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**Center for Strategic and International Studies  
1800 K Street N.W.  
Washington, DC 20006  
(202) 775-3270**

# **Globalization and US Military Planning**

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**Anthony H. Cordesman  
Senior Fellow for Strategic Assessment**

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“Globalization” is not a new phenomenon, nor is it easy to define 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 corporation, 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 21<sup>st</sup> Century may be no more peaceful than the world of the 20<sup>th</sup>, or 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 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 between 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 which are at least equally likely to shape the first half of the 21<sup>st</sup> 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 US may not face the kind of peer threats or ideological enemies it did during the 20<sup>th</sup> Century, but it may well see the emergence of powerful regional powers and blocs that will sometimes be hostile to American strategic interests.

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

- A world which has been, and remains extraordinarily violent.
- The sheer complexity of a world in which so much change is occurring, and in which overall economic develop so far disguises a growing gap between rich and poor both between 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 US as the world’s only superpower is challenged by underspending and overcommitment, and the inability to commit resources that match the roles US forces may be called upon to perform.
- A future in which these pressures will force the US 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 the US is seeking in the “revolution in military affairs.” In such a world, the present “edge” the US preserves in conventional warfare may erode steadily because each further improvement forces a steady escalation in marginal cost while producing diminishing returns in terms of effectiveness.
- A future in which nations that cannot challenge the US and Western lead in conventional warfighting capabilities and technology increasingly turn to asymmetric warfare.
- A world in which proliferation becomes the norm and a dominant form of asymmetric warfare.
- A shift in the global economy that creates new patterns of vulnerability that match growing global economic interdependence, and which have particular importance for maritime shipping, the flow of energy, and naval power.
- A world in which jointness and global engagement potential make the US 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 US and the West to imprison itself in a false image of “perfect” or “bloodless” war and which threatens to use the advantages the West can achieve through the revolution in military affairs to progressively limit the ways in which the West 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. Men 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 towards 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 later 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 Britannia throughout most of the world, although at the cost of a almost constant over-deployment of its land and air forces. The collapses of the French empire in 1870 had removed the only peer threat to British power, although the rise of the US 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 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 through the 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 nations Western could no longer profit from wars in Europe. In fact, two Nobel prizes were awarded in the years that followed for 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 thesis that complexity theory is merely an annoyance to those who can identify clear and dominant trends. Complexity is, in fact, a key issue with terms like “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 Non-Global 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:<sup>1</sup>

- Demographics create major new pressures because of population growth:<sup>2</sup>
  - 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 in 2015, and 8.1 billion in 2030.
  - The population of low income nations will grow from 2.04 billion in 1997 to 3.4 billion in 2030 (66% growth). The population of middle income states will grow from 2.86 billion to 3.7 billion (30% growth). The population of high income states will change from 927 million to 981 million (6% growth).
  - Basic shifts will take place in the age of the population which may exacerbate tensions. The percentage of people 0-14 in the low income states is growing by 2.0% per year. It is only growing by 0.2% in middle income states, and it is dropping by 0.6% annually in high income states. The youth explosion in low income states has reached the point where 40% of the population is 14 years of age or less while serious aging is taking place in the high income states.<sup>3</sup>
- 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% of the world’s 5.8 billion people, middle income states account for 50%, and high income states account for only 15%. (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 was little material evidence that low income states were improving their position in spite of the increase in many aspects of global economic growth. The average annual GNP growth in low income states during 1965-1997 was 1.4%. It was 2.2% in the middle income states, and 2.3% in the high income states.

- Global trade favors the high income and developed states. It makes up 40% of the GNP in low income states, 50% in middle income states, and 41% in the high income states. There high trade flows favor the more developed states.
- Regional trade blocs show a sharp growth in intraregional exports, relative to global markets. EU exports within bloc rose from \$76.5 billion in 1970 to \$1,867.8 billion in 1997. NAFTA from \$22 billion to \$496 billion.
- Global capital flows aren't 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 the richer and more developed states:
  - Richest 20% controls 74% of all telephone lines 91% of all Internet users.
  - Top 10 telecommunications firms control 86% of the \$262 billion global telecommunications market.

Other work by the CSIS 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% of population controls 86% of world output, and 82% 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.<sup>4</sup> The impact of such differences on technology flows and sophistication are described in more detail in Table One.

Table One

Technological Sophistication by Category of National Income

<u>Total Per 1,000 People</u>	<u>Low Income</u>	<u>Middle Income</u>	<u>High Income</u>
Television sets	56	256	647
Telephone mainlines	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)	0.10	3.96	374.89

Source: World Bank, World Development Indicators, 1999, Washington, World Bank, 1999.

Other data show that many positive trends are counterbalanced by serious problems and potential sources of conflict. For example, globalization not only has not brought world

prosperity, democracy, and human rights, it has not brought something as simple as effective medical care: The infant mortality rate did drop from 76 per 1,000 births to 58 during 1990s. The percent of 1 year olds immunized rose from 70% to 89%. Access to safe water rose from 40% of the world's population to 72%. However, 160 million children remain severely undernourished and 250 million working in child labor. More than two-thirds of developing world cannot afford to sustain health programs to deal with endemic diseases like AIDS 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. At the same time, they make it clear that, globalization is extraordinarily complex and why any analysis must include any significant global trend that is relevant, not just those that are academically fashionable and politically correct. It is also clear that many global trends are potentially destabilizing or threatening.

### **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 Two only lists the most serious conflicts in a world that has had some 1,200 armed clashes and encounters since World War II.<sup>5</sup> It does show, however, that future conflicts *within* civilizations, regions, and nations are an on-going certainty. The nature and frequency of these conflicts cannot be predicted but there have been 20-30 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 at which 500,000 or more civilians were at risk.

Table TwoThe Past is Prologue: Patterns in World Conflict: 1945-1994

	<u>Number of Wars</u>	<u>Number of Wars</u> <u>Involving Over 10,000 Dead</u>	<u>Number of Wars</u> <u>Involving US</u> <u>Military Action*</u>	<u>Total Dead</u>
Caribbean and Latin America	19	6	8	477,000
Middle East 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 US military assistance, covert action, demonstrative action, occupation, humanitarian efforts, combat, and emergency evacuations.

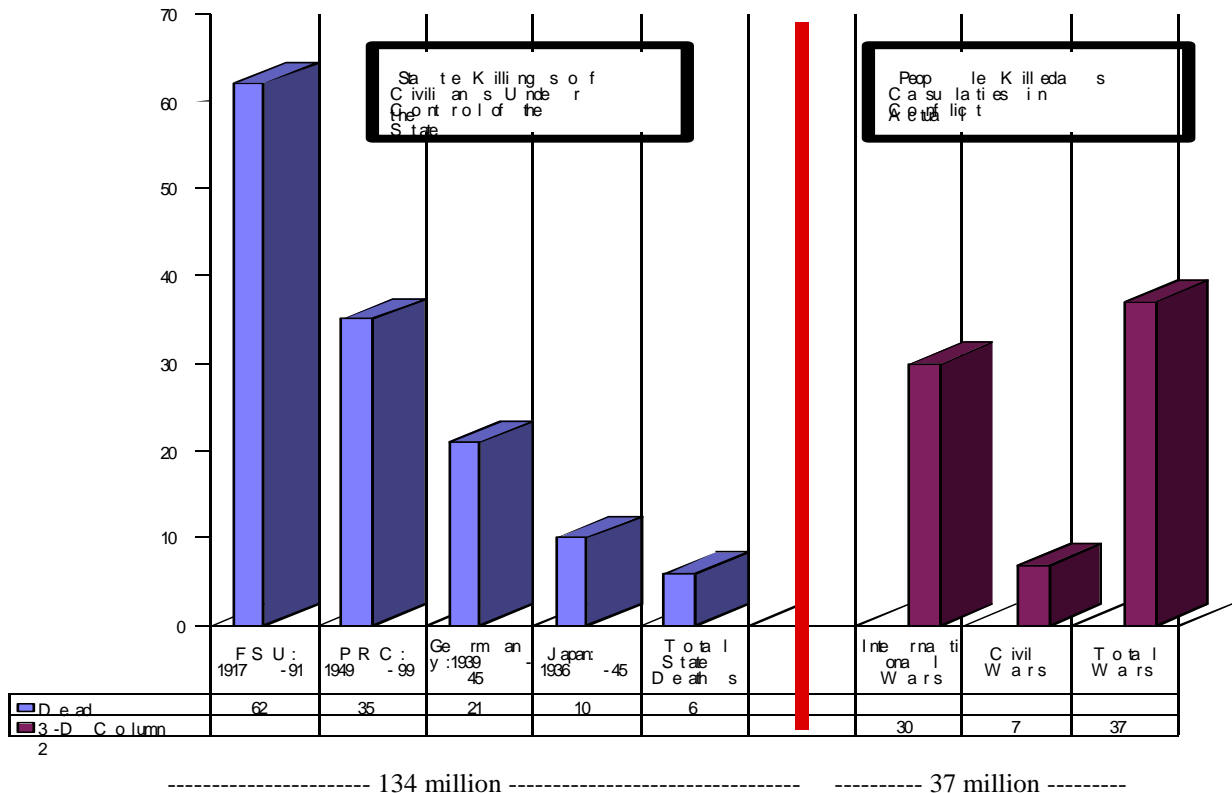
Source: IISS, Military Balance, 1998-1999, London, Oxford Press, 1998.

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

Figure One

The Past is Prologue: Warless Genocide – The State against the People in the 20th Century

(Millions of Dead)



\* Adapted By Anthony H. Cordesman from an estimate in the Economist, September 11, 1999, and Rudy J. Rummel, "Statistics of Democide."

There is nothing new about this aspect of "globalism" or the US military involvement that follows. Work by Adam Spiegel of the Center for Naval Analysis found that the US 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 US military involvement. Instead, it has shifted the focus of military



operations to peace making activities which have become something close to a new paradigm of globalism. UN peacekeeping and peacemaking activity is accelerating, and the US 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 led to increased levels of US military deployments even as US forces have been cut. These engagements are summarized in Table Three and are likely to remain key priorities for US force planning indefinitely into the future.

It also seems realistic to warn that military planners cannot hope for any clear or constant criteria for determine what kinds of such crises will involve military action. So far, the US and its allies have dealt with each new crisis on a case by case basis. Vietnam may have appeared to lead the US to reach decisions on such issues, but the years that have followed have shown that US strategy documents and planning guidance produced 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 act test of the Act's provisions and constitutionality.

The US 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<sup>th</sup>), 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 out power to stop it, we will stop it” (June 22<sup>nd</sup>).<sup>6</sup>

Vacuous catch phrases, however, do not define real-world criteria for US or Western military action, regardless of whether or not they are moral or noble in character. It is far easier to use terms like “en masse” than 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 like “vital strategic interest.” The Weinberger Doctrine's emphasis on such criteria has proved to be no more meaningful than the Clinton morality play. The US simply cannot wait long enough to determine whether a crisis or problem does or does not involve a vital strategic interest, and 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 US military interventions during the Cold War did not involve any direct threat to vital American strategic interests, and that 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 US 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% of the cases, it would be impossible to get any consensus from American foreign policy analysts over the level of “moral imperative” these crises created for US military action.

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

The same is likely to be true of the West as whole, particularly now that the EU is seeking to create a “crisis management” force for contingencies it has not bothered to define. Senior European officers has feelings to those of many American 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.

Table Three

Global Peacemaking Activity

<u>Peacekeeping Activity</u>	Number of <u>Activities</u>	Duration in Years <u>Over Two</u> <u>Over Five</u>	More than 10,000 Peacekeepers <u>Involved</u>	Some Combat <u>Activity*</u>	US <u>Involvement</u>
Current UN Operations	17	14	11	0	3
Past UN Operations	27	23	6	5	7
Current Non-UN Operations	6	5	1	1	3
Past Non-UN Operations	5	2	1	1	4
Total	55	44	19	7	17

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

## **The Regionalization of Power**

The US must also prepare for major regional conflicts, some of which could involve a major nuclear power and emerging peer. These include the immediate risk of a major regional conflict in the Gulf and Korea, and the longer-term threat posed by Russia and China. They also, however, include major regional wars against opponents like 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% of these nations have emerged since WWII. About half of the emerging nations have serious ethnic and religious divisions or instability, and about 40% have disputed borders. It may be unfair to label some states as rogue or failed states. At the same time, extremist regimes like Libya are likely to emerge in many parts of the world. Continuing civil wars in states like Myanmar, Sri Lanka, and the Sudan are

not likely to vanish. There is also a continuing risk of major regional wars that do not directly involve US interests but which could lead to US 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 or regional blocs. It is clear, however, that US 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. US 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:

- *EC and Europe versus NATO and Atlanticism:* The US must face continuing uncertainty regarding Russia and other members of the 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 EU grows stronger, and economic and political rivalries distance Europe from the US. Ironically, this may not reduce the implied US military commitment to NATO or the level of US peace making involvement in Europe.
- *The Middle East and Gulf:* It seems unlikely that the US will still demonize Iran, Iraq, and Libya indefinitely into the future. At the same time, there is little near-term prospect that the US will not face the continuing risk of a major regional war in the Gulf. It seems unlikely that even if an Arab-Israeli peace does involve all parties, that the US will not continue to have commitments in the Levant, and there is little near to mid-term prospect that the US 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, ASEAN does little to bring stability to nations like 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, is a major energy exporter, could affect naval traffic through the Mediterranean, and so far has not demonstrated that any Mahgreb nation 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 US 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 Columbia is already involved in a civil drug war of major importance to the US.

It should be stressed that each region has its successes, and that the fact things can degenerate in each region in spite of globalism and more positive trends is no indication that they will. US 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 that are fully armed for a future conflict:

- Greece and Turkey
- Arab-Israeli.
- Gulf.
- North and South Korea.
- PRC and Taiwan
- South China Sea/Spratleys
- India and Pakistan
- Horn of Africa.
- Sudan
- Congo

### **The World Remains a Violent and Uncertain Place and the US Must React**

Put simply, there is no meaningful prospect that the US will face less need to plan for major regional wars during the next quarter century, or that any US military service will face less need for global engagement. The same is true of peace making activity, no matter what strategies and doctrines America's political and military leaders may appear to agree on at any given moment in 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 US scenario analysis and contingency planning will continue to have only limited success, and that the level of US 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 US military forces for the future.<sup>7</sup>

It should also be clear that the risk of underestimating the true nature of the complexity of the trends that shaping 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 doesn't 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 US and its allies attempt two politically correct oxymorons: "crisis management" and "conflict resolution."

The true nature of "globalism" means that US 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 only committing US forces to contingencies that involve vital strategic interests are strategically naïve to the point of being ridiculous. The US will be unable to wait to determine whether a given crisis affects its "vital national interest."

## **Living as the World's Only "Superpower"**

The nature of US global military power adds more complexity this situation situation. As much through an accident of history as anything else, the US is now the "world's only superpower" in the sense 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 US is thrust into global roles that put serious strains upon its forces, and which make it potentially vulnerable to shifts in regional military balances, proliferation and asymmetric warfare.

In summary terms, US military "globalism" has the strengths and weaknesses shown in Table Four:

Table FourThe Strengths and Weaknesses of American Military Globalism**Strengths**

- No peer threat likely during the time frame of this study; in any case have 5-10 years of warning.
- Superior base of conventional war fighting 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 Army and Air Force power projection; independent global power projection capability through Navy and Marine Corps.
- Superiority in space-based sensor and intelligence systems, overall superiority in ISR.
- Major lead in strategic air and sealift, refueling capability.

**Weaknesses**

- Insufficient present resources to support current strategy, deal 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 over there as well as underfunded, underpaid, and undersupported.
  - Procurement problems: Major dropout rate and slippage in programmed QDR force improvements.
  - Prolonged readiness problems.
  - RMA is unaffordable; the question is whether we can fund an “evolution in military affairs.”
- Growing global political constraints on the ways we can use force.
- Global proliferation.
- Globalization of asymmetric 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 US must often say “no,” and make hard decisions about its priorities and interests.

Perhaps the greatest single problem the US faces in dealing with the global pressures described earlier is one of resources. Some studies indicate that the present US force posture has

been underfunded by some \$100 billion, and that the US would need to spend roughly 4% of its GNP to adequately fund its current strategy and force goals.<sup>8</sup> This percentage compares with planned spending of 2.9% in FY2000, which will drop to 2.4% in 2010, and 2.0% in 2020.<sup>9</sup> Certainly, there is strong evidence that the US is not willing to spend the money necessary to meet its existing commitments, deal with continuing deployments for peace making 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 US 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 US 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 US interventions and peace-making activity and consistently push the US into over-deploying its forces.

No other power or international body is likely to fill this gap. Kosovo is living evidence of the fact there is little near to mid-term prospect that “globalization” will create meaningful international peace making capabilities under the UN. 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, peace-making 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 US forces.

Like the Pax Britannia of a century ago, this creates a strong prospect that the US will find itself remaining the world’s only superpower largely because no peer emerges to expose the limits of its military capabilities. Like Britain, however, it is also likely to remain overdeployed in ad hoc operations and making resource decisions that steadily compromise its military capabilities. The end result may be a cruel parody of an old joke about force planning: 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 the US could avoid this would be to fund a capabilities-driven force rather than a requirements-driven force. 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 remain a mid and long-term requirement, and that the US must at least consider the long-term emergence of some form of major peer threat and/or proliferator.

## **The American Military Response: Living with the Problem of Complexity**

There is no way to predict whether or when “globalization” will intensify the need for US 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 like major regional contingencies.

There are, however, a number of aspects of “globalization” that will almost affect US military requirements and planning. These include added reliance on coalition warfare, technology transfer, asymmetric warfare, proliferation, shifts in maritime power and traffic, and new forces of war like information warfare.

### **Coalition Warfare, Global Interoperability, and Global Engagement**

The growth of regional powers and the limits to US military capabilities mean that US 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 US 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 the US, and most have steadily cut real defense spending since 1991. If there is an arms race among the main coalition partners of the US, 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 America’s friends and allies. Secretary of Defense William Cohen stated in his speech to International Institute of Strategic Studies on the lessons of the war that, :<sup>10</sup>

“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.... this 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 US 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 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 US has elsewhere in the world are growing stronger, with the possible exceptions of Israel and Japan. As a result, the US 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..
- Coalitions that are entangling and ally driven; rather than serve US policy.
- Largely regional coalitions that involve very disparate forces.
- Interoperability 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 US into tailored “high-low” regional engagement strategies where the US designs its C4I/SR, battle management systems, tactics, and force employment strategies around the lack of allied capabilities and globalism.

Interoperability will often have to be unilateral. The US will need training, tactics, and technology that allow the US 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, US forces must be as expeditionary as possible, and they must be capable of projecting power faster and at longer in-theater distances. As a result, the value of deep strike capabilities from the sea, sea-based missile defense, CONUS based bomber forces, air/fast sealift deployable forces, and sea-based mobile prepositioning will also increase with time.

These points reinforce another lesson that the Joint Staff drew from Kosovo; the need to rethink joint warfare and military service planning to achieve what it calls global force integration. The US 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 that:<sup>11</sup>

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 geographically 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 that this kind of globalism can compensate for continued US over-commitment and underspending, or for the weaknesses in regional coalition partners. At the same time, it is clear that the US 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 area munitions, and C4I/SR systems that support the broad range of capabilities that currently give the US its global edge in conventional warfighting capabilities.

This mix of capabilities is summarized in Table Five.

Table FiveThe Capabilities in the Revolution in Military Affairs that America's Technology Edge Makes Possible

- *Unity of command:* The level of unity of command, and "fusion," achieved during the 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 h.
- *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 integrated air and land operations..
- *Emphasis on maneuver:* The US 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 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 or all-weather combat system, or 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 are designed to wage warfare continuously at night and in poor weather. Equally important, they are far more capable of taking advantage of the margin of extra range and tactical information provided by superior technology.
- *Near Real-Time Integration of C<sup>4</sup>I/BM/T/BDA:* New C<sup>4</sup>I/BM/T/BDA organization, technology, and software systems make it possible to integrate various aspects of command, control, communications, computers, and intelligence (C<sup>4</sup>I); battle management (BM); targeting (T); and battle damage assessment (BDA) to achieve a near real time integration and decision making-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 make 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 the ability to support the movement of heliborne and armored forces
- *Beyond-visual-range air combat, air defense suppression, air base attacks, and airborne C<sup>4</sup>I/BM:* The Coalition in the Gulf had a decisive advantage in air combat training, beyond-visual-range air combat capability, anti-radiation missiles, electronic warfare, air base and shelter and kill capability, stealth and unmanned long-range strike systems, IFF and air control capability, and airborne C<sup>4</sup>I/BM systems like 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 its deep strike capabilities to carry out a rapid and effective pattern of focus 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 battle field: "Deep Strike":* As part of its effort to offset the Warsaw Pact's numerical superiority, US tactics and technology emphasized using AirLand battle capabilities to extend the battlefield far beyond the immediate forward "edge" of the battle area (FEBA). The Coalition exploited the resulting mix of targeting capability, improved air strike capabilities, and land force capabilities in ways during the Gulf War that played an important role in attriting Iraqi ground forces during the air phase of the war, and which helped the Coalition break through Iraqi defenses and exploit the breakthrough. Even in Kosovo, the US and NATO were only beginning to employ advanced "deep strike" targeting technologies and precision strike systems and far more advanced systems are 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 US 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 US 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 US 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 a imminent possibility. While many nations do important advanced arms and military systems, declassified US intelligence scarcely indicates that there is a global, high technology arms race.<sup>12</sup> The volume of global are 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 IISS 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.<sup>13</sup> Work by Richard F. Grimmett of the Congressional Research service includes data that are somewhat more up to date, but only covers transfers to developing nations. These data indicate that new arms transfer agreements – which are a better measure of future trends in arms sales – dropped from \$21.6 billion in 1991 to \$13.2 billion in 1998.<sup>14</sup>

It should be noted, however, that these same sources do show a relatively high rate of transfer of high technology weapons systems by the US, Europe, and Russia in categories like tanks, major surface combatants, guided missile patrol boats, supersonic combat aircraft, surface-to-air missiles, surface-to-surface missiles, and anti-ship missiles. For example, US experts estimate that 420 major surface-to-surface missiles, 13,352 surface-to-air missiles, and 947 major anti-ship missiles, were transferred to the developing world during 1991-1998.<sup>15</sup>

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 US, but which 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, US 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 the 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 to lead hostile states to pursue alternative options like asymmetric warfare and proliferation, and increase the incentive to acquire lower cost and less constrained technologies for new types of wars and battles like information warfare. Accordingly, the US 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 the consequences.

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

The US has a long history of exaggerating the effectiveness and useful life span of high technology force multipliers, as well as of underestimating their lifecycle cost, and related training and sustainment costs. No element of the Department of Defense, US defense industry, or the US 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 US technology "edge," backed by transfers to friendly states, will remain a critical asset. The US 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.

## **Asymmetric Warfare**

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

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

The Department of Defense report on the lessons of the war notes that,<sup>16</sup>

military ground forces in Operation Allied Force. 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 asymmetric threats. For example, Iran seems to have helped Serbia in some aspects of its asymmetric strategy, and certainly Serbia

learned from the Iranian experience. Chinese military literature shows a new interest in asymmetric warfare, and Iran has shown considerable originality in using submarines, mines, unconventional forces, and anti-ship missiles to create a tailored asymmetric threat to naval movement through the lower Gulf.

The US is vulnerable to such forms of warfare in many ways, and faces the full range of potential asymmetric threats outlined in Table Six.

### Table Six

#### Globalism, Asymmetric Warfare, and the Vulnerabilities of Advanced Technology Powers

- *Sudden or surprise attack:* Power projection is dependent on strategic warning, timely decision making, 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 C<sup>4</sup>I/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 the Israeli Defense Force could recover. 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 how well it can absorb the damage inflicted upon it. Many powers are highly sensitive to casualties and losses. This sensitivity may limit its operational flexibility in taking risks, and in sustaining some kinds of combat if casualties become serious relative to the apparent value of the immediate objective.
- *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 its opponents, and show that Israel is actively attempting to fight a "humanitarian" style of combat.
- *Low-intensity combat:* Low-intensity conflict makes it much harder to cannot most 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 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 RMA-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. HUMINT is more important than conventional military intelligence, 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 the problem of urban warfare. They did 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 peace-keeping and peace- enforcement -- require prolonged military occupations.

- *Weapons of mass destruction:* The threat or actual use of such weapons can compensate for conventional weakness in some cases and deter military action in others.

Asymmetric warfare is not a one-way street. The US use of carbon fiber weapons against power grids in Kosovo illustrates the fact that the US can introduce new asymmetric warfare techniques as well as its enemies. Indeed might be useful to conduct a “what if” analysis of Kosovo to see how the introduction of other asymmetric weapons now under development might have changed the course of the fighting.<sup>17</sup>

More broadly, however, the US needs to give the ability to fight asymmetric warfare the same priority it gives to fighting conventional forces in documents like Joint Vision 2010. It needs to examine Serbia’s use of asymmetric 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 asymmetric warfare.

The US 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 the failure to plan effectively for conflict termination. It also needs to understand that peacemaking almost inevitably means fighting asymmetric warfare, and that humanitarian crisis can easily turn into such forms of conflict. This places an especially high premium on avoiding casualties and collateral damage, and 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, and more lethal conventional weapons that they can use to strike with precision at critical strategic targets like oil shipments, desalination plants, etc.

The US recognized this aspect of globalism in the Bottom Up Review 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 US has been slow to develop coherent programs and acquire actual capabilities. Once again, this is partly a matter of the complexity and uncertainties surrounding the threats the US now faces.

Table Seven provides a rough estimate of the more visible forms of proliferation that are now reshaping global military capabilities. In many cases, however, the most hostile powers in this table 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 like India and Pakistan



have shown such barriers do not block military change, and nations like Iran, Iraq, and North Korea continue to acquire new technology and improve their capabilities.<sup>18</sup>

The US 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 down in the past by the difficulties in acquiring nuclear weapons, and in weaponizing 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 present continuing risks. It would take the collapse of the political restraints enforced by the NNPT, and a major increase in supplier willingness to sell relevant technologies to radically change the present mix of risks the US faces.

Similar constraints do not apply, however, to chemical and biological weapons. The global spread of biotechnology, more 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 Seven. The US intelligence community estimates a total of some 25-35 countries, although any list is classified. Moreover, the spread of missile warhead, cluster munition, sprayer, and UAV technology is simplifying the weaponization of such weapons.

- *The risk posed by biotechnology:* Modern biological weapons can easily be as lethal as fission and boosted weapons. They 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 20<sup>th</sup> Century will be matched or surpassed by the threat posed by the globalization of biotechnology.
- *Long-range strike systems:* Nations like 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 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.<sup>19</sup>

- *Weapons of mass destruction and asymmetric 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 non-state actors like terrorists and extremists, and 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 US and allied nations that the US 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 rationale deterrence as 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 there are many forms of attack that could be used that do not require an overt declaration of war or clearly identify the attacker, and that the most costly form of defense – national and theater missile defenses – deal with only 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, and 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 they will interact to create the same broad changes in the global military environment as asymmetric warfare.<sup>20</sup>

It is clear from such changes that this particular form of “globalism” forces the does needs to give a counterproliferation program high priority, and that will probably require broad changes in US military deterrent, retaliatory, active defense, and passive defense capabilities. At the same time, it is important to point out several aspects of the response the US must make:<sup>21</sup>

- The US cannot act as a global power and 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 the biological threat, and US planning must give them at least equal vulnerability.
- The present maximum casualty level used for guidance in planning response measures for US homeland defense is 1,000 casualties. The existence of the biological threat alone means that far higher thresholds of damage must be considered.<sup>22</sup>
- 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 US must rethink its doctrine, tactics, technology, training and C<sup>4</sup>I/BM/SR to fight in a regional and low level NBC environment, as well as rethink force protection and Coalition defense capabilities.
- The US must also rethink its global vulnerabilities. For example, seapower can minimize vulnerability and incentive to strike at US/Coalition forces in some circumstances, but it also often requires extended strike and deployment ranges. At the same time, ports, bases, over-the-beach assembly areas become a 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 US 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.

Table SevenGlobal Challenges: Who Has Weapons of Mass Destruction?

<u>Country</u>	<u>Type of Weapon of Mass Destruction</u>				<u>Long-Range Missiles</u>
	<u>Chemical</u>	<u>Biological</u>	<u>Nuclear</u>	<u>Theater</u>	<u>Intercontinental</u>
<u>East-West</u>					
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
US	Residual	Breakout	Deployed	Technology	ICBMS/SLBMs
<u>Middle East</u>					
Egypt	Residual	Breakout	-	Deployed	-
Israel	Breakout	Breakout	Deployed	Deployed	-
	Technology/Booster				
Iran	Deployed?	Breakout	Technology	Deployed	
	Technology/Booster				
Iraq	Deployed	Deployed	Technology	Technology	?
Libya	Deployed	Research	-	Deployed	?
Syria	Deployed	Technology?	-	Deployed	-
Yemen	Residual	-	-	-	-
<u>Asia and South Asia</u>					
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	Deployed	Technology	Deployed	
	Technology/Booster				
South Korea	Breakout?	Breakout	Technology	Technology?	-
Taiwan	Breakout?	Breakout	Technology	-	-
Thailand	Residual	-	-	-	-
Vietnam	Residual	-	-	-	-
<u>Other</u>					
Argentina	-	-	Technology	Technology	-
Brazil	-	-	Technology	Technology	-
South Africa	-	-	Technology	Technology	-

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](http://www.cia.gov/cia/publications/nie/nie99)); Non-Proliferation 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](http://www.cia.gov/cia/publications/nie/nie99))).

## **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 US military more vulnerable with time. This is not only a function of the increase in the volume of US trade, but in the increasingly specialized nature of trade which means that the US obtains most of many specialized products and components from overseas, and has only a limited industrial base to provide substitutes in an emergency.<sup>23</sup>

There is little tangible data on such vulnerabilities, which are far more complex than the kind of dependence on strategic raw materials than was the subject of analysis during the Cold War. It is clear, however, that US dependence on trade is growing steadily, as is the US 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 US trade more than doubles in value in constant dollars every decade.<sup>24</sup>

The latest CIA estimate of US trade indicates, however that that US exports totaled \$663 billion in 1998, and that the chief importers were Canada 22%, Western Europe 21%, Japan 10%, and Mexico 10%. US 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 US imports were Canada, 19%, Western Europe 18%, Japan 14%, Mexico 10%, and China 7%.<sup>25</sup> 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 manage much more complex flows of interrelated imports and exports. As a result, both the volume and “fragility” of trade increases with time. The tangible impact of such shifts is a steady series of increases in interdependent ship and air cargo movements and capacity, and the growth of specialized ports, airports, and trade-related facilities. Moreover, the growing US strategic dependence on overall health of the world economy means that the US must increasingly consider the security of the trade and imports of other states.

US energy imports are a good case in point. The level of US dependence on oil imports increased from 6.3 MMBD in 1973, to 10.5 MMBD in 1999.<sup>26</sup> Projection by the US Energy Information Agency indicate that such petroleum imports could reach around 15 MMBD by 2020.<sup>27</sup> 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.

US dependence on oil imports consist of both direct imports and the imports of oil US trading partners need to produce their exports to the US and to sustain their economies in ways that allow them to finance imports from the US. Globalism means that data that only report on the direct level of US 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 US Energy Information Agency projects that these imports will rise from around 37.1 MMBD to 66.0 MMBD by 2020.<sup>28</sup> 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 MMBD in 1995 (32% of world imports) to 23.2 MMBD (36% of world imports).

The end result is that globalization means the world's sea-lanes will change radically in traffic density; strike systems extend range and number of chokepoints while the simultaneously emphasizes low inventories and the on-time delivery of increasing specialized products. 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 US 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 anti-ship 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 analytic base.<sup>29</sup> This means the US military needs to:

- Analyze the changing patterns in trade-flows in depth.
- Reanalyze dependence, interdependence, and vulnerability.
- Evaluate capability to protect greatly expanded number and regional area of choke points.
- Consider impact of proliferation and asymmetric warfare on choke points.

### **Out of the Box: New Forms of Warfare**

The US 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 have a major potential impact in both attacking civil society and attacking military forces. While it can be argued that many forms of information warfare are simply a new form of electronic warfare and asymmetric 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.<sup>30</sup>

Thought must also be given to the risk of new forms of environmental warfare (e.g. oil spills in Gulf in Gulf War), and economic warfare directed at critical economic and civil systems

such as land-based pipelines, desalination plants, and electric power and plants. The globalization of precision strike capabilities and the growing complexity and vulnerability of modern societies is redefining strategic vulnerability, particularly for our allies and coalition partners in theaters and regions where such capabilities become common.

At the same time, the US 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.<sup>31</sup>

“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 decision-makers, 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 was, 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 perspective of the other side, and may have done more to reassure those issuing the statements than influence either the enemy or world opinion. While NATO certainly did a better job than Serbia, it had far more means and a far better case. It also did not avoid over-selling 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 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 that each advance in US military technology means that the US must use those advances to virtually eliminate US 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 US approach to the globalization of the media, that the US 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 mistakes, weapons failures, and the fog of war, and the political cost of every mistake, failure, and casualty has been exaggerated.
- The US talks about offensive information warfare, but does not seem to be able to fight it. Kosovo showed that US information warriors must find some way to overcome the long-standing objections by the CIA and 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 only be used 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.<sup>32</sup>

## **Living with Uncertainty**

“Globalization” will not reduce the challenges US 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 US forces and US-led coalitions. It will make them more complex and – in some cases – require significant changes in the way the US 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, US 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.



US force planning must also take account of the “globalization” of new threats and vulnerabilities. The most immediate of these threats are technology transfer, asymmetric warfare, and proliferation. More broadly, however, the US 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 US, and the US military, will face in making the necessary changes. The first is to accept the fact the true complexity of the future the US 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 will be. The third will be to transition as quickly as possible out of the “conventional wisdom” that shaped US 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 2010” 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 Future Year Defense Program. The US became the world’s only superpower largely through a series of historical accidents. It will only remain a preeminent power through deliberate planning.

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<sup>1</sup> World Bank, World Development Indicators, 1999, Washington, World Bank, 1999.

<sup>2</sup> 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, Rodolfo A. Bulatao, World Population Projections, 1994-1995, Washington, World Bank, 1996. The World Bank ceased publication of these Johns Hopkins projections after 1996, evidently because they felt the projections were not optimistic enough.

<sup>3</sup> For further background, see Walter Mondale, Ryutaro Hashimoto, and Karl Otto Pohl, "Global Aging: The Challenge of the New Millennium," Washington, CSIS-Watson Wyatt, 2000.

<sup>4</sup> See Erik R. Peterson, "Our Divided Future," Washington, CSIS, January 29, 1998.

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

<sup>6</sup> For an interesting discussion of the issues involved, see Andrew J. Bacevich, "Policing Utopia," The National Interest, Summer 1999, pp. 5-13.

<sup>7</sup> For additional reading, see Tom Czerwinski, Coping with the Bounds: Speculations on Nonlinearity in Military Affairs, Washington, CCRP, 1998; Zalmay Khalizad and Ian O. Lesser, Sources of Conflict in the 21<sup>st</sup> Century, Santa Monica, Rand, 1998, and David S. Alberts and Tom Czerwinski, Complexity, Global Politics, and National Security, Washington, NDU, 1997.

<sup>8</sup> For a detailed analysis, see Daniel Goure and Jeffery M. Ranney, Averting the Defense Train Wreck in the New Millennium, Washington, CSIS, 2000. Also see Harlan K. Ullman, In Irons: US Military Might in the New Century, Washington, NDU Press, 1995.

<sup>9</sup> Testimony to the Senate Armed Services Committee by Jeffery M. Ranney, Management Support Technology, February 4, 2000.

<sup>10</sup> The text is excerpted from Secretary Cohen's speech to the International Institute of Strategic Studies at San Diego, California, on September 9, 1999 as reported in [www.defenselink.mil/speeches/1999](http://www.defenselink.mil/speeches/1999).

<sup>11</sup> Department of Defense, Report to Congress: Kosovo/Operation Allied Forces After Action Report, Washington, Department of Defense, January 31, 2000, pp. 122-125.

<sup>12</sup> 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 on the State Department web page under the reports section of the Bureau of Arms Control.

<sup>13</sup> See the web page edition of World Military Expenditures and Arms Transfers, 1997, Table II.

<sup>14</sup> Richard F. Grimmett, Conventional Arms Transfers to the Developing World, 1991-1998 Congressional Research Service RL30275, August 4, 1999, p. CRS-44.

<sup>15</sup> Richard F. Grimmett, Conventional Arms Transfers to the Developing World, 1991-1998 Congressional Research Service RL30275, August 4, 1999, p. CRS-69.

<sup>16</sup> Department of Defense, Report to Congress: Kosovo/Operation Allied Forces After Action Report, Washington, Department of Defense, January 31, 2000, pp. 6-7.

<sup>17</sup> New York Times International, May 4, 1999, p. A-12; Jane's Defense Weekly, May 12, 1999, p. 4.

<sup>18</sup> 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](http://www.cia.gov/cia/publications/nie/nie99)); Non-Proliferation 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](http://www.cia.gov/cia/publications/nie/nie99))).

<sup>19</sup> 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](http://www.cia.gov/cia/publications/nie/nie99))).

<sup>20</sup> For an interesting discussion of some of these issues, see Michael O'Hanlon, Technological Change and the Future of Warfare, Washington, Brookings, 2000, pp. 160-166.

<sup>21</sup> For further discussion, see Barry R. Schneider, Future War and Counterproliferation, US Military Response to NBC Proliferation Threats, Westport, Praeger, 1999.

<sup>22</sup> US General Accounting Office, "Combating Terrorism: Need for Comprehensive Threat and Risk Assessments of Chemical and Biological Attacks," Washington, GAO/NSIAD-99-163, September 1999.

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<sup>23</sup> 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 21<sup>st</sup> Century, Newport, Naval War College Press, 1998; and CSIS Working Group, "The Role of Sea Power in US National Security in the Twenty-First Century," Washington, CSIS, March 1998.

<sup>24</sup> See "US Trade In Perspective," International Trade Administration, US Department of Commerce, Office of Trade and Analysis, on-line editions.

<sup>25</sup> CIA, World Factbook, 1999. [www.odci.gov/cia/publications/factbook/us.html](http://www.odci.gov/cia/publications/factbook/us.html).

<sup>26</sup> US Department of Energy, "Table 1.8, Overview of U.S. Petroleum Trade," [www.eia.doe.gov/pub/energy/overview/monthly.energy/mer1-8](http://www.eia.doe.gov/pub/energy/overview/monthly.energy/mer1-8).

<sup>27</sup> Energy Information Agency, International Energy Outlook, 1999, Washington, Department of Energy, DOE/EIA-0484(99), March, 1999, p. 32.

<sup>28</sup> US Department of Energy, "Table 1.8, Overview of U.S. Petroleum Trade," [www.eia.doe.gov/pub/energy/overview/monthly.energy/mer1-8](http://www.eia.doe.gov/pub/energy/overview/monthly.energy/mer1-8).

<sup>29</sup> 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, NDU and CNA, 1996.

<sup>30</sup> For a broad review of the issue, see Zalmay M. Khalilzad and John P. White, The Changing Role of Information Warfare, Santa Monica, Rand, 1999.

<sup>31</sup> Prepared joint statement on the Kosovo After Action Review presented by Secretary of Defense William S. Cohen and Gen. Henry H. Shelton, Chairman of the Joint Chiefs of Staff, 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, NDU/CCRP, 1998.

<sup>32</sup> Washington Post, November 8, 1999, pp. A-1 and A-10.