

The Military in a New Era: Living with Complexity

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Globalization is not a new phenomenon, nor is it easily defined in terms that are relevant for strategic and force planning. It is true that several key trends are reshaping much of global society. These include a far more integrated structure of trade and investment, the growth of multinational corporations, the integration of telecommunications and information systems, and a steady increase in the use of computer systems and automation.

At the same time, globalization can have a very different meaning in military terms. The world of the 21st century may be no more peaceful than the world of the 20th, or of any century before it. Progress is as likely to occur in the means of conflict as in the means of conflict resolution. Globalization can create new vulnerabilities and tensions as well as ease or transform old ones, and seemingly peaceful trends can cause violence with little or no strategic warning.

The problems that globalization creates for military force planners are also fundamentally different from those it creates for other analysts. Military planners do not need to plan for a future in which economic development ends a chief source of tension among nations. They do not need to plan for a world in which global information systems create a level of mutual understanding that resolves many past causes of conflict, or for a world that converges around democracy and shared values. Such a world is a world in which military planners can gradually go out of business.

Military planners do, however, need to plan for other global trends that are more threatening and are at least equally likely to shape the first half of the 21st century. The kind of regional, ethnic, and religious warfare that has characterized the early post-Cold War era can easily be equally characteristic of the next half-century. The United States may not face the kind of peer threats or ideological enemies it did during the 20th century, but it may well see the emergence of powerful regional powers and blocs that will sometimes be hostile to U.S. strategic interests.

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There are other global trends that may prove equally important and force the United States to plan for new threats and forms of warfare. These include:

- A world that has been, and remains, extraordinarily violent.
- The sheer complexity of a world in which so much change is occurring and in which overall economic development so far disguises a growing gap between rich and poor, both among nations and within them.
- A world in which unstable regional power blocs are mixed with a wide assortment of ethnic, religious, and racial tensions.
- A future in which the status of the United States as the world's only superpower is challenged by underspending, overcommitment, and the inability to commit resources that match the roles U.S. forces may be called upon to perform.
- A future in which these pressures will force the United States to adopt new forms of coalition warfare.
- A world in which technology transfer and shifts in the cost and availability of key technologies outpace the kind of developments that the United States is seeking in the revolution in military affairs. In such a world, the present edge that the United States preserves in conventional warfare may erode steadily because each improvement forces an escalation in marginal cost while producing diminishing returns in terms of effectiveness.
- A future in which nations that cannot challenge the United States and Western lead in conventional warfighting capabilities and technology increasingly turn to asymmetrical warfare.
- A world in which proliferation becomes the norm and a dominant form of asymmetrical warfare.
- A shift in the global economy that creates new patterns of vulnerability that match growing global economic interdependence and that have particular importance for maritime shipping, the flow of energy, and naval power.
- A world in which jointness and global engagement potential make the United States uniquely vulnerable to information warfare.
- The impact of changes in global media coverage and the battle for public and international opinion that has so far led the United States and the West to imprison themselves in a false image of perfect or bloodless war and that threatens to use the advantages the West can achieve through the revolution in military affairs to progressively limit the ways in which it can use force.

Living in Jurassic Park: The Problem of Complexity

Every new generation seems to invent reasons why history will end during the coming decades and to ignore the lessons of some 4,000 years of historical evidence. People look for an end to violence and seek reasons why it will end. It is useful in this context to consider a similar exercise in globalism and military planning toward the end of the last century. Imagine what a similar study on globalism would have

found if it had taken place in the Royal United Services Institution in the late 1890s or early 1900s.

Such a study would have had perceptions remarkably similar to those that now influence much of the American thought about globalism. The British empire enforced a Pax Britannica throughout most of the world, although at the cost of an almost constant overdeployment of its land and air forces. The collapse of the French empire in 1870 had removed the only peer threat to British power, although the rise of the United States and Germany raised serious questions about the future. Lord Fisher's insistence on the construction of the *Dreadnought* and British pioneering of the submarine, advances in artillery and automatic weapons, and the promise of the airplane were creating a revolution in military affairs. The invention of the telegraph, the transatlantic cable, and early experiments with radio not only were making fundamental changes in the flow of information and world trade but also were creating the opportunity for information warfare.

The new power of mass media and global communications had helped trigger the Spanish-American War while appearing to put new limits on the ways in which wars could be fought as a result of media coverage of the Boer War. The rise of empire, the Industrial Revolution, and the vast expansion of world trade promised global development and new integration of the global economy. Economists and political scientists had begun a serious study of the impact of war that concluded that Western nations could no longer profit from wars in Europe. In fact, two Nobel Prizes were awarded in the years that followed the study proving the futility of war. Virtually the entire intellectual community of the Western world agreed that Western values would come to dominate and reshape the world—although there was little true consensus on what these values meant.

The problem with such perceptions is that they denied the true complexity of history. Like Jurassic Park, they were based on the false thesis that complexity theory is merely an annoyance to those who can identify clear and dominant trends. In the Jurassic Park movie, complex realities ruled over simple-minded designs: dinosaurs could not be tamed by creating a controlled setting for them. The same applies to world affairs. Complexity is, in fact, a key issue with terms such as *globalization*. According to this view of globalism, trees really do grow to the sky. The world is shaped by a few dominant trends and clear outcomes. There is no need to accept just how complex global trends really are, how rarely they are global in the sense of any broad symmetry in terms of their regional and local impact, and just how uncertain the future must be.

The Nonglobal Character of Globalization

One sign of this complexity is the fact that the global patterns in economic and technological change disguise great disparities in the level of development between rich and poor nations, within given regions, and within given states. The most recent report by the World Bank on *World Development Indicators* describes the following patterns and trends:¹

- Demographics create major new pressures because of population growth.²
- The world's population grew from 4.4 billion in 1980 to 5.8 billion in 1997. It is projected to grow to 7.1 billion by 2015, and to 8.1 billion by 2030.
- The population of low-income nations will grow from 2 billion in 1997 to 3.4 billion in 2030 (66 percent growth). The population of middle-income states will grow from 2.9 billion to 3.7 billion (30 percent growth). The population of high-income states will change from 927 million to 981 million (6 percent growth).
- Basic shifts in the age of the population may exacerbate tensions. The percentage of people 14 years of age and younger in the low-income states is growing by 2 percent per year. It is growing by only 0.2 percent in middle-income states, and it is dropping by 0.6 percent annually in high-income states. The youth explosion in low-income states has reached the point where 40 percent of the population is 14 years of age or less while serious aging is taking place in the high-income states.³
- The average per capita income in low-income states is \$350. It is \$1,890 in middle-income states and \$25,890 in high-income states. Low-income states make up about 35 percent of the world's 5.8 billion people, middle-income states account for 50 percent, and high-income states account for only 15 percent. (World Bank projections through 2050 show a rise in the percentage of the world's total population living in low-income states and a decline in the percentage living in high-income states.)
- There is little material evidence that low-income states are improving their position, in spite of the increase in many aspects of global economic growth. The average annual growth in the gross national product (GNP) in low-income states between 1965 and 1997 was 1.4 percent. It was 2.2 percent in the middle-income states, and 2.3 percent in the high-income states.
- Global trade favors the high-income and developed states. It makes up 40 percent of the GNP in low-income states, 50 percent in middle-income states, and 41 percent in the high-income states. But the volume for wealthy states is far higher than for low-income states.
- Regional trade blocs show a sharp growth in intraregional exports, relative to global markets. European Union (EU) exports within bloc rose from \$76.5 billion in 1970 to \$1,867.8 billion in 1997; North American Free Trade Agreement (NAFTA) exports rose from \$22 billion to \$496 billion.
- Global capital flows are not truly global.
- Foreign direct investment in 1997 totaled \$10.6 billion in low-income countries, \$160.6 billion in middle-income countries, and \$233.9 billion in high-income countries.
- Private capital flows in 1997 totaled \$17 billion in low-income countries and \$268.9 billion in middle-income countries.
- Technology diffusion has so far favored richer and more developed states.

- The richest 20 percent of states control 74 percent of all telephone lines and have 91 percent of all Internet users.
- The top 10 telecommunications firms control 86 percent of the \$262 billion global telecommunications market.

Other analysis further dramatizes the gap between rich and poor and the fact that globalization may not bring stability or reduce the threat of conflict. The richest 20 percent of the population controls 86 percent of world output and 82 percent of all world exports. Roughly 1.3 billion people live on less than \$1 a day while the assets of the top three billionaires are equal to the GNP of all the “least developed” countries—with a total population of 600 million.⁴ The impact of such differences on technology flows and sophistication is described in more detail in table 1.

Other data show that many positive trends are counterbalanced by serious problems and potential sources of conflict. For example, not only has globalization *not* brought world prosperity, democracy, and human rights, but also it has *not* brought something as simple as effective medical care. The infant mortality rate did drop from 76 to 58 per 1,000 births during 1990s. The percentage of 1-year-olds immunized rose from 70 percent to 89 percent. Access to safe water rose from 40 percent of the world’s population to 72 percent. However, 160 million children remain severely undernourished, and 250 million are working in child labor. More than two-thirds of the developing world cannot afford to sustain health programs to deal with endemic diseases such as acquired immunodeficiency syndrome and malaria. Roughly 850 million people lack access to any health services, and 2.6 billion do not have access to basic sanitation.

These trends are only brief statistical snapshots of an extraordinarily complex set of changes. Nevertheless, they make it clear that globalization is extraordinarily complex and that any analysis must include any significant global trend that is relevant, not just those trends that are academically fashionable and politically correct. It is also clear that many global trends are potentially destabilizing or threatening.

Table 1. Technological Sophistication by Category of National Income (Total per 1,000 people)

<i>Devices</i>	Income Category		
	<i>Low</i>	<i>Middle</i>	<i>High</i>
Television sets	56	256	647
Telephone main lines	16	87	506
Mobile phones	1	15	189
Fax machines	0.2	0.9	49.7
Personal computers	2.2	15.8	264.4
Internet hosts (per 10,000 people)	0.10	3.96	374.89

Source: World Bank, *World Development Indicators, 1999* (New York: Oxford University Press for the World Bank, 2000).

Table 2. Patterns of World Conflict, 1945–1994

<i>Area</i>	<i>In Total</i>	<i>Number of Wars</i>		<i>Total Dead</i>
		<i>Involving 10,000+ Dead</i>	<i>With U.S. Military Action</i>	
Caribbean and Latin America	19	6	8	477,000
Mideast and North Africa	19	11	9	993,000
Sub-Saharan Africa	26	15	5	4,177,000
Europe	6	0	0	186,000
Central and South Asia	10	6	1	2,857,000
East Asia	34	17	6	10,396,000
Total	114	55	29	19,086,000

*Includes significant U.S. military assistance, covert action, demonstrative action, occupation, humanitarian efforts, combat, and emergency evacuations.

Source: International Institute for Strategic Studies, *Military Balance, 1998–1999* (London: Oxford University Press, 1998).

Table 3. Global Peacekeeping Activity

<i>Operations</i>	<i>Number of Activities</i>	<i>Some U.S. Involve- ment</i>	<i>Duration in Years</i>		<i>10,000+ Peacekeepers Involved</i>	<i>Some Combat Activity</i>
			<i>Over 2</i>	<i>Over 5</i>		
Current UN	17	14	11	0	3	5
Past UN	27	23	6	5	7	7
Current Non- UN	6	5	1	1	3	2
Past Non-UN	5	2	1	1	4	1
Total	55	44	19	7	17	15

*Generally very low level or indirect involvement during fighting between principals.

Continuing Global Violence and Conflict

It is equally important to point out that military planning cannot be based on the assumption that there will be any kind of global clash of civilizations, between rich and poor states, or between “north” and “south,” in the sense this means conflict between the developed and developing world. Such conflicts are always remotely possible, but unlikely.

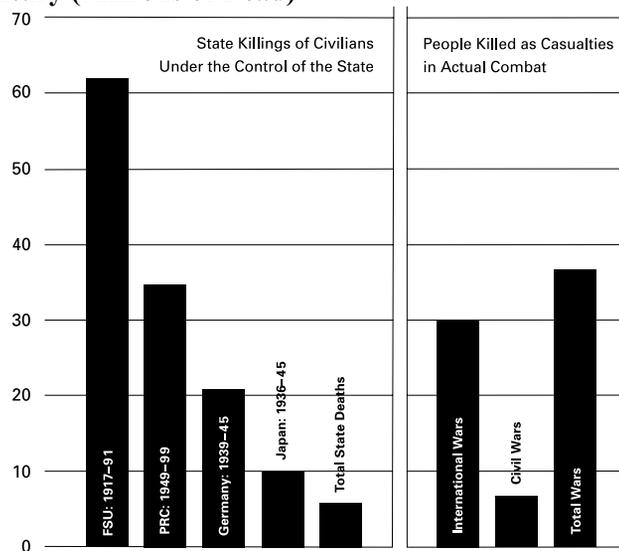
Table 2 lists the most serious conflicts in a world that has had some 1,200 armed clashes and encounters since World War II.⁵ It does show, however, that future conflicts *within* civilizations, regions, and nations are an ongoing certainty. The nature and frequency of these conflicts cannot be predicted, but there have been 20 to 30 ongoing regional civil wars and local conflicts every day since World War II, and a recent study found that there were 23 ongoing local conflicts in which 500,000 or more civilians were at risk.

It is also important to note that the existence of peer threats during World War I, World War II, and the Cold War tended to disguise the true nature of global violence. Figure 1 shows that such violence has always been dominated by intrastate killing, and that the kind of violence that leads to the peacemaking activity that now dominates U.S. and Western military operations is nothing new.

There is nothing new about this aspect of globalism or about the U.S. military involvement that follows. Work by Adam Spiegel of the Center for Naval Analyses found that the United States had overtly used military force more than 240 times before the end of the Cold War, excluding covert action and major military assistance efforts not involving an active combat presence. The real total would be well in excess of 300. These actions ranged from demonstrative actions to major wars, and they have very little in common. They are also almost impossible to categorize without getting into endless controversies over their context and definition.

The collapse of the Soviet Union and Warsaw Pact have scarcely brought global stability or peace, or an end to such U.S. military involvement. Instead, it has shifted the focus of military operations to peacemaking activities that have become something close to a new paradigm of globalism. UN peacekeeping and peacemaking activity is accelerating, and the United States alone has deployed troops 36 times since 1989—largely in peacekeeping missions. This compares with 10 times during the previous 40 years of the Cold War, including deployments for Korea and Vietnam. This trend has led to increased levels of U.S. military deployments even as U.S. forces have been cut. These engagements, which are summarized in table 3, are likely to remain key priorities for U.S. force planning indefinitely.

Figure 1. The Past is Prologue: Warless Genocide—The State against the People in the 20th Century (Millions of Dead)



Source: Adapted from an estimate in *The Economist*, September 11, 1999, and Rudy J. Rummel, "Statistics of Democide."

It also seems realistic to warn that military planners cannot hope for any clear or constant criteria for determining what kinds of crises will involve military action. So far, the United States and its allies have dealt with each new crisis on a case-by-case basis. Vietnam may have appeared to lead the United States to reach decisions on such issues, but the years that have followed have shown that U.S. strategy documents and planning guidance failed to produce any clear doctrine or criteria for using military force. The legal constraints set up after Vietnam in the War Powers Act have been honored largely by evading any test of the act's provisions and constitutionality.

The United States has made an effort since Kosovo to define a Clinton doctrine for dealing with the commitment of military forces, but this "doctrine" so far consists of little more than a moralistic statements that, "If the world community has the power to stop it, we ought to stop ethnic cleansing" (June 20, 1999) and "If somebody comes after innocent civilians and tries to kill them en masse because of their race, their ethnic background or their religion and it is within our power to stop it, we will stop it" (June 22, 1999).⁶

Vacuous catch phrases, however, do not define real-world criteria for U.S. or Western military action, regardless of whether they are moral or noble in character. It is far easier to use terms such as *en masse* than to define them. While a phrase like "their race, their ethnic background or their religion" may seem noble, one does have to wonder why the level of suffering in a case like Cambodia should be excluded.

It is equally vacuous, however, to use seemingly pragmatic criteria such as vital strategic interest. The Weinberger doctrine's emphasis on such criteria has proved to be no more meaningful than the Clinton morality play. The United States simply cannot wait long enough to determine whether a crisis or problem involves a vital strategic interest. One awkward corollary of being a global superpower is that anything anywhere in the world involves at least a tenuous tie to some strategic interest.

The vast majority of low-level and crisis-driven U.S. military interventions during the Cold War did not involve any direct threat to vital U.S. strategic interests, and more than half had only a limited direct tie to the Cold War. Well over two-thirds did not involve significant strategic warning or occur under conditions where the United States could credibly predict and put clear limits on the ultimate level of its military commitments. In passing, it seems equally fair to say that in well over 70 percent of the cases, it would be impossible to get any consensus from U.S. foreign policy analysts over the level of moral imperative that these crises created for U.S. military action.

The fact is that U.S. and Western military action will probably continue to be event-driven by the emergence of a given crisis, and the use of force will then be determined by whether the event affects U.S. allies, there is major media concern, or those at hazard arouse political sympathy. As one ex-chief of staff of a U.S. military service said after the Clinton speech on June 22, "We will use our power if they look like us."

The same is likely to be true of the West as a whole, particularly now that the European Union is seeking to create a "crisis-management" force for contingencies that it has not bothered to define. Senior European officers have feelings similar to those of many U.S. officers. They believe that they increasingly are being asked to use military force to make up for diplomatic failures in a context where civil political

decisionmakers pay far too little attention to whether military force can be effective, the risks involved, the ability to withdraw if military action fails, and the endgame in translating military victory into lasting political success.

The Regionalization of Power

The United States must also prepare for major regional conflicts, some of which could involve a major nuclear power and an emerging peer. These include the immediate risk of a major regional conflict in the Persian Gulf or in Korea and the longer term threats posed by Russia and China. They also include major regional wars against opponents such as North Korea and Iraq, and a wide range of opponents that may emerge with little warning.

The world now has nearly 200 nations, nearly 80 percent of which have emerged since World War II. About half of the emerging nations have serious ethnic and religious divisions or instability, and about 40 percent have disputed borders. It may be unfair to categorize some states as rogue or failed. At the same time, extremist regimes such as that in Libya are likely to emerge in many parts of the world. Continuing civil wars in states such as Burma/Myanmar, Sri Lanka, and Sudan are not likely to vanish. There is also a continuing risk of major regional wars that do not directly involve U.S. interests, but which could lead to U.S. intervention, at least on a humanitarian level. The nuclear arms race between India and Pakistan is perhaps the grimmest case in point.

It is not clear how these tensions and conflicts will interact with the emergence of regional blocs. It is clear, however, that U.S. military planning does face the need for power projection in a wide range of regions with very different force requirements and potential conditions for coalition warfare. U.S. planning must also consider the possibility of the emergence of the following new regional power blocs without being certain whether and when such blocs will be partners, rivals, or opponents:

- *The European Union and Europe versus the North Atlantic Treaty Organization (NATO) and Atlanticism:* The United States must face continuing uncertainty regarding Russia and other members of the former Soviet Union (FSU), and the possible emergence of a strategic relationship between China and Russia. At the same time, it may see NATO and Atlanticism erode as the European Union grows stronger, and economic and political rivalries distance Europe from the United States. Ironically, this may not reduce the implied U.S. military commitment to NATO or the level of U.S. peacemaking involvement in Europe.
- *Tense Middle East and Persian Gulf:* It seems unlikely that the United States will demonize Iran, Iraq, and Libya indefinitely. At the same time, there is little near-term prospect that the United States will not face the continuing risk of a major regional war in the Persian Gulf. It seems unlikely that even if an Arab-Israeli peace does involve all parties, the United States will not continue to have commitments in the Levant, and there is little near- to mid-term prospect that the United States can do anything more than slow the rate of proliferation in the region.

- *Divided Asia*: Asian economic development has brought a tenuous stability to Southeast Asia, although scarcely to Northeast Asia and South Asia. North Korea and the China-Taiwan issue currently seem likely to present lasting military problems, and China could emerge as a serious threat in regional terms. Even in Southeast Asia, the Association of Southeast Asian Nations (ASEAN) does little to bring stability to nations such as Burma/Myanmar and Cambodia, and the risk of a massive civil war in Indonesia is unlikely to be eliminated.
- *Unstable Africa*: It is far from clear that any part of Africa can cooperate as an effective region. North Africa, however, presents obvious problems in terms of immigration and transnational threats to Europe. The region is a major energy exporter, and it could affect naval traffic through the Mediterranean. So far, no Maghreb nation has demonstrated that it can develop fast enough to deal with its population growth. A large part of sub-Saharan Africa is already at war, and these wars are creating new and unstable regional power blocs. The increasing U.S. dependence on West African oil gives these problems growing strategic importance.
- *Unstable Latin America*: Like East Asia, Latin America has experienced significant economic growth in recent years. At the same time, economic and ethnic divisions still threaten to create new conflicts, and Colombia is already involved in a civil drug war of major importance to the United States.

It should be stressed that each region has its successes and the fact that things can degenerate in each region, in spite of globalism and more positive trends, is no indication that they will. U.S. military planning, however, is not concerned with regional successes. It is concerned with regional failures, and there are several major areas of potential regional conflict that involve nations fully armed for a future conflict. They include:

- Greece and Turkey
- Arab-Israeli
- Persian Gulf
- North and South Korea
- People's Republic of China and Taiwan
- South China Sea/Spratly Islands
- India and Pakistan
- Horn of Africa
- Sudan
- Congo

Reacting to a Violent and Uncertain World

Put simply, there is no meaningful prospect that the United States will face less need to plan for major regional wars during the next quarter century, or that any U.S. military service will face less need for global engagement, than it does today. The same is true of peacemaking activity, no matter what strategies and doctrines U.S.

political and military leaders may appear to agree on at any given time. Moreover, the very complexity of the national and regional problems in the modern world means that crises will emerge with only ambiguous strategic warning, that most U.S. scenario analysis and contingency planning will continue to have only limited success, and that the level of U.S. involvement will be contingency-driven. Strategy and doctrine that attempt to deny these realities have no chance of success and will almost certainly lead to planning that fails to properly prepare U.S. military forces for the future.⁷

It should also be clear that the risk of underestimating the true nature of the complexity of the trends that shape the modern world is particularly severe in the case of military forces. Conflicts and crises almost inevitably are random walks through history. They involve the cases in which the system does not work, and the trends that are perceived as dominant do not apply. This is true even in the case of the use of force to prevent conflict or when the United States and its allies attempt two politically correct oxymorons: crisis management and conflict resolution.

The true nature of globalism means that U.S. military action will remain event-driven. Neither the Clinton nor Weinberger doctrines will have a meaningful impact on this fact. Vacuous generalizations about treating the world as a morality play are neither a doctrine nor a policy. Statements about committing U.S. forces only to contingencies that involve vital strategic interests are strategically naïve to the point of being ridiculous. The United States will be unable to wait to determine whether a given crisis affects vital national interests.

Living as the World's Only Superpower

The nature of U.S. global military power adds more complexity to this situation. As much through an accident of history as anything else, the United States is now the world's only "superpower" in the sense that it is the only power in the world with major global power projection assets. Britain, France, and Russia can project power broadly, but only in limited amounts and with limited sustainability. At the same time, the United States is thrust into global roles that put serious strains upon its forces and that make it potentially vulnerable to shifts in regional military balances, proliferation, and asymmetrical warfare.

In summary, U.S. military globalism has the following strengths and weaknesses:

Strengths

- No peer threat likely during the time frame of this study; in any case have 5 to 10 years of warning.
- Superior base of conventional warfighting technology, and superior research-and-development effort.
- Lead in nuclear offensive technology and parity in weapons; lead in missile defense capability.
- Global power projection capabilities to support coalition warfare through the Army and Air Force power projection; independent global power projection capability through the Navy and Marine Corps.

- Superiority in space-based sensor and intelligence systems, overall superiority in intelligence and strategic reconnaissance.
- Major lead in strategic airlift and sealift, refueling capability.

Weaknesses

- Insufficient present resources to support current strategy of dealing with two near simultaneous major regional wars.
- Peacetime funding dynamic: only major new threat or near catastrophe will lead to major increases in military spending and force structure.
- Overdeployed, overcommitted, and overseas, as well as underfunded, underpaid, and undersupported.
 - Procurement problems: major dropout rate and slippage in programmed Quadrennial Defense Review force improvements.
 - Prolonged readiness problems.
 - Revolution in military affairs is unaffordable; the question is whether we can fund a slower “evolution” in military affairs.
- Growing global political constraints on the ways we can use force.
- Global proliferation.
- Globalization of asymmetrical warfare.
- Uncertainty and insufficient resources combine to force a reactive, event-driven strategy.
- Put differently, forces and resources are insufficient to support a consistent global policy. The United States must often say “no” and make hard decisions about its priorities and interests.

Perhaps the greatest single problem the United States faces in dealing with the global pressures described earlier is one of resources. Some studies indicate that the present U.S. force posture has been underfunded by some \$100 billion and that the United States would need to spend roughly 4 percent of its GNP to adequately fund its current strategy and force goals.⁸ This percentage compares with planned spending of 2.9 percent in fiscal year 2000, which will drop to 2.4 percent in 2010 and 2 percent in 2020.⁹ There is strong evidence that the United States is not willing to spend the money necessary to meet its existing commitments, deal with continuing deployments for peacemaking and other unanticipated missions, develop and acquire a revolution in military affairs, and modernize its current mix of forces.

There is no way to predict whether the United States will increase defense spending to a level that matches its force plans and strategy in the future. If globalization continues to mean the lack of a peer threat and major wars, however, the United States is most likely to try to remain a superpower on the cheap. There will be a continuing mismatch between its strategy and force plans and the money it makes available. It is also likely that the declared foreign policy of the United States will continue to understate the real-world probability of U.S. interventions and peacemaking activity and consistently push the United States into overdeploying its forces.

No other power or international body is likely to fill this gap. Kosovo is living evidence of the fact that there is little near- to mid-term prospect that globalization will create meaningful international peacemaking capabilities under the United Nations. In fact, divisions in the Security Council make it likely that little effort will be made to create any kind of global norms for the use of armed force to intervene in humanitarian, peacemaking, and regional crises and conflicts. While Europe is creating a “crisis-management force” under the European Union, its members are simultaneously making major cuts in their military expenditures and forces. There is no other region where regional coalition partners are likely to create military capabilities that can greatly reduce the strain on U.S. forces.

This creates a strong prospect that the United States will find itself remaining the world’s only superpower, largely because no peer will emerge to expose the limits of its military capabilities. Like Britain during the Pax Britannica of a century ago, the United States is likely to remain overdeployed in ad hoc operations and to make resource decisions that steadily compromise its military capabilities. The end result may be a cruel parody of an old joke about force planning, namely, the goal is to do more and more with less and less, until the resulting forces attempt to do everything with nothing.

The only way that the United States could avoid this would be to fund a capabilities-driven force rather than a requirements-driven force. The United States cannot now predict the timing or scale of the conflicts that will involve it in the future. All it can predict is that global interests will require global power projection capability, that major regional contingencies will remain a mid- and long-term requirement, and that the United States must at least consider the long-term emergence of some form of major peer threat and/or proliferator.

The U.S. Military Response: Living with Complexity

There is no way to predict whether or when globalization will intensify the need for U.S. military intervention, reduce it, or leave it at roughly its current levels. The most likely reality is that there will be no constant trend, and periods of relative quiet will be followed by high-stress cases such as major regional contingencies.

There are, however, a number of aspects of globalization that will almost always affect U.S. military requirements and planning. These include added reliance on coalition warfare, technology transfer, asymmetrical warfare, proliferation, shifts in maritime power and traffic, and new forces of war such as information warfare.

Coalition Warfare, Global Interoperability, and Global Engagement

The growth of regional powers and the limits to U.S. military capabilities mean that U.S. forces generally will have to fight on a coalition basis. Some of these coalitions will exist before a crisis and allow the development of interoperability and common force plans. Many, however, will not. The United States currently has a number of core partners. These include NATO, Australia, Britain, Canada, Egypt, Japan, Israel, Saudi Arabia, and South Korea. It is interesting to note, however, that

virtually all of these partners now spend far less of their GNP on defense than the United States does, and most have steadily cut real defense spending since 1991. If there is an arms race among the main coalition partners of the United States, it is to cut military capabilities and take a peace dividend.

Kosovo has already demonstrated the risk involved if coalitions do not mean the growth of global interoperability among U.S. friends and allies. Secretary of Defense William Cohen stated in his speech to the International Institute of Strategic Studies on the lessons of the war:¹⁰

We have all agreed to develop forces that are more mobile, beginning with the reassessment of NATO's strategic lift requirements for planning purposes. We need forces, we've agreed, that can sustain themselves longer; that means having a logistics system that will ensure they have the supplies when and where they need them. [We need] forces that communicate more effectively, I just touched upon that. We have to have a common NATO command and control structure and communication architecture by the year 2002, so we are working to develop that as well. [We need] forces that can engage more effectively; that means having the new advanced technologies such as greater stocks of precision-guided munitions and forces that can survive better against chemical, biological or nuclear weapons, and also information warfare.

. . . What we now have to do is to measure up and to match the political commitment with actual deeds. There I would say the evidence is less encouraging. As I look around at the budgets of the members of the NATO Alliance I certainly see restructuring taking place as far as the size of the forces, and one cannot criticize that. But I also see a corresponding reduction in a commitment as far as the budget is concerned. So while there is a great sense of enthusiasm for what we have to do for the future to modernize NATO, to make it as effective as it needs to be, there is not at this point the kind of political commitment to actually carry it out. . . . [T]his is something that we must continue to point to; otherwise the gap that you have been reading and hearing about—the technological gap between the United States and the other NATO Allies—will continue to grow. If that disparity becomes deeper and more prolonged, that will carry political implications for the NATO Alliance itself.

The practical issues for the United States are: first, what to do if even Europe fails to develop the proper mix of force improvements and interoperability necessary to serve as an effective coalition partner; and second, what will happen in any future conflicts in the Persian Gulf, Korea, the Taiwan Straits, or any other area where coalition partners show even fewer signs of developing effective military capabilities. None of the other alliances and semi-alliances the United States has elsewhere in the world is growing stronger, with the possible exceptions of Israel and Japan. As a result, the United States may have to rely on a global coalition strategy that is

- Contingency-driven, and where the identity and commitment of the partners may be uncertain before, during, and after the contingency.
- Entangling and ally-driven, rather than serving U.S. policy.

- Largely regional and involving very disparate forces.
- Characterized by interoperability, which will almost invariably present major problems.

It is easy to talk about globalism as a trend in civilian technology, but there are few signs of any coherent globalism in coalition warfare. The end result may well be to force the United States into tailored “high-low” regional engagement strategies where the United States designs its command, control, communications, and computers, intelligence, surveillance, and reconnaissance (C⁴ISR) battle management systems, tactics, and force employment strategies around the lack of allied capabilities and globalism.

Interoperability will often have to be unilateral. The United States will need training, tactics, and technology that allow it to rapidly integrate its forces in a wide range of unanticipated combinations of allies with little warning and preplanning. Access to bases is also likely to be a growing issue because of the contingency-driven and ad hoc nature of many coalitions. As a result, U.S. forces must be as expeditionary as possible, and they must be capable of projecting power faster and at longer in-theater distances. The value of deep-strike capabilities from the sea, sea-based missile defense, continental U.S.-based bomber forces, airlift/fast sealift deployable forces, and sea-based mobile pre-positioning will also increase with time.

These points reinforce another lesson that the U.S. military drew from Kosovo—the need to rethink joint warfare and military service planning to achieve what it calls “global force integration.” The United States may not be able to structure any coherence behind its global coalition options, but it may be able to create “globalism” within its own force structure. The Department of Defense report on the lessons of the war in Kosovo notes that¹¹

Our ability to reach back and use capabilities in the continental United States to perform functions formerly accomplished only in the theater of military operations is one of the highlights of Operation Allied Force. Such capability improves responsiveness to urgent requirements in a conflict and reduces the amount of equipment and the number of personnel that must be transported to the theater. In short, the capability to integrate our force globally yields significant improvements in our ability to respond to crises, particularly during their initial stages.

. . . Extensive growth in communications capacity enabled an unprecedented degree of reliance on U.S.-based forces to provide direct support for in-theater tasks. Targets in Kosovo and the Federal Republic of Yugoslavia were developed through the concerted effort of numerous agencies in the United States cooperating closely with commands in Europe. Planning and integration of cruise missile attacks by bombers operating from the continental United States and the United Kingdom and by ships and submarines operating in the Mediterranean were closely coordinated by commanders and planners who were widely separated geographically. Bomb damage assessments of strikes made against targets in theater were conducted by agencies and commands located in the United States in close support with efforts by commands in the European theater. This system of using geo-

graphically dispersed activities to perform and integrate bomb damage assessment (BDA) became known as federated BDA. Expert personnel located in the United States and Europe performed detailed planning of information operations. Kosovo operations continued a trend of increasing global integration of U.S. forces and commands to support operations in a distant theater.

Integration of global forces during Kosovo operations provides insight to the design of future exercises and training required for increasing our proficiency in the complex actions necessary for integrating a global force. While our focus is on theater operations, the Department must exercise the global capabilities required in support of theater operations. Additionally, the Department must recognize the need to deploy forces in a myriad of unpredictable scenarios requiring new levels of adaptability and flexibility in global interoperability and integration.

. . . our experience in integrating worldwide capabilities during Operation Allied Force highlights the importance of the joint operational architecture concept. This architecture would define the relationships between forces and commands involved in complex operations. A joint operational architecture would also serve as the basis for developing technical architectures to support warfighters' needs, and for prioritizing resources and training requirements. These technical architectures would be defined for the spectrum of global threats and would identify any organizational changes required to support the National Military Strategy.

It is far from clear that this kind of globalism can compensate for continued U.S. overcommitment and underspending or for the weaknesses in regional coalition partners. At the same time, it is clear that the United States cannot afford service- or theater-oriented force plans and strategies.

Arms Transfers and Transfer of Technology

For nearly a century, there has been a continuing shift in the global transfer of technology and in the flow of conventional arms. These trends are increasingly being affected by the transfer of many of the key aspects of the weapons and technology that make up the revolution in military affairs. They include the transfer of precision weapons, smart munitions, and C⁴ISR systems that support the broad range of capabilities that currently give the United States its global edge in conventional warfighting capabilities. This mix of capabilities is as follows:

- *Unity of command*: The level of unity of command and “fusion” achieved during the Persian Gulf War was scarcely perfect, but it was far more effective than that possible in most states. Advanced powers have improved its unity of command and ability to conduct joint operations.
- *Jointness, combined operations, combined arms, and the “AirLand Battle”*: Advanced powers can use technology to train and integrate in ways that allow far more effective approaches to jointness, combined arms, and combined operations. They have developed tactics that closely integrate air and land operations.

- *Emphasis on maneuver*: The United States had firepower and attrition warfare until the end of the Vietnam War. In the years that followed, it converted its force structure to place an equal emphasis on maneuver and deception. This emphasis has been adopted by Britain and France, and by other advanced states.
- *“24-hour war”—superior night, all-weather, and beyond-visual-range warfare*: “Visibility” is always relative in combat. There is no such thing as a perfect night vision, an all-weather combat system, or a way of acquiring perfect information at long ranges. Advanced technology air and land forces, however, have far better training and technology for such combat than they ever had in the past, and they are designed to wage warfare continuously at night and in poor weather. Equally important, they are now far more capable of taking advantage of the margin of extra range and tactical information provided by superior technology.
- *Near-real-time integration of C⁴I/BM/T/BDA*: New organization, technology, and software systems make it possible to integrate various aspects of command, control, communications, computers, and intelligence (C⁴I); battle management (BM); targeting (T); and battle damage assessment (BDA) to achieve a near-real-time integration and decisionmaking-execution cycle.
- *A new tempo of operations*: Superiority in virtually every aspect of targeting, intelligence gathering and dissemination, integration of combined arms, multi-service forces, and night and all-weather warfare makes it possible to achieve both a new tempo of operations and one far superior to that of the enemy.
- *A new tempo of sustainability*: Advanced forces will have maintainability, reliability, reparability, and the speed and overall mobility of logistic, service support, and combat support force activity that broadly match their maneuver and firepower capabilities. The benefits of these new capabilities are already reflected in such critical areas as the extraordinarily high operational availability and sortie rates of Western combat aircraft and in the ability to support the movement of heliborne and armored forces.
- *Beyond-visual-range air combat, air defense suppression, air base attacks, and airborne C⁴I/BM*: The coalition in the Gulf had a decisive advantage in air combat training, beyond-visual-range air combat capability, antiradiation missiles, electronic warfare, air base and shelter and kill capability, stealth and unmanned long-range strike systems, Identification, Friend or Foe (IFF) and air control capability, and airborne C⁴I/BM systems such as the E-3 and ABCCC. These advantages allowed the coalition to win early and decisive air supremacy. Advanced forces will steadily improve the individual capability of these systems and their integration into “netrocentric” warfare.
- *Focused and effective interdiction bombing*: Advanced forces will organize effectively to use their deep-strike capabilities to carry out a rapid and effective pattern of focused strategic bombing where planning is sufficiently well coupled to intelligence and meaningful strategic objectives so that such strikes achieve the major military objectives that the planner sets. At the same time, targeting, force allocation, and precision kill capabilities will advance to the point where interdiction bombing and strikes are far more lethal and strategically useful than in previous conflicts.

- *Expansion of the battlefield (deep strike)*: As part of the effort to offset the Warsaw Pact's numerical superiority, U.S. tactics and technology emphasized using AirLand battle capabilities to extend the battlefield far beyond the immediate forward edge of the battle area. The coalition exploited the resulting mix of targeting capability, improved airstrike capabilities, and land force capabilities in ways during the Gulf War that played an important role in destroying Iraqi ground forces during the air phase of the war and that helped the coalition break through Iraqi defenses and exploit that breakthrough. Even in Kosovo, the United States and NATO were only beginning to employ advanced deep-strike targeting technologies and precision strike systems, and far more advanced systems are currently in development.
- *Integration of precision-guided weapons into tactics and force structures*: Advanced forces will exploit a technical edge in the ability to use precision-guided weapons with far more realistic training in using such weapons and the ability to link their employment to far superior reconnaissance and targeting capability.
- *Realistic combat training and use of technology and simulation*: During the Gulf War, the United States and Britain used training methods based on realistic combined arms and AirLand training, large-scale training, and adversary training. These efforts proved far superior to previous methods and were coupled to a far more realistic and demanding system for ensuring the readiness of the forces involved. They show the value of kinds of training that allow forces to rapidly adapt to the special and changing conditions of war.

So far, the United States retains a major global lead in most of these technologies, but the same trends that reduce the cost of virtually every other aspect of information processing may reduce the cost to other nations of acquiring similar capabilities, raise the cost to the United States of trying to preserve its current edge to unaffordable levels, or drive the benefits from any given aspect of the revolution in military affairs to the point of diminishing returns.

This particular form of globalism does not seem to be an imminent possibility. While many nations do possess important advanced arms and military systems, declassified U.S. intelligence scarcely indicates that there is a global, high-technology arms race.¹² The volume of global arms sales has dropped sharply in constant dollars since the late 1980s, and a detailed review of the equipment holdings in the 1999–2000 edition of the *Military Balance* indicates that the technology content of these arms transfers has been considerably less threatening than was estimated at the start of the Clinton administration.

The latest State Department estimate indicates that deliveries from world arms sales in constant 1996 dollars dropped from \$84.4 billion in 1987 to \$42.4 billion in 1996, and that sales to the developing world dropped from \$58.3 billion in 1987 to \$23.7 billion in 1996.¹³ Work by Richard F. Grimmett of the Congressional Research Service includes data that are somewhat more up to date but covers only transfers to developing nations. These data indicate that new arms transfer agreements—which are a good measure of future trends in arms sales—dropped from \$21.6 billion in 1991 to \$13.2 billion in 1998.¹⁴

It should be noted, however, that these same sources do show a relatively high rate of transfer of high-technology weapons systems by the United States, Europe, and Russia in categories such as tanks, major surface combatants, guided missile patrol boats, supersonic combat aircraft, surface-to-air missiles, surface-to-surface missiles, and antiship missiles. For example, U.S. experts estimate that 420 major surface-to-surface missiles, 13,352 surface-to-air missiles, and 947 major antiship missiles were transferred to the developing world between 1991 and 1998.¹⁵

Arms and technology transfers are also extremely cyclical—with sudden massive bursts in the transfers of new forms of technology and arms. The decline in the current volume of global transfer, for example, has been heavily driven by a combination of factors that have favored the United States but that may not continue to do so in the future:

- The collapse of Russian arms sales and China's inability to manufacture competitive high-technology weapons for export.
- International sanctions against Iraq and Libya.
- Iran's economic problems, U.S. pressure not to sell to Iran, partial Russian cooperation, Iranian economic problems and Iran's decision not to attempt massive rearmament after its defeat in the Iran-Iraq War in 1988.
- Syria's poverty and inability to pay its massive arms debt to Russia.
- The economic collapse of North Korea.

Many of these constraints on world arms sales are easing or are likely to ease with time. At the same time, such constraints have not always helped lead to global stability. The inability to compete in conventional forces has unquestionably helped lead hostile states to pursue alternative options such as asymmetrical warfare and proliferation, and to increase their incentive to acquire lower cost and less constrained technologies, such as information warfare, for new types of wars and battles. Accordingly, the United States needs to be extremely careful in dealing with technology transfer and has strong incentives to limit the transfer of technology to potentially hostile states. It is also clear that it is far better and cheaper to deny technology transfer than to deal with its consequences.

At the same time, the United States should be very careful to conduct ongoing technological assessments to determine what rate of technology transfer will occur in spite of U.S. efforts, and it should not exaggerate the advantages technology gives U.S. forces. It seems fair to state that the United States has not deployed a single major military system on time, at cost, and with the promised effectiveness in the last quarter century and that it normally takes 3 to 5 years after initial deployment to modify and fix systems that were supposedly combat-ready in the first place.

The United States has a long history of exaggerating the effectiveness and useful life span of high-technology force multipliers, as well as of underestimating their life cycle cost and related training and sustainment costs. No element of the Department of Defense, U.S. defense industry, or the U.S. strategic studies community has an impressive rate of accuracy in such forecasting, and there is an almost universal history of advocacy analysis and special pleading. Given current global trends, a U.S.

technological edge, backed by transfers to friendly states, will remain a critical asset. The United States must, however, be extremely careful about exaggerating its requirements for technology and its effectiveness. The regular reexamination and iteration of requirements analysis will be vital to a successful high-technology strategy in a resource-constrained environment.

Asymmetrical Warfare

There is another aspect of military globalism that the United States must consider. Every reaction produces an equal and opposite reaction, and many hostile states have found two major counters to the kind of high-technology advantages that the United States can now exploit in conventional warfare. One is the use of asymmetrical warfare; the other, proliferation of weapons of mass destruction.

There is nothing new about asymmetrical warfare per se or about the fact that it poses a global threat to the United States. China posed a major asymmetrical threat to the United States in Korea by using deception, surprise, and human wave tactics. The United States was decisively defeated in Vietnam by asymmetrical warfare, even though it won virtually every conventional battle. The United States was driven out of Lebanon and Somalia and faced a major threat in Kosovo because of such methods of warfare.

The Department of Defense report on the lessons of the war notes that¹⁶

in the Kosovo conflict, Serbia's Milosevic was unable to challenge superior allied military capabilities directly. His fielded forces were compelled to hide throughout most of the campaign, staying in caves and tunnels and under the cover of forest, village, or weather. He was forced to husband his antiaircraft missile defenses to sustain his challenge to our air campaign. Therefore, he chose to fight chiefly through asymmetric means: terror tactics and repression directed against Kosovar civilians; attempts to exploit the premium the alliance placed on minimizing civilian casualties and collateral damage; creation of enormous refugee flows to create a humanitarian crisis, including in neighboring countries; and the conduct of disinformation and propaganda campaigns.

These tactics created several serious challenges for our forces, all of which we were able to overcome thanks to excellent training, leadership, equipment and motivation. Nevertheless, these challenges underscored the continued need to develop new operational concepts and capabilities to anticipate and counter similar asymmetric challenges in the future. Simply put, adversaries will use unconventional approaches to circumvent or undermine U.S. and allied strengths and exploit vulnerabilities. Milosevic illustrated very clearly his propensity for pursuing asymmetric approaches. He chose his tactics in the hope of exploiting the NATO nations' legitimate political concerns about target selection, collateral damage, and conducting military operations against enemy forces that are intentionally intermingled with civilian refugees.

In the case of refugee flow, the time-scale was so rapid and the numbers so great that it initially overwhelmed the neighboring countries, particularly

the Former Yugoslav Republic of Macedonia (FYROM) and Albania. The humanitarian crisis created by Milosevic appeared to be an attempt to end NATO's operation by "cleansing" Kosovo of ethnic Albanians, overtaxing bordering nations' infrastructures, and fracturing alliance cohesion. He failed, despite all these efforts, principally because NATO adapted to the changing circumstances. One general lesson learned is that similar attempts at asymmetric challenges should be anticipated in future conflicts as well.

There are numerous other examples of a shift toward asymmetrical threats. For example, Iran seems to have helped Serbia in some aspects of its asymmetrical strategy, and certainly Serbia learned from the Iranian experience. Chinese military literature shows a new interest in asymmetrical warfare, and Iran has shown considerable originality in using submarines, mines, unconventional forces, and antiship missiles to create a tailored asymmetrical threat to naval movement through the lower Gulf.

The United States is vulnerable to such forms of warfare in many ways and faces the full range of potential asymmetrical threats:

- *Sudden or surprise attack*: Power projection is dependent on strategic warning, timely decisionmaking, and effective mobilization and redeployment for much of its military effectiveness.
- *Saturation*: There is no precise way to determine the point at which mass, or force quantity, overcomes superior effectiveness, or force quality. Historically, efforts to emphasize mass have been far less successful than military experts predicted at the time. Even the best force, however, reaches the point where it cannot maintain its edge in C⁴I/battle management, air combat, or maneuver warfare in the face of superior numbers or multiple threats. Further, saturation may produce a sudden catalytic collapse of effectiveness, rather than a gradual degeneration, from which recovery is possible. This affects forward deployment, reliance on mobilization, and reliance on defensive land tactics versus preemption and offensive defense.
- *Taking casualties*: War fighting is not measured simply in terms of whether a given side can win a battle or conflict, but in terms of how well the opponent can absorb the damage inflicted upon it. Many powers are highly sensitive to casualties and losses. This sensitivity may limit their operational flexibility in taking risks and in sustaining some kinds of combat if casualties become high.
- *Inflicting casualties*: Dependence on world opinion and outside support means some nations increasingly must plan to fight at least low- and mid-intensity conflicts in ways that limit enemy casualties and collateral damage to their opponents.
- *Low-intensity combat*: Low-intensity conflict makes it much harder to employ technical advantages in combat—because low-intensity wars are largely fought against people, not things. Low-intensity wars are also highly political. The battle for public opinion is as much a condition of victory as is killing the enemy. The outcome of such a battle will be highly dependent on the specific political conditions under which it is fought, rather than on revolution in military affairs-like capabilities.

- *Hostage taking and terrorism*: Like low-intensity warfare, hostage taking and terrorism present the problem that advanced technology powers cannot exploit their conventional strengths and must fight a low-level battle, primarily on the basis of infantry combat. Human intelligence is more important than conventional military intelligence is, and much of the fight against terrorism may take place in urban or heavily populated areas.
- *Urban and built-up area warfare*: Advanced military powers are still challenged by the problem of urban warfare. They do not perform particularly well in urban warfare. Most Western forces are not trained or equipped to deal with sustained urban warfare in populated areas during regional combat, particularly when the fighting may affect large civilian populations on friendly soil.
- *Extended conflict and occupation warfare*: Not all wars can be quickly terminated, and many forms of warfare—particularly those involving peacekeeping and peace enforcement—require prolonged military occupations.
- *Weapons of mass destruction*: The threatened or actual use of such weapons can compensate for conventional weakness in some cases and deter military action in others.

Asymmetrical warfare is not a one-way street. The U.S. use of carbon fiber weapons against power grids in Kosovo illustrates the fact that the United States can introduce new asymmetrical warfare techniques as well as its enemies can. Indeed, it might be useful to conduct a “what if” analysis of Kosovo to see how the introduction of other asymmetrical weapons now under development might have changed the course of the fighting.^{17,18}

More broadly, however, the United States needs to give the ability to fight asymmetrical warfare the same priority that it gives to fighting conventional forces in documents such as *Joint Vision 2020*. It needs to examine Serbia’s use of asymmetrical warfare in more depth to determine the merit of relative techniques and to examine worst cases in which the global spread of steadily more sophisticated forms of asymmetrical warfare accelerates.

The United States must recognize and reduce its key historical vulnerabilities in such forms of conflict, which include protracted conflict, urban warfare, guerrilla warfare, use of human shields, casualties, collateral damage, and failure to plan effectively for conflict termination. It also needs to understand that peacemaking almost inevitably means fighting asymmetrical warfare, and that a humanitarian crisis can easily turn into such forms of conflict. This places an especially high premium on avoiding casualties and collateral damage and on letting an enemy use the media to achieve political dominance of a conflict.

Proliferation

There is little present prospect of the effective globalization of arms control, and there is a near certain prospect of the globalization of weapons of mass destruction and long-range delivery systems. Hostile states will also acquire longer range, more

lethal conventional weapons that they can use to strike with precision at critical strategic targets such as oil shipments and desalination plants.

The United States recognized this aspect of globalism in the bottom-up review that it issued at the start of the Clinton administration, which gave the development of counterproliferation capabilities its highest force planning and strategic priority. At the same time, the United States has been slow to develop coherent programs and acquire actual capabilities. Once again, this is partly because of the complexity and uncertainties surrounding the threats that the United States now faces.

Table 4 provides a rough estimate of the more visible forms of proliferation that are now reshaping global military capabilities. Many of the most hostile powers in this table, however, face international sanctions or are signatories to arms control agreements that provide a strong incentive to keep their efforts covert. The good news is that such constraints have often reduced their rate of activity and success and have sharply increased the cost of acquiring and deploying key threats like nuclear weapons. The bad news is that nations such as India and Pakistan have shown that such barriers do not block military change, and nations such as Iran, Iraq, and North Korea continue to acquire new technology and improve their capabilities.¹⁹

The United States also faces the risk of several paradigm shifts in the process of global proliferation that it must take into account in its force planning.

- *Making weapons of mass destruction an international norm:* As the Iran-Iraq War has shown, the present political barriers to the use of weapons of mass destruction are tenuous and can vanish under the pressure of war. The Gulf War showed that missile attacks against population centers and “horizontal escalation” are very real threats, and the course of the Gulf War might well have led to the widespread use of weapons of mass destruction if it had occurred several years later. There “is a serious risk that a new conflict using weapons of mass destruction—such as a nuclear conflict between India and Pakistan—could suddenly legitimize” both proliferation and the use of weapons of mass destruction in the sense that it could become a new norm for many developing countries.
- *Proliferating global breakout capabilities:* Proliferation has been slowed in the past by the difficulties in acquiring nuclear weapons and in designing chemical and biological weapons with real effectiveness. Some of these trends may continue. While most powers can now design fission and boosted weapons, there has been only limited progress in the technology needed to develop fissile material. This situation seems likely to continue, although the acquisition of high-speed centrifuge technology, the technology needed to build small reactors designed to produce plutonium, or fissile material from the FSU, presents continuing risks.
- Radically changing the present mix of risks that the United States faces would take the collapse of the political restraints enforced by the Nonproliferation Treaty and a major increase in supplier willingness to sell relevant technologies.

Table 4. Global Challenges: Who Has Weapons of Mass Destruction

Country	<i>Type of Weapon</i>			<i>Long-Range Missiles</i>	
	<i>Chemical</i>	<i>Biological</i>	<i>Nuclear</i>	<i>Theater</i>	<i>Intercontinental</i>
<i>East-West</i>					
Britain	Breakout	Breakout	Deployed	Deployed	SLBMs
Canada	—	Technology	Technology	—	—
France	Breakout	Breakout	Deployed	Deployed	SLBMs
Germany	Breakout	Breakout	Technology	Technology	—
Sweden	—	—	Technology	—	—
Russia	Residual	Residual	Deployed	Technology	ICBMs/SLBMs
United States	Residual	Breakout	Deployed	Technology	ICBMs/SLBMs
<i>Middle East</i>					
Egypt	Residual	Breakout	—	Deployed	—
Israel	Breakout Technology/ Booster	Breakout	Deployed	Deployed	—
Iran	Deployed? Technology/ Booster	Breakout	Technology	Deployed	—
Iraq	Deployed	Deployed	Technology	Technology	?
Libya	Deployed	Research	—	Deployed	?
Syria	Deployed	Technology?	—	Deployed	—
Yemen	Residual	—	—	—	—
<i>Asia and South Asia</i>					
China	Deployed?	Breakout?	Deployed	Deployed	ICBMs/SLBMs
India	Breakout?	Breakout?	Deployed	Deployed	Technology
Japan	Breakout	Breakout	Technology	Technology	—
Pakistan	Breakout?	Breakout?	Deployed	Deployed	Technology?
North Korea	Deployed Technology/ Booster	Deployed	Technology	Deployed	—
South Korea	Breakout?	Breakout	Technology	Technology?	—
Taiwan	Breakout?	Breakout	Technology	—	—
Thailand	Residual	—	—	—	—
Vietnam	Residual	—	—	—	—
<i>Other</i>					
Argentina	—	—	Technology	Technology	—
Brazil	—	—	Technology	Technology	—
South Africa	—	—	Technology	Technology	—

Key: ICBM, intercontinental ballistic missile; SLBM, submarine/sea-launched ballistic missile.

Source: Adapted from estimates and data in National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," September 1999 (www.cia.gov/cia/publications/nie/nie99); NonProliferation Center, Director of Central Intelligence, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions 1 January Through 30 June 1999," ODCI/CIA, January 2000; National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," September 1999 (www.cia.gov/cia/publications/nie/nie99).

- Similar constraints do not apply, however, to chemical and biological weapons. The global spread of biotechnology, food processing facilities, fertilizer plants, and petrochemical plants is slowly giving a wide range of nations the ability to manufacture advanced chemical and biological weapons. In fact, far more countries have already begun research efforts than are shown in table 4. The U.S. intelligence community estimates that there are 25 to 35 such countries, although any list is classified. Moreover, the spread of missile warhead, cluster munitions, sprayer, and UAV technology is simplifying the creation of such weapons.
- *The risk posed by biotechnology:* Modern biological weapons can easily be as lethal as fission and boosted weapons. Biological weapons can also be used to attack in ways that incapacitate or threaten the agricultural sector, or modified—with or without genetic engineering—to defeat current vaccines and medical treatment. Globalization is making such weapons steadily cheaper and more accessible and is creating a wide range of national research and production capabilities that can mass-produce such weapons with only a limited chance of detection. There is a high probability that the threat of nuclear proliferation, which dominated the “globalism” of the last half of the 20th century, will be matched or surpassed by the threat posed by the globalization of biotechnology.
- *Long-range strike systems:* Nations such as North Korea, Iran, and Iraq are demonstrating that developing states can acquire the technology to produce missile boosters capable of launching weapons of mass destruction with enough accuracy to hit city-sized targets at ranges of more than 1,000 miles and eventually to attain intercontinental ranges. At the same time, the proliferation of GPS guidance systems and specialized commercial jet engines is greatly reducing the cost of developing and producing cruise missiles with ranges in excess of 600 miles.²⁰
- *Weapons of mass destruction and asymmetrical warfare:* The technologies and weapons necessary to carry out covert and proxy attacks using weapons of mass destruction are far cheaper than those required to use ballistic and cruise missiles. They are also becoming available to nonstate actors such as terrorists and extremists. Such attacks offer the potential ability to attack without attribution.
- *Homeland and allied defense:* All of these risks combine to create a need for the homeland defense of the United States and allied nations that the United States has not seriously contemplated since the early days of the thermonuclear era. It is far from clear that emerging proliferators will have the kind of political leadership that is as subject to rational deterrence as is Russia. Certainly, Iraq and North Korea have been erratic enough in the past to create serious concerns about their conduct, and even a rational developing state might become involved in a process of escalation that ended in little restraint. The practical problem is that many forms of attack that could be used do not require an overt declaration of war or clearly identify the attacker, and the most costly forms of defense—national and theater missile defenses—deal only with the most costly and overt form of attack. As a result, effective counterproliferation may require a global shift to a broad mix of costly homeland defense measures ranging from missile defense and counterproliferation to response measures designed to limit damage and deal with its effects.

There are no certainties involved in any of these threats. It is impossible to assign reliable probabilities to their nature, timing, or effectiveness, but it is at least possible that diplomacy, political change, and economic development may reduce them, roll them back, or at least prevent the emergence of major paradigm shifts. It is equally possible, however, that these threats will interact to create the same broad changes in the global military environment as has asymmetrical warfare.²¹

It is clear from such changes that the counterproliferation program deserves high priority, and this will probably require broad changes in U.S. military deterrent, retaliatory, active defense, and passive defense capabilities. At the same time, it is important to point out several aspects of the response that the United States must make:²²

- The United States cannot act as a global power if it does not provide counterproliferation capabilities for its allies and coalition partners. No nation is going to sacrifice itself for a defended America.
- Ballistic missile defense is only part of the problem and involves the most costly form of defense against the most costly form of attack.
- The nuclear threat is no more lethal than is the biological threat, and U.S. planning must give them at least equal vulnerability.
- The present maximum casualty level used for guidance in planning response measures for American homeland defense is 1,000 casualties. The existence of the biological threat alone means that far higher thresholds of damage must be considered.²³
- The threat of retaliation and extended deterrence will probably have to be redefined to deal with these problems.
- Arms control and limits on technology transfer are the cheapest methods of counterproliferation *if* they can be made effective. To paraphrase Clausewitz, they must be regarded as “an extension of war by other means.”
- The United States must rethink its doctrine, tactics, technology, training, and C⁴I/BM/SR to fight in a regional and low-level NBC environment as well as rethinking force protection and coalition defense capabilities.
- The United States must also rethink its global vulnerabilities. For example, sea power can minimize vulnerability and incentive to strike at U.S.-coalition forces in some circumstances, but it also often requires extended strike and deployment ranges. At the same time, ports, bases, and over-the-beach assembly areas become potential critical targets that give both sea power and the maritime economy a new level of vulnerability.

There are no rules or precedents that the United States can afford to trust in shaping this response, and it presents a further major potential drain on already inadequate defense resources. It will also ultimately prove at least as important to the future of an effective strategy for global coalition warfare as any of the lessons of Kosovo.

Shifts in Economic Interdependence, Air and Maritime Traffic, and Related Information Systems

The analysts of the economic aspects of globalism often focus on its benefits and not its vulnerabilities. It is clear, however, that economic interdependence makes the U.S. military more vulnerable with time. This is a function not only of the increase in the volume of U.S. trade but also of the increasingly specialized nature of trade, which means that the United States obtains most of many specialized products and components from overseas and has only a limited industrial base to provide substitutes in an emergency.²⁴

There are few tangible data on such vulnerabilities, which are far more complex than the kind of dependence on strategic raw materials that was the subject of analysis during the Cold War. It is clear, however, that U.S. dependence on trade is growing steadily, as is its dependence on the overall health of the world economy. In fact, the International Trade Administration of the Department of Commerce indicates that the volume of U.S. trade more than doubles in value in constant dollars every decade.²⁵

The latest Central Intelligence Agency estimate of U.S. trade indicates, however, that American exports totaled \$663 billion in 1998 and that the chief importers were Canada, 22 percent; Western Europe, 21 percent; Japan, 10 percent; and Mexico, 10 percent. American imports were a much larger \$912 billion and were equally diverse in nature and source. The main imports included crude oil and refined petroleum products, machinery, automobiles, consumer goods, industrial raw materials, food, and beverages. The main sources of American imports were Canada, 19 percent; Western Europe, 18 percent; Japan, 14 percent; Mexico, 10 percent; and China, 7 percent.²⁶ The total volume of world trade totals about \$5 trillion annually in both imports and exports.

This dependence on the globalization of world trade has been accompanied by changes in management and information systems that can provide a steadily improved capability to reduce inventories and stockpiles, and to manage much more complex flows of interrelated imports and exports. As a result, both the volume and “fragility” of trade increase with time. The tangible impact of such shifts is a steady series of increases in interdependent ship and air cargo movements and capacity and in the growth of specialized ports, airports, and trade-related facilities. Moreover, the growing U.S. strategic dependence on overall health of the world economy means that the United States must consider increasing the security of the trade and imports of other states.

U.S. energy imports are a good case in point. The level of U.S. dependence on oil imports increased from 6.3 million barrels per day (mbd) in 1973 to 10.5 mbd in 1999.²⁷ Projections by the U.S. Energy Information Agency indicate that petroleum imports could reach around 15 mbd by 2020.²⁸ This may seem like a massive increase in the volume of a critical aspect of world trade, but it is only part of the story.

United States dependence on oil imports consists of both direct and indirect imports. American trading partners need to produce their exports to the United States and to sustain their economies in ways that allow them to finance imports from the United States. Globalism means that data that report only on the direct level of

American dependence on oil imports are obsolete and misleading. As a result, it is the overall volume of the increase in world oil exports between today and 2010 that matters, and the U.S. Energy Information Agency projects that these imports will rise from around 37.1 mbd to 66.0 mbd by 2020.²⁹ It is also interesting to note that the flow of trade is changing strikingly as well and that the flow of exports to Asia is projected to shift from 11.8 mbd in 1995 (32 percent of world imports) to 23.2 mbd (36 percent of world imports).

The end result is that globalization will alter how the world's sea-lanes are used. Long-range strike systems will pose a greater menace to key chokepoints, which themselves will be used by growing maritime traffic carrying specialized products that must be delivered quickly. The same will be true of air cargo, which cannot handle anything like the volume of maritime traffic, but which is often even more time-sensitive in terms of the efficient operation of world trade.

As a result, the United States will have to react to the globalization of trade, maritime and air traffic, and changes in the way in which trade is managed at a time when technology is also changing the ability of states to use long-range antiship missiles, mines, submarines, and anti-air systems to vastly increase the range at which they can strike at the world's chokepoints. There has been so little analysis of these aspects of globalization, however, that the starting point for force planning has to be to establish a suitable analytical base.³⁰ This means that the U.S. military must:

- Analyze the changing patterns in trade flows in depth.
- Reanalyze dependence, interdependence, and vulnerability.
- Evaluate capability to protect a greatly expanded number and regional areas of chokepoints.
- Consider the impact of proliferation and asymmetrical threats on chokepoints.

Out of the Box: New Forms of Warfare

The United States must also plan for the impact that the same trends that create globalism will have in creating new forms of warfare. The most obvious of these forms of warfare is information warfare, which has a major potential impact in attacking both civil society and military forces. While it can be argued that many forms of information warfare are simply a new form of electronic warfare and asymmetrical warfare, the level of technology involved is so different, and its importance is growing so rapidly, that military operations must plan for information warfare on a global basis.³¹

Thought must also be given to the risk of new forms of environmental warfare (for example, oil spills in the Gulf War) and economic warfare directed at critical economic and civil systems such as land-based pipelines, desalination plants, and electric power plants. The globalization of precision strike capabilities and the growing complexity and vulnerability of modern societies are redefining strategic vulnerability, particularly for U.S. allies and coalition partners in theaters and regions where such capabilities become common.

At the same time, the United States almost certainly needs to rethink the way in which it deals with the global media and the fact that war is now a real-time televised

event. “Information dominance” is scarcely a matter of battle management in today’s world, a point that is clearly recognized in the Department of Defense report on the lessons of Kosovo:³²

The first political-military plan on Kosovo, completed in the fall of 1998, focused on using the threat of NATO air strikes to achieve a political-military settlement. After this threat of force convinced Milosevic to garrison most Serb forces in October 1998, interagency planning efforts focused on deploying the OSCE’s Kosovo Verification Mission, facilitating humanitarian assistance, and responding to possible Serbian noncompliance. During Operation Allied Force, two interagency planning efforts occurred simultaneously. The first involved the development of a strategic campaign plan designed to ensure that wider U.S. and allied diplomatic, economic, and information efforts were integrated with our military operations.

As it became clear that Milosevic hoped to outlast the alliance, more attention was paid to other ways of bringing pressure to bear. The second effort involved planning for a NATO-led peace implementation force in Kosovo and an international civilian presence for the UN Mission in Kosovo (UNMIK) after NATO’s military campaign had achieved its objectives.

This experience has taught us that our planning must better reflect the full range of instruments at our disposal, including the use of economic sanctions, public diplomacy, and other information efforts. Our initial planning focused on air strikes and diplomacy as the tools to achieve U.S. and NATO objectives. To ensure comprehensive planning and high-level awareness of the range of instruments available to decisionmakers, we believe it is important that senior officials participate routinely in rehearsals, gaming, exercises, and simulations.

Successfully conducting operations to disrupt or confuse an enemy’s ability to collect, process, and disseminate information is becoming increasingly important in this “information age” of warfare. The importance of such capabilities was recognized fully during Operation Allied Force, but the conduct of an integrated information operations campaign was delayed by the lack of both advance planning and strategic guidance defining key objectives. The Department will address this problem by developing the needed plans and testing them in exercises.

There is good reason to address the problem. One of the most striking aspects of any review of the propaganda campaign conducted by both sides is how inept many portions of the campaign were, how unconvincing many media and propaganda statements were, and how often the content lacked the depth to be convincing. In many cases, the statements also seemed to ignore the different values and perspectives of the other side and may have done more to reassure those issuing the statements than to influence either the enemy or world opinion. Although NATO certainly did a better job than Serbia did, the former had far more means and a far better case. It also did not avoid overselling in shallow ways that alienated a considerable amount of the media and created a major credibility problem.

There are two broader problems that emerged in Kosovo that the United States will also have to address if it is to exploit information warfare and effectively exercise military power:

- The most serious is the *de facto* decision that the sensitivity of the global media is so great that each advance in U.S. military technology means that the United States must use those advances to virtually eliminate American and friendly casualties and to reduce collateral damage and even enemy casualties to an absolute minimum. It is one of the ironies of the real-world impact of the revolution in military affairs, and the current U.S. approach to the globalization of the media, that the U.S. military tries to create an image of perfect war that is so demanding that every bit of friction becomes a potential political disaster. The possibility of using force to achieve shock and awe has been minimized by a military culture that fails to warn that collateral damage and casualties are as inevitable as are mistakes, weapons failures, and the fog of war, and that the political cost of every mistake, failure, and casualty has been exaggerated.
- The United States talks about offensive information warfare but does not seem to be able to fight it. Kosovo showed that U.S. information warriors must find some way to overcome the longstanding objections by the CIA and the National Security Agency to direct attacks on enemy computer systems that are prime sources of intelligence. Furthermore, the Department of Defense encountered major legal objections during Kosovo to attacks using international links that might affect public and financial systems. Lawyers raised strong “law of war” arguments that information warfare can be used only against dedicated military systems, and the General Counsel’s office of the Department of Defense ended up issuing some 50 pages of complex guidelines on the legal issues involved.³³

Living with Uncertainty

Globalization will not reduce the challenges that U.S. military forces face in the future. It may not make them worse. This depends on the unpredictable emergence of threats whose capabilities evolve faster than those of U.S. forces and U.S.-led coalitions. It will make them more complex and—in some cases—require significant changes in the way that the United States plans to use military power.

It is also clear that globalization involves different trends from a military perspective than it does from one focused on the civil economy. In particular, U.S. strategy must look beyond “jointness” to a true focus on global engagement that cuts across service and command lines. It must redefine its approach to coalition warfare in ways that take account of regional differences and the need for a new approach to global interoperability.

U.S. force planning must also take account of the globalization of new threats and vulnerabilities. The most immediate of these threats are technology transfer, asymmetrical warfare, and proliferation. More broadly, however, the United States must also prepare for the fact that the globalization of trade, information systems, and the media creates both new vulnerabilities and new criteria for military operations.

There are three cultural challenges that the United States, and the U.S. military, will face in making the necessary changes. The first is to accept the true complexity of the future that the United States faces, and the near certainty that it will be just as violent and uncertain as the past. The second is to understand just how serious the present problem caused by insufficient resources will be in limiting the level of military modernization and change necessary to meet the new pressures and threats created by globalization. The third will be to transition as quickly as possible out of the conventional wisdom that shaped U.S. military strategy and planning during the Cold War and to respond flexibly and rapidly to new emerging new threats.

No one can really define “globalism” in military terms with any precision, much less predict the impact given trends will have at any given point in the future. It is clear, however, that the narrow conventional warfighting mindset set forth in *Joint Vision 2020* must be replaced with a far more flexible and adaptive approach to strategy and force planning. It is equally apparent that globalization is already challenging enough to require substantially larger forces and resources than have been considered under the Quadrennial Defense Reviews or are programmed in the Five Year Defense Program. The United States became the world’s only superpower largely through a series of historical accidents. It will remain a preeminent power only through deliberate planning. 🌐

Notes

¹ World Bank, *World Development Indicators, 1999* (Washington, DC: World Bank, 1999).

² These seem to be relatively optimistic projections. Older and more independent World Bank projections were considerably more pessimistic. See Eduard Bos, My T. Vu, Ernest Massiah, and Rodolfo A. Bulatao, *World Population Projections, 1994–1995* (Washington, DC: World Bank, 1996). The World Bank ceased publication of these projections from The Johns Hopkins University after 1996, evidently because they felt the projections were not optimistic enough.

³ For further background, see Walter Mondale, Ryutaro Hashimoto, and Karl Otto Pohl, *Global Aging: The Challenge of the New Millennium* (Washington, DC: Center for Strategic and International Studies-Watson Wyatt, 2000).

⁴ Erik R. Peterson, *Our Divided Future* (Washington, DC: Center for Strategic and International Studies, January 29, 1998).

⁵ This estimate is based primarily on work by Herbert J. Tilemmer in trying to summarize the history of such violence since World War II.

⁶ For an interesting discussion of the issues involved, see Andrew J. Bacevich, “Policing Utopia,” *The National Interest* 56 (Summer 1999), 5–13.

⁷ For additional reading, see Tom Czerwinski, *Coping with the Bounds: Speculations on Nonlinearity in Military Affairs* (Washington, DC: C³ISR Cooperative Research Program, 1998), Zalmay Khalilzad and Ian O. Lesser, *Sources of Conflict in the 21st Century* (Santa Monica, CA: RAND, 1998), and David S. Alberts and Tom Czerwinski, *Complexity, Global Politics, and National Security* (Washington, DC: National Defense University Press, 1997).

⁸ For a detailed analysis, see Daniel Goure and Jeffery M. Ranney, *Averting the Defense Train Wreck in the New Millennium* (Washington, DC: Center for Strategic and International Studies, 2000). Also see Harlan K. Ullman, *In Irons: U.S. Military Might in the New Century* (Washington, DC: National Defense University Press, 1995).

⁹ Jeffery M. Ranney, testimony to the Senate Armed Services Committee, February 4, 2000.

¹⁰ William S. Cohen, speech to the International Institute of Strategic Studies, San Diego, CA, September 9, 1999, <www.defenselink.mil/speeches/1999>.

¹¹ U.S. Department of Defense, *Report to Congress: Kosovo/Operation Allied Forces After-Action Report* (Washington, DC: Department of Defense, January 31, 2000), 122–125.

¹² There are two primary sources of such declassified intelligence data. One is the annual work of Richard F. Grimmett of the Congressional Research Service in *Conventional Arms Transfers to the Developing World*. The other is the annual edition of *World Military Expenditures and Arms Transfers*, which is available at the State Department Web site under the reports section of the Bureau of Arms Control.

¹³ See the Web site edition of *World Military Expenditures and Arms Transfers*, 1997, table II.

¹⁴ Richard F. Grimmett, *Conventional Arms Transfers to the Developing World, 1991–1998*, CRS–44 (Congressional Research Service RL30275, August 4, 1999).

¹⁵ Grimmett, *Conventional Arms Transfers*, CRS-69.

¹⁶ U.S. Department of Defense, *Report to Congress: Kosovo/Operation Allied Forces After-Action Report*, 6–7.

¹⁷ *New York Times International*, May 4, 1999, A12.

¹⁸ *Jane's Defense Weekly*, May 12, 1999, 4.

¹⁹ For recent reporting, see National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015*, September 1999, <www.cia.gov/cia/publications/nie/nie99> and Non-Proliferation Center, *Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions 1 January Through 30 June 1999* (ODCI/CIA, January 2000).

²⁰ National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015*, September 1999, <www.cia.gov/cia/publications/nie/nie99>.

²¹ For an interesting discussion of some of these issues, see Michael E. O'Hanlon, *Technological Change and the Future of Warfare* (Washington, DC: The Brookings Institution, 2000), 160–166.

²² For further discussion, see Barry R. Schneider, *Future War and Counterproliferation: U.S. Military Response to NBC Proliferation Threats* (Westport, CT: Praeger, 1999).

²³ U.S. General Accounting Office, *Combating Terrorism: Need for Comprehensive Threat and Risk Assessments of Chemical and Biological Attacks* (Washington, DC: GAO/NSIAD-99-163, September 1999).

²⁴ Interestingly enough, even many books on the future of seapower largely ignore these issues. For example, see the essays in Pelham G. Boyer and Robert S. Woods, *Strategic Transformation and Naval Power in the 21st Century* (Newport, RI: Naval War College Press, 1998) and Center for Strategic and International Studies Working Group, *The Role of Sea Power in U.S. National Security in the Twenty-First Century* (Washington, DC: Center for Strategic and International Studies, March 1998).

²⁵ International Trade Administration, U.S. Department of Commerce, Office of Trade and Analysis, *U.S. Trade In Perspective*, online editions.

²⁶ CIA, *World Factbook, 1999*, <www.odci.gov/cia/publications/factbook/us.html>.

²⁷ U.S. Department of Energy, “Table 1.8,” *Overview of U.S. Petroleum Trade*, <www.eia.doe.gov/pub/energy/overview/monthly.energy/mer1-8>.

²⁸ Energy Information Agency, *International Energy Outlook, 1999*, DOE/EIA-0484 (99) (Washington, DC: U.S. Department of Energy, March 1999), 32.

²⁹ U.S. Department of Energy, “Table 1.8.”

³⁰ The author could only find unclassified vulnerability analyses that focused solely on existing trade flows and which were not linked to analyses of global economic interdependence. For example,

see John H. Noer with David Gregory, *Chokepoints: Maritime Economic Concerns in Southeast Asia* (Washington, DC: National Defense University and Center for Naval Analyses, 1996).

³¹ For a broad review of the issue, see Zalmay M. Khalilzad and John P. White, *The Changing Role of Information Warfare* (Santa Monica, CA: RAND, 1999).

³² William S. Cohen and Henry H. Shelton, prepared joint statement on the *Kosovo After-Action Review* presented before the Senate Armed Services Committee, October 14, 1999. For legal details, see Lawrence T. Greenberg, Seymour E. Goodman, and Kevin J. Soo Hoo, *Information Warfare and International Law* (Washington, DC: National Defense University/C⁴ISR Cooperative Research Program, 1998).

³³ *The Washington Post*, November 8, 1999, A1, A10.