Chapter 2

Threats, Forces, and Operations

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Chapter 2

Threats, Forces, and Operations

INTRODUCTION

The defeat of the Axis powers, the end of World War II, and the beginning of the cold war required a complete review of U.S. national security policy. A similarly comprehensive review is warranted in the aftermath of the cold war, including reexamination of the size and structure of U.S. military forces and their supporting industry. Restructuring the forces entails policy choices with important consequences for defense technology and industrial base (DTIB) planning. This chapter is not meant to provide an answer to the question of what the future structure of U.S. forces *should be*, but rather to provide a useful and considered estimate of what it will be, for the purpose of assessing the effects on the DTIB.

CHANGING U.S. STRATEGY

After the Second World War, several events combined to create new security challenges for the United States and the world. The Soviet Union's totalitarian system, expansionist ideology, and imposition of client regimes in Eastern Europe made it a military threat to the West. Clear and apparently irreconcilable ideological differences between the Communist countries and the Western-oriented democracies forced most nations into one of the two camps, forming a' 'bipolar' world. With the Soviet development of atomic weapons, the nuclear threat hung over every calculation of war and created for Americans an unprecedented sense of national vulnerability. At the same time, the United States came to view regional conflicts throughout the world through the prism of the superpower rivalry.

The North Korean invasion of the South in 1950 and the continuing confrontation in Europe created the impression that the Soviet Union was intent on expansion, that another world war might be imminent, and that such a war would be nuclear and devastating. These perceptions led the United States to implement a new policy of "containing" the Soviet Union by reversing the post-war dismantlement of the U.S. military and its supporting industry.[1] Defense spending shot up from $78 billion to $331 billion (in fiscal year 1990 dollars).[2] The United States hoped that the strategy of containment would prevent the Soviet Union from dominating the Eurasian continent while avoiding a third world war. This state of tense, alert peace came to be called the "cold war."

The cold war and containment required something new of the United States. U.S. policymakers feared that Soviet conventional military capabilities in Europe were so formidable, and the destruction from a nuclear strike would be so devastating, that the Nation would be unable to recover from a surprise attack and mobilize over a year or more as it had in World War II. Thus, highly ready forces had to be deployed both at home and abroad to counter similarly ready Soviet forces. The United States settled into a state of continuous military alert and partial defense-industrial mobilization.

During the cold war era, the clarity of American security objectives owed much to the clarity of the Soviet threat. Although great debates raged at times over details and execution, there was a general

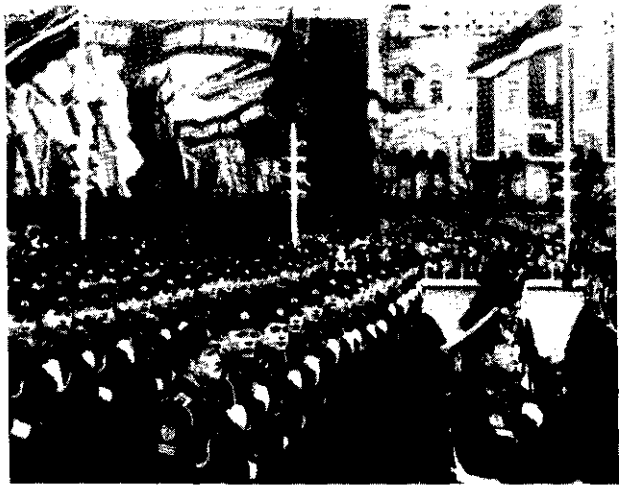

Photo credit: U.S. Department of Defense

During the cold war the annual parade through Moscow's Red Square demonstrated Soviet military power and emphasized the global military confrontation.

[1] X (George Kennan), "The Sources of Soviet Conduct," *Foreign Affairs, vol. 25, No. 4,* July 1947, pp. 566-582.

[2] William Kaufmann, *Glasnost, Perestroika, and U.S. Defense Spending* (Washington, DC: The Brookings Institution 1990), table 1.

consensus about the basic objectives of U.S. national security policy. As Paul Nitze writes:

> For over forty years the foreign and defense policies of the United States have been guided by a central theme, a well-defined basic policy objective. That goal, throughout the Cold War, was for the United States to take the lead in building an international world order based on liberal economic and political institutions, and to defend that world against communist attack.[3]

Because the cold war mobilization was a direct response to East-West tensions, the diminution of those tensions may result in a comparable degree of demobilization.

Planning future military forces requires some idea of a future national strategy. As the singular military threat from the Soviet Union diminishes, however, designing a national security strategy will become more subtle and complex. There are two major changes in the security environment: the diminished military threat, and the increased importance of non-military factors. While economic performance, access to raw materials, capital accumulation, and ideological appeal are all part of any security calculation, the relative contributions of each and the balance between military and non-military considerations are shifting.

By the broadest definition, economic problems are ultimately security problems because the extent of a nation's military power is limited by its economic resources and by necessary tradeoffs between social-welfare and defense spending. The ability of the United States to manufacture weapons will be constrained by a decline in its overall manufacturing capabilities. In addition, the military requires goods, such as food and fuel, that are clearly "civilian" yet are critical to military operations. Although defense procurement makes up only about 3 percent of the U.S. gross national product (GNP), the fact that it constitutes 21 percent of capital goods manufacturing and that in a major war a far greater percentage of GNP would be applied to military production (39 percent in World War II) indicates that the Nation's overall economic performance is an important determinant of its military potential.

This report, while recognizing that there is no sharp dividing line between civilian and military industry, concentrates on that part of the U.S. industrial base specifically devoted to weapons and other critical military equipment. The broader economic issues treated here are those that most concern military capabilities, such as how the state of the U.S. electronics industry affects the military's access to critical electronic components.

U.S. Security Objectives

According to a recent statement by the President, the United States has four basic national security objectives:

1. ensuring the survival of the Nation as a politically independent entity,
2. promoting economic prosperity for Americans and the world,
3. maintaining a stable world order conducive to liberty, and
4. forging strong ties to allies and like-minded nations throughout the world.[5]

For the foreseeable future, attaining these objectives will require military forces to supplement economic and diplomatic tools.

Preserving national survival and sovereignty are the foremost objectives of any state. Beyond these basic needs, however, the United States has the power and resources to pursue other objectives. First, the United States seeks to promote its own prosperity and that of friendly nations through a stable international environment. Second, the United States is a liberal democracy, supports like-minded democracies around the world, and officially promotes the process of democratization in other countries.

Strategic Alternatives

The future national security strategy of the United States may follow one or more of the following paths:

1. the Nation may try to maintain its current military security arrangements with the minimum changes possible,

[3]Paul H. Nitze, "America: An Honest Broker," *Foreign Affairs*, vol. 69, No. 4, fall 1990, pp. 1-14.

[4]Under Secretary of Defense (Acquisition), Bolstering *Defense Industrial Competitiveness* (Washington DC: Department of Defense, July 1988), p. v.

[5]President Bush, *National Security Strategy of the United States* (Washington, *DC: The* White House, March 1990), pp. 2-3.

Photo credit: Bettman Archives

Indicative of the profound changes in European security since 1989, a driver and mechanic prepare Soviet tanks for departure. The poster reads, "Farewell, Czechoslovakia!" ' "

2. it may withdraw economically and militarily and become more isolationist,
3. it may remain internationally engaged but act unilaterally or through ad hoc alliances, abancloning the permanent alliances designed primarily as counters to the Soviet Union, or
4. it may act increasingly through multinational organizations such as the United Nations.

The **actual strategy most likely will be composed** of some combination of these alternatives. Current evidence suggests, however, that a major disengagement is the least likely route for the United States to follow. All of the other strategies require military force that can be projected across the world. Moreover, since the beginning of World War II, the United States has sought to act within an alliance context for military and political support. Without an immediate Soviet threat, however, alliances such as the North Atlantic Treaty Organization (NATO) may lose their primacy. Instead, the ad hoc alliance formed to counter Iraq maybe the model for future alliance relations, although the United States may not take the lead every time.

THE NATURE OF FUTURE MILITARY THREATS

Europe

U.S. policymakers have long recognized that economic and industrial power create military potential. Thus, the United States has considered the domination by any single power of Europe's industrial production—and hence its military potential—to be a long-term threat to American security. This concern was a major factor in U.S. cold war policy.

The security of Europe retains its historical importance to the United States. The difference now is that the threat of a large-scale conventional attack has greatly diminished: estimates of warning time have increased from 2 weeks to as much as 2 years. Even if the Soviet Union remains intact and powerful, an important buffer now exists between Soviet military forces and NATO Europe.

Military security is difficult to measure on an absolute scale, but the situation today suggests that the relative likelihood of a major war in Europe involving the United States has fallen to its lowest level since the end of World War II. Yet even without a threat of short-warning surprise attack, Europe may still need the U.S. long-term potential for reinforcement and mobilization to counter a reconstituted Soviet conventional threat. Moreover, non-nuclear European nations, like Germany, may still want a U.S. nuclear guarantee.

Instability in Eastern Europe or the Soviet Union itself, while not a "threat' in the normal sense, could pose a danger to U.S. and NATO security. One can envision widening circles of chaos that could draw the United States into a conflict. Thus, President Bush can say with some justification that the enemy is "instability." Having intervened in two World Wars that began in Europe, the United States clearly has an interest in maintaining stability in that critical region.

Third World

The importance to U.S. security of countries outside the advanced industrial nations, often lumped together as the "Third World," has been much debated. There are two basic schools of thought.[6] One school argues that the United States should concentrate almost exclusively on the security of the world's industrial centers and oil-rich regions because they are the sources of economic and military power. Since the Third World's economic power is limited and diffuse, it is of secondary security interest to the United States except for a few special cases such as Panama, Saudi Arabia, and Kuwait.[7] Members of the opposing school contend that straightforward calculations of industrial power are too simplistic. They argue that while the geographic position and resources of any single Third World country may not be vital to the United States, the loss of access to resources or basing rights in several Third World countries could affect the global balance of power. In addition, while war in Europe would be far more damaging than conflict in the Third World, the latter is so much more likely that it deserves greater attention.[8]

Much of the past argument about the strategic importance of the Third World concerned its role in the global competition between the Soviet Union and the United States. Since the Soviets have essentially withdrawn from that competition, however, balance-of-power arguments supporting U.S. intervention in Third World conflicts are no longer compelling. A few geopolitical considerations may survive the end of the cold war, but they have also been weakened. The United States will always be concerned about potential instability in Mexico and other neighboring states, but threats to straits and other transportation choke-points were most significant in the context of a potential global conflict with the Soviet Union. Even then, it was easy to exaggerate the significance of these threats, since there were always alternative transport routes.[9] For example, anyone with a map can point out the vital importance of the Suez Canal, yet it was closed for years after the 1967 Arab-Israeli War without disastrous effects.

Some observers argue that the Third World's soaring populations, shortages of food and other resources, rising religious fundamentalism, and expanding arsenals of modem weapon systems may make it a zone of perpetual crisis. Other analysts, however, suggest reasons why the Third World may become more stable: the process of decolonization is essentially complete, nation-building is well advanced, and the Soviet Union's ideologically driven intervention has ended. It is therefore uncertain whether the world outside Europe and North America will experience more or less civil and interstate conflict in the future.

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[6]For a good comparison of the main arguments on both sides, see Michael C. Desch, "The Keys That Lock up the World: Identifying American Interests in the Periphery,' *International Security,* vol. 14, No. 1, summer 1989, pp. 89-121.

[7]For a succinct exposition of this view, see Stephen Van Evera, ' 'American Strategic Interests: Why Europe Matters, Why the Third World Doesn't," *Hearings before the Panel on Defense Burdenshanng, Committee* on Armed Services, U.S. House of Representatives, Mar. 2, 1988.

[8]See Steven R. David, "Why the Third World Matters," *International Security,* vol. 14, No. 1, summer 1989, pp. 50-85.

[9]Robert H. Johnson, "ExaggeratingAmerica's Stakes in Third World Conflicts," *International Security,* vol. 10, No. 3, winter 1985-86, pp. 32-68.

Photo credit: U.S. Department of Defense

American troops continue to patrol the cease-fire line between the two Koreas.

In any **case,** most Third World conflicts are the result of long-standing *local* animosities that do not automatically imply threats to Western security .10 While the United States will continue to have moral and humanitarian concern for the poor Third World, such countries are unlikely to pose threats to U.S. security interests that would warrant a large-scale intervention by American forces. Moreover, even in those rare cases where U.S. intervention proves necessary, the very large majority of nations of the world have such limited military capabilities and potential that even a relatively small U.S. force would be adequate to handle most contingencies.

Other than the Soviet Union, only a handful of nations have substantial military capability and also control a vital resource (in practice, this means oil) or threaten a U.S. ally or important U.S. interests. The number of potentially serious threats is small enough that instead of planning for a "generic" Third World threat, specific cases can be considered. North Korea and a number of countries in the Middle East represent the most challenging potential threats, providing a yardstick for future U.S. force requirements.

The United States, of course, calculates its military requirements in context, such as including South Korea's substantial military capability when estimating the potential threat from North Korea. Nevertheless, since the United States must fight far from its shores and may be constrained in its military options by political considerations (e.g., access to foreign bases), U.S. force requirements may be greater than a simple comparison of size and economies would suggest.

The types of military operations that the United States would conceivably undertake in most parts of the Third World might require tailored intervention forces with special equipment and training, but one would have to postulate unexpected reversals and protracted conflict involving U.S. forces before the military requirements would be taxing. Moreover, those Third World crises that do flare up should be much easier to handle without the threat of Soviet intervention hanging over every move. Imagine the recent Persian Gulf War if Iraq had still been a Soviet client state. Each U.S. action would have been weighed against the risk of Soviet intervention, and the Syrians and several other Arab states most likely would have withheld support from the United States or even sided with Iraq. The West Europeans, worried about antagonizing the Soviets, would have been much less forthcoming. What was already a formidable task could have become paralyzingly complex.

While only a handful of Third World nations have any significant domestic weapons production capacity and none has a comprehensive defense technology and industrial base (see table 2-l), Third World weapon production capability is increasing, often

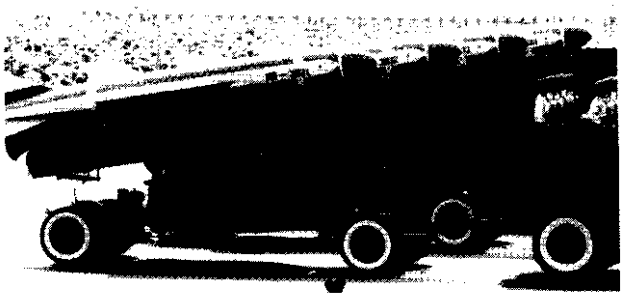


Photo credit: U.S. Department of Defense

An ever-increasing number of Third World countries produce and export weapons. In the hands of a hostile regional power, the Chinese Silkworm missile could greatly complicate U.S. military planning.

[10]Eliot Cohen, "Distant Battles: Modern War in the Third World," *International Security*, vol. 10, No. 4, spring 1986, pp. 143-171.

Table 2-l-Countries Producing Weapons—Now Through 2000

Major independent weapon production	Indigenous production of a wide range of weapons	Limited production of many types of weapons	Limited production of a few types of weapons	Minimal weapon production capability
United States	Brazil	Chile	Argentina	Algeria
Soviet Union	India	Greece	Egypt	Iraq
France	Israel	Indonesia	North Korea	Libya
Germany	South Korea	Iran	Taiwan	Morocco
United Kingdom	Yugoslavia	Malaysia	Canada*	Syria
China	South Africa	Singapore		
Poland	Spain*	Pakistan		
Czechoslovakia		Thailand		
Italy		Turkey		
Sweden				
Japan*				

● Additional estimates by OTA.

SOURCE: Briefing by David Louscher, "Patterns of Demand and Supply of Weapons."

with Western help.[11] The problem is not just production but the widespread availability of weapons on the open market. Other than nuclear weapons, there is very little that any country with the money cannot buy. Some Third World nations, especially those with oil reserves, have been able to acquire large arsenals. Several nations have bought sophisticated weapons such as antiship cruise missiles, which, even if not possessed in large numbers, could severely complicate U.S. defense plans. In addition, some of the existing inventory in Europe may be sold off on the international market as surplus. Although the U.S. defense industry favors promoting arms sales to support the DTIB, this policy makes little sense if it encourages transfers of weapons to countries that may foster regional instability or become adversaries in the future.

In summary, the transformation of the global security environment will result in changes in U.S. force structure, in turn imposing new demands on the supporting defense technology and industrial base. Competing and conflicting requirements may create conundrums for DTIB planners. On the one hand, the large increase in warning time available before the Soviet Union could launch a credible conventional attack, as well as the buffer of newly independent states between NATO and the Soviet Union, are transforming the challenge of meeting a Soviet threat into one of reconstituting a large U.S. military capability over a period of years. On the other hand, there are many lesser contingencies that require forces-in-being. The defense-industrial requirements of these ready forces will be very different from those needed for long-term force reconstitution. Allocating limited resources between these two sets of requirements is an important policy issue affecting the DTIB in the coming decade.

The Continuing Nuclear Threat

Although the threat from Soviet conventional forces is much reduced, there has been no comparable reduction in the destructive capabilities of Soviet strategic nuclear systems, which continue to pose a direct threat to the United States. Even so, it is generally believed that the nuclear threat has diminished, for several reasons.

First, although prudent military planners often contend that one should not consider intentions but concentrate only on capabilities, that approach is too simplistic. Both the British and the French have nuclear arsenals that could destroy the United States as a modem society, yet Americans do not worry about those capabilities because of their confidence in the intentions of these allies. The Soviet Union clearly has become less belligerent over the last several years, and the circumstances in which the Soviet leadership would consider using nuclear weapons are almost certainly less likely than in the past. Thus, U.S. warning and nuclear readiness levels have begun to be reduced.

Second, nuclear war would be so horrible that no one can easily imagine a provocation strong enough to start one. Most military planners have judged that the most plausible route to nuclear war is escalation from conventional war. Yet the United States has supported President Gorbachev in his difficult efforts at reform and has made it clear that NATO

[11] U.S. Congress, Office of Technology Assessment, *Global Arms Trade: Commerce in Advanced Military Technology and Weapons,* OTA-ISC-460 (Washington DC: U.S. Government Printing Office, June 1991).

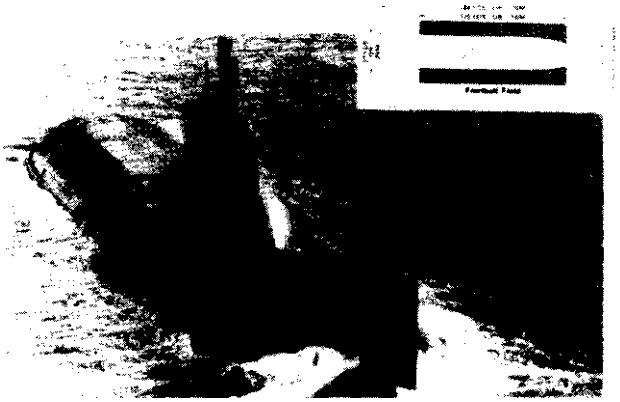


Photo credit: U.S. Department of Defense

Although the Soviet conventional threat to Europe is much reduced, Soviet nuclear capabilities, such as this Typhoon missile-launching submarine, remain formidable.

does not threaten Soviet security. The risk of conventional war has accordingly declined, and without a conventional war little nuclear incentive exists.

Finally, the sea-change in U.S.-Soviet relations might allow a slowing of the quantitative and qualitative nuclear arms competition. Each side's modernization efforts drive the other's to some extent and require costly countermeasures to maintain an assured second-strike capability. Even if the two superpowers remain wary of each other, changes in the Soviet Union make it at least conceivable that retaliatory security can be assured by a substantial reduction in the number of strategic nuclear weapons on both sides. The current START negotiations are a move in that direction.

Perhaps the greatest potential for an *increased* threat from Soviet nuclear weapons would follow from instability or breakup of the Soviet Union. Centralized control over nuclear weapons might then be lost or pass to small, untested, perhaps unstable governments. While it is difficult to imagine any of the potential new governments starting a war with the United States, the presence of nuclear weapons increases the dangers of instability.

The U.S. policy of extended deterrence has assigned some role in deterring conventional aggression in Europe to both theater nuclear forces based on European soil and central strategic systems in the United States. As the conventional threat to Europe diminishes and the possibility of a Soviet military victory recedes, nuclear weapons will become, in ***NATO'S*** words, "truly weapons of last resort."[12] With deterrence of war provided primarily by NATO conventional weapons strength, the portion of the U.S. nuclear force dedicated to NATO could be reduced.

Although the Soviet nuclear threat may be diminishing, the second tier of nuclear powers and the spread of nuclear weapons to other nations remain sources of concern. Nuclear weapons are so destructive that the possession of small numbers by even one hostile nation could be a significant threat to U.S. security. Fortunately, past predictions of the expansion of the nuclear club have turned out to be overly pessimistic, since many states with a nuclear weapon potential have chosen to forego the option.[13] The problem is not a general worldwide rush to go nuclear by every country that is technologically capable of it, but rather the efforts of a few renegade nations such as Iraq, North Korea, and Libya. Although these cases present a challenge, sanctions are more effective against a small number than against a general trend.

POSSIBLE FUTURE FORCE STRUCTURES

Future military force structure will be the result of decisions based ultimately on judgments about the size and character of the threat and on the resources available to develop and maintain the forces. Four major force-structure judgments will affect requirements for the defense technology and industrial base:

1. the expected size and type of the threat that must be countered,
2. the desired rate at which forces should be committed and the length of time they should be sustained,
3. the autonomy desired for U.S. forces, and
4. the expected performance of U.S. weapons compared to those of potential adversaries.

The assessed size and type of threat clearly affects the desired overall size of U.S. forces and, hence, the size of the peacetime DTIB. The desired rate of force commitment determines the readiness of the force,

[12]London Declaration Summit of NATO Heads of State and Government, July 5-6, 1990.

[13]Joseph Nye, "Nonproliferation: A Long-Term Strategy," *Foreign Affairs*, vol. 56, No. 3, April 1978, pp. 601-623.

Table 2-2—Force-Structure Choices Affecting the Defense Technology and Industrial Base

National security policy choice	Military force indications	DTIB indications
Size and natureof contingency planned for	Size and capability of overall force	size of sustaining base, surge and mobilization capacity
Urgency of dealing with contingency	Readiness of force, active/ reserve ratios, training tempo, war reserves	Responsiveness, lead times
Autonomy of action	Degree of integration with allied forces, size and readiness of forces, composition of force	Use of foreign technology, use of foreign production, cooperative logistics planning
Qualitative or quantitative emphasis in weapons	Performance and number of weapons	Sophistication of supporting technology base, allowed dependence on global commercial technology

SOURCE: Office of Technology Assessment, 1991.

Table 2-3—Major Military Elements Under Several Proposed Defense Reductions

Forces	Current	CBO[i] "Alternative i"	CBO "Alternative V"	Kaufmann[i] "Case D"	Comm. for Nat. Sec. and Def. Budget Proj.	Admin.[k] 25%. Force Reductions
Divisions[a]	(21/11)[b]	(19/1 1)	(12/8)	(10/1 1)	(10/10)[j]	22[l]
Carriers	[c]	14	[c]	6	9	12
Attack submarines	9 2[d]	[e]	7 2[h]	[e]	[e]	—
Tactical Air Wings[a]	(27/13)[c]	(27/13)	(17/8)	(15/12)	(12/12)j	25
Missile submarines	34"	23	17	17	[e]	20
ICBMs	1000	50 MX+500 SICBM	50 MX+500 MM-iii	100 MM-iii	950 MM	500
Bombers	260[g]	97 B1 +132 B2	23 B52+97 B1 +15 B2	41 B1	97 B1+15 B2	200

a(active/reserve)
b Army (18/10) + Marine (3/1) divisions--does not include nondivisional assets. See CBO, Security Needs, p. 3, Mil Bal, pp. 17, 20.
c Air Force (24/12) + Marine (3/1) airwings. See CBO, p. 3 and Mil Bal, pp. 21-22.
d CBO, p. 46.
e Mil Bal, p. 16.
f Minimum reductions to meet expected START& CFE limits.
g Mil Bal, p. 16 (excludes FB-111s).
h CBO, p. 46.
i Kaufmann, Table 32. Kaufmann calculates force levels in terms of "division equivalents."
J Excludes Marine forces.
k From OSD briefing, "Budget impact of Illustrative 25% Force Reduction," June 1990.
l Active and reserves were not broken out.

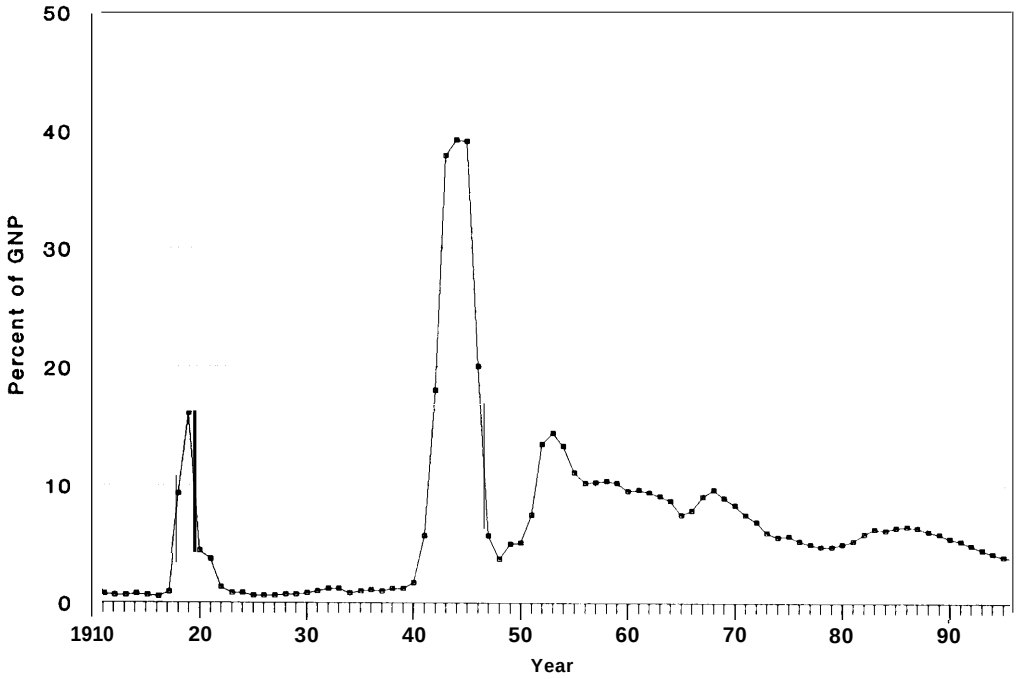
"CBO" refers to *Meeting New National Security Needs: Options for U.S. Military Forces in the 1990s,* Congressional Budget Office (February 1990).
"Kaufmann" refers to William Kaufmann, Glasnost, Perestroika, and *U.S. Defense Spending* (Washington, DC: The Brookings Institution, 1990).
"Mil Bal" refers to *The Military Balance, 1989-7990* (London: International Institute for Strategic Studies, 1989).
"Comm. for Nat. Sec. & Def. Budget Proj.," refers to *Restructuring the U.S. Military: Defense Needs in the 21st Century* (Washington, DC: Defense Budget Task Force of the Committee for National Security and The Defense Budget Project, 1990).

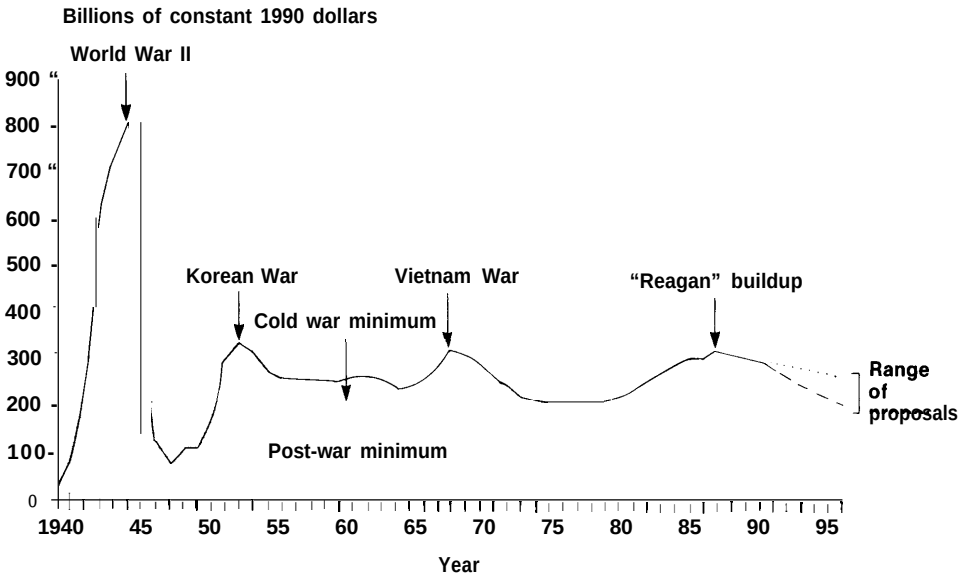
SOURCE: Office of Technology Assessment, 1991.

which refers to the level of training, the peacetime operational and maintenance tempo, the required stockpiles of ammunition and spare parts, and the planned surge capability of the DTIB. Autonomy of U.S. forces means the degree to which they can operate without foreign forces, weapons, or bases and infrastructure, and the extent to which the Nation will allow itself to use foreign technology. The desired performance edge of U.S. weapons should determine, in part, the extent of the Nation's investment in defense R&D. These choices are listed in table 2-2.

Several recent studies have proposed force reductions of various extent and speed, as summarized in table 2-3. Most proposals envision at least a 25-percent cut, and some sketch out 50-percent cuts, usually over 7 to 10 years. How severe such cuts appear depends on one's view of the appropriate baseline. Figure 2-1 shows overall U.S. defense spending as a percentage of GNP since the beginning of the century and spending in 1990 dollars since the beginning of World War II. There were three major peaks in spending: World War I, World War II, and the cold war mobilization begun in 1950.

Figure 2-I—United States Defense Spending





SOURCES: *Budget of the United States Government Fiscal Year 1992, Historical Tables* (Washington, DC: U.S. Government Printing Office, 1991); Stephen Alexis Cain, *Analysis of the FY* 1992-93 *Defense Budget Request with Historical Budget Tables* (Washington, DC: Defense Budget Project, 1991); William W. Kaufmann, *Glasnost, Perestroika, and U.S. Defense Spending* (Washington, DC: The Brookings Institution, 1990).

Spending during the cold war had a floor of over $200 billion in 1990 dollars. Lesser peaks in spending over the cold-war minimum were associated with the Korean and Vietnam Wars and the peacetime buildup of the eighties. After these peaks, spending in 1990 dollars gradually returned to the cold-war minimum, and the expanding economy resulted in a downward trend in percentage of GNP devoted to defense. If one believes that the cold-war minimum is still appropriate, then some proposed

Box 2-A—Forecasts of Future Forces

The Electronic Industries Association (EIA) makes periodic forecasts of defense spending that are widely respected for their accuracy. The latest EIA study,[1] which was completed after the Iraqi invasion of Kuwait but before Desert Storm, predicts that overall U.S. defense spending will decline steadily to about $200 billion (in 1991 dollars) by the turn of the century. It predicts force cuts of more than 40 percent in the Army and the tactical Air Force, about 40 percent in the Navy, and about 25 percent in the Marines and the strategic nuclear forces.

The President's 1992 budget request calls for a reduction from 18 to 12 active Army divisions by 1995. Both the budget request and the EIA study foresee less forward basing and relatively greater emphasis on light forces rather than heavy armored forces. Accordingly, the Army plans very limited procurement of new armor. Despite the Army's decision to proceed with the next-generation LH helicopter, the ultimate investment is uncertain. Some experts contend that upgrades of existing helicopters would be adequate for the foreseeable future and much cheaper.[2]

DoD plans to reduce the total number of Navy warships by 17 percent to 451 by 1995 but would eliminate only a single aircraft carrier, from 13 to 12. The EIA study predicts a 32-percent cut in active Navy forces by the year 2000, down to a 400-ship navy with 10 aircraft carriers. Budget cuts and arms control treaties will almost certainly limit the Trident submarine fleet to 18 boats. Current procurement plans for the SSN-21 Seawolf-class attack submarine call for about 15 boats by 2000, half the production rate planned for in 1989.[3] The recent cancellation of the Navy's A-12 carrier-based attack plane will, of course, have a major effect on naval aircraft procurement. At least in the short term, the cancellation will result in more attention to upgrading existing models.

For the Air Force, DoD plans call for a reduction from 24 to 15 active tactical airwings and from 12 to 11 reserve airwings. The EIA study foresees a 41-percent cut in active forces, with a disproportionate share in tactical air, shifting the relative emphasis to strategic missions. The President has asked for continued funding for the B-2 strategic bomber, but congressional support is very thin. Congress has also eliminated funding for rail-garrison basing of the MX intercontinental ballistic missile and, while no final decision has been made, there is support for only one new ICBM, either the MX or the Small ICBM (Midgetman). The one area of growth anticipated by the EIA study is in Air Force airlift capacity.

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[1] Electronics Industries Association *Defense Electronics Market Ten-Year Forecast, U.S. Department of Defense and National Aeronautics and Space Administration Budgets, FY 1991 -FY-2000*, Oct. 16, 1990.

[2] See Congressional Research Service, *Major Legislation of the Congress*, summary issue, 101st Cong., December 1990, MLC-088.

[3] Ibid., MLC-100.

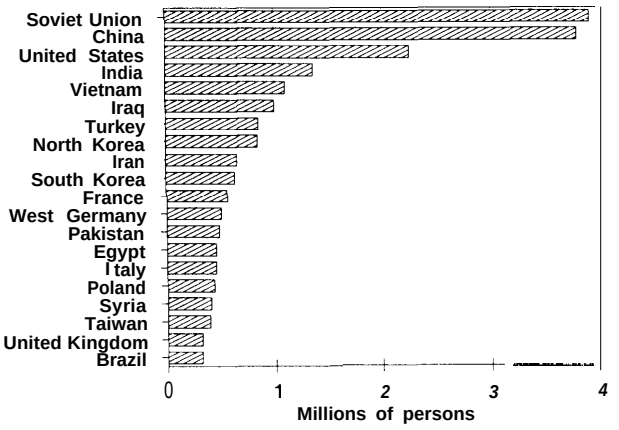
cuts could seem dangerously large. But if one believes that the pre-World War II spending levels and the post-war peacetime minimum are more appropriate to the current security environment, then a 25-percent cut would merely return us to "normal' cold-war levels, while a further 25-percent cut may be a justifiable response to the end of the cold war.

When these proposed force reductions were first presented, a 25-percent reduction appeared most likely, while a 50-percent reduction seemed radical. Since then, however, the President presented his fiscal 1992 defense budget request, which proposes a 30-percent reduction in budget authority between 1985 and 1996. (Reductions in actual outlays would be smaller because all of the money authorized in previous fiscal years has not yet been spent.) As the evaluation of future U.S. defense needs evolves, reductions by the end of the century may be closer to the previously "radical" 50-percent cuts than to 25-percent cuts (see box 2-A).

Most proposals for cutting forces would achieve reductions by retiring old inventory and terminating current production with those items already started (hence the proposal for 15 B-2 bombers) or contracted for at the time of the proposal (hence 17 Trident submarines). Thus far, not enough attention has been given to maintenance of the DTIB during the transition.

While all force-structure decisions will have some effect on the DTIB, a few key decisions may present particular challenges. Reductions in the heavy armor force and completion of force modernization without additional upgrades could result in a complete halt in the production of heavy armored vehicles. Similarly, the production of the Trident submarine

Figure 2-2—Active Armed Forces Personnel, 1988



SOURCE: U.S. Arms Control and Disarmament Agency.

will end with the additional boat funded this year. Some attention must therefore be given to the problem of how to maintain the skills, knowledge, capabilities, and equipment that will be required to develop and produce major categories of weapon systems or their replacements. If the United States produces no bombers, tanks, or submarines for a decade, how much will it cost to restart production, and would the Nation lose the ability to make such platforms in the future?

The sections below examine in more detail the tradeoffs and the risks associated with various choices about force structure, including size and type of contingency, force readiness, autonomy, and weapon performance. There then follows a discussion of the implications of these choices for the DTIB.

Size and Type of Contingency

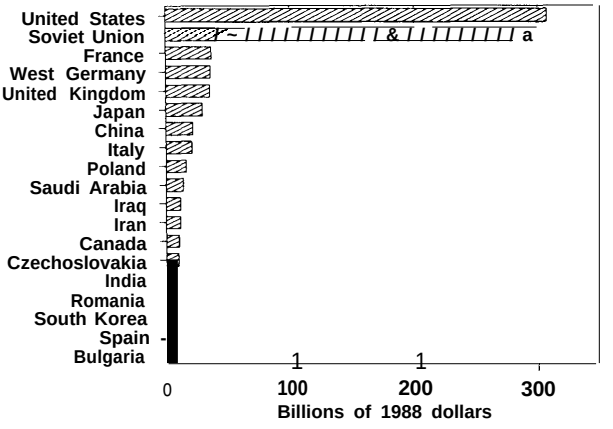
The size and structure of future U.S. forces will be influenced by judgments about the size and type of military contingencies that may face the United States, the likelihood of these contingencies, and the risks of not being able to handle them. Examining the personnel under arms and defense budgets of the leading military powers provides some perspective on the potential military challenges facing the United States.

Perhaps the most straightforward comparison of possible threats is total personnel under arms (see figure 2-2). By this measure, the United States does not stand out clearly, nor is there a sharp cut-off that divides the great from the small. Because the United States expects to be able to fight across the globe, much of its personnel is in the Navy and combat support. American *combat ground forces are,* therefore, relatively smaller than figure 2-2 would suggest. Moreover, political constraints on casualties means that U.S. involvement in the Third World could require the use of massive, overwhelming force to assure a quick, relatively painless victory, as it did in the Persian Gulf War. Yet even if the United States halved its total number of personnel, it would still count among the largest forces in the world and would lose relative rank only to India and Vietnam.

A better comparison of capability in modem conventional war is total military resources, which corresponds to the investment in modem weaponry and the skilled manpower to operate it. Although there is great variation in costs from nation to nation, particularly manpower costs, the armed forces of advanced industrial nations are trained to operate sophisticated weapons. Thus, financial measures indicate the extent of capital investment in modem weapons and skilled manpower and can provide a gross assessment of military strength. Figure 2-3 shows military spending of those countries with the largest military budgets. The United States and the Soviet Union overwhelm every other nation's military spending. Further, the second tier is composed predominantly of U.S. allies: the United Kingdom, France, Germany, Japan, Italy, and Saudi Arabia.

All of the U.S. force structure studies summarized in table 2-3 were completed before the recent war in the Persian Gulf. But since these proposals presumably considered contingencies like war against Iraq,

Figure 2-3--Major National Military Budgets, 1988



SOURCE: U.S. Arms Control and Disarmament Agency.

they should still be relevant to long-term planning. A reasonable test is whether the forces in each of these proposals could have handled the requirements of that conflict. Even for the proposed U.S. force structure with the deepest cuts, and even though Iraq was—at least on paper--one of the most challenging cases, the answer is a qualified yes. Coalition forces would still have been victorious over Iraq, but U.S. military responses would have taken longer, more reliance would have been placed on reserves or on allies, fewer U.S. forces might have been held in reserve to deal with other contingencies, and the actual operational plan might have differed.

A more critical policy issue than the size of a Third World contingency is how many such contingencies the United States must be able to handle at once. The difference between using Iraq or North Korea as a nominal planning threat might be small, but the difference between being able to handle Iraq or North Korea and being able to handle both contingencies simultaneously is bound to be close to a factor of two. The policy decision is how much the Nation is willing to pay for an insurance policy against U.S. involvement in two concurrent wars in the Third World.

In addition to force size, analyses of potential contingencies will require decisions about the composition of the forces needed to fight in different types of theaters. Will there be a change in emphasis among land, air, and sea forces, or between conventional and strategic forces? The emphasis could also shift within the Services, for example, from heavy to light armored forces in the Army or from submarine to surface forces in the Navy. Such changes in force size and composition will have important implications for the DTIB.

Force Readiness

After deciding the size and composition of U.S. forces, the next most important policy decision is to determine their state of readiness. As a military term, readiness refers to the extent to which the force is sufficiently well-trained and equipped to be committed to combat quickly and to perform effectively. According to the Department of Defense (DoD), the factors determining readiness include the quality, training, and manning levels of military personnel; the condition and maintenance of equipment; the training of units and crews; the quality of command, control, communications, and intelligence support; the location and mobility of forces; and logistics support.[14]

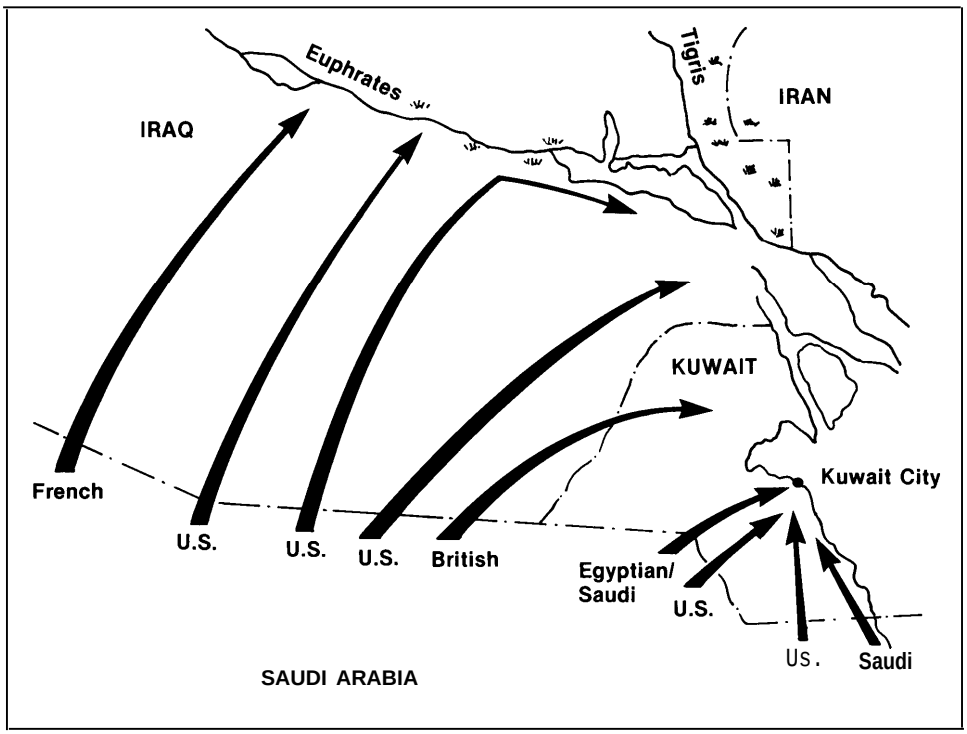
Decisions about readiness will require an analysis of costs and benefits. While full levels of troops, modern equipment, and realistic training are clearly expensive, the costs of being unready are harder to assess. The greatest danger arises when a hostile power can attack so quickly and with such force that the victimized state cannot recover in time to defend itself. This situation characterizes the vulnerability of small nations the world over. Fortunately, the United States is large, militarily powerful, and separated from potential enemies by great oceans, and thus much less vulnerable to a conventional-as opposed to nuclear-surprise attack. The United States may pay a price for not being ready to meet conventional aggression, but its national survival will not be in jeopardy.

Nevertheless, wars and threats can flare up quickly in places where the United States has vital interests. While it is not always necessary to respond immediately to aggression, costs can sometimes be incurred by waiting. The North Korean attack on the South in 1950 provides an example. Had the United States completely lost its foothold on the Korean peninsula, the cost—both in materiel and lives-of later making a "forcible entry" would have been much higher. Whatever the level of force readiness the Nation chooses, it must be matched by the responsiveness of the DTIB.

Autonomy of Forces

The degree of autonomy of U.S. forces really entails two questions. First, in how wide a range of contingencies should U.S. forces be able to operate without allied support? The required level of autonomy is determined by the extent the United States is willing to depend on allies to defend common interests. In the past, the United States has often sought to fight alongside allies for political reasons, even when it was not required militarily. Second, and more relevant to the DTIB, to what extent should the weapons employed by U.S. forces be products solely of the U.S. defense industrial base? The degree of autonomy of the U.S. base has varied greatly in the past, from nearly complete dependence

[14] Frank Carlucci, Secretary of Defense, *Annual Report to the Congress*, fiscal year 1990, p. 7.



Credit: Office of Technology Assessment

The United States has fought alongside allies whenever possible; the ground campaign to liberate Kuwait, shown in this map, was only the most recent example. Thus, allied contributions and materiel requirements should be figured into U.S. contingency planning.

on allies for heavy equipment in World War I, to an integrated Anglo-American production base in World War II, to the more autonomous base of today. The United States is fortunate to be allied with most of the leading industrial nations; otherwise, military-technical cooperation would be almost impossible.

A decision to exclude foreign production from U.S. weapons would have important consequences for the DTIB. While military planners may prefer that the base not become any more dependent on off-shore production than it already is, the increasing globalization of industry and technology may make defense industrial interdependence with other nations difficult to avoid or even track.

Desired Performance of Weapons

Throughout the cold war, the United States sought to match greater Soviet numbers with fewer but higher performance weapons. This approach has been followed for so long that today it has become nearly axiomatic. The Nation should not forget, however, that this procurement strategy is a policy choice and not an inevitable result of circumstances. A comparison of populations and productive capacity reveals that NATO certainly had the option of matching the Warsaw Pact man-for-man and tank-for-tank, had it so desired. The United States has chosen high-performance forces for a variety of reasons, including the desire to minimize battlefield casualties and expected cost-effectiveness. But the quality versus quantity debate will never go away. The country may want better tanks and airplanes than those of an adversary, but how much better? Is twice the performance preferable to a two-to-one numerical advantage?

The waning of the military competition with the Soviet Union could have an important effect on the performance requirements of U.S. weapons. Since the end of World War II, U.S. weapon performance has been measured against Soviet weapons. In the new security environment, however, more emphasis may be placed on low maintenance costs and high reliability for systems that might be in inventory for many years and used against technologically less sophisticated opponents. Moreover, as security concerns shift toward the Third World, the United States will become increasingly likely to face hostile forces armed with U.S. or European weapons. For this

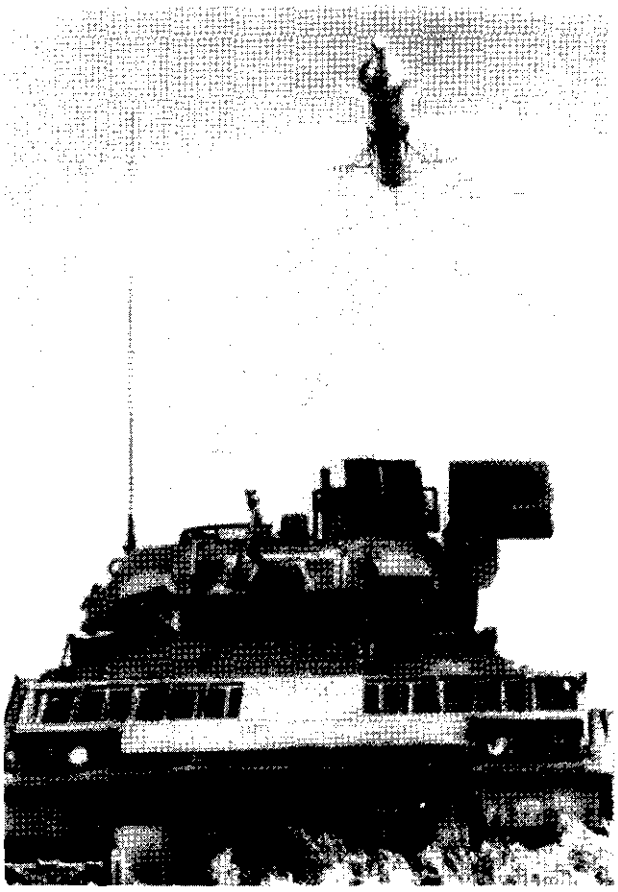


Photo credit: U.S. Department of Defense

The United States has emphasized high-performance weapons, such as this wire-guided TOW missile, rather than depend on sheer quantity. This strategy requires an active research and development program.

reason, choices relating to the performance of U.S. weapons in the future maybe affected by the extent of controls on international arms transfers. The performance required of U.S. weapons will in turn determine the requirements placed on the DTIB and, in particular, continuing levels of defense R&D.

EFFECTS ON THE INDUSTRIAL BASE

The likely characteristics of future U.S. forces are listed in table 2-4. While it is impossible to predict the nature of U.S. forces a decade hence, this analysis assumes that overall force structure will decline by nearly half over that period. Almost all possible force structures place relatively greater emphasis on reserves, but future force readiness levels remain uncertain. While military planners express a preference for readiness over force size, in the only vote that counts-the Service planning documents-they continue to prefer funding major weapon systems even at the expense of readiness. Finally, there is every indication that the United States will want to maintain superiority in weapon performance over that of potential adversaries, which will require preserving the U.S. lead in the requisite technologies.

Table 2-4-Characteristics of Future U.S. Forces

- Smaller active and ready reserve forces
  Less forward basing, greater strategic mobility
- Continuing weapons performance advantage
- Substantial nuclear capability
- Chemical and biological defense capabilities
- Greater dependence on mobilization

SOURCE: Office of Technology Assessment, 1991.

How the transition to the future force structure is carried out is at least as important for the DTIB as the size of the reduction. To provide a simple example, if a force is made up of a uniform age distribution of weapons with a 20-year lifetime, a reduction of one-half can be effected over 10 years simply by halting procurement and retiring the weapons as they wear out. This approach is appealing because of the procurement money saved, but what happens to the production base in the meantime? For some systems, this illustration is not too far from reality. A reduction in Army heavy divisions and Navy carrier battle groups could result in a hiatus of several years in tank and aircraft-carrier production. While terminating production with the expectation of restarting it some years into the future maybe the only affordable approach, careful attention must be given to the problem of preserving critical skills, facilities, and technology during the intervening period.

Apart from the size of the force, how the force will be used will also affect DTIB requirements. For example, the surge capability of the base should be matched to the readiness of the forces, how long they may need to be sustained, and the size of stockpiles of materiel. Ironically, if active forces and munitions stockpiles get smaller-making industrial surge necessary for a greater number of contingencies—surge requirements may increase just as baseline production goes down.

Surge capability is also related to the problem of optimizing production efficiency. In the past, surge capacity was rarely funded explicitly; instead, some

extra capacity **was** hidden in the inefficiency of varying production rates, which often gave factories considerable surplus capacity. As total production diminishes, however, economies of scale are less likely to be realized, requiring evermore attention to production efficiency. One way to increase the efficiency of peacetime production is to avoid year-to-year variation in production rates and thereby eliminate surplus capacity, yet doing so would reduce surge capability in a crisis. This observation suggests that in the future, explicit funding of surge capacity for selected items will be required.

The desired level of autonomy of U.S. forces will affect DTIB requirements in two ways: by influencing decisions about the overall size and composition of the force, as described above, and by determining the allowed degree of interdependence of the DTIB with the global industrial base. Autonomy will not bean all-or-nothing decision. The appropriate level of national autonomy will vary for each type of weapon; foreign dependence may be acceptable for sidearms but never for nuclear warheads.

Even when autonomy is desired, it may be difficult to achieve. As the civil economy becomes more internationalized and parts of the DTIB come to depend more on the civil economy, it may simply not be possible to maintain complete autonomy in many areas. Moreover, foreign dependence does not necessarily equate to foreign vulnerability: if the United States has a dozen different suppliers of some critical part spread around the globe, the chances of a cutoff are slim, and indeed, the supply maybe more reliable than from a single domestic producer. Still, there are some critical technologies for which the Nation should preserve a domestic knowledge base and production capability.

Finally, future weapon performance goals will affect the requirements of the DTIB. The main risk associated with a "low-tech" approach is the possibility of technological surprise. If a potential adversary makes unexpected technical breakthroughs —which in the past have included radar, the transistor, and the atomic bomb--the military and strategic implications for the United States could be severe. The Nation will therefore wish to maintain some ongoing weapons R&D as a hedge against such an eventuality.

If the policy decision is made to continue emphasizing weapon performance, the Nation will require a continuing robust research and development effort. Yet there is no reason to maximize performance for its own sake; it must have some clear utility from a military operational perspective. At any given level of technology, better performance is available by paying more, but there is a point of diminishing returns. For example, the last 10-percent improvement in performance may be extremely expensive yet contribute little to combat effectiveness.

Since there is little doubt that future procurement of large expensive weapon platforms will be substantially reduced for a period of several years, R&D efforts should concentrate more on upgrading and retrofitting existing platforms to increase their performance, life expectancy, or reliability. Emphasis could also be shifted from developing new tanks, ships, and aircraft to improving their subsystems and the munitions they carry. Such shifts in R&D focus will also affect production. For example, relatively greater resources may go to production of munitions rather than new platforms, and of improved components and subsystems rather than complete weapon systems.

This chapter has reviewed important future choices about U.S. military force structure and discussed their potential effects on the DTIB. The next two chapters describe the structure of the DTIB and examine current trends and problems that must be taken into account in planning the transition to the future base.