American Military Power: Future Needs, Future Choices

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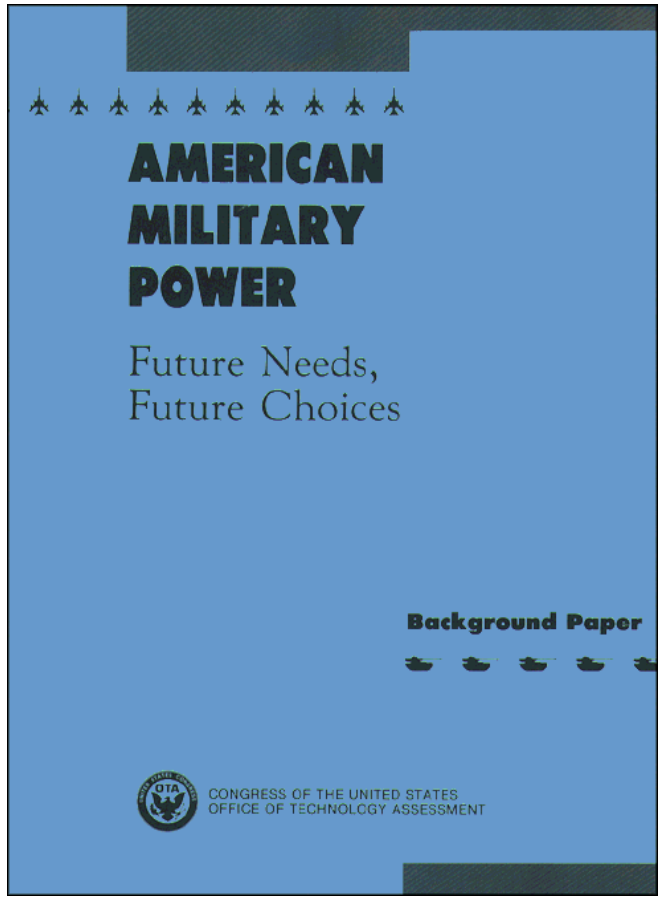

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Foreword

America's global security environment is changing profoundly, pushing the country toward a fundamental reevaluation of its military requirements and those of the supporting defense technology and industrial base. If U.S.-Soviet relations do not deteriorate, defense procurement could accelerate its present decline through the end of the decade. The Office of Technology Assessment has been asked to conduct an assessment of what form the future defense technology and industrial base might take. An essential first step in any evaluation of the defense base is understanding what military forces it will support and what those forces may be called upon to accomplish. Many of the characteristics of the U.S. military forces and the defense industry that supports them arose because of the unique security requirements of the last 40 years. Given the extraordinary new environment, the assumptions that led to today's military and industrial structure requires careful and continuing review. What threats the Nation faces, the role of force, the context of regional conflict, even the definition of "security," must be reevaluated.

This background paper, part of OTA's ongoing assessment of the future defense technology and industrial base, outlines some of the issues of importance for making choices about the future nature and role of U.S. armed forces, and suggests how these choices will affect defense base requirements. The final report of the assessment, to be delivered in the spring of 1992, will address specific policy options arising from the strategic choices and tactical decisions discussed here.

In preparing this background paper, OTA sought information and advice from a broad spectrum of knowledgeable individuals and organizations whose contributions are gratefully acknowledged. As with all OTA studies, the content of the background paper is the sole responsibility of the Office of Technology Assessment and does not necessarily represent the views of our advisers and reviewers.



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NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

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OVERVIEW

America's international security environment is undergoing profound changes. The Office of Technology Assessment has been asked to evaluate the effects of these changes on the future requirements of the defense technology and industrial base, possible changes in management required by a smaller base with new missions, and options for moving from the current cold-war configuration of the base to a streamlined but still robust future base.

An essential first step in any evaluation of the defense industrial base is understanding what military forces it will support and what those forces may be called on to accomplish. This background paper outlines the major issues in the ongoing debate about the future nature and role of U.S. armed forces. The paper starts with a review of post-World War II developments and then summarizes U.S. national security objectives, possible future policies, and current trends in world security. The paper ends with a discussion of the choices to be made about the nature of future U.S. forces and how these choices will affect the defense technology and industrial base.

During the First and Second World Wars, the United States mobilized its industrial potential to meet the material challenge of war and, when the fighting stopped, quickly demobilized. In 1950, following the North Korean invasion of the South and the Berlin crisis, the United States entered a period of tense peace or "cold war' with the Soviet Union that required a state of continuous partial military mobilization. Today the cold war is over and a substantial part of the associated defense-industrial mobilization can be reversed. At the same time, however, the United States remains a military super-power with global responsibilities that must now be reexamined in a broader context than the U.S.-Soviet competition.

Fundamental U.S. national security objectives will probably change very little. These objectives include guaranteeing the physical security of the United States, maintainingg a wide range of foreign-policy options, improving the country's prosperity, ensuring a stable international environment, and promoting democracy throughout the world. But the policies that the Nation pursues to meet these objectives may change significantly with the end of the cold war. In particular, the use of military force to meet U.S. objectives must be reexamined. In some cases, such as Europe, deterrence through the potential use of force will become less important. In other cases, such as the recent Gulf War, the political context for the use of force has changed radically.

The security of Europe is as vital to the United States as it has always been, but the military challenge is now much reduced. Soviet forces are being pulled back to the Soviet Union, some beyond the Ural Mountains, and their overall number reduced. The Warsaw Pact has been dissolved and former Soviet allies now provide an important buffer between the Soviet Union and the North Atlantic Treaty Organization (NATO). However, ethnic conflict in Eastern Europe (e.g., Yugoslavia) is on the rise and the ultimate nature of the Soviet Union is unclear.

The security situation outside of Europe is more complex and ambiguous. Although there is much conflict throughout the "Third World," in only a few cases do regional hostilities threaten U.S. security interests, now that they have been removed from the context of the superpower competition. The United States can therefore concentrate its military planning efforts on the few countries of the world that have significant military resources and directly threaten some U.S. interest or ally, rather than planning for a "generic" Third World threat. Fortunately, current U.S. military capabilities dwarf those of nations other than the Soviet Union and a very few others. Moreover, most of the military powers in the second tier are close U.S. allies. Although the Soviet nuclear arsenal is still capable of destroying the United States, the diminished threat of escalation from conventional war in Europe has made any intention by the Soviets to use nuclear weapons even more remote than in the past.

There are four primary policy decisions about future U.S. military forces that will affect the defense technology and industrial base. They are:

1. the expected size and type of the threat or contingency that available U.S. and allied forces are expected to meet,
2. the desired rate at which forces would be committed and the length of time they need to be sustained,
3. the degree of autonomy desired for U.S. forces, and

4. *the* expected performance of U.S. weapons compared to those of potential adversaries.

Each of these choices will affect the requirements placed on the defense technology and industrial base. The size of the force will determine the overall size of the base. The readiness of forces should be roughly matched with the responsiveness of the base. The desired autonomy of U.S. defense technology will determine the extent of dependence on and cooperation with allies and, in an era of increasing globalization of technology, the degree of integration between civil and defense industry. Finally, the performance of U.S. weapons will determine the size and intensity of the Nation's defense research and development effort.

Whatever choices the Nation makes about its future force requirements, the defense technology and industrial base that served so well during the cold war is no longer appropriate. Careful attention must be given to the restructuring of the base to assure its ability to support the Nation's defense needs well into the next century.

American Military Power: Future Needs, Future Choices

INTRODUCTION

America's international security environment has changed profoundly and the change continues. The primary engine of change is the political revolution in the Soviet Union and the consequent revolutions allowed in its former satellite nations. The Office of Technology Assessment has been asked to evaluate the effect of these changes on the future requirements for the defense technology and industrial base, possible changes in management required by the smaller size of the base and its changing mission, and means of evolving from the current cold-war configuration of the base to the future streamlined but still robust base.

An essential first step in any evaluation of the defense industrial base is understanding what military forces it will support and what those forces may be called on to accomplish. This background paper outlines a cluster of issues of importance to the ongoing debate about the future nature and role of U.S. armed forces. It takes a traditional approach to force planning by discussing near-term (10 year) options against more traditional threats. OTA is also conducting a separate assessment of longer term (25 year) options and a broader array of potential threats.

Designing a military structure is a complex process. An idealized approach would start from scratch with a statement of national military objectives. These objectives could be based on consensus, or tradition, or they could be considered axiomatic. Policies would then be developed to promote the chosen objectives, and military forces would then be designed to serve those policies. In fact, however, practice is well removed in many ways from this idealized approach. Even in a rapidly changing world, the Nation must consider existing force structures and inventories of weapons, organizations' traditional approaches, and domestic and international precedent. Nevertheless, many of the characteristics of the U.S. military forces and their supporting defense industry arose in response to the special security requirements of the last 40 years. Given the profound security changes that have occurred, the assumptions that led to today's military and industrial structure warrant review.

The next section briefly covers the post-war developments that led to the current U.S. military force structure and the supporting industrial base. The following sections review the Nation's security objectives and the military policies designed to achieve those objectives. There follows a description of the new security environment and the foreseeable trends. Finally, the paper concludes with a discussion of how force-structure decisions will affect the defense technology and industrial base.

THE POST-WAR SECURITY ENVIRONMENT AND EVOLUTION OF U.S. MILITARY DOCTRINE

Immediately after the victory of the Allied Powers in the Second World War, the United States perceived few security threats. The Allies had defeated the Germans and Japanese and the United States was still hopeful that the wary wartime alliance with the Soviet Union would continue. While the U.S. public had seen the military and industrial mobilization for the war as necessary, it was never popular, and full demobilization was expected immediately after the war. U.S. strategy at the end of the war appeared as simplistic as "bringing the boys home' and returning quickly to business as usual. But the emergence of the United States as the world's preeminent economic and military power opened new opportunities, as well as new peacetime responsibilities.

Soon after the end of the Second World War, events combined to create new security challenges for the United States and the world. The Soviet Union, by its coercive actions in Eastern Europe, quickly came to be seen as a military threat. The sharp and apparently irreconcilable ideological differences between the communist countries and the liberal democracies tended to force nations into one of the two camps, forming a "bipolar' world. The United States tended to define conflicts large and small around the world in a context of this ideological superpower rivalry. Finally, nuclear weapons, by their very existence, hung over every calculation of war and gave Americans an unprecedented sense of national vulnerability.

The North Korean invasion of the South decisively reversed the post-War dismantling of the U.S. military and its supporting industry. Defense spending between 1950 and 1953 shot up from $78 to $331 billion (in FY90 dollars). The United States saw a Soviet Union intent on expansion, believed a world war was imminent, and feared that such a war might be nuclear and devastating. The United States hoped that the strategy of "containment" would attain the objective of preventing Soviet domination of Europe by conquest or intimidation while avoiding nuclear war.[1]

This state of continual tense, alert peace came to be called the "cold war," and it required something new of the United States. Because Soviet conventional capabilities in Europe were so formidable, and the destruction from a nuclear surprise attack would be so devastating, the Nation would not be able to recover from a sudden blow and mobilize over a year or more, as it had in World War II. Thus, highly ready forces were deployed both at home and far from the United States to counter similarly ready Soviet forces. This task in turn required a level of military operations that was unprecedented for the United States in peacetime, and the Nation settled into a state of continuous military alert and partial industrial mobilization.

The military threat from the Soviet Union, in particular the threat from Soviet nuclear weapons, has dominated U.S. strategic thinking for the past 40 years.[2] Although some argued that atomic weapons made war too horrible to consider as a policy option, even a U.S. monopoly on atomic weapons did not deter the Soviets in the 1948 Berlin crisis nor, later, the North Korean invasion of the South. In part because of the frustrating failure of nuclear deterrence in Korea, the United States explicitly presented, in a 1954 speech by Secretary of State Dunes, a policy that became known as "massive retaliation." In its most extreme form, this policy threatened a U.S. nuclear attack against the Soviet homeland in response to conventional attack by communists anywhere.

Finances were a prime motivation for the policy of massive retaliation. The United States, and even more its European allies, were convinced that they could never match the Soviets man-for-man and gun-for-gun. (This judgment was based on the size of a standing army thought to be politically acceptable in a democracy; a comparison of economies and populations reveals no inherent inferiority.) Nuclear weapons seemed to offer a cheap way to counter the huge communist land armies. Western conventional forces, and specifically U.S. forces in Europe, needed to be only large enough to demonstrate U.S. commitment and serve as a "tripwire' to trigger nuclear war.

Massive retaliation was a plausible strategy only as long as the Soviets did not have an atomic bomb with which to retaliate or to deter a Western nuclear attack in the first place. Since Dunes' speech occurred after the Soviet's first test of a hydrogen bomb, massive retaliation was recognized at the time to be an interim policy. The next year Maxwell Taylor introduced the strategy of "flexible response,' which envisioned using only the amount of force necessary and appropriate to counter an aggression. The capability to respond proportionately to any of a wide spectrum of possible attacks required more powerful and versatile conventional forces.

Once the Soviets had acquired a substantial arsenal of nuclear weapons, the United States' objective was to minimize the chance of all-out nuclear war, which would most likely start from a conventional conflict. Initially, nuclear weapons had been intended to deter conventional attack, relegating U.S. conventional forces to the almost token role. By the early 1960s, however, Secretary of Defense McNarmara was urging European allies to increase spending on conventional forces to forestall, or at least delay, the resort to nuclear weapons should war break out. Thus deterrence relied less on the nuclear threat, and the relation of nuclear and conventional weapons almost reversed itself. Toward the end of the cold war, NATO forces were meant to provide a credible conventional defense or, at the very least, a coherent defense lasting weeks to allow a deliberate decision to use nuclear weapons.

Conventional forces in Europe have received various amounts of attention since McNamara's tenure. The war in Vietnam was a purely conventional conflict in which the threat of nuclear use played no real part, yet the United States has never allowed nuclear weapons to lose their critical role in Europe as the fina1 recourse if attacked. Indeed,

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

[2] For a good history of nuclear strategy, see Lawrence Freedman, *The Evolution of Nuclear Strategy (New* York, NY: St. Martin's Press, 1981).

along with continued improvements in conventional force capability, a great deal of effort during the cold war went toward developing procedures and weapons that would "couple" the conventional defenses in Europe to increasingly powerful nuclear forces, culminating with the intercontinental nuclear forces of the United States.

Throughout the cold war, the United States viewed most regional conflicts outside of Europe as being at least partially in the context of a global struggle between the United States and Soviet-aided communist aggression. This perception gave some local conflicts in small countries, such as Angola and Nicaragua, an importance out of proportion to that they would have received if viewed in isolation. Even when local animosities were adequate to produce conflict, for example in the Middle East, the Soviets often tried to exploit such conflicts to the disadvantage of the United States. The United States played the same game, supporting groups whose main qualification was opposition to whatever group the Soviets were supporting. In only a few cases such as Panama, because of the importance of the Canal to U.S. commerce, did the United States perceive security interests wholly independent of the superpower competition.

The cold war affected every aspect of U.S. force structure to some extent: forward deployment of forces; reliance on allies; maintenance of large, highly ready forces; and emphasis on high-performance weapons. The continuing changes in the Soviet Union and east-central Europe are of the same magnitude as those that brought on the cold war, only in the direction of diminished threat. Before discussing changed policies, however, the next section reviews U.S. objectives.

U.S. NATIONAL SECURITY OBJECTIVES

The *stated* national security objectives of the United States are simple, although not consistently observed in real-world politics. According to recent statements by the President, the United States has four basic 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.[3]

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

Maintaining a political identity and the ability to act as a political entity is the foremost objective of any state. Indeed, pursuing this objective could be used to define the purpose of a "nation-state." Beyond this fundamental goal, the United States has the power and resources to pursue other objectives.

First, the U.S. Government maintains the objective of promoting its own and the world's prosperity by pursuing policies it believes will contribute to a stable international environment. Other countries may share this view but the United States is foremost in being able to effect it on a global scale, and the only nation with the required force even to attempt it militarily.

Second, stated U.S. foreign-policy objectives have an ideological content. The United States is a liberal democracy and officially supports liberal democratic governments around the world, as well as movement toward democracy among those governments that have not yet achieved it. The historical record here is mixed, however, and the United States has not always lived up to its rhetoric. During the cold war, for example, the United States supported autocratic regimes in Iran, Iraq, South Korea, and throughout Central and South America simply because they were anticommunist or were perceived to promote regional stability. Nevertheless, no country, except the Soviet Union, has even attempted on a *global scale* such support based on ideology.

POLICIES

Planning for future military force structure requires some vision of the mission of the military forces. The country needs very different forces to intervene in other countries than it does just to keep hostile military forces off its own shores. And no *military* force alone will be able to guarantee that a future government, for example in Iraq, is stable, democratic, and friendly to the United States.

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

There was never much question of whether the United States should defend vital interests challenged by the Soviet Union. Instead, the debate concerned how to do it best, how much military force was needed, and how that force ought to be deployed.

U.S. policymakers have recognized that in the modern era, economic and industrial power create military potential. Thus, during the cold war, the United States considered the potential Soviet domination of Europe's industrial power-and hence its military potential-to be a long-term threat to American security. The security of Europe remains vital to the United States. The difference now is that the Soviet challenge is much reduced and the new security equation much more complex. The threat of overwhelming surprise attack is gone. Estimates of warning time have increased from 2 weeks to as much as 2 years, and the Soviet Union is much weakened. This change is now believed irreversible, in the strict sense that the Soviets will not be able to return to the situation they once enjoyed and an important buffer of Eastern and Central European states now exists between the Soviets and NATO Europe.

Military security cannot be measured on an absolute scale, but comparing the situation today to the past suggests that the relative likelihood of a major war in Europe involving the United States has fallen to its lowest level since the 1920s. Yet, even without a threat of short-term surprise attack, Europe may still need the American long-term potential for reinforcement and mobilization to counter the comparable Soviet potential, and some European nations may still want the U.S. nuclear guarantee against Soviet nuclear coercion.

Instability in Eastern Europe, or in the Soviet Union itself, while not a "threat" in the normal sense, could pose a potential danger to U.S. and NATO security. Since wars can expand in unpredictable and seemingly irrational ways, President Bush can say with some reason that the enemy is "instability.' Having intervened in two World Wars in Europe, the United States clearly has an interest in maintainingg stability on the continent.

Aside from the Soviet threat, the United States, thanks to its size, power, and geography, faces exceedingly few threats to its survival. Nevertheless, the United States has been willing to fight for interests that cannot in the strictest sense be called "vital" in that they affect national survival. The intervention in Grenada is a recent example. These interventions were officially justified in part by the U.S. objective of promoting international stability. Of course, great care must be exercised in the use of military force because it is a blunt instrument with many unpredictable consequences and often leads to less rather than more stability.

In the future, the United States must continue to balance costs and benefits when calculating whether and when to involve itself militarily around the world. Furthermore, if military planning is not dominated by the need to meet the Soviet threat, the United States must make difficult tradeoffs when deciding on the military forces (and supporting industrial base) needed to maintain the *capability* to intervene around the world.

THE FUTURE SECURITY ENVIRONMENT

If the United States chooses to remain a great power, even if not a "superpower," then it must have military resources that make it a serious player along with other large nations on the world stage. Comparisons of military power between any two countries should not imply that the potential for conflict exists. Indeed, part of the ongoing debate about the appropriate size of U.S. forces in Europe involves the perceived need to have forces comparable in size to the those of *allies so the* United States can remain a major player in NATO policymaking.

Europe

Europe continues to hold the greatest concentration of conventional military power on Earth. For U.S. military force planning, it also holds the greatest number of ironies. Since the end of the Second World War, the Soviet Union and the Soviet-dominated Warsaw Pact have been the dominant threats to security in Europe. The Warsaw Pact is now defunct, but Soviet military power, while reduced, is still formidable. NATO has done well at deterring the military threat to the security of Western Europe but is now uncertain of its future role. The future role of U.S. forces in particular is unclear.

American forces have been integral to the defense of Europe. They represented both significant military power in their own right and the commitment of the balance of American power should war break

out. The United States could judge the size of its military requirements by the force needed to bring NATO's overall strength up to the challenge presented by the Soviet threat.

This NATO military shortfall is much reduced with the reduction of Soviet forces and their withdrawal from Eastern Europe. The dissolution of the Warsaw Pact, and the loss of East Germany *to* NATO, represent a greater loss of military power by the Soviet side than the withdrawal from Europe of U.S. forces would be for NATO. If trends in reduction of the Soviet conventional threat to Europe continue then very little of the *military* justification for U.S. forces in Europe will remain. European NATO countries ought to be more than capable of providing for their own security, especially if backed by the potential for U.S. reinforcement.

Without an immediate Soviet threat, the military mission of U.S. forces in Europe has become less clear, and the lack of a clear mission means that no simple yardstick is available to judge the appropriateness of any particular level of U.S. *military* force. The European countries have significant armed forces of their own, and almost any U.S. military action in Europe would require the cooperation of allies. This fact requires estimating U.S. military needs within the context of a total allied force.

Even though the military mission of U.S. forces in Europe has become less clear, few Europeans are clamoring for a complete withdrawal of U.S. forces. One reason is that the U.S. military presence has a political function to perform by demonstrating the United States' continuing commitment to the security and stability of Europe. Ultimately, this mission might require little more than a military liaison and logistics support on the ground. If warning time of a resurgent Soviet threat really is 2 years or more, then U.S. military *potential* plays as great a part as immediate capability in the deterrence calculation.

U.S. forces may be useful for a variety of possible nonmilitary NATO missions. They could serve to enhance stability, as a sign of U.S. political commitment to European affairs, as insurance or reassurance, or in a future European arms control regime. None of these missions alone would justify a U.S. presence, however, and each has limitations. For example, although instability could spill over into NATO areas, it is most likely to arise in southeast Europe-Bulgaria, Romania, or Yugoslavia-or in the realigned republics of the Soviet Union itself, where U.S. forces could not realistically be deployed. Alternatively, U.S. forces may reassure the Poles and the Russians about German intentions, but explaining this mission to the Germans would be very delicate indeed. Finally, U.S. forces might find a role in a future European arms control regime if non-European forces are needed to serve as more disinterested observers or referees. They could help monitor military movements and count treaty-limited weapons, and act as inspectors or adjudicators.

Outside Europe

Until recently, the Warsaw Pact threat to Europe was so challenging that it alone could provide most of the context for planning U.S. military forces. If the United States could meet the threat in Europe, then other, lesser contingencies would be covered more or less automatically. This will not be the case in the future.

The importance to U.S. security of areas outside of Europe and Japan, often lumped together as the "Third World," has been much debated. There are two basic schools of thought.[4] One school argues that the United States should concentrate almost exclusively on the security of the world's industrial centers and the oil-rich areas that fuel them, because they are the source of military power. Since the Third World's economic power is very limited and diffuse, the Third World is of limited security interest to the United States except for such special cases as Panama, Kuwait, and Saudi Arabia.[5]

Members of the opposing school contend that straightforward calculations of industrial power are too simplistic. They argue that much of the importance of the Third World depends on geography and that, while no single country maybe vital, aggregate loss of access to resources and bases could affect the global balance of power. Moreover, some observers, seeing the Third World's growing populations, rising religious fundamentalism, and expanding

[4]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.

[5]For a suscinct 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 Burdensharing, Committee on Armed Services, U.S. House of Representatives, Mar. 2, 1988.

arsenals, argue that it is becoming increasingly unstable, and that threats to U.S. interests in the Third World are increasing in number and degree. In such a view, even if conflict in Europe would be more damaging, Third World conflict is so much more likely that it should receive greater attention. [6] In contrast, a longer term view suggests reasons why Third World stability may increase: the long post-war decolonization and its destabilizing effects are behind us, Third World nation-building is well along, and the Soviet's ideologically driven intervention has ended. Thus, whether the world outside Europe and North America will become less stable in the future is uncertain. Whatever the future of level of instability, where Third World conflict persists today, it is most often due to long-standing local animosities and does not automatically imply threats to Western security.

Much of the past argument about the importance of the Third World concerned its effect on the global balance of power between the Soviet Union and the United States. Since the Soviets have essentially withdrawn from that competition, however, balance-of-power arguments supporting involvement in the Third World are no longer relevant and the postulated military threats to U.S. interests are substantially reduced. Other considerations supporting Third World involvement will survive the end of the cold war, but they also may be weakened. Geography will remain the same: the United States will inevitably be concerned about what goes on in Mexico and other nearby states. Although threats to straits and other transportation choke-points are possible because of Third World geography, they were most significant within the context of potential global conflict with the Soviet Union. Moreover, it is easy to exaggerate the significance of these threats, since there are always alternatives. [8] 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.

Regardless of the extent of U.S. interests, the large majority of nations of the world have such limited military capability that even a small force by U.S. standards would be adequate to handle most contingencies. Moreover, the majority of the world's nations are poor and thus have a limited military potential. This is not to say that the poorest parts of the world, such as Africa, are or will be peaceful. Precisely because they are poor, they may experience civil and interstate conflict, but they are unlikely to pose a traditional overt military threat to U.S. security interests.

The types of potential U.S. military intervention in the poor Third World could require more tailored forces. One would have to postulate some type of extended guerrilla war involving the United States before the military requirements would be taxing. But forces used for intervention may need special equipment and training, and may be only part of a coordinated program of economic development, police training, education, and so on.

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 few countries in the Middle East are the challenging potential threats, providing a yardstick for future U.S. force requirements.

Only a handful of Third World nations have any significant domestic weapons production and none has a broad, comprehensive military industrial base. Still, Third World weapon production capability is increasing, often with Western help. [9] (See table 1.) A few countries have tried to leapfrog their defense industry into production of weapons such as ballistic missiles, although those available so far are better suited for terrorizing civilians than for achieving military objectives.

The problem is not just the proliferation of military technologies 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. Thus, some Third World nations, especially those with oil reserves, have been able to acquire substantial arsenals. Several nations have

[6] See Steven R. David, "why the Third World Matters," *International Security, vol.* 14, No. 1, summer 1989, pp. 50-850.

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

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

[9] U.S. Congress, Office of Technology Assessment, *GlobalArms Trade: Commerce in AdvancedMilitary Technology and Weapons,* OTA-ISC-460 (Washington, DC: U.S. Government Printing Office, June 1991).

Table I-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."

bought sophisticated types of weapons that, even if not possessed in large numbers, can severely complicate U.S. defense plans. Antiship cruise missiles are an example. Although some defense contractors have suggested promoting arms sales to support the U.S. defense base, this policy makes little sense if it encourages sales of weapons to countries that may become America's enemies.

The Continuing Nuclear Threat

Soviet intercontinental-range nuclear weapons continue to pose a direct threat to the United States. Although the threat from Soviet conventional forces is much reduced and the Warsaw Pact threat has disappeared, there has been no comparable reduction in the capability for destruction from Soviet central nuclear systems. But even though Soviet nuclear capabilities are practically undiminished, there is still a reduced risk to the United States, for several reasons.

First, although military planners often say that one should disregard intentions and concentrate only on capabilities, that is too simplistic. Both the British and the French have nuclear arsenals that could destroy the United States as a modern society, yet Americans do not worry about those capabilities because of their confidence in the intentions of these two allies. The Soviet Union clearly has become less belligerent over the last several years and any intention to use nuclear weapons is certainly even more remote than in the past.

Second, nuclear war would be so horrendous that no one could easily imagine incentives strong enough to start one. Most military planners have judged that the most probable route to nuclear war has been escalation from conventional war. With the diminished probability of conventional war between the United States and the Soviet Union, the risk posed by the Soviet nuclear arsenal has been indirectly reduced.

Finally, the recently completed START arms control negotiations offer hope that the future threat to the United States from Soviet nuclear weapons will be reduced through further cuts in numbers and types of weapons (particularly heavy ICBMs). Each side's modernization drives the other's to some extent and requires costly countermeasures, for example, to maintain survivability. Even if the two superpowers remain wary of each other, changes in the Soviet Union are such that it is now at least conceivable that retaliatory security can be assured by cooperatively refraining from deploying counterforce weapons.

Perhaps the greatest potential for an *increase in the* threat from Soviet nuclear weapons would follow from instability in, or a breakup of, the Soviet Union. In that case, nuclear command-and-control could pass to untested, perhaps unstable governments. The Soviet coup and its aftermath forcefully demonstrated the potential dangers. However, the breakup of the Soviet Union could also lead to the rapid dismantling of its nuclear forces particularly with encouragement from the United States, such as the recent unilateral reductions in the number and readiness of its nuclear weapons. The events unfolding in the Soviet Union at this time carry both risks and opportunities.

U.S. policy of extended deterrence has assigned to strategic nuclear systems in the United States some role in defending Europe. Nuclear weapons were meant to weigh in the final balance as a deterrent to conventional aggression. As the conventional threat

to Europe is reduced, nuclear weapons need to keep only their purer deterrent function of deterring the other side's use of its own nuclear weapons, and the further deterrent provided by nuclear weapons would become redundant. As a result, the nuclear force intended to deter conventional attack could be proportionately reduced.

Although the Soviet nuclear threat may be diminishing, there is the continuing worry about the second tier of nuclear powers, particularly China, and the additional concern about the spread of nuclear weapons to other nations. In the past, the Soviet nuclear arsenal has been so huge that China's weapons seemed insignificant. If large Soviet reductions occur, then more attention must be given to China and other nuclear states.

The nuclear club has grown very little over the past 10 years but other nations are trying to develop nuclear weapons or are on the verge of having them. Nuclear weapons are so destructive that possession by even one hostile nation could be a significant threat to the Nation's physical security. This makes defense difficult; for example, a weapon could be carried in a single ship into any of dozens of harbors. Moreover, deterrence by the threat of retaliation, which seems to have worked in the past, may not be effective against irrational leaders who may acquire nuclear weapons.

Another strategy is to prevent the spread of nuclear weapons. Here there is some room for hope since the existing nuclear powers cooperate fairly well to discourage further proliferation and most non-nuclear states with a nuclear weapon potential have chosen to forego the option.[10] The problem, then, is not a general worldwide rush to go nuclear by every country that is technologically capable of it, but rather a few nations, such as, Pakistan, Libya, and Iraq, that appear intent on acquiring nuclear weapons. Although these cases present a challenge, isolation, persuasion, coercion, and sanctions work better against a few renegades than against a general trend and they are far less costly than deploying a strategic defense system.

Summary

The global security environment has become more favorable to the United States over the last few years and the trends point toward continuing improvement. The Soviet threat is reduced, while the military threat from Third World conflicts has diminished now that these continuing conflicts have been removed from the superpower context. U.S. force planners must not assume that military forces or conflict around the world are necessarily a threat to U.S. interests.

Those Third World crises that do flare up will be much easier to handle in the absence of the threat of Soviet intervention hanging over every move. Imagine the recent war against Iraq if it were still a Soviet client state. Each U.S. action would have been judged against the risk of Soviet involvement, and the Syrians and several other Arab states most likely would have withheld support from the United States or even sided with Iraq. The Europeans, worried about antagonizing the Soviets on their own front, would have been much less forthcoming. What was already a formidable task might have become paralyzingly complex.

The change in the nature of the military threat will result in changes in the required military force structure, creating new needs for the supporting technology and industrial base. But competing requirements for military forces create conundrums for defense base planning. With the sharp decline in the Soviet threat, the large increase in warning time available before it could launch a credible conventional attack, and anew buffer of independent states between NATO and the Soviet Union or its successor states, the challenge of meeting a future major threat involves reconstituting a huge U.S. military capability at least as quickly as the new threat emerges. That period of competitive rearmament could take years. On the one hand, no one proposes that the United States should maintain a standing army sized to meet a reconstituted Soviet military capability or some other great-power threat. On the other hand, there are many lesser contingencies that require forces-in-being, and the defense base requirements of those forces will be very different from those needed to reconstitute forces to meet a new superpower threat. How to allocate limited resources between these two requirements will be one of the important policy questions concerning the defense industrial base in the coning decade.

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

FOUR CHOICES ABOUT HOW TO REACH OBJECTIVES

Desired characteristics of the Nation's future military forces will result primarily from political choices, assumptions, and judgments; few decisions will fall out from objective calculation. Nevertheless, these decisions should be based on a few important policy choices.

There are four primary policy decisions that will affect the defense technology and industrial base. They are:

1. the expected size and type of the threat or contingency that available forces will be expected to meet,
2. the desired rate at which forces should be committed and the length of time the forces need to be sustained,
3. the autonomous capability for unilateral action desired for those forces, and
4. the expected performance of U.S. weapons compared to those of potential adversaries.

These choices are summarized in table 2.

These force-structure choices should not be thought of as independent parameters in an equation but as different perspectives from which to examine a very complex problem. The options are closely interrelated. For example, the size of the Navy, and specifically the number of aircraft carriers, is determined in part by the total force capability required and in part by the desired reaction time of the carriers.

The United States still has to decide which contingencies it wants to handle with forces-in-being. There will always be hypothetical contingencies that would require a national mobilization and general expansion of the military, for example, against countries the size of the Soviet Union, India, or China. On the other hand, operations smaller than defending against an all-out Soviet attack on Europe, such as the ones in Grenada, Panama, and the Persian Gulf, could be handled with plausible levels of active forces. Since none of these lesser cases present immediate threats to the fundamental security of the country, U.S. defense planners must use somewhat subjective judgment in choosing which contingencies to handle with available forces.

Whatever the size of any particular military force, the Nation must decide on the readiness of that force. Very different readiness levels are required if the President wants U.S. forces to occupy Panama within 24 hours as compared with taking 6 to 12 months to do the same thing. Readiness is reflected most explicitly in the ratio of standing to reserve forces but also in the training time of standing personnel, the stock of spare parts, and the level of maintenance of weapons.

Since the beginning of the Second World War, the United States has relied on allies to help protect even its most vital interests. Although the Nation has maintained an autonomous nuclear retaliatory force, the United States has chosen to forego the ability to conduct major military operations without allied or host-nation cooperation. Interdependence with allies affects industrial-base needs in two ways: first, directly by influencing the size and composition of

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

National security policy choice	Military force implications	DTIB implications
Size and nature of 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.

the forces needed for various contingencies and, second, by determining the extent to which the United States allows itself to rely on foreign supply of weapons and components.

The fourth force structure decision that will affect strongly the requirements of the industrial base is the desired performance of U.S. weapons. The United States has made a policy of having weapons of superior performance to those of potential adversaries, even if that has required sacrificing quantitative superiority. Producing weapons with high performance at acceptable cost has required maintaining technological superiority over potential enemies. This policy is not written in stone. Indeed, during the Second World War, the United States was renowned not just for the quality of its weapons but for their overwhelming numbers. Even if the Nation continues to pursue a policy of maintaining qualitative superiority, the question of trades between quality and quantity will remain.

Each of these policy choices is expanded below.

Size of Contingency

The size of the threat that U.S. forces must be capable of handling, that is, the overall capability and power of the Nation's military force, is the most important single choice to be made about them. This section discusses some of the considerations that will go into making that choice.

Measuring military power is extremely difficult, and several units of measure are commonly used. Perhaps the best overall comparison of capability in modern conventional war is total resources expended for military forces, as measured by dollars spent. Total resources corresponds to the investment in modern weaponry and the sidled manpower to run it. Measures of capability used by military planners include total number and quality of people under arms, and the firepower, mobility, and vulnerability of major weapons (tanks, planes, and ships). Total resources invested is another rough, aggregate measure of overall capability.

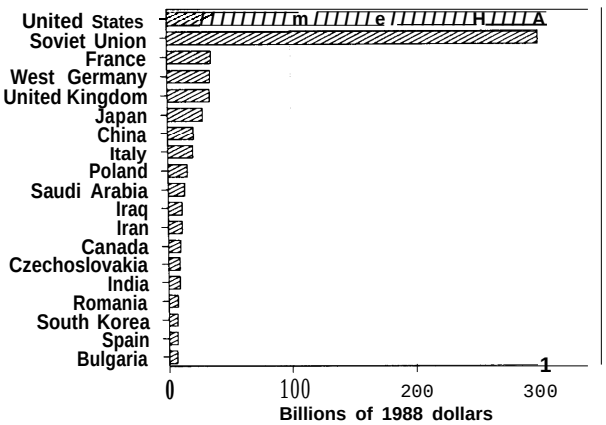
Using any measure for a relative comparison of two military forces can be even more problematic. Furthermore, static comparisons of today's forces may tell us little about the military *potential* of a nation. For example, the existing military power of Japan measured by its deployed tanks and planes is much less than the military potential that Japan could achieve after a few years' mobilization. In contrast, some oil-rich countries may have huge inventories of modern weapons but may lack the industrial infrastructure to support them, a profound weakness in any long-term conflict. Simple comparisons of industrial capability alone are also inadequate. Again using Japan as an example, because it is an island-nation short of natural resources, Japan's military potential is vulnerable to disruption by naval blockade. Clearly, measuring military requirements will always be difficult and neither completely quantitative nor precise.

The size of future U.S. forces will be determined by judgments about the size of contingencies to be handled, the likelihood of those contingencies, and the risks of not being able to handle them. Figures 1 and 2 provide some global perspective on the military challenges confronting the United States. Figure 1 shows military spending of those nations with the largest military budgets. What stands out starkly from the figure is that the United States and the Soviet Union do not just outspend other countries but overwhelm every other nation's military spending.

In fact, other than the Soviet Union, no other nation spends on its military as much as *one-eighth* as much as the United States does. This distant second tier of nations with significant military spending is made up overwhelmingly of America's closest allies: the United Kingdom, France, Germany, Japan, Italy, and Saudi Arabia. As measured by spending, there is little competition other than the Soviet Union; if the United States were to halve its defense budget, it would still outspend the nearest competitors by a factor of 4. (The ratio of spending will hold steady with many of the European countries even after U.S. budget reductions because they, too, will be reducing their spending after the CFE Treaty goes into force.)

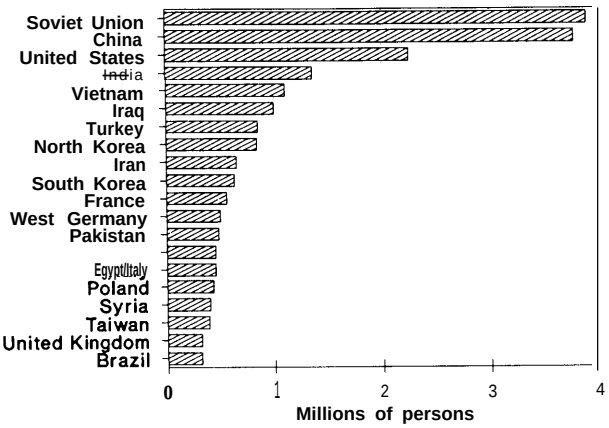
Again with the exception of the Soviet Union, no *large* nation spends as great a fraction of its gross domestic product (GDP) on its military as does the United States, even though it has the largest GDP in the world. The other countries that spend a greater fraction of GDP on the military than the United States are a few oil-producing states with valuable, easy-to-seize assets and small populations to defend them (e.g., Oman), face perceived immediate threats (e.g., Israel), are involved in hostilities or insurrection (e.g., Angola), or are militarized societies (e.g., North Korea).

Figure I—Major National Military Budgets, 1988



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

Figure 2—Active Armed Forces Personnel, 1988



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

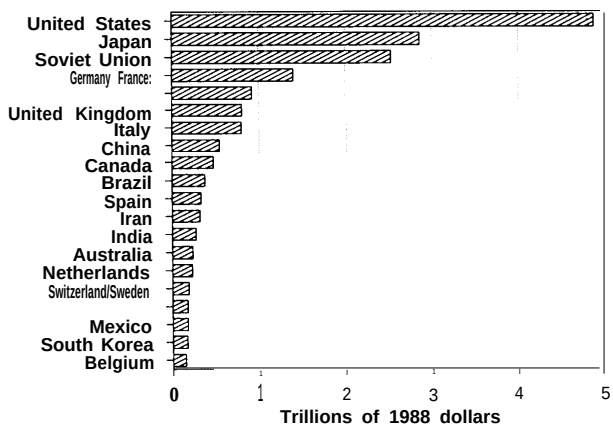
Figure 2 shows another measure of a nation's military power, total personnel in the armed forces. By this measure, the United States does not standout so clearly, nor is there a sharp cut-off that divides the great from the small. Yet even if the United States halved its total number of personnel, it would still count among the largest forces in the world. (Note that by halving the force the United States would only lose relative rank with India and Vietnam.) If the United States halved its current personnel strength and maintained its current quality of troops, training, and equipment, it would still have both one of the largest and best militaries in the world.

Although not a perfect measure, total national resources are a good frost cut at military *potential.* Figure 3 shows GDP for the largest economies of the world. Again, the United States stands out from the rest of the world and the nearest competitors are counted among America's military allies. Thus, by any measure—spending, major weapons, total men under arms-only a few nations are in the same league as the United States. This suggests that an analysis of future military force requirements could profitably concentrate on comparison to a few specific nations—for example, Syria, Iran, and North Korea.

Readiness of U.S. Forces

After deciding the size of U.S. forces, the next most important policy decision to be made concerning them is their state of readiness. According to the

Figure 3-Gross Domestic Products, 1988



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

Department of Defense definitions, readiness as a military term refers to the fraction of a force that can be committed to a fight without unacceptable delays and acquit itself well. Factors determining readiness include: the quality, training, and reaming levels of military personnel; the condition and maintenance of equipment; the state of collective training of units and crews; the quality of command, control, communications, and intelligence (C3I) support; the location and mobility of forces; and logistics support.[11]

When a force is "ready" is, of course, partly a judgment. On the one hand, any force can be thrown into combat without training, but disaster may await them. On the other hand, any force would probably

[11]Frank Carlucci, Secretary of Defense, *Annual Report to the Congress,* Fiscal Year 1990, P. 7.

benefit from additional training and attention to weapons. Overall readiness of the total military forces is affected primarily by the ratio of active to reserve forces, but any particular reserve unit can be at varying levels of readiness (where 'readiness' is defined by how long it would take to get prepared to fight). Readiness is also affected by the deployment, the training tempo, and the support of active forces, particularly the transport planes and ships required to get them where they are needed.

Decisions about maintainingg readiness will include calculations about both the costs of staying ready and the costs of not being ready. The costs of readiness are clear. To maintain ready personnel requires high levels of realistic training for active personnel, which in turn means wear and tear on equipment, fuel for vehicles, and salaries for the people. Maintaining ready equipment means bins full of spare parts and aggressive maintenance schedules, all of which costs money.

Estimating the costs of not being ready is more difficult. The greatest danger would arise if a hostile power could attack so quickly and so severely that the victimized state could not recover to defend itself further. This situation characterizes the vulnerability of many small nations, and that of the United States to intercontinental nuclear weapons. Fortunately, the United States is large, militarily powerful, and separated from potential enemies by great oceans, so that its homeland and military industrial potential could not be overrun in a conventional (i.e., non-nuclear) surprise attack. The United States may pay a price for not being ready, but its survival will not be in jeopardy.

Nevertheless, wars and threats can flare up quickly in places where the United States has interests, and sometimes costs can be incurred by delaying a military response. The North Korean attack on the South in 1950 provides an example. Had the United States completely lost its foothold on the peninsula, then the cost—both in materiel and lives-of later having to make a "forcible entry" could have been much higher.

Against a giant adversary like the Soviet Union with its huge mobilization potential, the best allocation of resources will result almost certainly in a "total force" made up of a combination of highly ready active forces and reserve forces at various lesser levels of readiness. The best ratio of active to reserve forces for secondary contingencies is controversial, and will be determined by a judgment comparing recurring costs to potential risks. Because of the United States' power and distance from enemies, however, it will always have some time to prepare for a major non-nuclear war. Thus, U.S. military forces can be composed of a limited number of active troops to deal with quick flare-ups or to "hold the fort' until successively less ready categories of forces are brought up to combat strength. Others argue that any U.S. intervention must be quick and decisive, as much for domestic political as military reasons, and thus must be carried out with forces-in-being. This view implies that reserve forces will not be used to their full potential except in cases of total war.

Like force size, future force readiness decisions are still unresolved. Given the choice between size and readiness, most military planners today seem to prefer a smaller, highly ready force to a larger, less ready force. There are a variety of reasons for this preference but one is the perception cited above that only ready forces are usable. Others counter that highly ready forces make military involvement too easy. Indeed, several recent Presidents have argued that, as Commander-in-Chief, they can commit active forces as they see fit, even to the extent of engaging in combat. Once active forces have been raised, congressional control becomes more difficult, but Congress could put a ceiling on the extent of future U.S. involvements by limiting the size of the ready forces.

Interdependence With Allies

Since the beginning of the Second World War, the United States has often operated militarily in cooperation with allies, but it has also sought to preserve the option for independent military action. Alliances obviously can bring to bear greater military power than any one nation alone could produce. But the United States has sought to act within a group as often for political as for military reasons. The crisis with Iraq is a good example of how the United States has sought to forge an international consensus for the use of military power. Operating within an alliance can be frustrating, but it can be a moderating influence as well.

The United States is allied with Japan, South Korea, Australia, and New Zealand, but the NATO alliance has dominated. With the collapse of the Warsaw Pact and the continuing diminution of the Soviet threat against Europe, the NATO alliance will

certainly change. NATO could be weakened by the lack of a clear, unifying threat. However NATO evolves, the United States cannot avoid reexamining its most important alliance relationship and its attitude to alliances in general. The allowed degree of interdependence with allies is the third important policy decision affecting the nature of the future defense technical and industrial base, and will affect the required size of U.S. forces, their level of readiness, and their composition. Moreover, a consistent policy would match the degree of military and industrial interdependence.

The size and capability required of U.S. forces is related to their autonomy. The U.S. forces stationed in Germany or South Korea would have no hope of defending those countries alone and were never intended to. Clearly, if allies are fighting alongside, the requirement for U.S. forces is reduced. The logistical burden on U.S. forces is also reduced by host-nation support and the existence of secure lines of resupply. Required readiness levels are also affected by the degree to which the United States is willing to depend on allies to defend common interests. A rational division of responsibilities could leave quick response to those allies nearer the threat, while the United States maintains its huge reserve potential.

The composition of U.S. forces will depend on the degree of allied cooperation. In many cases, efficiency calls for specialization. NATO is an example of how individual nations in a group have-to a limited extent-divided up military responsibilities so that each can become more expert at their tasks or geographic areas. For example, Denmark has special responsibilities to maintain control of its straits, which are important to all of NATO; the United States has a disproportionate responsibility in air power because it can be reinforced across the Atlantic quickly; and Belgium and the Netherlands have special logistical responsibilities in their harbors. The division of these tasks maybe obvious and straightforward, but no nation's forces could do its job smoothly without the other nations' doing theirs. The disadvantage of such a division of labor is that without the cooperation of the other members of the alliance, any single member may become vulnerable. As a simple illustration, if one navy were good at protection against submarines and the other at protection against missiles, then the two may be able to work together but each would face major problems working alone.

To the extent that the United States pursues a policy of military autonomy, it will require a complete and diverse military force. If the United States is willing to forego some autonomy, in some cases giving up the option of acting without allied support, it could specialize to a greater degree. For example, some military analysts have suggested that ground forces in South Korea could be supplied by the host nation while the United States invests its resources in tactical air power capable of rapid reinforcement. This opton would result, however, in a U.S. force that might not have adequate ground power to act independently elsewhere.

The capability, readiness, and composition of U.S. forces will have indirect effects on the defense industrial base, but decisions about allied dependence will affect the base directly. The United States has depended on allies to help defend Europe from the Soviets. It also buys from these allies critical components of U.S. weapons. While these two types of dependence are different, they should be roughly consistent. Depending on a nation for a computer chip should not cause excess alarm about military (as opposed to commercial) vulnerability if that same nation is being depended on to provide combat forces when the need arises. Finally, the chosen extent of interdependence with allies will affect the degree to which some allies may depend on the U.S. defense base to supply them with weapons and logistical support.

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. One should not forget, however, that this approach is a policy choice and not an inevitable result of circumstances. A comparison of populations and productive capacity reveals that the Western allies certainly have had the option of matching the Warsaw Pact man-for-man and tank-for-tank if they had so desired.

The future choices about the performance of U.S. weapons relative to that of potential enemies will have significant long-term effects on the defense technology and production base supporting U.S. military forces. These choices will determine how much effort is devoted to research for new technology, what the sources of that technology will be, and how it will be paid for.

The United States has, in general, sought weapons of higher performance than those of potential adversaries, even if the higher costs have required smaller numbers of weapons and smaller forces overall. The debate about the optimal allocation of resources between numbers and performance is perennial. Often the debate seems to be between two distinct camps, but in fact the positions are not as extreme as may frost appear. Everyone agrees that performance is important. Would the Royal Air Force have had an easier time in the Battle of Britain if they had been flying F-15s armed with missiles? Of course. But wouldn't they have had nearly as much of an advantage with Korean War vintage F-86s armed with guns? The question is not whether performance is important but the proper tradeoff between performance and numbers (e.g., the choice is between hundreds of Spitfires or just one F-15), and where one should stop when pursuing performance (against propeller-driven airplanes, an F-86 is probably good enough and an F-15 is overkill).

The reduced intensity of the U.S.-Soviet military competition will have an important effect on the development of U.S. weapons. Since the end of the Second World War, the Soviet Union has been the yardstick against which U.S. weapon performance has been measured. The United States will continue to develop new weapons. But if the pace of Soviet weapons development slows down dramatically, then the development of countering U.S. weapons can follow suit.

In the future, improvement in weapon performance may be harder to achieve because the total number of each type of weapon will probably be smaller, and smaller production runs do not justify as large investment in development (and, in the long run, research). Greater time between procurement cycles will increase the problem of holding design teams together or, in the extreme, maintaining the design "culture' of a particular type of weapon. Nevertheless, the weapons of the United States, its allies, and the Soviet Union far outclass those of any other producers. Indeed, most nations of the world have armed themselves with sophisticated weapons by buying them from members of NATO or the Warsaw Pact. Although a few countries view arms exports as economically important, the original motivation for most of the weapon development was the NATO-Warsaw Pact confrontation. Thus, with the fading of the cold war, the rate of all weapon development could be reduced.

In fact, the engine of U.S. weapons development of the future may be the performance not of Soviet weapons but those of our allies, or at least those weapons they are willing to sell abroad. Nations outside of NATO and the Soviet Union are generally not capable of broad-based defense production and will continue to purchase most of their weapon systems from U.S. and European producers. The trend today is a widening military technical gap between the United States and most nations of the Third World, although a few oil-rich countries can afford to buy some of the world's best performing weapons.

In sum, the international arms market may change the benchmark by which the United States measures the performance of its weapons. Foreign markets may help support the U.S. defense industrial base, but selling weapons to nations that may later use them to fight against the seller is clearly counterproductive in the long term. The solution, a sellers' cartel, seems obvious in principle but may be difficult to arrange in practice. In any case, a very careful cost/benefit analysis must precede any decision to support the U.S. defense industrial base by encouraging arms exports.[12]

Choices about the performance of future weapons will affect, and be affected by, the other policy choices outlined here about size, readiness, and independence of U.S. forces. On the one hand, if the Nation decides to reduce military personnel to levels much smaller than today's, then high-performance weapons may be needed to maintain military capability. On the other hand, depending on smaller numbers of high-performance weapons would exacerbate the problems and costs caused by very limited production runs.

Future weapon-performance goals will affect the requirements for the underlying defense technologies. At any given level of technology, better performance is available by paying more, although some performance levels are not possible at any price. If the policy decision is made to continue to press weapon performance to ever-increasing levels, then new technical capabilities will be required, in

[12] *U.S. Congress, Office* of Technology Assessment, Arming *Our Allies: Cooperation and Competition in Defense Technology, OTA-ISC-449* (Washington, DC: U.S. Government Printing Office, May 1990).

turn requiring a continuing robust research and development effort.

Moreover, defense technologies must be protected to prevent other nations from using them for weapon production. Some analysts have suggested greater use of civilian, or 'dual use,' technology for military purposes at the same time that civilian technology is becoming evermore internationalized. But the objective of superior weapons performance places limits on the degree to which the United States can pursue a policy of depending on civilian technology for military purposes. To maintain an unmatched performance lead will require the United States to protect and nurture some specifically military technologies.

SUMMARY

The cold war, which lasted 40 years, provided a whole generation of military planners with a basic paradigm that now must be reexamined. The cold war is over, the Warsaw Pact has disbanded, and the Soviet threat has been substantially reduced. While many places in the world, especially among the least developed nations, continue to be racked by armed conflict, only a very few of these trouble spots pose security threats to the United States in the absence of the U.S.-Soviet competition.

The immediate threat of a short-warning Soviet attack against NATO has been transformed into a long-warning threat of a reconstituted Soviet force. The goal of the United States is to be able to reconstitute military power at least as fast as the Soviets (or any other emerging great power). The potentially short-warning threats are from lesser contingencies, none of which present immediate challenges to the core power of the United States nor are capable of irretrievably damaging the U.S. capability to respond. Meeting the materiel requirements of the large immediate threat from the Soviet Union was difficult, but at least the threat was clear. Meeting the materiel needs of lesser threats will be much easier, but the Nation is faced with difficult tradeoffs between the costs of maintaining a ready military force and risks of not being able to meet a regional military threat in a timely manner.

Whatever choices the Nation makes about its future force requirements, those choices will have implications for the defense technology and industrial base. The base that served so well during the cold war is no longer appropriate. Careful attention must be given to the currently evolving base to assure its ability to support U.S. national-security needs well into the next century.

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