialization, and that this requires different assets and skills, not much progress has been made in the last decade.¹¹¹

A properly constructed sea-denial capability in littoral combat combines several elements: bottom mines; diesel electric submarines; small, fast, surface attack craft; surveillance radars; passive electronic intelligence collectors; long-range mobile land-based SAMs; and long-range, mobile, land-based antiship missiles. Aircraft and helicopters also play important roles. These systems are inexpensive relative to the cost of U.S. warships and aircraft. There are a number of militaries worldwide with expertise in littoral combat.¹¹² Germany, Israel, Sweden, and perhaps South Korea are probably the best in terms of combining the most modern relevant technology and weaponry, with good training and appropriate tactics. (Only Germany and Sweden organized themselves to fight a superpower navy, however.) China, Iran, North Korea, and

109. U.S. Department of the Navy, . . . *From the Sea, Preparing the Naval Service for the 21st Century*, White Paper (Washington, D.C.: U.S. Department of the Navy, September 1992). See also *Forward . . . from the Sea*, U.S. Naval Institute Proceedings (Washington, D.C.: U.S. Department of the Navy, December 1994), pp. 46–49.

110. Adm. Vern Clark, U.S. Navy, "Sea Power 21 Series—Part I," *National Institute Proceedings*, Vol. 128, No. 196 (October 2002). The Pentagon recognizes the special problems of littoral warfare: "Anti-ship cruise missiles, advanced diesel submarines, and advanced mines could threaten the ability of U.S. naval and amphibious forces to operate in littoral waters." *Quadrennial Defense Review Report*, p. 31; see also p. 43. Recognition is not the same as solution, however. They recognized the problem in 1992: "Some littoral threats . . . tax the capabilities of our current systems and force structure. Mastery of the littoral should not be presumed. It does not derive directly from command of the high seas. It is an objective which requires our focused skills and resources." U.S. Department of the Navy, *Forward . . . From the Sea*, p. 4. Yet progress has been slow. According to the General Accounting Office, the Navy, "does not have a means for effectively breaching enemy sea mines in the surf zone; detecting and neutralizing enemy submarines in shallow water; defending its ships against cruise missiles, or providing adequate fire support for Marine Corps amphibious landings and combat operations ashore." General Accounting Office, *Navy Acquisitions: Improved Littoral War-Fighting Capabilities Needed*, GAO/NSIAD-01-493 (Washington, D.C.: GAO, May 2001), p. 2.

111. The problem of inexpensive technology complicating great power naval operations in the littorals is not new. This was a key fact of late nineteenth- and early twentieth-century naval life, which ended the practice of the "close blockade." See Kennedy, *The Rise and Fall of British Naval Mastery*, pp. 199–200.

112. This is my personal assessment. For suggestive, supporting material, see the various country entries in IISS, *The Military Balance, 2002–2003*.

Taiwan have all developed a considerable littoral capability, though each suffers some shortfalls. In recent years no great power has actually fought a first-class littoral navy, but there are examples of how damaging the various elements of littoral warfare can be.

Naval mines are very lethal and difficult to find and eliminate.¹¹³ Iraq nearly blew the U.S. cruiser *Princeton* in half during Desert Storm with two modern bottom mines.¹¹⁴ A more primitive Iraqi moored contact mine badly damaged and nearly sank the amphibious landing ship LPH *Tripoli* in the same engagement. In 1987 a \$1,500, World War I–design, Iranian floating mine nearly sank the U.S. frigate *Samuel Roberts*.¹¹⁵ Iraq still possessed some naval mines in the 2003 war, but few were deployed. Nevertheless, it took nearly a week for a combined force of British, U.S., and Australian mine-hunting units to clear the channel to the port of Umm Qasr of what was subsequently discovered to have been a total of eleven mines. It was learned, however, that the Iraqis had been preparing to lay another seventy-six mines as the war began, and commanders were very relieved that the outbreak of the war forestalled this action.¹¹⁶

Mobile land-based antiship missiles might prove as difficult to find as mobile Scuds or mobile SAMs. An improvised, land-based French-built Exocet badly damaged a British destroyer during the 1982 Falklands War.¹¹⁷ Land-based Iranian Silkworm antiship missiles, of Chinese manufacture, damaged two tankers at a Kuwaiti oil terminal in 1987, from nearly 80 kilometers away.¹¹⁸ Similar missiles were fired by Iraq in the same area in the 2003 war, though no shipping was hit and no serious damage was done. Iraqi antiship missiles instead struck a harborside shopping mall in Kuwait City on March

113. See Gregory K. Hartmann and Scott C. Truver, *Weapons That Wait: Mine Warfare in the U.S. Navy* (Annapolis, Md.: Naval Institute Press, 1991), pp. 254–262. These authors note that naval mine warfare has usually proven to be very cost effective. During World War II, U.S. forces damaged or sank five to nine Japanese ships per \$1 million dollars of mine warfare expenditure. *Ibid.*, pp. 236–237. See also “Appendix A: Mine Threat Overview,” *U.S. Naval Mine Warfare Plan*, 4th ed., Programs for the New Millennium.

114. The mine was an Italian-manufactured “Manta,” which cost perhaps \$10,000. Edward J. Marolda and Robert J. Schneller Jr., *Shield and Sword: The United States Navy and the Persian Gulf War* (Washington, D.C.: Naval Historical Center, Department of the Navy, 1998), p. 267.

115. *Ibid.*, p. 37.

116. “Minister of State for the Armed Forces and the First Sea Lord Admiral Sir Alan West: Press Conference at the Ministry of Defence,” London, April 11, 2003, http://www.operations.mod.uk/telic/press_11april.htm.

117. Max Hastings and Simon Jenkins, *The Battle for the Falklands* (New York: W.W. Norton, 1983), pp. 296–297.

118. Robert W. Love, *A History of the U.S. Navy, 1942–1991* (Harrisburg, Pa.: Stackpole, 1992), p. 784.

29, and then struck near Umm Qasr on April 1. U.S. and British ground and air forces had been in southern Iraq for more than a week, yet these systems had eluded detection.¹¹⁹ Antiship missiles fired from surface vessels and aircraft have damaged or sunk several large naval vessels. Two Exocets fired from an Iraqi aircraft nearly sank the U.S. frigate *Stark* in 1987, killing thirty-seven sailors.¹²⁰ Air-launched Exocets sank the British destroyer *Sheffield* and the container ship *Atlantic Conveyor* in the 1982 Falklands War.¹²¹ U.S. ship-launched Harpoons sank two Iranian ships in Operation Praying Mantis in April 1988. Two Iranian ships managed to fire missiles in the same engagement, but neither was successful.¹²²

Though they did not prove lethal against large ships, lightly armed (Swedish-built) Iranian Boghammer speedboats proved a nuisance in the Persian Gulf during the 1980–88 Iraq-Iran War. Their main mission was machine gun and rocket attacks on ships trading with the gulf states, especially Kuwait, which provided the money that fueled Saddam Hussein’s war machine. Because the shallow waters of the northern gulf were considered too dangerous for large warships, due to mines and presumably land-based antiship missiles, the U.S. Navy built two floating bases aboard large, leased, commercial barges and used them for special operations helicopters and patrol boats to deal with this threat.¹²³ They did this successfully, though at some risk. The use of a small motorboat by suicide bombers against the U.S. destroyer *Cole* on October 14, 2000, has added a new dimension to this threat. Moreover, much more sophisticated fast-attack aircraft can be built.¹²⁴ Major navies now feel compelled to devise new weaponry to counter these cheap, nimble, and potentially deadly attackers. In a recent U.S. war game, a defending “red force” navy con-

119. Paul Lewis and Steward Penney, “Timeline: Week Two,” *Flight International*, April 8, 2003, p. 11.

120. Marolda and Schneller, *Shield and Sword*, p. 36.

121. Hastings and Jenkins, *Battle for the Falklands*, pp. 153–156, 227–228.

122. Love, *A History of the U.S. Navy*, pp. 787–789.

123. David B. Crist, “Joint Special Operations in Support of Earnest Will,” *Joint Forces Quarterly*, No. 29 (Autumn/Winter 2001–02), pp. 15–22. Crist notes some forty-three attacks in 1986, though only one actually sank a ship.

124. Richard Scott, “UK Plans to Counter Threat of Terrorists at Sea,” *Jane’s Defence Weekly*, June 19, 20002, p. 8. According to Scott, “Staff in the UK Ministry of Defence’s Directorate Equipment Capability . . . have identified a significant gap in the capability of ships to adequately defend themselves against fast attack craft (FACS) fast inshore attack craft (FIACS), and acknowledge a capability upgrade as an urgent priority.” Ibid. In an act of perhaps unintentional irony, the second story on the same page of the magazine is “Taiwan to Launch Prototype Stealth PCFG,” or fast-attack missile patrol boat. If Taiwan can build stealthy small craft, then so can many other small and middle-sized countries, and the threat can be expected to grow.

sisting of small boats and some aircraft, attacked the simulated U.S. Navy task force entering the Persian Gulf and sent much of it to the bottom.¹²⁵

Finally, though modern diesel electric submarines have not sunk any major surface combatants of late, they have proven extremely difficult to catch. Hunting for diesel electric submarines in coastal waters is rendered difficult by the poor acoustical transmission properties of shallow water and the background noise of coastal traffic. When running on its battery, a diesel electric submarine is naturally very quiet. When recharging the battery, its diesel sounds much like any other diesel in coastal waters. Its snorkel may generate a heat and radar signature, which ASW aircraft could exploit, but not if they can in turn be engaged by SAMs based afloat or ashore. A German-designed Argentine submarine made several unsuccessful attacks against British aircraft carriers during the Falklands War. Large quantities of ASW munitions were used against it, without scoring a hit.¹²⁶ When the Iranians took their first Soviet-designed Kilo-class submarine out for its maiden voyage several years ago, the U.S. Navy is said to have quickly lost track of it.¹²⁷

Treated separately, these weapons are not only annoying but also potentially deadly. Deployed together, they produce synergies that can be difficult to crack. These synergies become even more deadly when the "terrain" favors the defense (i.e., in constricted waters such as the Persian Gulf). Bottom mines are difficult enough to find and disable when one is not liable to attack. If the minefield is covered by fire, if it lies within the lethal range of shore-based antiship missiles, the work could be impossible. A maximum effort by a task force of heavily armed surface vessels may with difficulty defend mine hunters

125. Robert Burns, "Ex-General Says Wargames Were Rigged," Associated Press, August 16, 2002.

126. John Morgan, captain, U.S. Navy "Anti-Submarine Warfare: A Phoenix for the Future," *Undersea Warfare*, Vol. 1, No. 1 (Fall 1998), <http://www.chinfo.navy.mil/navpalib/cno/n87/usw/autumn98/anti.htm>. Morgan warns, "Finally, ASW is hard. The *San Luis* operated in the vicinity of the British task force for more than a month and was a constant concern to Royal Navy commanders. Despite the deployment of five nuclear attack submarines, twenty-four-hour-per-day airborne ASW operations, and expenditures of precious time, energy, and ordnance, the British never once detected the Argentine submarine. The near-shore regional/littoral operating environment poses a very challenging ASW problem. We will need enhanced capabilities to root modern diesel, air-independent, and nuclear submarines out of the 'mud' of noisy, contact-dense environments typical of the littoral, and be ready as well to detect, localize, and engage submarines in deep water and Arctic environments." Ibid.

127. I have heard this from several U.S. naval officers. Iran apparently began operating its first Kilo submarine in 1993. At the time Vice Admiral Henry Chiles, commander of the Atlantic Fleet's submarine force did not consider the Iranians to be a "serious military threat." He did expect that "a year from now I think they'll have a greatly improved military capability." Quoted in Robert Burns, "Admiral Calls Iranian Subs a Potential Threat to U.S. Interests," Associated Press, August 4, 1993.

working close to shore against antiship missile attack, but this will surely produce a signature that will attract the attention of surveillance assets ashore and perhaps draw the combined attention of surface, subsurface, and land-based assets.¹²⁸ The point here is not that the U.S. Navy could not ultimately take a competent littoral defense force apart. It probably could. The point is that it could take time, and may impose considerable costs.

Thus far, the United States has been fortunate in that it has encountered adversaries with perhaps only one of these three capabilities—air, land, or sea. And even when the adversary has had one of these specializations, it has not necessarily been the best of breed. Serbian air defense troops were extremely good, but their best weaponry was at least a generation old, maybe older. The Somalis fought with great tenacity and, candidly, drove the United States from the country. But they were neither as well armed nor as well trained as the al-Qaeda troops in the Shah-e-Kot valley during Operation Anaconda in Afghanistan. The al-Qaeda troops were still not as well armed as some adversaries that U.S. forces might encounter, and there were probably not more than a few hundred of them in the fight. Finally, the U.S. Navy's littoral engagements in the Persian Gulf have been fought under fortuitous conditions. Iraq did not take littoral warfare especially seriously. The Iranian navy suffered because it had lost many of its officers in the 1979 revolution and arguably had never fully focused on the littoral mission. The shah of Iran had delusions of grandeur and sought a blue water navy.

One cannot predict whether the United States will encounter an adversary with the full panoply of capabilities that make possible the contested zone, and the United States need not take up the challenge if it is presented with such an array. A decade from now, however, it seems plausible that China and Iran will have mastered a range of air, sea, and land combat capabilities. U.S. Naval authorities are already nervous about Iran's capabilities.¹²⁹ North Korea is probably quite good in the arena of close, ground combat, but only mediocre in the

128. Iraq's naval tactics were not adept during Operation Desert Storm: "Fortunately for the allies, the Iraqis had failed to activate many of the weapons, and chose not to cover the minefields with aircraft, naval vessels, artillery, or missiles. More expertly laid and defended mines would have sunk ships and killed sailors and marines." Marolda and Schneller, *Shield and Sword*, p. 267.

129. "U.S. Alarmed by Growing Iranian Might: U.S. Navy Commander," Agence France-Presse, February 4, 1996. Vice Adm. Scott Redd, then commander of the U.S. Fifth Fleet, declared, "Iran now poses a threat to navigation and aircraft flying over the Gulf." Referring to then new Iranian sea-launched antiship missiles he noted, "From a military point of view, I have to warn of the new threat, which is represented by Iran's ability to launch missiles from all directions and not only from its shores." Quoted in *ibid.*

realm of air defense and littoral warfare.¹³⁰ Russia will probably be the source of most of the best anti-aircraft systems sold around the world to possible U.S. adversaries, though China will surely enter that market as its systems improve. Russia will also produce and sell deadly weapons for littoral warfare. It is likely that Russia itself will remain a master of anti-air warfare, will develop (or arguably redevelop) mastery in littoral warfare, but will have problems generating land power, especially infantry power.

Implications

Military strategy that fully exploits command of the commons is not complicated in principle. From time to time, even a policy of selective engagement may necessitate offensive engagements; indeed they may necessitate fights in the contested zone. The main point is that time is usually on the side of the United States. U.S. military power resides mainly in North America, where it is largely safe from attack. Command of the sea allows the United States to marshal its capabilities, and those of its allies, from around the globe to create a massive local material superiority.

Command of the commons also permits the isolation of the adversary from sources of political and military support, further increasing the U.S. margin of superiority and further allowing the passage of time to work in favor of the United States. This is especially useful against adversaries who depend on exports and imports. U.S. allies have large numbers of good, small-to-medium, naval surface combatants, especially appropriate for maintaining a blockade.¹³¹ These ships play important roles in the worldwide war on terror.¹³²

130. North Korea exports several vessels designed for coastal operations, including miniature submarines. It has sold several such vessels to Iran. See Bill Gertz, "N. Korea Delivers Semi-submersible Gunships to Iran," *Washington Times*, December 16, 2002.

131. Britain, France, Germany, and Italy together operate 99 destroyers and frigates. The U.S. Navy operates 117 cruisers, destroyers, and frigates. European surface combatants are smaller and less capable than those of the U.S. Navy, but they permit the surveillance and control of a great deal of additional sea space. Moreover, these navies either possess significant littoral combat experience, such as Britain, or build some of the world's most lethal littoral weapons, such as France (antiship missiles) and Italy (bottom mines). IISS, *The Military Balance, 2002–2003*, country entries.

132. Michael R. Gordon, "Threats and Responses: Allies—German and Spanish Navies Take on Major Role Near Horn of Africa," *New York Times*, December 15, 2002, p. 36. Task Force 150 is an 8 ship flotilla conducting patrols in the Indian Ocean in search of al-Qaeda operatives. Its first commander was German, and its second was Spanish. This is part of a larger multinational operation in the region, which includes ships from Australia, Canada, France, Germany, Greece, Italy, Japan, the Netherlands, Spain, the United Kingdom, and the United States. "Greece Contributes Frigate to Anti-Terrorism Campaign," Xinhua news agency, March 12, 2002.

They played important roles in the isolation of Iraq, which was under economic embargo from 1990. Though Iraq illegally exported some oil and illegally imported some weapons and military technology between 1990 and 2003, its military capability suffered greatly in these years. It failed to modernize in any significant way and was prevented from recovering its ability to invade its neighbors. The erosion of Iraq's conventional combat power contributed to U.S. confidence as it considered an invasion of Iraq in the autumn of 2002. Once the third Persian Gulf War began in March 2003, it rapidly became clear that Iraqi conventional weapons had on the whole not improved since 1991. Iraqi tactics improved slightly, in part because U.S. forces could not avoid the contested zones. Over the last decade, the U.S. Navy and allied navies quietly helped to starve Iraq's army and air force. Had they not done so, U.S. casualties in the 2003 war in Iraq would surely have been higher.

Command of space allows the close study of the adversary and the tailoring of U.S. capabilities to fight that enemy, while command of the air permits a careful wearing away of the adversary's remaining strengths. There is little that an adversary can do to erode U.S. military capabilities or political will unless the United States engages on the enemy's terms. But the United States does not need to be in any rush to launch attacks into enemy-held real estate. Instead it can probe an adversary's defenses, forcing it to elicit the information that U.S. forces need. U.S. probes can also lure the adversary into using up some of its scarce and difficult-to-replace imported munitions. At the appropriate time, if necessary, quantitatively and qualitatively superior U.S. and allied forces can directly challenge the much-weakened adversary. The fight may still prove difficult, but the United States will have significantly buffered itself against the perils of the contested zone.

In land warfare, U.S. military capabilities are particularly lethal when defending against adversaries who have to move large amounts of heavy military equipment and supplies forward over long distances. Command of space, and command of the air, permit the United States to exact an immense toll on advancing ground forces and the air forces that support them. This means that the United States should have a good chance of deterring regional aggressors, and successfully defending against them in the event that deterrence fails, if it has some forces in the theater and is permitted to mobilize more forces in a timely fashion. Command of the sea helps the U.S. keep forces forward deployed, even in politically sensitive areas, and reinforce those forces quickly. Rapid response still, however, depends on good political relations with the threatened party. On the whole, states worry more about proximate threats

than they do about distant ones. But the tremendous power projection capability of the United States can appear to be a proximate threat if U.S. policy seems domineering. So command of the commons will provide more influence, and prove more militarily lethal, if others can be convinced that the United States is more interested in constraining regional aggressors than achieving regional dominance.

Command of the commons and the enduring contested zones mean that allies remain useful, more useful than current U.S. strategic discourse would suggest. The allies provide the formal and informal bases that are the crucial stepping stones for U.S. power to transit the globe. The military power of these allies contributes modestly to maintenance and exploitation of command of the commons, but can contribute significantly to the close fights and their aftermath. The NATO allies, for example, have great expertise in sea mine clearance and possess many mine hunters; Britain and France together have nearly half again as many mine-hunting vessels as the U.S. Navy.¹³³ Several of the allies have good ground forces, and perhaps most critically, good infantry that seem able to tolerate at least moderate casualties. The British Army and Royal Marines have 43 infantry battalions—all professionals—nearly half as many as the United States; France has another 20.¹³⁴ Given the relative scarcity of U.S. infantry, allied ground forces are also particularly useful in the postconflict peace-enforcement missions necessary to secure the fruits of any battlefield victory.

IMPLICATIONS FOR GRAND STRATEGY

The nature and scope of U.S. military power should affect U.S. grand strategy choices. U.S. military power is very great; if it were not, no hegemonic policy would be practical, but that does not mean that every hegemonic policy is practical. Today, there is little dispute within the U.S. foreign policy elite about the fact of great U.S. power, or the wisdom of an essentially hegemonic foreign policy. Even before the September 11 terrorist attacks, the foreign policy debate had narrowed to a dispute between primacy and selective engagement, between a nationalist, unilateralist version of hegemony, and a liberal, multilateral version of hegemony. U.S. command of the commons provides an impressive foundation for selective engagement. It is not adequate for a policy of primacy.

133. IISS, *The Military Balance, 2002–2003*, country entries.

134. *Ibid.*

Primacy, in particular, depends on vast, omnicapable military power, which is why the Bush administration pushes a military agenda that aims self-confidently to master the “contested zones.”¹³⁵ President Bush and his advisers believe that the United States need not tolerate plausible threats to its safety from outside its borders. These threats are to be eliminated. Insofar as preventive war is difficult to sell abroad, this policy therefore requires the ability to act alone militarily—a unilateral global offensive capability. The effort to achieve such a capability will cause unease around the world and will make it increasingly difficult for the United States to find allies; it may cause others to ally against the United States. As they do, the costs of sustaining U.S. military preeminence will grow. Perhaps the first problem that primacy will create for U.S. command of the commons is greater difficulty in sustaining, improving, and expanding the global base structure that the United States presently enjoys.

Current Pentagon civilian leaders understand that they do not yet have the military to implement their policy. They hope to create it. For political, demographic, and technological reasons, the close fights in the contested zones are likely to remain difficult—especially when the adversary is fighting largely in defense of its own country. Senior civilian and military planners in the Pentagon seem to believe that somehow the technological leverage enjoyed in the commanded zone can be made to apply equally well in the contested zone if only the Pentagon spends enough money. This seems a chimera. Although one doubts that the United States would lose many fights in the contested zones, the costs in lost U.S., allied, and civilian lives of one or more such fights could be great enough to produce significant political problems at home and abroad for an activist U.S. foreign policy of any kind.

Selective engagement aims above all to create conditions conducive to great power peace on the assumption that many other benefits flow from this blessing, the foremost being U.S. security. In return for their cooperation, others get U.S. protection. Command of the commons makes this offer of protection credible. Their cooperation, in turn, makes the protection easy for the United States

135. The Pentagon has set the goals of “defeating anti-access and area denial threats,” and “denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strikes . . . against critical mobile and fixed targets at various ranges and in all weather and terrains.” *Quadrennial Defense Review Report*, p. 30. Moreover, “Likely enemies of the United States and its allies will rely on sanctuaries—such as remote terrain, hidden bunkers, or civilian ‘shields’—for protection. The capability to find and strike protected enemy forces while limiting collateral damage will improve the deterrent power of the United States and give the president increased options for response if deterrence fails.” *Ibid.*, p. 44.

to deliver. Great powers typically chafe at such dependency relationships, so U.S. diplomacy must be particularly adroit to sustain their willingness to cooperate. Command of the commons gives the United States a tremendous capability to harm others. Marrying that capability to a conservative policy of selective engagement helps make U.S. military power appear less threatening and more tolerable.

Command of the commons creates additional collective goods for U.S. allies. These collective goods help connect U.S. military power to seemingly prosaic welfare concerns. U.S. military power underwrites world trade, travel, global telecommunications, and commercial remote sensing, which all depend on peace and order in the commons. Those nations most involved in these activities, those who profit most from globalization, seem to understand that they benefit from the U.S. military position—which may help explain why the world’s consequential powers have grudgingly supported U.S. hegemony.

There is little question that the United States is today the greatest military power on the planet, and the most potent global power since the dawn of the age of sail. This military power is both a consequence and a cause of the current skewed distribution of power in the world. If the United States were not the dominant economic and technological power, it would not be the dominant military power. The fact of U.S. military dominance is also a consequence of choices—the choice to spend vast sums on armaments and the choice of how to spend those sums. Nevertheless, the immense U.S. military effort has not produced military omnipotence, and it probably cannot. Policymakers need a more nuanced understanding of the favorable U.S. military position to exploit it fully and to ensure that foreign and military policy are mutually supporting.