

# What Weapons Do We Have and What Can They Do?

*Arma virumque cano, I sing a song of arms  
and the man*

—Virgil

“What Kinds of Guns Are They Buying for Your Butter” was the subtitle of a 1982 “People’s Guide to National Defense.” It needs updating 25 years later. This essay cannot offer a comprehensive catalogue of U.S. weaponry; its goal is to outline what every citizen should know about the range and capabilities of our arsenal.

The discussion will consider capabilities by service excepting nuclear weapons. This is not to say that nuclear weapons are no longer a major instrument in America’s repertoire. On the contrary, it must be borne in mind that the U.S. possesses almost 10,000 nuclear warheads, more than half of which are currently active and deployed.<sup>1</sup>

The Air Force controls 4,237 warheads. At least 320 are to be delivered by plane (B-52s or B-2s); the rest are in missile silos at some 18 locations in 12 states in the continental U.S. and in six European countries.<sup>2</sup> The Navy has 2,116 nuclear missiles located on submarines (with up to one-third on patrol at any given time). An additional 1,450 warheads are configured for cruise missile delivery and controlled by the Army.

There is currently an agreement with Russia to mothball but not to destroy between 1,700 and 2,200 missiles by midnight, 31 December, 2012.<sup>3</sup> Also, the U.S. is currently conducting research on new nuclear weapons.<sup>4</sup> There is also research being conducted about what is required to preserve our capabilities in space although thus far there has been a sense that space should not be “militarized.”

## Armaments as an Orchestra

America’s *song of arms and the man* is a complex orchestration of soldiers, airmen, marines, and sailors; of tanks and aircraft and missiles; of varying organizational schemes, varying operational techniques and doctrines—all of which are orchestrated to protect the nation and its interests. “Orchestration” is possibly more important than the instruments themselves. Thus, the orchestra will be used as a metaphor in my effort to describe and explain America’s armaments.

A typical symphony orchestra consists of four groups: woodwinds, brass, percussion, and strings. Some are core instruments used in al-

most all presentations; others are auxiliary. A symphony orchestra may have over 100 instruments, a chamber orchestra as few as 20.

It is important to understand the instruments (weapons) themselves but one must also understand how the notes each plays fit together to create a composition. Similarly, to understand weapons one must understand how they are orchestrated in what we call operations.

America’s arms can be categorized into land-warfare systems; sea-warfare systems; and air-warfare systems. Thus, the land forces (Army and Marines<sup>5</sup>) may represent brass and percussion, sea forces (Navy) the strings and air power (Air Force) the woodwinds.

Popularly speaking, the Army’s primary role is to *fight and win the nation’s wars*. More prosaically, it is to seize and control territory.

The Navy is organized, trained, and equipped for on-the-sea and from-the-sea operations. Its non-nuclear missions include deterrence, command-of-the-sea, sealift and sustainment, land seizure, coastal defense, force-entry, and amphibious assault.

Rounding out the nation’s maritime capability is the Marine Corps, serving the role of naval infantry with the mission of providing the nation an amphibious force-in-readiness and from-the-sea forcible entry capability (expeditionary and maritime invasion force capacity).

The Air Force has responsibility for defending against air attack, gaining and maintaining global air supremacy, the defeat of enemy air forces, the conduct of space operations,<sup>6</sup> and the supply and support of troops projected abroad.

## “Brass and Percussion”—Land Power

Our land-warfare section is composed of U.S. Army and Marine Corps weapons systems—the instruments we typically use to introduce “our” national song of arms onto the stages of foreign lands. To begin, we look at the big instruments that play the full-notes as part of any melody. The Army’s Big Five weapons systems are the Abrams tank, the Bradley fighting vehicle (also a tracked vehicle), the Apache and Blackhawk helicopters, and the Patriot missile system.

### *A Brief Description of the Big Five*<sup>7</sup>

By the end of 1991 the Army completed its initial Big Five fielding plan, with each weapon system having by that time been combat tested in the First Gulf War. The 1991

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**Table 1**

	Main Role	Major Capability	Size/Cost
M1 Abrams	Maneuver warfare (fire and movement)	120mm Main Gun	8,800 tanks/\$4.3 million per tank
M2/3 Bradley Fighting Vehicle	Maneuver warfare (fire and movement)	25mm Chain Gun	6,724 fighting vehicles/\$1.14 billion (total production line cost)
AH64 Apache	Aviation (aerial) fires	Hellfire Missile System; 2.75" rockets; 30mm Chain Gun	824 aircraft/\$14.5 million (original program cost)
UH60 Blackhawk	Troop and utility transport	Speed, lift capability, and agility; multiple armament configurations	1,463 aircraft/\$280 million per aircraft (in 1996 dollars)
Patriot Missile System	Air defense	Interceptor hit-to-kill missile system	1,159 interceptors/\$6.9 billion (total production cost)

production line contained over 100 battalion/squadron sets of Abrams M1 tanks, 69 battalion sets of Bradley fighting vehicles, 13 battalion equivalents of the Multiple Launch Rocket System (MLRS), 26 AH-64 attack helicopter battalions, and 12 Patriot air defense system battalions (a Patriot "battalion" equating to four launchers, each launcher containing 12 rockets). (See Table 1.)

The Marine Corps makes use of some of the same Big Five as well as older versions of these systems which have been modified for Marine Corps use. They also use (towed) howitzers (i.e., cannon and rocket launchers) and the Super-Cobra Attack and CH-53 cargo helicopters.

I have already described the major weapons used by the land forces. To provide more details I invite you to go to my web site, [www.thinkbeyondwar.com](http://www.thinkbeyondwar.com), where you will find a series of tables providing details and also photos.

Combat troops include Artillery who wield rockets and missiles, Armor who drive tanks, Aviation which uses both fixed- and rotary-wing aircraft, Infantry, and Special Forces. They are supported by Combat Support troops such as Military Police, Military Intelligence, Signal Corps, Civil Affairs, and Chemical Corps and by Combat Service Support troops such as the following Corps: Medical, Transportation, Judge Advocate General (legal support), Acquisition, Ordnance, Quartermaster, Finance, Adjutant General (personnel human resource services), and Chaplain. The "tooth to tail" ratio (i.e., number of support corps personnel compared to combat arms personnel) is widely acknowledged to be roughly 1:10, with 10 supporters per every one "shooter."

## Woodwinds: Air Power

Fixed-wing aviation forces<sup>8</sup> of the Air Force, Navy, and Marine Corps include around 1,300 fighters, 200 bombers, and 690 support aircraft (airlifters and tankers).<sup>9</sup> This force is capable of rapid employment worldwide. Fighter/attack aircraft operate from both land and aircraft carriers. Bombers can fly from U.S. bases anywhere on the globe. Specialized aircraft perform functions such as suppression of enemy air defenses, reconnaissance, surveillance, and combat rescue. In addition the military operates a variety of transports, aerial-refueling aircraft, helicopters, and other support aircraft.

The Air Force, Navy, and Marine Corps keep about a third of their aircraft out of the country at all times. Carriers provide the ability to carry out combat operations independent of access to regional land bases. In addition, 38 countries currently play host to U.S. airbases.<sup>10</sup>

Influenced by the prominent role of airpower in the 1991 Gulf War, national security strategy still places a great deal of importance on the use of airpower. The Kosovo Campaign of 1999–2000 served as an important exemplar of both the compelling power of air power and of the limited returns from a too heavy an reliance on an airpower-centric national/multinational security strategy.

Operation ALLIED FORCE (the Kosovo Campaign) was NATO's plan to use air strikes to force President Slobodan Milosevic to stop the ethnic cleansing he ordered in Kosovo. NATO leaders agreed to a two-day air strike, convinced that Milosevic would comply just as he had in Bosnia four years earlier. When Milosevic refused, the air campaign was gradually escalated into an around-the-clock operation. Seventy-eight days later, on June 3, 1999, Milosevic finally surrendered to NATO demands.<sup>11</sup> The debate over whether the use of allied airpower proved itself not only the necessary but also the sufficient force in compelling Milosevic's acquiescence continues to this day, with airpower enthusiasts touting Operation ALLIED FORCE as proof-positive of the decisiveness of airpower and critics arguing otherwise

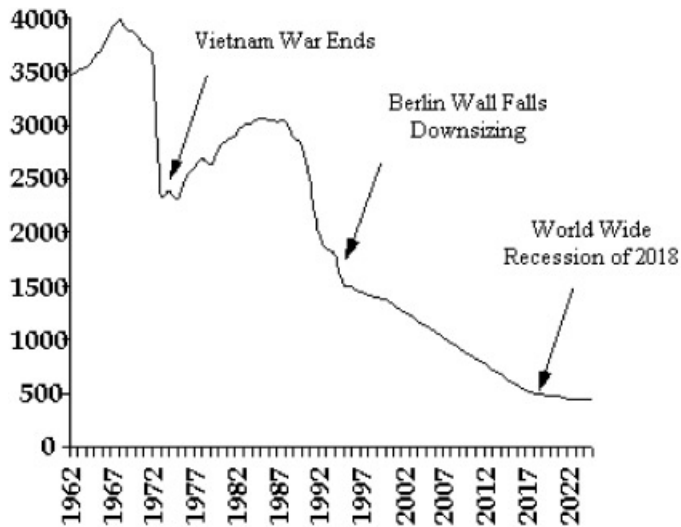
Over the past two decades we have so outstripped the airpower of any potential adversary that it is unlikely any nation could afford to build a capability to stalemate U.S. airpower.<sup>12</sup> The question is when is enough enough? Given the high price (an estimated \$10.91 billion total program cost—\$9.55 billion for the airframes and \$1.36 billion for engines) of our most technologically elegant aircraft, the F-22 Raptor, DOD budget requests call for careful examination. Do we have the right weapons for our current needs? Do we have weapons we do NOT need?

Figure 1 (from a "futures" piece) represents a possible fighter force of only 450 by the year 2025.<sup>13</sup> It is likely that today's fighter force will be retired by 2018, that the F-22 Raptor will begin entering retirement in 2025, and that there will be further reductions in the bomber fleet. These actions could result in a 2025 triad of conventional aerospace strike forces one fourth of the size of the 1996 force and one half of today's force.<sup>14</sup>

With the notable exception of the Reagan Defense Bubble (surge) of the 1980s, we have witnessed a steady decline in the size of the U.S. fighter aircraft fleet with a continued decrease projected out to the year 2022. Such projections gain validity from the exponential growth in the cost of production and life-cycle support costs of state-of-the-art fighter aircraft and from an anticipated decline in defense procurement budgets.

An emphasis on protracted land-based operations of an unconventional and irregular sort does not necessarily mean an

**Figure 1**  
**Number of U.S. Fighters—Future**  
**Projections**



end of history for airpower. It will continue in its traditional support roles (i.e., ground attack, close air support, fighter, bomber) and some new already emerging roles (i.e., expeditionary operations, unmanned aerial operations).

America's current "Big Five" aircraft are: the F-22 Raptor (fighter a/c; an over \$10 billion program); the F-16 Fighting Falcon (close air support; \$26.9 million per aircraft); F/A 18 Hornet (fighter and attack; \$60 million per aircraft); the F-117 Stealth (fighter; \$122 million per aircraft); and the B-1B (bomber; over \$200 million per aircraft).<sup>15</sup> For more details about and for photos of U.S. aircraft please refer to [www.thinkbeyondwar.com](http://www.thinkbeyondwar.com).

## The Strings: Sea Power

### Carriers

The United States' favored instrument of national power—its primary orchestral section (strings)—has been its Navy. "First-Chair" of that section has, since the loss of the battleship fleet at Pearl Harbor, been the carrier fleet. It was President William Jefferson Clinton who demonstrated this when he said aboard the USS Theodore Roosevelt:

"When word of a crisis breaks out in Washington, it's no accident that the first question that comes to everyone's lips is: 'Where's the nearest carrier?'"

U.S. naval prowess centers on the carrier. Its large Nimitz class carriers represent "4.5 acres of sovereign and mobile American territory." Adding the deck space of the rest of the Navy's some two dozen carriers, one arrives at a total of 75 acres. Indeed, the U.S. has twice as many aircraft carriers as the rest of humanity combined, and has about five times the total deck space as all other nation's combined.<sup>16</sup>

The Table 3 series at [www.thinkbeyondwar.com](http://www.thinkbeyondwar.com) details some of the major and minor instruments of America's "string section."

Carriers are deployed as Aircraft Carrier Battle Groups (CVBG). These consist of a carrier, its aircraft, and various escorts—cruisers, destroyers, frigates, attack submarines, and logistics ships.<sup>17</sup> At any given time, three CVBGs and three Air-

craft Readiness Groups (ARGs) are deployed and assigned to a commander in an overseas area, one to the Fifth fleet in South-west Asia, one to the Sixth in the Mediterranean and one to the Seventh in the Western Pacific.<sup>18</sup>

### Surface Combatants

Surface combatants—cruisers, destroyers, and frigates—provide the Navy with a range of capabilities. CRUISERS, are supposed to be anti-air warfare (AAW) specialists; FRIGATES, focus on anti-submarine warfare (ASW); and destroyers are supposed to be a mixture of cruiser and frigate. In practice, these are false distinctions; the difference between these three kinds of surface warfare ships has traditionally been based more on ship size, size and complement of the crew, and armaments.

### Submarines

The missions for the four classes of submarines roughly translate into six: Peacetime Engagement<sup>19</sup>; Surveillance and Intelligence<sup>20</sup>; Special Operations<sup>21</sup>; Precision Strike<sup>22</sup>; Battle Group Operations<sup>23</sup>; and Sea Denial.<sup>24</sup> The United States has 18 commissioned ballistic submarines of the Ohio class with four scheduled for conversion into guided (cruise) missile projection platforms. The United States currently has two Virginia class attack submarines in commission, two more under construction, and another two on order. The U.S. has two attack submarines of the Seawolf class in commission and maintains 49 submarines of the Los Angeles class in commission (i.e., in active service and available for use).<sup>25</sup>

### Amphibious Ships

Amphibious ships are designed to support assault from the sea against defended positions. They include several types of vessels, many of which were developed during World War II. The United States maintains the largest and most capable amphibious force in the world, with nine amphibious warfare ships current "underway" (i.e., deployed).<sup>26</sup>

### Mine Warfare

Mine Warfare is an essential capability for opening and maintaining sea-lanes and to dominate seacoasts (the littorals).

The new Mine Warfare Command manages both sea and land mines. In response to a new international treaty banning all landmines signed by 155 countries but which the U.S., has not signed, the U.S. announced a new mine policy in February 2004.

Under the new policy, the United States has promised to:<sup>27</sup>

- eliminate all persistent landmines from its arsenal;
- continue to develop non-persistent (self-destructing/self-deactivating) landmines that will not pose a humanitarian threat after use in battle;
- continue to research and develop enhancements to the current self-destructing/self-deactivating landmine technology in order to develop and preserve military capabilities that address the United States transformational goals;
- seek a worldwide ban on the sale or export of all persistent landmines;
- get rid of its non-detectable mines within one year;
- only employ persistent anti-vehicle mines outside of Korea between now and 2010, if needed, when authorized by the president;
- not use any persistent landmines—neither anti-personnel nor anti-vehicle—anywhere after 2010;

- begin the destruction within two years of those persistent landmines not needed for the protection of Korea;
- seek a 50% increase in the U.S. Department of State's portion of the U.S. Humanitarian Mine Action Program over Fiscal Year 2003 baseline levels to \$70 million a year.

## Global Commitments

The landwar forces of the United States are located in nearly 130 countries worldwide and involved in the performance of intervention tasks ranging from traditional combat operations (major combat operations, or MCO) to peace operations, to security assistance activities. Deployment of Army forces is currently maintained on a 12-month (for Iraq, most recently adjusted to a 15-month unit rotation) "boots on the ground" unit rotation, allowing for a 12-month "stabilization" back at home station. If need be (i.e., during a spike in crises), the U.S. Army can return units back into action in as little as four months after redeployment, leaving only enough time to reset the force—rest the troops and fix, overhaul, and replace equipment and platforms.

Current overseas commitments place nearly 40,000 U.S. Navy sailors at sea or abroad. Of the Navy's 12 aircraft carrier strike groups (CSGs) two were deployed in January 2006, with another five in pre-deployment training, and five receiving maintenance or refitting.

Approximately one-third of U.S. Air Force airpower is at any given time committed to operations, with the remainder of the force in either pre-deployment or the refit phase of a three-phase cycle.

The shocking and simple fact is clearly one of overstretch. The current capabilities and production and sustainment capacity of the United States is currently pressured to the limit, and perhaps beyond, with that unknown breaking point perhaps being just around the corner. Unfortunately, the saber-rattling coming from the Iranian Republic may be a warning sign of the unfortunate effects of overstretch.

## Orchestrating the Brass, Percussion, and Woodwinds

"AirLand Battle"<sup>28</sup> drove military doctrine until the late 1990s. It was designed to counter the Warsaw Pact's numerical superiority by stressing the need to "fight outnumbered (3:1) and win" the first battle of the next war. This required a ready peacetime force with the tank as the most important weapon.

It also required that commanders seize the initiative, move faster and farther than the enemy, exploit depth through operations extending even into space, and, crucially, *synchronize* the combat power of ground and air forces.

Doctrine drives military organization and procurement. The Army's Big Five weapons and the major Air Force weapons were specifically designed to support this doctrine.<sup>29</sup>

## Conclusion

Great orchestras are due to a "synergy" between instruments, their musicians, and their conductor. This is also true when it comes to differentiating between good, better, and the best orchestrations of national military power. One reason for the quality of the U.S. military has surely been its technological

innovativeness. Perhaps equally importantly (at least since Goldwater Nichols), we have orchestrated our military power in a joint (inter-service) way.

Still, the twenty-first century may introduce a new musical score, with a different tune, tone, and tempo which will require new capacities.

Adaptability will be essential to maintaining an orchestra/military's greatness. So far, the new security musical score has not made the tank, the carrier, or fighter aircraft obsolete. Nor has the new environment diminished the importance of the Soldier, the Marine, the Sailor, or the Airman. That said, the new score clearly calls for some new instruments, some new kinds of musicians and some experimentation with new orchestral arrangements. America's competitor philharmonics (enemies, threats) have already begun their transitions. Whose new arrangement will prove to sing a better song of arms and the man remains to be seen, but it is important to remember that any ensemble that stagnates, playing the same old scores, can find itself overly enamored with its own voice. Just as music exists to serve a human purpose beyond its own musicology; so does the military.

New military arrangements by all four services are developing in Afghanistan, Iraq, and the littorals. There is an emphasis on joint operations, on expeditionary operations; and on modular "plug-and-play" capability.<sup>30</sup> Service "transformations" are made evident by the new labels the armed services are giving their mission:

- U.S. Army<sup>31</sup> and U.S. Marine Corps<sup>32</sup>: Network-Centric Operations<sup>33</sup>
- U.S. Air Force<sup>34</sup>: Aerospace Expeditionary Force Operations<sup>35</sup>
- U.S. Navy<sup>36</sup> and Maritime: "From the Sea . . ."  
Operations<sup>37</sup>

Whether these new designs are necessary and appropriate is a question that citizens must ask and answer. Whether existing weaponry is necessary and appropriate is also a question that citizens must ask and answer. The military takes initiatives and gives advice. The ultimate "decider" however, is the audience, the voters.

The first rule of an orchestra is a simple but important one . . . *all must follow the direction of the conductor—the maestro*. This same rule holds true for the orchestration of military operations and war. The central question, however, is: *Who is the maestro—the rightful conductor?*

The American people, that's who. There is an adage that states, "The nation that draws too great a distinction between its scholars and its warriors will have its thinking done by cowards and its fighting done by fools." Equally foolhardy is the nation that abdicates its command and control over the instruments of national power to its military power through simple ignorance about those instruments—their capabilities and their limitations. In a democratic republic, the *song of arms* must be conducted by its citizens through their elected representatives. Healthy and effective subordination of the military to civilian authority depends on a public that knows the instrumentation of war and is, therefore, empowered to . . . *conduct*.

I urge you to visit my web site for more information and to consult the short bibliography below for more resources so that we will develop an American people better able to effectively, rightly, and justly conduct the nation's *song of arms*.

## Notes

1. Source: "U.S. Nuclear Weapons Enduring Arsenal," available at <http://nuclearweaponarchive.org/Usa/Weapons/Wpngall.html>. Accessed

Feb. 2007. At the beginning of 2006 the U.S. nuclear arsenal was composed of eight types of nuclear warheads (in 13 variant mods) on active duty.

Some 5,736 warheads of these active warheads were operationally deployed, another 3,637 were either listed as spares or are part of the responsive force. One of the active warheads (the W87) is not currently deployed but will be redeployed later in the decade. There are also 589 warheads of two types that are inactive, these are not kept in operational condition and one of these warheads (the W84) is slated to be completely dismantled.

2. The highest concentration is at the Strategic Weapons Facility Pacific in Bangor, Washington, which is home to more than 2,300 warheads—probably the most nuclear weapons at any one site in the world. At any given moment, nearly half of these warheads are aboard ballistic-missile submarines in the Pacific. See, “Experts Depict vast 12-State Nuclear Inventory Stretching from Georgia to Puget Sound,” Natural Resources Defense Council available at [www.nrdc.org/media/pressreleases/061109.asp](http://www.nrdc.org/media/pressreleases/061109.asp). Accessed Feb. 2007.

3. The only strategic arms treaties still in force between the U.S. and the Russian Federation is the Moscow Treaty on Strategic Offensive Reductions (also called “the Moscow Treaty,” the Strategic Offensive Reductions Treaty, or SORT) and the START I treaty, which will expire in December 2009.

4. In the FY2005 budget congress authorized \$36.6 million for two new nuclear weapons programs—the Robust Nuclear Earth Penetrator (RNEP), and the Advanced Concepts Initiative (ACI). The RNEP was intended to explore the design of a new “bunker busting” warhead, while the ACI explored other weapons concepts. Poor reviews of the RNEP concept led to the deletion of funding from the FY2006 budget. Source: Jonathan Medalia, *Nuclear Weapons: The Reliable Replacement Warhead Program*, CRS-RL32929, Congressional Research Service, Library of Congress, 9 March 2006.

5. It must be noted that by tradition and doctrine, the U.S. Marine Corps is an amphibious capability. That amphibious mission and configuration rounds out the nation’s maritime military capacity and landpower capacity, and as such bridges the U.S. Army and U.S. Navy.

6. The U.S. Air Force describes the United States policy and strategy for space operations as a doctrine of “Counterspace Operations.” According to the United States Air Force, U.S. Air Force counterspace operations are the ways and means by which the Air Force achieves and maintains space superiority. Space superiority provides freedom to attack as well as freedom from attack [AFDD 1]. The Air Force executes the counterspace function to protect U.S. military and friendly space capability while denying space capability to the adversary, as situations require. See, Air Force Doctrine Document (AFDD 2-2.1), dated August 2004 available at [www.dtic.mil/doctrine/jel/service\\_pubs/afdd2\\_2\\_1.pdf](http://www.dtic.mil/doctrine/jel/service_pubs/afdd2_2_1.pdf). Accessed Feb. 2007.

7. Sources include the Federation of American Scientists web site, available at [www.fas.org](http://www.fas.org), accessed Feb. 2007, and the U.S. Army Center for Military History available at [www.army.mil/cmh/](http://www.army.mil/cmh/), accessed Feb. 2007.

8. Consistent with the long-standing U.S. defense policy and force planning doctrine of maintaining “redundancy” across the armed services, all four major armed services, including the U.S. Army, maintains a fleet of fixed-wing aircraft. Given that the U.S. Army’s compliment is limited to low numbers and intelligence and general purpose/support roles, U.S. Army fixed-wing aircraft are not detailed in this description of U.S. airpower.

9. See “The Long Term Implications of Current Defense Plans,” Congressional Budget Office Report (dated 2003) available at [www.cbo.gov/ftpdocs/40xx/doc4010/01-14-DefenseStudy.pdf](http://www.cbo.gov/ftpdocs/40xx/doc4010/01-14-DefenseStudy.pdf), accessed Feb. 2007.

10. Source: Globemaster, available at <http://www.globemaster.de/bases.html>, accessed Feb. 2007.

11. United States General Accounting Office, *Kosovo Air Operations: Need to Maintain Alliance Cohesion Resulted in Doctrinal Departures*, July 2001 (GAO-01-784).

12. For a good roadmap to more detailed qualitative and quantitative analyses relating to the power dominance of U.S. airpower, see “The Global Airpower Balance,” (a RAND study), available at [www.rand.org/pubs/research\\_briefs/RB21/index1.html](http://www.rand.org/pubs/research_briefs/RB21/index1.html), accessed Feb. 2007.

13. Ibid.

14. “A New Defense Industrial Strategy,” *Air Power Journal*, fall 1993, 18–22; Brian Green, “McCain’s Rising Star,” *Air Force Magazine*, April 1996, 9. In this article, Senator John McCain states, “It’s obvious we’re not going to maintain the force structure that was anticipated when the two-MRC scenario was designed.”

15. All per unit production costs in FY98 dollars. See Federation of American Scientists available at [www.fas.org](http://www.fas.org), accessed Feb. 2007.

16. See “World-Wide Aircraft Carriers,” available at [www.globalsecurity.org/military/world/carriers.htm](http://www.globalsecurity.org/military/world/carriers.htm), accessed Feb. 2007. This web site also provides a very helpful and useful graphic comparison between the type—and size—of carriers maintained by the United States and other countries, such as the United Kingdom, Italy, France, Thailand, India, Brazil, South Korea, Spain, and Russia.

17. Ibid. Each Amphibious Ready Group (ARG) comprises a large-deck amphibious assault ship, two to four amphibious ships [transport dock ship or dock landing ship], and an embarked Marine expeditionary unit (special operations capable), or MEU(SOC). Battle Groups and ARGs may operate independently as naval expeditionary task groups, or they may coalesce into a single naval expeditionary task force (1 CVBG + 1 ARG).

18. Ibid. A carrier homeported in Japan provides further full-time presence in the western Pacific. The Navy deploys a CVBG and an ARG about three-fourths and four-fifths of the year, respectively, in the Mediterranean Sea; about three-fourths and one-half of the year, respectively, in the Indian Ocean; and on a nearly continuous basis in the western Pacific. During periods when neither a CVBG nor an ARG is present in a theater, one is located within a few days’ transit time of the region.

19. In peacetime the deployment of submarines in forward areas can demonstrate U.S. interest in the region. Alternatively, submarines are valuable if the president decides that interest should not be visible until a specific time. The long endurance and high transit speeds of nuclear submarines make them particularly attractive for rapid deployments to forward areas in such circumstances. Once on station, the attack submarine can be highly visible—in 1991 U.S. submarines conducted more than 200 port visits to 50 cities around the world—or invisible. The submarine can also be used to land small groups of special operations forces, or to conduct surveillance of an area, or carry out electronic surveillance to gain valuable intelligence. These submarines can also operate independently or in direct support of carrier battle groups, surface task forces, or with other submarines.

20. Submarines have been employed in various forms of surveillance and intelligence collection throughout the Cold War. Although the SSN force has been cut by nearly 40% since 1994, the volume of Intelligence, Surveillance, and Reconnaissance [ISR] mission tasking directed to the Submarine Force has more than doubled. The attack submarine has been a valuable platform for surveillance, intelligence, and warning. This capability comes from the submarine’s ability to enter an area to watch, listen, and collect information without being seen. See: “Submarine Warfare,” at Global Security Website, accessible at [www.globalsecurity.org/military/systems/ship/submarine.htm](http://www.globalsecurity.org/military/systems/ship/submarine.htm).

21. Submarines have long been used for special operations—carrying commandos, reconnaissance teams, and agents on high-risk missions. Most special operations by U.S. submarines are carried out by SEALs, the Sea-Air-Land teams trained for missions behind enemy lines. See: “Submarine Warfare,” at Global Security Website, accessible at [www.globalsecurity.org/military/systems/ship/submarine.htm](http://www.globalsecurity.org/military/systems/ship/submarine.htm).

22. U.S. attack submarines carry Tomahawk Land-Attack Missiles (TLAM), which provide the capability for long-range, precision strike with conventional warheads against shore targets. First used in combat in the 1991 Gulf War, U.S. Navy surface ships and submarines fired 288 land-attack variants of the Tomahawk during the Gulf War. Battleships, cruisers, and destroyers launched 276 of the missiles and 12 were launched from submarines—the USS Louisville (SSN 724), operating in the Red Sea launched eight missiles and the USS Pittsburgh (SSN 720), operating in the eastern Mediterranean, launched four missiles. See: “Submarine Warfare,” at Global Security Website, accessible at [www.globalsecurity.org/military/systems/ship/submarine.htm](http://www.globalsecurity.org/military/systems/ship/submarine.htm).

23. Attack submarines are integrated into Navy battle group operations. Typically, two attack submarines are assigned to each battle group. These submarines participate with the battle group in all pre-deployment operational training and exercises. While operating with the battle group, tactical control or command of the submarines is routinely shifted to amphibious group commanders, battle group commanders, destroyer squadron commanders, or even NATO commanders. Likewise, tactical control of NATO submarines is routinely shifted to U.S. commanders. See: “Submarine Warfare,” at Global Security Website, accessible at [www.globalsecurity.org/military/systems/ship/submarine.htm](http://www.globalsecurity.org/military/systems/ship/submarine.htm).

24. Stopping enemy surface ships and submarines from using the seas is an important mission for submarines. Attack submarines can perform sea denial missions in a variety of scenarios, from general war against a major maritime power, to blockages of enemy ports. See: “Submarine Warfare,” at Global Security Website, accessible at [www.globalsecurity.org/military/systems/ship/submarine.htm](http://www.globalsecurity.org/military/systems/ship/submarine.htm).

25. See the United States Navy Official Website available at [www.navy.mil/](http://www.navy.mil/), accessed Feb. 2007.

26. Ampibs currently underway (i.e., deployed) are: USS Tarawa (LHA 1)—Pacific Ocean; USS Bonhomme Richard (LHD 6)—Pacific Ocean; USS Nassau (LHA 4)—Atlantic Ocean; USS Denver (LPD 9)—Pacific Ocean; USS San Antonio (LPD 17)—Atlantic Ocean; USS New Orleans (LPD 18)—Atlantic Ocean; USS Rushmore (LSD 47)—Pacific Ocean; USS Harpers Ferry (LSD 49)—Pacific Ocean; and USS Germantown (LSD 32)—Pacific Ocean.

27. See “U.S. Landmine Policy,” available at [www.state.gov/t/pm/wra/c11735.htm](http://www.state.gov/t/pm/wra/c11735.htm), accessed Feb. 2007.

28. AirLand Battle Doctrine has continued to be the main musical score for U.S. land combat. Although developed for another scenario, it drove the victory of U.S. and Coalition forces in the 1990–1991 Gulf War (Desert Shield/Desert Storm), in which Iraq’s military was defeated in under 100 hours. A different strategy was used in the second conflict with Iraq which proved less successful and we are now engaged in quite a different kind of warfare, urban and insurgent, which calls for different training, support, and technology. In this case, new weaponry is not the central issue. The question is, though, whether we should continue the expense of maintaining the weaponry developed for AirLand battle.

29. The basic relationship between doctrine, weapons development and procurement, and force design is important to note. Basically, the “law of military force planning” is thus: when doctrine changes one should expect weapons to change as well. As with most rules and laws, the law of military force planning is often not as clean and not as adhered to in practice as one might expect.

30. The Army designed the traditional legacy divisions as the basic building blocks for a Cold-War Army. The 4th Infantry Division now contains four self-sustaining brigade combat teams, otherwise known as units of action, which are the basic building blocks for modular units. The legacy divisions were each unique in their designs and capabilities. That uniqueness is changing so that units will now mirror one another in their designs and capabilities. The new organization means that the 4th Infantry Division is at the forefront of the Army’s changes. The similarity produces what Gen. Peter Schoomaker, Army chief of staff, calls “plug and play,” which provides and gives the combatant commanders throughout the world the ability to tailor forces for a more effective fighting force. See, “4<sup>th</sup> Infantry Division Goes ‘Modular,’” available at [www.defenselink.mil/home/articles/2004-12/a121504a.html](http://www.defenselink.mil/home/articles/2004-12/a121504a.html), accessed Feb. 2007.

31. The cornerstone doctrinal manuals of the U.S. Army are Field Manual (FM) 1.0, The Army and FM 3.0, *Operations*. See, FM-1, accessible at [www.dtic.mil/doctrine/jel/service\\_pubs/fm1.pdf](http://www.dtic.mil/doctrine/jel/service_pubs/fm1.pdf) and FM 3.0 at [www.dtic.mil/doctrine/jel/service\\_pubs/fm3\\_0a.pdf](http://www.dtic.mil/doctrine/jel/service_pubs/fm3_0a.pdf).

32. For the definitive on U.S. Marine Corps doctrine, see MCDP 1-0, *Marine Corps Operations*, accessible at [www.dtic.mil/doctrine/jel/service\\_pubs/mcdp10.pdf](http://www.dtic.mil/doctrine/jel/service_pubs/mcdp10.pdf).

33. Network-centric warfare (NCW), also commonly referred to as network-centric operations (NCO), is a new military doctrine or theory of war pioneered by the United States Department of Defense. NCW/NCO is an emerging theory of war in the information age that seeks to translate an information advantage into a competitive warfighting advantage through the robust networking of well-informed geographically dispersed forces allowing new forms of organizational behavior. This “networking” utilizes information technology via a robust network to allow increased information sharing, collaboration, and shared situational awareness, which, theoretically allows greater self-synchronization, speed of command, and mission effectiveness. The theory hypothesis has four basic tenets:

- A robustly networked force improves information sharing;
- Information sharing enhances the quality of information and shared situational awareness;
- Shared situational awareness enables collaboration and self-synchronization, and enhances sustainability and speed of command; and
- These, in turn, dramatically increase mission effectiveness.

In August 2003, Army Chief of Staff General Peter J. Schoomaker introduced a new organizing principle and operational doctrine, intended to improve on the Army’s rapid-decisive operations (RDO) contribution to U.S. joint (i.e., integrated army, maritime, and air force operations) operations by reorganizing existing Army-of-Excellence (AOE) units and capabilities (instruments) born of AirLand Battle concepts into new self-contained “modules” able to conduct effective “plug-and-play” operations through a marriage of combined-arms concepts with network-centric technological advancements. This new Joint, Expeditionary, Modular (JEM) construct is the next and latest evolution in America’s landwar orchestration—a musical score playing out in places like Afghanistan, Iraq, and theaters of the nation’s Global War on Terror (GWOT). Source: Joint Publication 3-33, pp. II-1 to II-5 and JFSC Publication-1.

34. For the seminal doctrinal manual on the U.S. Air Force, refer to AFDD-1 Air Force Basic Doctrine, accessible at [www.dtic.mil/doctrine/jel/service\\_pubs/afdd1.pdf](http://www.dtic.mil/doctrine/jel/service_pubs/afdd1.pdf).

35. The Air Force is moving into the twenty-first century as an expeditionary aerospace force. And at the core of these efforts to move ahead are the air expeditionary forces<sup>35</sup>—the AEFs, which will be implemented by 1 January, 2000. This new concept is one way of responding to the increasing number of contingencies that call for worldwide deployments. It attempts to answer a need for “predictability” by reducing OPTEMPO and enhancing readiness. Under the AEF concept almost all of the Air Force—active, Reserve and Guard—will be divided into 10 force packages, each with a cross-section of Air Force weapon systems drawn from geographically separated units. Each AEF will have about 175 aircraft, and each will be more formidable than the air forces of most nations. These AEF packages will be able to respond within 72 hours of any unexpected contingency—and will be trained and tailored to meet commanders’ needs in a wide range of contingency operations. Each AEF will be on call to handle contingency operations for about 90 days every 15 months. And two will be on call at all times. About half of each AEF to wait on call at home bases during the 90-day window and about half to deploy. Source: Joint Publication 3-33, pp. II10 to II-12 and JFSC Publication-1.

36. The United States Navy’s premiere operational manual is NDP-1, *Naval Warfare*, accessible at [www.dtic.mil/doctrine/jel/service\\_pubs/ndp1.pdf](http://www.dtic.mil/doctrine/jel/service_pubs/ndp1.pdf).

37. Naval forces respond across the spectrum of conflict in the littorals and, as part of a joint force, in the execution of sustained land operations. Opportunities and challenges in the world’s littoral regions will increase America’s reliance on the continuous forward presence and sustainable maritime power projection of naval expeditionary forces. The littoral may be considered to consist of a region 100nm from shore and 100nm inland. This region is often cluttered with heavy coastal shipping and fishing traffic; intense air traffic; oil rigs; small islands; shallow water influences; many sources of electronic radiation from land and sea (commercial and military); and a wide variety of threats from land, sea, and air. These characteristics all have adverse implications for naval operations. However, demographic trends indicate that 90% of the world’s population will be concentrated in littoral regions by 2025. Also, as numbers of U.S. overseas bases continue to decrease, the littorals will be the main means of access into a crisis area. Navy and Marine Corps doctrine emphasizes expeditionary warfare, and expeditionary warfare requires uniquely capable combat systems and the logistics to sustain them. The Navy seeks to develop the capability of deploying, reconstituting, and supplying forces from the sea, without building up a large logistical infrastructure ashore. This needs combat and combat support systems that will enable the Navy and Marine Corps team to dominate the battlespace across the spectrum of conflict. Source: Joint Publication 3-33, pp. II-7 to II-9 and JFSC Publication-1.

## Sources for more information

*Most of the data and information on U.S. weapons and their uses provided in this article comes from the Joint Doctrine Electronic Library (JEL), a central source for all current U.S. operational doctrine at: [www.dtic.mil/doctrine/s\\_index.html](http://www.dtic.mil/doctrine/s_index.html). For a traditional description of the weaponry alone, Jane’s Dictionary remains a basic resource at [www.janes.com](http://www.janes.com). For alternative views on the subject of U.S. weaponry and the policy and doctrine behind them, I offer the following list of resources.*

Bacevich, Andrew J. 2006. *The New American Militarism*. New York: Oxford University Press.

———. 2004. *Blowback: The Costs and Consequences of American Empire*. New York: Owl Books.

Chalmers, Johnson. 2004. *The Sorrows of Empire: Militarism, Secrecy, and the End of the Republic*. New York: Metropolitan Books.

Chomsky, Noam. 2006. *Failed States*. New York: Metropolitan Books.

———. 2007. *Nemesis: The Last Days of the American Republic*. New York: Metropolitan Books.

Federation of American Scientists (FAS). Available at [www.fas.org](http://www.fas.org).

Ruppert, Michael C. 2004. *Crossing the Rubicon*. New York: New Society Publishers.

Stockholm International Peace Research Institute (SIPRI). Available at [www.sipri.org/](http://www.sipri.org/).