

Chapter 21

Security from the Oceans

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This, with the vast increase in rapidity of communication, has multiplied and strengthened the bonds knitting the interests of nations to one another, till the whole now forms an articulated system, not only of prodigious size and activity, but of an excessive sensitiveness, unequalled in former ages.
— Alfred Thayer Mahan¹

Surprisingly, these are not the musings of a recent commentator on the 21st century phenomenon of globalization. They are, in fact, the words of the (frequently lionized, but more recently disparaged) philosopher and prophet of sea power, Alfred Thayer Mahan, writing at the turn of the century.

Therein lies the clue to clarifying the thus far unexplored relationship between naval power and globalization. Like other elements of military power, naval forces—and specifically the forces of the United States Navy—contribute to the international security function of protecting the mediums and markets critical to the increasing international exchange known as globalization. Indeed, the very nature of navies makes their protective role *uniquely attuned* to the new era dynamics created by globalization. Moreover, because the United States Navy is the sole global navy in existence today, it plays a vitally important role in the globalization process. The Navy is both a globalized and globalizing force. This has been the case for at least the last 50 years. It will remain true for the future in growing and changing ways.

To understand this role, we must understand not simply the effects of globalization on navies—and the Navy in particular—but also the influence of navies and sea power (of which naval power is an element) on globalization itself. With these dual effects in mind, the purpose of this chapter is threefold. First, it seeks to explain the relationship between sea power and globalization and why they are interlocked. Second, it identifies the role that the Navy plays in the globalization phenomenon, including the influence of the Navy on globalization, as well as the influence of globalization on the Navy. Third, it examines the shape and force structure that the Navy might need to maintain in order to ensure that globalization remains a process that benefits the United States. The underlying premise is that the elements constituting the traditional concept of sea power are so similar to those of the 21st century

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concept of globalization as to make the Navy uniquely positioned to influence the outcome of today's globalization process. This is a premise that even Rear Admiral Mahan, an unabashed Victorian era nationalist, could understand.

What Is a Navy?

Why are navies functionally attuned to the process of globalization? The answer lies within the very nature of naval power. What exactly *is* a navy? The obvious, but only partially correct, answer is that a navy is a military force that operates primarily at sea. However, there is a significant difference between the functioning of navies and that of land-based military forces. Unlike other forms of military power, naval forces are primarily and uniquely designed to control the flow of commerce through the dominant mediums of commercial interaction, rather than to directly control territory or areas of human habitation. In short, armies are designed to control *territory*; navies are designed to control *access* to territory and interaction with the international system.

Operating in a multiplicity of mediums—the undersea depths, the surface of the sea, the air, littoral regions, space, and the infosphere—navies contest for the control of political and economic interactions, rather than for the control of populations. The classic naval struggle for sea control is for dominance of oceans—which are, in fact, mediums that humans use, but cannot permanently inhabit. Once dominated, these oceans (not all of them consisting of water) can provide access to the areas where humans live as well as control of links between these areas and the rest of the globe.²

If, as previously defined, globalization is a “process of expanding cross-border networks and flows,”³ then naval forces, broadly defined, are both protectors and inhibitors of this process. The traditional language of sea power—with its concern for the sea lines of communications (SLOCs), blockades, fleets-in-being, and naval presence—may seem like a quaint legacy to those schooled in information technology and e-commerce. But though it may not use the same grammar, it uses the same logic of carrying out and influencing access.

The traditional goal of sea power is unfettered *access* to the world's common transportation routes for raw materials and manufactured products, as well as access to the actual markets and sources of materials themselves. The emerging concept of the new economy revolves around *access* to the world's common information routes—such as the Internet—and to the sources of information, as well as to the potential markets for value added to the information. The Internet is both a facilitator and a product of the globalization phenomenon; its impact parallels the advances of maritime commerce that fueled the Colonial Period of the years 1400 to 1900. It is reshaping the economic and political world. But like every other such shaping process, globalization, at its very heart, involves a struggle for economic and political power—a struggle for access to the sources and the fruits of the process.

This struggle includes access to the infosphere, access to financial markets, access to raw materials (of which information is one), access to the means of production, and access to markets. Just as a hacker can use information warfare to delay, disrupt, distort, or deny access to the infosphere, more traditional military forces can

deny access to the physical sources of the production of wealth. The maintenance of a navy is a form of insurance that such physical access could not be cut by military force—at least not without a physical struggle. Equally true, navies themselves can be used as very effective means of access denial to opponents or rivals. They do so while operating with the global commons of the sea, their movement protected and sanctioned in peacetime by international law.

As noted above, armies are designed to control *territory*; navies are designed to control *access*. If globalization is really breaking down the territorial barriers of our world—which is what most of the contributors to this volume suggest—then access to information, markets, and resources is becoming even more important to the world's political economy than is control of territory, no matter how fertile or resource-filled, and populations, no matter how productive. Arguably, this reality means that naval forces—broadly defined—are becoming even more important as well.⁴ In the real world, unlike the utopia many would prefer, there are forces that would deny or restrict our access. Even those who view globalization as a beneficial force that will eventually result in a more politically integrated, economically balanced, just, and peaceful world must admit that the process appears a potentially dangerous voyage.

In summary, a navy is the portion of military forces that *operates in the fluid mediums that humans use for information, transportation, and exchange but cannot normally inhabit*. Its prime purpose is to *ensure or deny access*. Its effect on territories and population is generally indirect. However, the freedom of operation that the law of the sea allows in the international commons of the oceans provides for independent and direct effects in the littoral regions to the ever-increasing range that technology allows naval weapons (which includes sea-based aviation) to reach.

Comparing 1902 and 2002

The interlocking nature of sea power and globalization becomes evident in comparing the worlds of 1902 and 2002. In essence, 1902 was also an era of globalization. Then, the process of expansion of cross-border networks and flows was more commonly referred to as colonialism or imperialism. The world's great powers competed for access to the raw materials and markets of the rest of the world. To traverse the oceans in economic terms required naval power to ensure maritime security. As Mahan defined it, sea power included the totality of a nation's maritime capability—its merchant trade and exploitation of sea resources, as well as its naval might. But economic commerce also required—at least as it was then understood—direct political control over foreign access, in other words, colonies. With the invention of manned aviation still a few years away, the oceans remained the sole medium for international trade, and though armies were needed to maintain colonies, access relied exclusively on sea power. At the height of the colonial era, most international trade traveled by sea.

In the early 21st century, we live in an era in which information can travel instantaneously on the Internet. Small packages can be flown overnight to cities on the other side of the globe. Human reach extends into space. Yet, often forgotten is the fact that

90 percent of international trade still travels by sea, for the very same physical reasons that it did in 1902. The sea remains the most efficient and cheapest means of transporting bulk materials. There appears to be no impending technological breakthrough to change this situation in the near future. The traditional sea power term *SLOCs* may prove a confusing concept to generations more familiar with the many other mediums for personal communication. But replacing it with the term *sea lanes of commerce* may get the point of their continued importance across. SLOCs even have numerous indirect effects on the shape of the infosphere. Most global telecommunication is conducted along the traditional maritime trade routes. And with rare (and expensive) exception, overseas manufactured components for even the personal computers that allow individual access to the Internet arrive in the hulls of ships.⁵

This means that a hostile navy (or air force, operating in a navy-like interdiction mode, rather than conducting strategic bombing) could exert considerable influence on the flow of the manufactured goods that ultimately determine the success of globalization. There are three reasons that people today often do not worry about such flows being disrupted. First, of course, is that people often forget how dependent international trade is on maritime commerce. Second, they assume—quite correctly—that most everyone else in the world wants to trade with the United States (and other industrial powers) and has no sane interest in curtailing such trade. Finally, the United States is the only Nation that still possesses a global navy.

Ultimately, the possession of a global navy by a nation committed to global trade allows for the international access that underlies today's globalization. If international trade is secure from threats to its disruption, trade can expand. Economic confidence and creativity are thereby energized. Participants in the globalization process have a reduced sense of fear—and therefore reduced potential hostility—in an assured security regime for international exchange. Local conflicts can break out, but in a world without rival or hostile sea powers, they remain relatively local.⁶ The freedom from a threat of denial of international access allows for the flow of economic commerce and the growth of prosperity. Perhaps it even furthers the internationalization of world citizenry and the increasing cosmopolitanism that may presumably make armies and navies some day obsolete.

In any event, the economic dreams of globalization advocates parallel those of the traditional sea power advocates: a world with assured access to the lines of communications and commerce that provides for prosperity. The linkage between modern globalization (seen as a beneficial process) and sea power is perhaps most evident in this common objective of keeping the sea lanes of commerce open. Sea power can have another important political impact. By creating a climate of assured security, it can help bind nations together in cooperative relationships that begin in the military arena, but spread outward to the political and economic arenas. The Asia-Pacific is a vast region where naval interactions play a major role in determining security conditions, but the same principle applies elsewhere. Because the Navy's presence encourages stable security affairs, it helps set the stage for diplomatic and political cooperation to develop and for economic markets to take hold.

From Global to Globalized Navy

Like the U.S. dollar in international commerce and the use of the English language in the development of information technology, the Navy has become the benchmark and dominant standard for all things naval. In today's world, all other navies are essentially regional or coastal, with the exception of the fleets of the United Kingdom and France, both long-term U.S. allies.⁷ Even these two oceangoing navies are shadows of their former selves, capable of extended deployments in relatively small numbers. The former Soviet fleet, once sole challenger to U.S. sea power, is a defeated and ruined hulk. Its successor, the Russian Navy, is left with but a handful of seaworthy vessels. Other countries, notably China and India, are building up their naval capabilities, but sustained out-of-area operations currently are far beyond their reach. Like Rome or Britain in former days, the United States is—militarily—sovereign of the seas.

But in what can only be considered an apt metaphor for the overall phenomenon of globalization, U.S. “rule” is over an internationalized ocean open to the commerce of all nations and subject to the legal authority of no one state. The law of the sea, by treaty and custom, allows anyone to use the oceans as the grand highway of trade and—subject to limits on pollution and overfishing—as a source of “free” resources. All that is needed is the physical means to do so, making the sea a truly open market. By protecting access to this open market to all those who accept international law, the Navy performs a common security function on a global basis. In reality, it provides the protocols and security structure of the “maritime internet,” which, in terms of international trade in goods, remains the ultimate internetted exchange.

That is why the Navy can be considered a globalized as well as a global navy. In essence, it is no longer solely the U.S. Navy; it has become the world's navy—delivering the security of access function across the entire world system. When the Asian tiger economies—such as that of Taiwan—are shaken by the bellicose posturing of a neighbor, it is the movement of U.S. naval forces into the region of potential crisis—such as the Taiwan Strait—that provides the prime means of psychological restabilization. In attempting to quantify this stabilization effect on markets, recent studies have identified the positive impact of such naval deployments.⁸

Moreover, with the exception of the “states formerly known as rogues,”⁹ which seem ideologically opposed to globalization, as well as the Chinese Communist Party, which appears to want only those globalization effects that would allow for continued authoritarian rule within its domain, no one expects any harm from the Navy. Japan, which is sometimes an economic competitor of the United States, even allows the Navy to homeport both a carrier battle group (CVBG) and an amphibious ready group (ARG) in its own port cities—and pays for the infrastructure to do so. When building its own ships, Japan routinely licenses technology used by the Navy. Russia, with a military still often suspicious of the West, has conducted post-Cold War exercises with the North Atlantic Treaty Organization (NATO) and U.S. naval forces. It would probably conduct more exercises, were it not for the disastrous state of its navy and the desire to hide its weak readiness (made evident in the *Kursk* rescue attempt). The Navy is welcomed in ports around the globe, and the forward naval

presence of U.S. warships is readily accepted—often advocated—by most nations as a sound policy for maintaining regional security.

This naval presence gives the United States certain advantages in the same way that the internationalization of the dollar or the U.S.-led computer industry does in other markets. It allows the United States—as a society, if not as a government—to set the rules and protocols of yet another slice of the expansion of cross-border networks and flows. As a globalized service, the Navy can—within certain limits—determine the when, where, and how of the world’s maritime exchanges. This represents the direct influence of U.S. sea power on the overall globalization process. Because of the U.S. commitment to global trade and open access, what is good for the United States is generally good for all other trading states. The day-to-day impact of U.S. sea power on globalization thus appears transparent. If push came to shove, however, there would be no alternative maritime security service. The Navy simultaneously operates major fleets in the Mediterranean, Arabian Sea, and Western Pacific, and it has individual ships and squadrons in almost every major locale. This ensures that U.S. influence can never be easily outvoted. From the perspective of realpolitik, “It is good to be king”—especially of the sea: U.S. naval presence influences not only economic commerce but also the new era geopolitics of regions in stabilizing ways.

Participant in the Globalizing Function

In addition to being a globalized navy, the Navy facilitates at least four key globalization functions. As previously discussed, it provides the world standards for naval operations. Second, it conducts direct interactions—such as combined training and exercises—with almost every other national fleet. Such interactions, which the U.S. Department of Defense (DOD) refers to as engagement, are expected to promote the existing and future policies of the engagement and enlargement of global democracy. Third, it carries out the long-term mission of naval forward presence (that is, the continual deployment of naval forces to potential regions of crisis in order to provide stability and deter hostilities). Fourth, it provides naval weapons technology to selected foreign navies—a globalization, so to speak, of naval power. All of these functions contribute in important ways to the expansion of cross-border networks and flows.

Since the end of World War II, the Navy has replaced the British Royal Navy in providing the world standards for naval operations. With the exception of Russia, China, and states formerly known as rogues, such as Iran and North Korea, almost all national navies use concepts of operations and procedures derived from or similar to those of the Navy. This ensures a considerable degree of interoperability. Even those navies that do not have the technology to establish electronic links with U.S. tactical information networks are generally well versed in *Allied Tactical Publications 1*, the NATO signal book for naval operations. The signals and tactics of the United States and NATO have become global; they are used to facilitate naval communications and tactics throughout the world.

This degree of interoperability is solidified and enhanced by combined exercises and operational training around the globe. The Navy routinely conducts combined ex-

ercises and operations, as well as policy discussions, with most other fleets. Operations range from highly integrated Standing Naval Forces Atlantic (STANAVFORLANT) and Standing Naval Forces Mediterranean (STANAVFORMED); to frequent exercises with Latin American and Asian navies and with that of Australia; to passing exercises with friendly coastal navies, such as that of Oman; to occasional exercises with Black Sea navies, including that of Russia. A biannual seminar, the International Seapower Symposium, brings high-level representatives from almost every naval staff—including those of Russia and China—to the Naval War College in Newport for discussions of naval policies. The location is familiar because many of the flag officers of the world's navies are graduates of the Naval War College. Bilateral talks between the staff of the Chief of Naval Operations and its foreign counterparts are also routine.

As a primary mission of U.S. naval forces in peacetime, forward presence—the continual deployment of naval forces to potential regions of crisis—places the Navy in the forefront of the proverbial “global security market.” Like the best of global corporations, the Navy maintains representatives in the immediate vicinity of its significant customers. Not a day goes by in which U.S. naval forces cannot strike in some fashion at the forces of Saddam Hussein, ethnic cleansers, international terrorists, or maritime drug traffickers, to name but a few potential threats to global and U.S. security. Most national decisionmakers express their support (privately, if not publicly) for the Navy to continue performing this regional deterrence and peacekeeping function.¹⁰ This is a *de facto* globalization of a common concept of deterrence and security.

Finally, the Navy provides naval weapons and technology to selected foreign navies, and it includes foreign weapons systems on board some of its own ships and aircraft. Examples of the former include the AEGIS air defense system outfitted on destroyers of the Japanese Maritime Self-Defense Force; examples of the latter include the German-American rolling airframe missile (RAM) ship self-defense weapon, UAV prototype systems from Canada and Israel, and the Italian OTO Melara 76-mm gun on U.S. FFG-7 class ships. This exchange of systems, which the United States dominates by virtue of its robust defense industrial sector, increases the level of global naval interoperability.

Effects of Globalization on the Navy

Globalization is a multidirectional process. Several obvious globalization trends have a direct operational impact on the Navy of today and will have implications for future naval policy and force structure.¹¹ Five of these trends are (1) proliferation of advanced antiaccess weapons, (2) proliferation of information systems and sensors, (3) increases in maritime trade and traffic; (4) increased involvement in smaller scale contingencies, peacekeeping, and peace enforcement, and (5) emerging concerns about economic security.

Antiaccess Weapons Proliferation

A key trend is the proliferation of advanced weapon systems and sensors, particularly to the few nations—mostly “states formerly known as rogues”—that might seek to challenge U.S. military power. Although the United States does share military technology with selected nations, advanced technology from the former Soviet Union (some of it in continued Russian production, and some of it surplus) has also emerged on the world market.¹²

The technology being marketed includes weapons that the Soviet Union would not export to other Warsaw Pact states during the Cold War. A primary example is the SS-N-22 Sunburn (Russian name *Moskvit*) antiship cruise missile, which was considered one of the most potent ship killers of the Cold War. Initially reluctant to sell the missiles, Russia included them as the main armament in the sale of four *Sovremenny* class destroyers to China in the late 1990s. This sale was a disappointing development since, according to reports, the United States had attempted in the mid-1990s to buy the entire former Soviet inventory of 841 Sunburn missiles from Russia before they could reach the global market.¹³ The attempt failed. This transfer could presumably make U.S. naval forces more vulnerable if China becomes a potential opponent.¹⁴ It is also possible that China could produce a reverse-engineered version for additional export.

The proliferation of advanced military systems—such as intelligence, surveillance and reconnaissance sensors, ballistic and cruise missiles, submarines, sea mines, and weapons of mass destruction (WMD)—parallels the intellectual proliferation of a post-Gulf War operational concept on how to defeat U.S. forces, known as antiaccess or area denial strategy. This strategy recognizes the difficulty in defeating U.S. power projection forces after they have entered the region of conflict and are ready for combat. Instead of fighting U.S. forces on a regional battlefield (where the results might be similar to those of the Gulf War), the potential opponent could attempt to prevent U.S. forces from entering the region at all. In the logic of the antiaccess approach, a potential opponent would initially seek to destroy any forward-based U.S. forces stationed in the region, and then seek to block U.S. maritime and air forces from entering and bringing troops into regional littoral waters and territory by massive attrition attacks using the proliferated weapons systems.¹⁵

According to this construct, if there were to be threats to U.S. naval operations, they would come from asymmetrical weapons systems designed to deny U.S. passage through maritime chokepoints or the ability of the Navy to conduct operations near land.¹⁶ Both the Office of Naval Intelligence and the Office of Net Assessment within the Office of the Secretary of Defense report the steady proliferation of such weapons as ballistic missiles, cruise missiles, diesel-electric submarines, sophisticated naval mines, and fast patrol craft.¹⁷

In other words, the Navy may not have to face another globalized navy in the future, but it may have to face globalized antiaccess weapons. In an antiaccess scenario, with regional land bases capable of supporting U.S. forces destroyed and littoral access denied, the opponent may have effectively extended its defenses out to the entry points of its region. The United States could find itself in the position of having to

undertake potentially costly forcible entry operations. This would be the modern equivalent of the D-Day invasion of Nazi-occupied Europe, but with both sides having access to a range of high-technology weaponry.¹⁸ Even in this war of attrition, it is likely that the Armed Forces would eventually breach the antiaccess defenses, both through naval operations and the use of standoff weapons stationed outside the region or in the continental United States. However, the real goal of an antiaccess strategy is to convince America and its allies or coalition partners that the cost of penetration is simply too high.¹⁹ Hostilities could thereby be ended via a diplomatic agreement that, in effect, grants the regional power its wartime objectives. Such an agreement might be encouraged by international organizations that traditionally advocate negotiated peace. In these ways, an adversary whose military forces are inferior to those of the United States might still be able to attain its political objectives notwithstanding the opposition of U.S. forces.

Proliferation of Information Systems and Sensors

Another likely effect of economic globalization is a continuing increase in the capability and proliferation of high-speed information systems and remote sensors. Of particular concern to naval forces is the increasing availability of commercial satellite imagery, as well as satellite communications and navigation systems. Satellite imagery is the key element in military reconnaissance and targeting. Satellite navigation systems allow for accurate attacks. Space-based communication systems are more difficult to jam and allow communications between units in difficult operating terrain, including urban terrain.

As part of a revolution in military affairs, many sources claim or imply that naval forces will be more detectable in the future because of the proliferation of space-based imagery. The Office of Net Assessment has sponsored a number of briefings at which it has been argued that surface vessels have become vulnerable to detection and strike by antiaccess weapons, particularly in littoral regions, and are no longer viable warfighting platforms. This argument is challenged by sources pointing out the inability of most potential opponents to strike moving targets, particularly at sea.²⁰ An additional debate concerns the continued use of commercial satellite imagery, navigation, and communications during actual hostilities. The availability of such information to potential opponents of the United States during time of war remains doubtful.²¹ But whatever the actual survivability of U.S. surface ships may be, the reality of commercial targeting data becoming widely available is of considerable concern and is a globalization trend that should be taken into consideration in naval planning.

Increases in Maritime Trade and Traffic

A key effect of economic globalization is the continuing increase in maritime trade and traffic. While the new economy that helps fuel globalization is knowledge-based, the fact is that knowledge needs to be transformed into goods and services. These goods and services need to be transported internationally. While personnel may travel by air, most goods can travel economically only by sea. If globalization

indeed results in an increase of world trade and cross-border networks and flows, it will necessarily result in an increase in maritime traffic.

At the same time, ongoing trends could make maritime trade more vulnerable to disruption. Modernization of maritime off-load and on-load is being consolidated in a handful of megaports or hub ports such as Rotterdam, Singapore, Kobe, Vancouver, and Long Beach. The impact of future crises near these megaports—or the sea lanes of commerce leading to them—will have a greater overall effect on international trade than it had in the past, when there were many more ports open to the most modern ships.²² Obviously, this increases the potential workload of the Navy in providing the maritime security function, whether against bellicose states or against piracy and international crime.

The impact of a global navy is directly related not only to its workload but also to the perception of stability that it brings to the international environment. This would argue that the requirement for naval forward presence—naval forces operating within the regions of potential crises—will become even more important under continuing globalization. Indeed, the demand for forward presence forces could increase sharply with an increase in the number of small-scale contingencies (SSCs), and peace enforcement and peacekeeping operations in which the United States and its military become involved.

Involvement in Peace Operations, SSCs, and Regional War Fighting

In their foreign policies of engagement and humanitarian intervention, the post-Cold War Bush and Clinton administrations greatly increased U.S. military involvement in many world crises. Supporters of these policies argue that the end of the Cold War lifted the lid off many national and ethnic conflicts, and that the United States can make positive steps to contain and reduce them. Opponents argue that such conflicts have been steady throughout history and that U.S. involvement, while worthy and effective in certain cases, is akin to bailing water from the sea. Whatever position dominates, one effect of globalization is to make it appear that such crises have greater effects on the rest of the world than they did in the past. Thus, there is a perception that the increase in cross-border networks and flows necessitates international involvement in the internal crises of far-off nations, to include such supposedly smaller scale contingencies as NATO bombing of Serbian forces, and peace enforcement and peacekeeping in a variety of locales.

Although much of the actual peace enforcement and peacekeeping involves ground forces, strong support from air and sea is often a prerequisite. As a part of the Department of the Navy, the Marine Corps is a naval service, thereby bringing direct naval involvement to day-to-day peacekeeping on the ground. The Clinton administration also increased the use of sea-based force in such peacetime SSCs, even using sea-launched Tomahawk land attack missiles (TLAMs) to strike terrorist targets in landlocked countries. Additionally, naval forces have direct involvement in enforcing international sanctions, such as those against illegal maritime traffic with Iraq and the southern no-fly zone. If globalization continues to increase, along with the perception that such missions are a vital American responsibility, the Navy operational tempo

may continue to increase. This would have a significant impact on the numbers and types of naval forces required for such contingencies.

Navy and Marine forces, of course, will also continue to play important roles in defense strategy for waging major regional wars. The Marines provide about 25 percent of the Nation's active duty ground forces. Together, the Navy and the Marines generate about 40 percent of the Nation's tactical air power, including the capacity for precision strikes. They play a key role in joint doctrine. Often, the Navy and the Marines will be among the first U.S. forces to converge on the scene of a war, where they will play an important role in halting enemy attacks in order to provide time for larger U.S. forces to converge on the scene. Once the U.S. buildup is complete, they will contribute importantly to counterattack plans and ultimate victory. Should some future conflicts be primarily maritime events, their role will be even larger.

Emerging Concerns about Economic Security

The proliferation of weapons of mass destruction, potential threats to commerce, potential denial of access, and erupting national conflicts have created emerging concerns about U.S. economic security. Homeland security, rarely a topic of popular discussion, is of increasing interest to political, business, and economic leaders. Of particular concern is the potential for terrorist use of chemical or biological weapons on U.S. soil. While the effects on individuals are frightening to contemplate, there are also concerns as to what impact the very existence of such an ever-increasing threat may have on U.S. prosperity. Can the United States be truly open to the beneficial aspects of cross-border networks and flows without becoming more vulnerable to terrorist and hacker attacks on individuals, infrastructure, and computer networks?

At the same time, there are emerging concerns as to whether American or multinational businesses operating overseas can be protected against what appears to be an increasingly chaotic world filled with WMD-capable terrorists, disgruntled ethnic groups, and increasingly sophisticated international criminal groups. Demands for increased homeland and overseas protection could have significant impact on naval forces.

The Composition and Disposition of the Future Navy

The overarching questions concerning naval forces and globalization revolve around whether today's Navy is configured so as to be able to deal with the challenges just described. Does it need to make significant changes in order to support the beneficial aspects of globalization or protect us from hazardous trends? If globalization is a continuing phenomenon, how should the Navy adapt? Are the Navy's future programs designed to deal with future globalization effects? Are other platforms, platform mixes, and operational concepts needed? How "joint" do naval forces need to be, and how much jointness is needed to deal with the maritime effects of globalization?

It is difficult to link recommendations on naval force structure directly to the globalization process because force structure choices are presumably based on the anticipated threat and related military requirements. Globalization, as it is currently construed, is a recent and not fully understood phenomenon. Nonetheless, it is possi-

ble to suggest how current, planned, and proposed naval systems might fit in a globalized world. Where the basis for concrete suggestions may be lacking, questions for future analysis at least can be posed.

Size of the Fleet

One of the current concerns expressed by both Congress and DOD leadership is the overall size of the Navy and the number of ships in the fleet. With the end of the Cold War, the Navy, along with its sister services, faced substantial reductions. Overall U.S. defense spending was reduced by more than one-third. Depending on how one calculates fleet size, the Navy was reduced by almost one-half. During the 1980s, the Reagan administration aspired to a 600-ship Navy; although that actual number was programmed, it was not reached. The latest defense structure review, the Quadrennial Defense Review of 1997, called for a fleet size of slightly more than 300 ships (current size is 316), which was deemed sufficient until 2015.

However, the significant number of SSCs and other operations in which the U.S. Government has chosen to become involved has increased the operational tempo of the services sharply enough to cause great strains in the force. A fleet of 316 ships does not have a sufficiently large rotation base to provide a CVBG and an ARG for all three of the critical theaters of interest (Mediterranean, Arabian Gulf, Western Pacific) simultaneously, as requested by the commanders in chief (CINCs) of the Unified Commands. While almost one-third of the Navy is forward-deployed for a period of 6 months, the rest of the fleet is in overhaul or training for deployment. Instead of being able to provide this 3.0 presence (1 CVBG and 1 ARG per theater), today's worldwide presence varies between 2.5 and 2.7 ships. According to a recent study, a 3.0 presence would require a fleet of approximately 360 ships.²³

The fleet reduction was achieved by decommissioning ships early in their life spans and reducing the ship construction budget. The current ship construction level can no longer replace ships that are reaching their normal decommissioning age. If ship construction is not increased, the Navy will inevitably fall below 300 ships by 2010.²⁴

This shortage could become acute if globalization trends increase the requirements for naval presence, engagement, and contingency operations.²⁵ Although it may be possible to increase the length of ship deployments and reduce their maintenance time, this step has a deleterious effect on both equipment readiness levels and personnel retention. Secretary of Defense William Cohen endorsed the Navy's proposal for a 360-ship fleet;²⁶ however, currently there is no strong Congressional support for the budget increases required.

Though globalization does seem to increase the value of naval forward presence, the question remains as to what increase in fleet size is actually required. Some argue that the United States maintains sufficient joint service forces to substitute air or land forces for naval presence. To a considerable extent, this is the logic behind the Air Force's recent decision to organize itself into Air Expeditionary Forces (AEFs).²⁷ But if a globalized security environment is characterized by effective antiaccess strategies, a choice to become *more* dependent on overseas land bases for joint operations would seem illogical. In fact, the Navy's independent capability to operate at sea

without a significant overseas logistics footprint would appear a great advantage. Whereas the United States has air bases in Europe and Northeast Asia, plus conditional access in the Persian Gulf, it lacks comparable facilities elsewhere, including virtually all of Asia south of Okinawa. Using the seas, by contrast, U.S. carriers can reach many of these places.

Issues Concerning Current Force Structure

Perhaps fleet size is ultimately less critical than its actual composition. A large fleet of smaller, less capable ships is not necessarily as effective as a smaller fleet of more powerful ships. Additionally, individual ship characteristics need to include increased levels of protection against weapons of mass destruction (primarily chemical and biological weapons) as these weapons proliferate. The current configuration of the Navy seeks to balance combat firepower with multimission capability and the requirements for naval forward presence. However, the downsizing of the 1990s resulted in the divestiture of naval capabilities on the low end of the spectrum. The search for a capabilities-size balance in a globalized world would require an assessment of desired ship characteristics and might indicate the value of new ship concepts. The following short survey barely scratches the surface of issues that require considerable detailed analysis.

Aircraft Carriers. The large through-deck carrier capable of operating conventional takeoff and landing aircraft is a virtual U.S. monopoly. No other nation operates such ships, although all other potential blue-water navies aspire (whether driven by future plans or wishful thinking) to do so.²⁸ However, critics—focused on the enormous cost of building and operating such floating airfields—question their survivability in an antiaccess environment.

While the expense of constructing carriers is undeniable, their survivability in an antiaccess environment would seem much greater than that of overseas land bases (assuming prudent employment), and their capability to remain on station is obviously much greater than that of long-range aircraft. If direct engagement and presence are required in a not-yet-hot-war environment, carriers are unparalleled assets. Their key advantage is great flexibility—they provide airfields that can move at relatively high speeds and defend themselves by maneuver as well as strike operations. An aircraft carrier is relocatable U.S. territory that is readily usable in demonstrating U.S. interest and resolve. Its disadvantage is its vulnerability to submarines—a problem that existed under previous conditions and can be mitigated only through the combined-arms operations that have been the existing fleet's concept.²⁹ The type of aircraft that can be operated and their sortie rates are less than that of overseas land bases, but a combination of carrier operations and long-range aircraft (Air Force bombers) would seem to provide the greatest capacity for probing and breaking through antiaccess defenses. The bottom line is that while U.S. carriers might seem vulnerable at first glance, they are well defended and are far from easy to sink. Indeed, none has been lost since World War II even though they were heavily employed in three regional wars over the past 50 years.

The recent Navy report to Congress calls for a force of 15 carriers to provide 3.0 worldwide peacetime presence. Such a force could not be built or maintained without

a substantial increase in the Navy's budget. The bottom line appears to be that evolutionary improvements in carrier design make such a platform desirable in a globalized future, but adequate funding—for what are self-sustaining overseas air bases—seems problematic. Short of adding more carriers, the most substantial increase in efficiency could come about by using them as command-and-control centers for overseas joint operations.

Aviation Squadrons. The overall Navy aviation program has focused on improving relatively short-range strike aircraft, such as the F/A-18. A globalized antiaccess environment would appear to call for longer range and greater relative stealth in such aircraft. Additionally, internettted defenses would seem a prime target for electronic warfare aircraft, an expertise that primarily resides in the Navy and Marine Corps EA-6B Prowler squadrons.

Recent regional interventions have made the shortage in existing EA-6Bs very evident. It is surprising that the Navy has not pursued an increase and enhancement of electronic warfare aviation systems with greater alacrity or apparent interest. To be effective in regional conflict in a globalized world, electronic warfare/cyberwarfare cannot be confined only to space or ground assets—at least not without giving up a certain degree of precision and local effectiveness. Adequate aircraft, including naval aircraft, are necessary.

Attack Submarines.³⁰ With the end of the Cold War, the U.S. nuclear attack submarine (SSN) inventory was cut dramatically from a force of about 100 to a planned force slightly above 50. This step stemmed from the perception that the former Soviet submarine force of Russia—much of which is no longer operational—represented a much reduced threat. Recently, however, the Navy has argued that the planned submarine force will not be large enough to carry out all the engagement and intelligence operations required by the CINCs, along with providing two submarines as part of every deploying CVBG. (The latter is an organizational choice by the Navy, rather than a joint requirement.) Studies of joint requirements have specified the number of 68 SSNs as the desired force level.³¹ Due to their stealth and flexibility, submarines would appear to be a priority asset for a globalized world, particularly in the intelligence, surveillance, and reconnaissance (ISR) role as well as blue-water sea control.

Surface Combatants. During the Cold War, *surface combatants*—the generalized term used for cruisers, destroyers, and frigates—were multipurpose designs optimized for war *at sea*, as opposed to land attack or strikes against land targets—which could be considered war *from* the sea. With the absence of a global naval threat, surface combatants are currently prized for their capability to launch TLAMs and their developing capability of theater ballistic missile defense (TBMD).

Both missions retain their relevance in a highly globalized world. In fact, TBMD could become the greatest asset in demand during future periods of potential crises. The advantage of naval TBMD is that it is rapidly and highly mobile, with near indefinite on-station time, and that it uses an already existing air defense combat system capable of future upgrades for cruise missile defense.

The current Navy program includes the development of DD-21, a destroyer-sized platform designed specifically for land attack. As conceived, DD-21 would

require a drastically reduced crew size compared with the current DDG-51 class, would possess only a modest self-defense capability, and would take much of its targeting data from off-ship sensors. But with its relatively large size, DD-21 would appear to be giving up survivability without a dramatic improvement in strike capability. An alternative in a dense antiaccess environment might be a significantly smaller vessel with similar characteristics, such as the streetfighter proposal described below.

Amphibious Warships. When the Navy shifted from its Cold War maritime strategy to the littoral-focused “Forward . . . from the Sea” strategy, greater emphasis was placed on modernization and new operating concepts for the amphibious fleet. This, in turn, seemed to herald an ever-increasing integration between the Navy and the Marine Corps. These developments have cooled recently, reflecting a return to the Navy’s traditional reluctance to prioritize assets for a Marine fleet. Modern assets such as the LPD-17 class are being developed to replace older, more specialized amphibious ships (most of which are already decommissioned) and to achieve the 2.5 Marine Expeditionary Brigade (MEB) lift requirement mandated by Congress. Certain previously held capabilities, such as the ability to pump fuel directly to forces operating ashore, are being quietly discarded. If a globalized world requires a greater number of interventions in the littoral regions—where most of the world’s cities are located—it would seem prudent to increase rather than decrease such combat-capable maritime support for land operations.

Another capability that has been quietly discarded is the inclusion of vertical launch tubes in the LPD-17 class. Such tubes could have been stocked with TLAMs, substantially increasing the number of Tomahawk shooters in the fleet. The tubes could also be used for enhanced air defense weapons or for shorter range fire support missiles to provide fires for troops engaged in combat ashore. Ostensibly a cost-reduction decision, the elimination of vertical launch capabilities in the amphibious fleet was a missed opportunity for enhancing fleet striking power at a modest overall cost. A potential alternative is the littoral supremacy ship proposal described later.

Counter-Mine Warfare. Beyond any doubt, counter-mine warfare is the weakest capability in the U.S. fleet inventory. During the Cold War, the mission was relegated to allied navies (particularly NATO allies) that could not afford to construct large oceangoing ships, but could spend their resources by specializing in this function. With the Cold War over, this “specialization agreement” is in doubt because European military assets are declining. Moreover, the Navy operates in regions in which NATO allies may not venture.

Since sea mines are among the cheapest antiaccess weapons readily available on the open market, recent trends seemingly require the Navy to re-formalize the counter-mine specialization agreement or increase its capability at mine hunting and clearing, a capability that was sorely taxed in the Gulf War. This issue is not a pressing one for a navy that operates in the deep blue water of the oceans, where mines cannot normally be placed, but it becomes critical as a prerequisite for littoral operations. The Navy’s counter-mine capability has not increased at the same rate as has the Navy’s interest in and commitment to littoral warfare.

Future naval programs are focused on developing organic mine-hunting capabilities that could be added to multipurpose surface combatants and submarines. But this adds yet another mission to ships that are already tasked with strike, TBMD, anti-submarine warfare, and fleet air defense. Unless a significant increase in surface combatants and submarines is programmed, it would seem prudent to make a comparatively modest investment in additional specialized surface and air mine-hunting and mine-clearing platforms. In order to develop a long-term advocate for this critical mission, it may be appropriate to assign this mission to a community other than surface or submarine warfare, such as to explosive ordnance disposal (EOD).

Patrol Aircraft. Navy patrol aircraft, such as the P-3 Orion, have proved their value as the most rapid and long-range antisubmarine warfare platform for blue-water operations; however, they appear particularly vulnerable in an antiaccess littoral environment. As the Cold War ended, the number of patrol squadrons was greatly reduced. Unless survivability of such aircraft can be increased or new concepts of operations developed, retaining this capability in modest numbers would seem appropriate for the current reduced oceangoing submarine threat.

Patrol Combatants. Since they are not independent or seagoing, and possess only very light armament, small patrol combatants cannot readily be deployed to theaters of crisis in a timely fashion. Used almost exclusively as special operations force (SOF) assets, patrol combatants are not integrated into fleet littoral operations. But if a globalized world requires greater near-shore engagement, such vessels would seem to have a significant role. Two possible solutions for increasing this capability would be constructing patrol combatants to be able to fit in the well decks of the current and future amphibious fleet, or developing a more lethal, more survivable combatant with greater seakeeping capabilities—similar in concept to the streetfighter described below.

Combat Logistics Ships/Military Sealift Command. As part of its downsizing, the Navy elected to convert most of its logistics assets into civilian-manned ships operated by the Maritime Sealift Command (MSC). The long-term cost reductions may be modest; in the near term, this reduces direct costs to the Navy budget, particularly military personnel costs. Although the legal status of these assets in a major theater war scenario still requires some scrutiny, there seems no pressing need in a globalized world to remilitarize them.

However, one area of significant reduction that could limit independence of operations in a globalized world is the complete elimination of destroyer tenders and repair ships, as well as most submarine tenders. The logic of this move was that repair of forward-deployed ships could be performed in overseas ports using foreign assets. But the availability of such foreign assets during wartime is uncertain, and much of the specialized repair needs of U.S. warships can be obtained only at relatively high cost. Another concern was that the decommissioned tenders were potentially the only means of reloading vertical launch tubes in forward-deployed forces. As of today, expended magazines require surface combatants to steam back to the United States for reload. This may create a considerable bottleneck to long-range land attack missions in an extended conflict.

New Force Structure Concepts

A number of new concepts may prove useful adjustments to fleet structure in order to meet the requirements of a globalized world. With the exception of network-centric warfare, which has been frequently discussed, but is still in the conceptual stages, these proposals have not been adopted in future Navy programs.

Arsenal Ship/Arsenal Submarine. An arsenal ship, consisting primarily of a large number of vertical launch tubes and a small crew and requiring targeting data and protection from other naval platforms, was a proposal particularly intriguing to the late Admiral Jeremy M. Boorda, a former Chief of Naval Operations. Although official scrutiny of the proposal did not long survive Admiral Boorda's demise, a variant that has gained increasing popularity among defense analysts and Congress is the arsenal submarine. The prototypical variant is a converted Trident nuclear ballistic missile submarine (SSBN) that replaces its ballistic missile tubes with multiple cruise missile tubes capable of firing TLAMs. Although arms control treaties create some complications, the use of an existing submarine hull could provide such an SSGN at a much lower cost than new construction. The advantage of an SSGN over a surface arsenal ship is its stealth characteristics, which would seem valuable in a globalized world/antiaccess environment. The recent *Report to Congress on Naval Vessel Force Structure Requirements* identifies the SSGN proposal as being under consideration.

Network-centric Warfare. A widely discussed proposal, the concept of network-centric warfare could be described as a shift in focus away from platforms to networks.^{32,33} Network-centric operations promise to increase the value of individual units by providing more effective information linkage and a common operational picture that, in turn, allow for the optimum, coordinated use of weapons and effects. Conceptually developed by Vice Admiral Arthur K. Cebrowski, the current President of the Naval War College, network-centric warfare clearly responds to the information era. One area of concern is the increased vulnerability that a tight tactical Internet could experience if any of its access nodes are penetrated by an enemy.

Littoral Supremacy Ship. Suggested in the writings of retired Admiral William Owens³⁴ and elaborated upon by others,³⁵ the littoral supremacy ship is a proposed combination of surface combatant and an amphibious warship that is optimized for land attack. The advantage of this idea is the potential for reducing the number of different ship types assigned to the fleet, thereby achieving economies of scale in construction, maintenance, and training. Although still a vessel of considerable size, capable of operating vertical or short-takeoff-and-landing (VSTOL) aircraft, the littoral supremacy ship would sacrifice blue-water warfighting capability for land attack and self-defense weaponry. The choice to construct these ships is postulated on the belief that the Navy will remain unchallenged in the oceans.

Mobile Off-shore Base. First proposed in the late 1960s, the concept of a mobile off-shore base, consisting of a series of connected off-shore oil platform-like structures, has been periodically reexamined. It recently attracted renewed interest through Admiral Owens and studies developed by potential mobile off-shore base builders.³⁶ The technological difficulties of linking oil platform structures in relatively moderate sea states are challenging, but not insurmountable. The goal would be a composite

platform capable of being used as an air base for operations by almost all aircraft in the Navy and Air Force inventory. In contrast to the 80 to 100 marinized aircraft that can be operated off today's largest aircraft carriers, the proposed mobile off-shore base might be capable of operating more than 300 aircraft, including large transports requiring a long runway.

Mobile off-shore bases would be constructed at sea at the major deployment hubs or in nearby areas of long-term crises. In effect, they would provide the same capacity as an overseas air base ashore without the force protection requirement (such as antiterrorism defenses) or the vulnerability of a fixed land target. Unlike an aircraft carrier, the mobile off-shore base could move only at very slow speeds (less than 5 knots) and would probably require disassembly to make a major relocation.

The advantage of the mobile off-shore base proposal is the vast size and high aircraft sortie rate it could bring to areas of long-term U.S. commitment. It would be an asset that satisfies numerous joint service requirements. However, it would probably still require naval battle group assets for its defense, and it obviously lacks the flexibility and survivability characteristics of an actual carrier. If a globalized world requires a continuing U.S. presence in an area where land bases are not readily available or subject to an antiaccess threat, the mobile off-shore base could prove a viable alternative to land basing.

Streetfighter. Another recent concept championed by Admiral Cebrowski, streetfighter would be a small surface combatant optimized for near-shore land attack.³⁷ Under the proposal, streetfighter would be an offensive platform with a small crew and would rely on speed, stealth, and point-defense weaponry for self-protection. Such a ship could be purchased in large numbers, thereby allowing it to be more expendable than are larger, capital ships. The historical analogy is World War II patrol torpedo (PT) boats that operated in the Pacific island archipelagoes. Much more technologically sophisticated than their predecessors, streetfighters would be armed with land attack missiles and possibly long-range guns, rely on remote targeting data for strikes, and be supported for logistics and repair by a seagoing mother ship (possibly similar to the littoral supremacy ship). Thus far, streetfighter has received a lukewarm reception by the majority of naval leaders.

Evaluating the current force structure and the above alternative concepts in terms of their effect on globalization and their relevance in a globalized world would be a most complex but worthy challenge. Perhaps it is a task that the dominant staff of the Office of the Chief of Naval Operations cannot handle alone, but is best achieved by commissioning competing analyses from a range of naval organizations including the Naval War College, Naval Postgraduate School, Office of Naval Research, and the systems commands of Naval Sea Systems Command, Naval Air Systems Command, and Space and Electronic Warfare Command, as well as the analytical organizations of the Marine Corps. Ultimately, such analyses come down to two basic questions: Which naval systems best achieve our objectives in a globalized world? and If the globalized world does not evolve as we expect it will, which systems are the best hedges against uncertainty?

Conclusions: The Leverage Called Sea Power

Since naval forces are structured to ensure or deny global access and interactions, they have the potential to provide leverage to the positive aspects of globalization as well as protection from some of the negative aspects.³⁸ While this contribution may not be apparent to those who think Internet or foreign stock market every time they hear the term *globalization*, it becomes evident once the trappings of the globalized economy are seen through and the question “What provides stability?” is asked.

The Nation is in the unique position of being sole possessor of a global navy. This position provides considerable leverage for a pro-democracy, pro-free market emphasis on globalization. It also allows the United States to act as underwriter for the security of international trade, which is both a burden and an advantage. In effect, the United States Navy has become the world’s navy, with no serious challengers to the claim. A strong instrument of military power, the Navy seems to be viewed with little jealousy, fear, or animosity by most countries. In part, this is due to a view of the United States as an honest broker, but it is also buttressed by acceptance of the law of the sea and a perception that naval power is less a direct threat to sovereignty than are armies stationed overseas. The very size of the U.S. fleet dissuades potential competitors from even attempting to build a seagoing fleet.³⁹

This happy state of affairs may not last forever, or even a few decades. Antiaccess weaponry is multiplying. Unsatisfied states such as China are slowly increasing their sea reach. The United States has an underfunded shipbuilding program, and its fleet will eventually age. Rather than apply the criteria of the past, it may be in the best interest of the United States to reshape naval assets toward managing a more globalized future. This is a thought that the Navy should analyze seriously if it expects to remain a dominant force in a globalized world.

The future of globalization cannot be foreseen. Perhaps globalization will make war between great powers obsolete, even while exposing the tensions between the haves and have-nots. However, the prospect of war—whether global, regional, or local—is never something to dismiss lightly. Sir Francis Bacon once remarked that a nation with sea power could “take as much or as little of war as it desires.” It may be that such a nation cannot avoid taking a good dose of globalization if it wishes to remain relevant in the world economy. But a sea power nation comes to the process with a leverage that others do not possess. To paraphrase a common optimistic saying: the rising tide of globalization may truly “lift all boats.” If most of the boats are yours, it is a fine tide indeed. 🌊

Notes

¹ Alfred Thayer Mahan, “Considerations Governing the Disposition of Navies,” *National Review* 39 (July 1902), 701–719, reprinted in John B. Hattendorf, ed., *Mahan on Naval Strategy* (Annapolis, MD: Naval Institute Press, 1991), 284.

² Recent criticisms of the writings of Mahan focus on his supposed fixation on decisive fleet-on-fleet engagements as the means of establishing sea power and dominating the oceans. It seems more likely that his emphasis on decisive engagements was simply a concern as to the prerequisite for domination in an era in which there were competing navies of comparable strength. Mahan also discussed other means of establishing sea control, but, more importantly, he did not foresee the post-Cold War

world in which there are effectively no global navies other than that of the United States. In effect, the decisive fleet-on-fleet engagement was the Cold War, which was settled without blue-water combat.

³ For further discussion, see chapter 2.

⁴ This broad definition includes military operations in space and cyberspace, both of which are mediums of communications, transformation, and exchange similar to the oceans. Admittedly, the current division of roles and missions of the U.S. Department of Defense assigns significant or primary responsibility to joint commands or services other than the Navy. However, that in no way lessens the fact that operations in those mediums are essentially *naval* in nature. See discussion in Sam J. Tangredi, "Space Is an Ocean," U.S. Naval Institute *Proceedings* 125, no. 1 (January 1999), 52–53.

⁵ Obviously, components built in Canada or Mexico, as well as in the United States itself, are exceptions.

⁶ It is possible that the possession of nuclear weapons by two regional belligerents could cause the conflict to become quite global. However, the traditional logic of nuclear deterrence holds that such weapons are quantitatively different from other forms of military power, and presumably would not be used to expand a local conflict to nonbelligerents.

⁷ An illustration of this absolute dominance is the fact that the United States possesses its own coastal navy, the United States Coast Guard, which itself is larger than the naval forces of most nations.

⁸ See, for example, Ron Brown et al., "Forward Engagement Requirements for U.S. Naval Forces: New Analytical Approaches," Report NPS–OR–97–011PR (Monterey, CA: Naval Postgraduate School, July 23, 1997).

⁹ *The Washington Post* reported that on June 19, 2000, Secretary of State Madeleine K. Albright announced that the Clinton administration would no longer use the term *rogue states*, but that "henceforth, nasty, untrustworthy, missile-equipped countries would be known as 'states of concern.'" This would appear to be a reaction to a recent meeting of the South and North Korean heads of state. See Steven Mufson, "What's in a Name? U.S. Drops Term 'Rogue State,'" *The Washington Post*, June 20, 2000, 16. However, the term *rogue state* is ubiquitous within the analytical literature.

¹⁰ See discussion in Sally Newman, "Political and Economic Implications of Global Naval Presence," in *Naval Forward Presence: Present Status, Future Prospects* (Washington, DC: Center for Strategic and International Studies, 1997), 48–50.

¹¹ Other trends, including indirect impacts on naval forces, are discussed in chapter 3.

¹² Additionally, numerous Western European nations—notably Sweden, France, and Italy—sell advanced naval systems. China is the original source for many weapons that emerge in the hands of "states formerly known as rogues." North Korea has a re-engineer and re-export network with other states, such as Iran.

¹³ Norman Friedman, *World Naval Weapons Systems 1997–1998* (Annapolis, MD: Naval Institute Press, 1997), 243–244.

¹⁴ However, in April 2000, it was reported that the U.S. point defense system rolling airframe missile (RAM) had successfully engaged a simulated SS–N–22 conducting a high-speed weave. Report in "RAM Passes OpEval," U.S. Naval Institute *Proceedings* 126, no. 4 (April 2000), 6.

¹⁵ The term *asymmetrical* includes weapons designed to attack U.S. weaknesses and take advantage of the geographical features of the region, such as straits and narrow passages. From the naval perspective, these weapons can be considered asymmetrical because the Navy is largely configured for open-ocean operations. But historically, use of such weapons or their antecedents might be considered a *normal* aspect of naval warfare in narrow seas. An excellent study of the historical and environmental factors influencing near-shore naval operations is Milan N. Vejo, *Naval Strategy and Operations in Narrow Seas* (Portland, OR: Frank Cass Publishers, 1999).

¹⁶ A good discussion can be found in Tim Sloth Joergensen, "Navy Operations in Littoral Waters: 2000 and Beyond," *Naval War College Review* 51, no. 2 (Spring 1998), 20–29.

¹⁷ Detailed in Office of Naval Intelligence, *Challenges to Naval Expeditionary Warfare* (Washington, DC: ONI, 1997).

¹⁸ The most detailed discussion is Theodore L. Gatchel, *At the Water's Edge: Defending Against the Modern Amphibious Assault* (Annapolis, MD: Naval Institute Press, 1996).

¹⁹ Thomas G. Mahnken, "America's Next War," *The Washington Quarterly* 16, no. 3 (Summer 1993), 171–184; Thomas G. Mahnken, "Deny U.S. Access?" U.S. Naval Institute *Proceedings* 124, no. 9 (September 1998), 36–39.

²⁰ See discussion of this debate in Sam J. Tangredi, "The Fall and Rise of Naval Forward Presence," U.S. Naval Institute *Proceedings* 126, no. 5 (May 2000), 29–32.

²¹ See discussion in Sam J. Tangredi, *All Possible Wars? Toward a Consensus View of the Future Security Environment*, McNair Paper 63 (Washington, DC: National Defense University Press, November 2000).

²² From discussion in Daniel Y. Coulter, "Hub Ports and Focal Points: New Entrants in the Maritime Security Lexicon" (unpublished paper, circa July 1998), many points from which are contained in an unclassified Office of Naval Intelligence briefing entitled "Global Commercial Maritime Environment," Dan Coulter, presenter.

²³ U.S. Department of Defense, *Report to Congress on Naval Vessel Force Structure Requirements* (Washington, DC: Government Printing Office, June 26, 2000), 4.

²⁴ Chuck McCutcheon, "The Navy Pushes for More," *Air Force Magazine* 83, no. 7 (July 2000), 57.

²⁵ The total Navy is composed of units other than ships and aircraft squadrons, such as naval construction battalions (Seabees), explosive ordnance disposal (EOD) units, sea-air-land (SEAL) commando teams, and others. They will not be addressed in this chapter.

²⁶ "Cohen Admits Navy's Force Size Is Stressing Sailors and Marines," *Inside the Pentagon* (June 29, 2000), 1.

²⁷ Tangredi, "The Fall and Rise of Naval Forward Presence," 30.

²⁸ The Soviet Navy built smaller carriers and eventually constructed several large carrier hulls but was unable to perfect comparable carrier operations. The French Navy has recently constructed a large nuclear-powered aircraft carrier, the RFS *Charles De Gaulle*. However, she has had numerous design and construction problems, and sea trials indicate she is not yet operational.

²⁹ Critics maintain that carriers are also vulnerable to ballistic and air- or ground-launched cruise missiles, but these are easier to defend against by combined arms fleet operations. Unless ballistic missile warheads were enhanced with terminal homing—a major technological advance—or massive saturation attacks were directed against individual ships—a costly and inefficient strategy—conventionally armed ballistic missiles would not be serious threats against maneuvering warships. Obviously, nuclear weapons are a greater magnitude of threat, as they would be against any target. Cruise missile attacks at sea require real-time targeting data or proximity, both of which are difficult to obtain against an alerted fleet.

³⁰ SSBNs, which are national deterrence assets subject to arms control limitations, are not addressed in this chapter.

³¹ "Cohen Admits Navy's Force Size Is Stressing Sailors and Marines," 1.

³² Arthur K. Cebrowski and John J. Garstka, "Network-Centric Warfare: Its Origin and Future," U.S. Naval Institute *Proceedings* 124, no. 1 (January 1998), 28–35.

³³ David S. Alberts, John J. Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Leveraging Information Superiority*, 2d ed. (Washington, DC: Department of Defense C⁴ISR Cooperative Research Program, August 1999).

³⁴ William A. Owens, *High Seas: The Naval Passage to an Uncharted World* (Annapolis, MD: Naval Institute Press, 1995), 166–169.

³⁵ See discussion in Sam J. Tangredi, "A Ship for All Reasons," U.S. Naval Institute *Proceedings* 125, no. 9 (September 1999), 92–95.

³⁶ Owens, *High Seas*, 162–166.

³⁷ See public discussion in Arthur K. Cebrowski and Wayne B. Hughes, "Rebalancing the Fleet," U.S. Naval Institute *Proceedings* 125, no. 11 (November 1999), 31–34; Dave Weeks, "A Combatant for the Littorals," U.S. Naval Institute *Proceedings* 125, no. 11 (November 1999), 26–30; and Wayne B. Hughes, "22 Questions for Streetfighter," U.S. Naval Institute *Proceedings* 126, no. 2 (February 2000), 46–49.

³⁸ The concept of leverage is adopted from Colin S. Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War* (New York: The Free Press, 1992).

³⁹ Secretary of the Navy Richard Danzig discusses the concept of dissuasion in Richard Danzig, *The Big Three: Our Greatest Security Risks and How to Address Them* (New York: Center for International Political Economy, February 1999), 22–24.