



# RESEARCH & DEVELOPMENT STRATEGY FOR THE 1990s

1990 Summer Study  
Volume II  
Scenarios & Intelligence Task Force

November 1990  
Office of the Under Secretary of Defense  
for Acquisition  
Washington, D.C. 20301-3140

This document cleared for publication

by  
Directorate for Freedom of Information and Security Review  
Office of the Assistant Secretary of Defense (Public Affairs)

THIS REPORT IS A PRODUCT OF THE DEFENSE SCIENCE BOARD (DSB). THE DSB IS A FEDERAL ADVISORY COMMITTEE ESTABLISHED TO PROVIDE INDEPENDENT ADVICE TO THE SECRETARY OF DEFENSE. STATEMENTS, OPINIONS, RECOMMENDATIONS, AND CONCLUSIONS IN THIS REPORT DO NOT NECESSARILY REPRESENT THE OFFICIAL POSITION OF THE DEPARTMENT OF DEFENSE.

**TABLE OF CONTENTS**

Scenarios and Intelligence Task Force . . . . .	iii
Scope of the Task Force Report . . . . .	1
I. NEW SCENARIOS FOR U.S. DEFENSE PLANNING . . . . .	2
Global Trends and U.S. Policy Objectives . . . . .	3
Principal Judgments Regarding Scenarios . . . . .	3
Brief Discussion of Scenarios by World Region . . . . .	5
Soviet Union . . . . .	5
Europe . . . . .	7
Asia-Pacific Region . . . . .	8
Western Hemisphere . . . . .	9
Middle East/Southwest Asia . . . . .	10
Key Observations of the Scenarios Group . . . . .	11
II. MEETING THE NEW REQUIREMENTS FOR NATIONAL INTELLIGENCE . . . . .	13
Increasing Demands on the Intelligence Community . . . . .	13
Principal Judgments Regarding National Intelligence Needs in the New World Environment . . . . .	13
Recommendations for Strengthening National Intelligence . . . . .	15
III. MANAGING THE DEFENSE TECHNOLOGY AND INDUSTRIAL BASES . . . . .	19
Background: The Changing Context of Defense Technology . . . . .	19
The Technology Reserve Concept . . . . .	20
Recommendations for Preserving and Strengthening the Defense Technology Base . . . . .	21
Recommendations for Acquisition of High-Technology Defense Equipment in an Era of Reduced Defense Procurement Budgets . . . . .	23
Considerations for the Defense Industrial Base . . . . .	24

LIST OF FIGURES

Figure 1. GlobalTrends . . . . . F-1  
Figure 2. U.S. Policy Objectives . . . . . F-2  
Figure 3. Excursions - USSR . . . . . F-4  
Figure 4. Excursions - Europe . . . . . F-5  
Figure 5. Excursions - Asia-PacificRegion . . . . . F-6  
Figure 6. Guidelines for Intelligence . . . . . F-7  
Figure 7. Guidelines for Technology Strategy/Industrial  
Base . . . . . F-8  
Figure 8. Guidelines for Strategic Force . . . . . F-9  
Figure 9. Guidelines for Tactical Forces . . . . . F-10  
Figure 10. Changing Priorities in National Intelligence . . . . . F-11  
Figure 11. The Intelligence Challenge . . . . . F-13  
Figure 12. Surging, Mobilizing, and Reconstituting . . . . . F-14

APPENDICES

A. Briefers to Scenarios and Intelligence Task Force . . . . . A-1  
B. Scenarios Briefing . . . . . B-1  
C. Intelligence Briefing . . . . . C-1  
D. Technology and Industrial Base Briefing . . . . . D-1

DEFENSE SCIENCE BOARD

SCENARIOS AND INTELLIGENCE TASK FORCE

Co-Chairmen: Dr. Robert J. Hermann, Dr. William J. Perry

Vice Chairman: Dr. Ashton B. Carter

Executive Secretary: Mr. Bobby Ellison

Scenarios Panel

Dr. Robert Hermann, Chairman  
Dr. James J. Martin, Vice-Chm  
Dr. Davis B. Bobrow  
RADM William A. Cockell, Jr.,  
USN (Ret.)  
Mr. Arnold L. Horelick

Intelligence Panel

Mr. Pete Aldridge, Jr.,  
Chairman  
Dr. Harold Rosenbaum, Vice-Chm  
Mr. M. S. Araki  
Mr. Lewis R. Franklin  
Dr. Eugene G. Fubini  
ADM Bobby R. Inman, USN (Ret.)

Technology/Industrial Base Panel      Government Advisors

Mr. Charles A. Zraket, Chairman	Mr. Lyndall Beamer
Dr. Richard L. Wagner, Vice-Chm	LtCol Murphy Donovan, USAF
Mr. Donald A. Ingram	LTC Arthur Faris, USA
Dr. Anita K. Jones	Mr. Thomas H. Handel
Dr. Walter B. LaBerge	Mr, Paul S. Kozemchak
	Dr. Gordon Oehler
	Dr. David W. Phillips
	Mr. Henry Sokolski
	Dr. Abraham R. Wagner

Support Contractors

Ms. Patricia Dorsey, BDM  
Ms. Jennifer Hickey, SAIC  
Ms. Elizabeth Quatrevaux, BDM  
Ms. Carrie Sigman, SAIC



## Scope of the Task Force Report

The 1990 Defense Science Board Summer Study focused on developing a strategy for U.S. defense technology in this era of fundamental change in the national security landscape. The Scenarios and Intelligence Task Force was charged, first, with defining alternative future scenarios where U.S. military forces might be used: and second, with deriving the implications of those potential scenarios for the national intelligence system and for the defense technology and industrial bases. Other summer study task forces dealt with the impact of the new scenarios on strategic forces, tactical forces, and technology and technology transfer policy.

The dramatic changes in the scenarios that will underlay U.S. defense planning in the future, together with the prospect of substantial cuts in U.S. defense spending over the next few years, clearly call for a restructuring of the U.S. defense establishment. A reduction in the size of U.S. forces and the rate of their modernization will be the most obvious feature of this restructuring. But for the national intelligence system and the technology and industrial bases that support the forces, a less obvious and more subtle type of restructuring is required, as this task force report explains. For this reason, recommendations for the national intelligence system and for the technology/industrial bases were developed in close association with the development of scenarios, and all three efforts were accomplished within the same task force.

This task force report has three parts, corresponding to the three working groups that comprised the Scenarios and Intelligence Task Force. Part I explores the range of scenarios of possible military action by U.S. forces in the coming decade and beyond. Part II derives the resulting requirements for national intelligence, and makes recommendations to enable the intelligence community to meet those requirements. Part III treats the implications of the emerging military and economic landscape of the world, and of the coming reductions in defense spending, for the defense technology and industrial bases.

As this report went to press, the crisis in the Persian Gulf erupted following the Iraqi invasion of Kuwait, and a large deployment of U.S. forces to that region began. Though the Task Force did not anticipate this particular event, it illustrates vividly one of the central types of scenario studied by the Task Force, and it makes the report's recommendations all the more salient.

## I. New Scenarios for U.S. Defense Planning

For nearly half a century, U.S. defense planning was necessarily preoccupied with the major threat posed by the Soviet Union. With its massive conventional forces, Warsaw Pact allies, and the opaque decisionmaking of its closed society, the USSR possessed a capability for short-warning attack on Western Europe and other regions neighboring its huge territory that dominated the attention of the U.S. defense and intelligence communities. This scenario was so demanding that it could plausibly be assumed that other scenarios of U.S. military action -- whether in Korea, the Middle East, Southwest Asia, Latin America, or elsewhere -- would be adequately met by the forces, intelligence system, and technology built by the United States to meet the Soviet threat. The Warsaw Pact threat to Europe dominated: other contingencies were "lesser included cases."

The events of the past year have fundamentally altered this familiar basis for U.S. defense planning. Soviet conventional forces facing Europe have been reduced and continue to be reduced. The nations of Eastern Europe have undergone separate revolutions that have led to the de facto dissolution of the Warsaw Pact as a military organization and to the unification of East and West Germany. Moreover, Soviet preoccupation with problems internal to the USSR has resulted both in less threatening Soviet behavior around the USSR's periphery and, intentions aside, in a genuine decline in the internal political cohesiveness of the Soviet Union that would be necessary for it to undertake and sustain major belligerent action with conventional forces.

In a slower but equally profound evolution, other military threat scenarios have grown more complex and can no longer simply be treated as "lesser included cases." Though not one of these lesser contingencies is as demanding overall as the former Warsaw Pact threat to Western Europe was, collectively they present new features that make novel demands on U.S. military capabilities. Plausible scenarios involving U.S. forces in the near future could take place in many regions of the globe; they would likely involve complex politics and uncertain allies; and U.S. forces would increasingly have to operate against opponents possessing sophisticated high-technology weapons, from a shrinking structure of overseas bases, and with a national intelligence system that was built largely with the Soviet Union rather than these other regions in mind.

Looking further into the future, one cannot rule out the possibility that a single dominant threat scenario will emerge as compelling and as demanding of U.S. military capability as the cold war Warsaw Pact threat. For one thing, the Soviet Union could reassert itself as an even more powerful opponent



after the current period of internal political flux, military reform, and attempted economic growth. Other large and wealthy nations or blocs could emerge in the early decades of the next century with potential for hostile action to the United States. Should such threats emerge, the United States would have to perceive them early and, reversing the current build-down, reconstitute the large standing forces of the cold war.

In essence, the Scenarios Group viewed the military threats to the United States for the near future as falling into two categories. The first category contains a great variety of scenarios, each with moderate or small probability but collectively presenting a near certainty of the use of U.S. military force somewhere in the world in coming years. Though extremely demanding in many ways, none of these scenarios requires forces in being of the size we have today. The second category contains a number of future world politico-military evolutions that, over a decade or more and after giving the United States ample strategic warning, could result in a threat to the United States comparable to the cold war Warsaw Pact threat and requiring a commensurately large standing U.S. force. The first category of scenarios requires small but flexible forces with global reach, technological dominance in each region of potential military action, and excellent global intelligence support, all in an era of reduced defense spending. The second category requires the potential to reconstitute a large standing force in less than a decade. These two categories of threat, and their resulting demands on the U.S. intelligence system and technology/industrial base, are major themes of this task force report.

## GLOBAL TRENDS AND U.S. POLICY OBJECTIVES

The Scenarios Group began with the set of global trends and U.S. policy objectives shown in Figures 1 and 2.

## PRINCIPAL JUDGMENTS REGARDING SCENARIOS

1. The baseline scenario for the Soviet Union projects Soviet and Warsaw Pact capabilities for large-scale conventional aggression in Europe that are structurally weakened beyond near-term repair. This judgment results from (a) completed and pending Soviet conventional force reductions; (b) the collapse of the Warsaw Pact as a coherent military organization; (c) the eroding cohesiveness of Soviet society, a cohesiveness that would be necessary to support major and sustained belligerent action; and (d) the poor prospects for the Soviet economy, and the resulting pressure on Soviet defense expenditures and defense industrial base. A reconstitution of the cold war level of conventional threat to Europe would require a combined political, military, and economic evolution in the Soviet Union and Eastern Europe that would take years to unfold.

2. In the baseline scenario for Soviet evolution, the USSR develops over time into a pluralistic state with a strong, modern economy. The major uncertainty in this scenario is the foreign policy tendencies of this reconstituted future superpower: cooperative with U.S. interests or newly assertive. In one excursion from the baseline scenario, the Soviet Union reverts to authoritarianism. The principal uncertainties in this scenario are the foreign policy propensities of the regime (inwardly preoccupied and averse to foreign adventures, or newly assertive and hostile) and the economic prospects of an entirely or largely command economy. In a second excursion from the baseline scenario, the USSR disintegrates internally into a number of necessarily weaker states.

3. All three scenarios of Soviet evolution project a period of decreased Soviet conventional capabilities. In all three scenarios, reconstitution of the cold war level of Soviet conventional threat could not occur soon, and all three would present comparable levels of warning and reaction time to the United States.

4. In the area of nuclear forces, Soviet capabilities are largely unchanged. In fact, Soviet strategic forces are undergoing modernization and, in land-based missiles, a shift to mobile basing. Soviet forces will be reduced by START and, further in the future, by a possible START II agreement, but their strategic capabilities will not be qualitatively altered. The likelihood of nuclear war, on the other hand, has decreased for two reasons. First, the Soviet Union appears to have moderated its expansionist aspirations, to have set in motion an internal process of reduced reliance on military power, and to be showing a greater awareness of its stake in the international status quo. Second, the diminished prospects for large-scale conventional war in Europe eliminate the most likely path to U.S.-Soviet nuclear war. In the excursion scenario that projects internal disintegration of the USSR, however, one new worrisome nuclear scenario arises, namely, the possibility that coherent central government control over some portion of the Soviet nuclear arsenal could be lost.

5. There is a growing likelihood that the United States and the Soviet Union will find their interests converging in scenarios of interest, e.g., in relation to the proliferation of sophisticated weapons around the world. This evolution opens up a new domain of opportunity for U.S.-Soviet security cooperation.

6. A number of non-Soviet superpower threats involving Western Europe, Japan, China, or India can be imagined for the far-term future, but in each case a lengthy evolution would be required for the threat to emerge, during which the United States could reconstitute a large standing conventional force. For Europe, the necessary evolution would be largely political;

for Japan, political and military; and for China and India, economic and military.

7. In virtually every region of the globe, contingencies can be identified that might call for U.S. military action in the near term, though on a scale much smaller than the cold war Soviet threat. These contingencies include fairly large interventions on behalf of important American interests or allies (e.g., countering an Iraqi invasion of Saudi Arabia or a North Korean attack on South Korea), regional wars that do not involve American interests directly but that would command American attention because of the possible use of nuclear weapons or other weapons of mass destruction (e.g., an India-Pakistan war), limited "police actions," special operations, and operations related to drugs, terrorism, or the taking of American hostages.

8. None of these near-term, lesser contingencies is as demanding of U.S. military capabilities as the cold war Soviet threat to Europe. And though none is demonstrably more likely than the others, collectively they amount to a near certainty of U.S. military action in coming years.

9. The relaxation of the U.S.-Soviet military standoff might tend to make regional conflicts more likely. At the same time, such conflicts, if they occur, are less likely to draw in the superpowers and thereby to escalate.

10. The near-term scenarios cannot be treated as "lesser included cases" for two reasons: first, the United States will not be maintaining the level of defense spending or the large forces in being that have characterized the cold war: second, contingencies of this sort will increasingly exhibit new features that place new demands and constraints on the application of U.S. military power, among them:

- proliferation of high-technology weapons, including nuclear, chemical, and biological weapons, ballistic and cruise missiles, diesel submarines, and modern anti-air and anti-ship weapons:

- absent or uncertain regional alliance structures;

- reduced U.S. overseas basing structure;

- stringent limitations on the amount of force considered morally and politically acceptable.

#### BRIEF DISCUSSION OF SCENARIOS BY WORLD REGION

Soviet Union. Three scenarios encompass the range of plausible alternative Soviet futures that are relevant to U.S. security: progressive evolution toward a pluralist political system and a

market economy: a reversion to authoritarianism; and disintegration of social order, with a collapse of nationwide authority (see Figure 3). The key variables determining which future actually emerges are internal developments in the USSR, its progress toward a market economy, the propensities of its foreign policy, and the resources allocated to the military sector.

In the progressive evolution scenario, political-economic reform continues, political constraints on the amount of resources allocated to the military are increased and institutionalized, Soviet forces leave Eastern Europe, Soviet conventional forces are cut, and nuclear forces are reduced to START II levels. For the 1990s and quite possibly beyond, the Soviet capability for large-scale conventional aggression in Europe, Northeast Asia, and the Persian Gulf region is greatly reduced in this scenario. The primary residual threat is from Soviet strategic nuclear forces.

If the Soviet Union sustains its progress toward pluralism and a market economy, the consequences for the United States are not necessarily benign, depending on Soviet foreign policy in the early 21st century. A cooperative foreign policy and continued institutionalized constraints in the military would accord with U.S. interests. On the other hand, if the Soviets pursued a more assertive foreign policy and increased the military's share of the resources of a strong economy, the United States would face a powerful military competitor in the 21st century.

Reversion of the USSR to an authoritarian government could make the USSR more hostile to the United States, but would not result in a threat increase for some period of time. Soviet capabilities for large-scale conventional attacks would depend on how well and how rapidly the economy could support military improvements in this scenario, since reversion to authoritarianism probably would result in an economy that was largely, if not entirely, centrally directed.

The disintegration scenario could result in a possibility that elements of a chaotic or fractionated USSR would come into possession of nuclear weapons, using them or threatening to use them against the United States or other nations.

If the USSR continues along its current evolutionary path for another year or two, as seems likely, future shifts to excursion paths that have negative consequences for the United States would entail long geopolitical lead times from the first clear manifestation of such changes to their completion. Reconstitution of the Soviet conventional threat would require a return to Eastern Europe and substantially increased military modernization.

The ability to detect early signs of such shifts would be well within the capabilities of a U.S. intelligence system that remains alert to political and economic as well as military trends in the context of a Soviet evolution toward a cooperative, relatively benign nation. These shifts would provide visible and clearly threatening signs that would permit U.S. and allied political leaders to increase the West's military capabilities.

In the case of disintegration of the Soviet Union and the increased threat of "irrational" use of nuclear weapons, early warning would be adequate, but Western options to deal with this threat appear seriously limited.

Europe. The range of plausible alternative futures in Europe is bounded by three scenarios: progressive evolution toward a European community that firmly anchors Germany within its institutions and that has drawn Eastern Europe and, increasingly, the Soviet Union into its orbit; a German quest for regional hegemony; and instability and conflict in Eastern Europe that spills over into other parts of Europe (see Figure 4). The key variables affecting which future comes about are the U.S. military presence, the role the unified Germany decides to play, the future course of East European instability, and the propensities of the Soviet Union. The last, of course, relates to the alternative Soviet futures discussed above and to trends in Europe as they affect the USSR.

The progressive evolution scenario holds no major negative consequences for the United States. America maintains a military presence in Europe, although it withdraws all nuclear weapons except probably nuclear bombs and the new Tactical Air-to-Surface Missile (TASM) for NATO dual-capable aircraft. America retains influence in European affairs through various political-economic means.

In one excursion, however, the United States withdraws all its military forces from Europe, and European integration proceeds slowly and haltingly. The result is that Germany is not strongly anchored in European institutions and increasingly pursues independent economic and political policies. This trend is exacerbated by chronic instability in Poland and -- by the end of the century -- various European powers (including the USSR) are seeking to form coalitions among themselves to protect against a hegemonic Germany. The result is a return to the pre-World War I balance-of-power European environment in which the United States is not a major player.

At the other extreme is a scenario in which East European instabilities grow and periodically erupt into local wars, some of which spill over into Western Europe or the Soviet Union. The consequences for U.S. and West European security depend

principally on Soviet policies and actions in this volatile situation.

Both of these excursions from the evolutionary scenario involve major shifts in Europe that would provide long lead-time indicators. These indicators would allow timely changes to U.S. foreign policy and reconstitution of U.S. military capabilities that would be adequate to deal with the new situations, provided that appropriate reconstitution hedges were maintained in DoD planning.

Asia-Pacific Region. Unlike Europe, the Asia-Pacific region will remain strongly multipolar for the indefinite future. Three scenarios bound the range of important alternatives for U.S. security: continuation or expansion of today's regional tensions, with continued U.S.-Japanese security cooperation: a "tranquility" scenario in which regional tensions decline; and heightened tensions, with Japan pursuing more assertive foreign and military policies independent of the United States (see Figure 5). The key variables are the U.S.-Japanese security relationship, the course of tensions among various Asian nations, and the extent to which Asian arms control negotiations become a major influence on force balances in the region, especially on U.S. naval forces.

The scenario of continued U.S.-Japanese security cooperation in the context of regional tensions in the 1990s is a surprise-free evolution from today's situation. Regional rivalries simmer and occasionally come to the boil. Increasingly Japan, the PRC, and India are preoccupied with one another, and other Asian nations are concerned with avoiding domination by any of these three. China continues to be ruled by hardliners and, while focused on economic modernization and internal control, it periodically seeks to use military assistance and veiled threats to influence affairs in south Asia and southeast Asia. There is no material arms control influence in the Asia-Pacific region and many countries continue to acquire advanced-technology weapons, including weapons of mass destruction. Japan and many other Asian nations seek to keep the United States heavily engaged as a military power in the region. The major uncertainty for the United States is the specifics of future regional crises.

The tranquility scenario is less violent, but not necessarily fully consistent with U.S. interests, because it could increase the difficulty of maintaining U.S. influence over Asian political and economic affairs. In this scenario there would be a general reduction of regional tensions, formal Asian arms control talks, and a stabilization of regional military balances. The result would be a substantial reduction in the demand by various Asian nations (including Japan) for a U.S. military presence, leading to a further decline in that presence as compared with the evolutionary scenario. The key issue for

the United States in this case would be how best to sustain its future political and economic influence in Asia.

The less likely scenario in which Japan pursues a more assertive security policy poses different problems for the United States, because it involves a breakdown in security cooperation with Japan. This breakdown could result from increased economic friction between America and Japan, growing Japanese concerns that the United States is unwilling or unable to manage regional tensions in areas of high interest to Japan, or growing Japanese nationalism. The Japanese propensity to pursue independent and assertive foreign and security policies could be increased by regional developments, including PRC pursuit of more aggressive foreign policies, increased political-military competition with Japan by South Korea or a unified Korea, or a power vacuum caused by prolonged political and economic chaos in China. In this scenario, Japan might try to constrain U.S. military capabilities in the Far East by promoting naval and other arms control negotiations. A key issue for the United States would be the extent to which other Asian nations would seek a U.S. military presence to balance Japan, rather than relying totally on Asian power coalitions to counter what they would see as a growing Japanese move toward regional hegemony.

The "tranquility" excursion scenario would be a major departure from current trends, providing ample long lead-time indicators upon which to base U.S. policies for sustaining its influence in a more benign Asian security environment. In contrast, a Japanese shift to an independent, assertive security policy would take several years of public domestic political discussion and several additional years for the Japanese military posture to achieve strong power projection capabilities. Provided Japan did not move in a power projection direction within the framework of U.S.-Japanese security cooperation, the United States would have time to begin adjusting its force posture to balance an assertive Japan.

In all Asian-Pacific scenarios in which regional tensions are high, the location, intensity, duration, and relation to U.S. interests of regional crises and wars will be uncertain. This unpredictability means that the United States would have to use forces in being to deal with those regional conflicts it chooses to try to influence.

Western Hemisphere. During the 1990s, the general pattern in the Western Hemisphere scenario is Latin American decline, with some notable exceptions (e.g., Chile, Mexico). While some trends are positive for the United States (North American economic integration, the likely reduction of Soviet aid to Cuba), most are negative. Caribbean and Latin American population growth that exceeds economic growth and widespread revolutionary and state violence will feed political

instabilities, threaten the endurance of democratic governments, and foster increased population migration to the United States. While Latin America will continue to depend on the United States as an economic partner, the region will be of declining economic importance for the United States except as an oil supplier.

Both optimistic and pessimistic excursions from this baseline are possible for specific countries. Among the optimistic ones are normalization of relations between Cuba and the United States; comprehensive economic reform in selected Central or South American countries; and substantial increases in investments and trade flows, helped by America and perhaps Japan.

Pessimistic excursions involve even greater political and economic decline, as compared with the baseline. This could result in a slide of some countries into prolonged terrorism and fanaticism (as in Lebanon), with some factions focusing their violence against American targets. At the extreme, according to some projections, the United States could conceivably invade and occupy some countries for a time, as it has done in the past.

The Western Hemisphere scenarios pose a number of negative consequences for the United States, including the domestic costs of the drug problem, the continued inability to control America's southern border, and increased Latin American turmoil and resentment against America. The United States could feel compelled to reassert the Monroe Doctrine and the U.S. right to intervene in Latin America, although implementation of these policies will be constrained by the aversion of the American people to fighting prolonged wars in circumstances where there is no consensus about U.S. interests or strategies.

To the extent that U.S. military capabilities are needed to help with these problems, they will have to come from forces in being.

Middle East/Southwest Asia. The security environment changes even more radically as we move to the Middle East/Southwest Asian region. The crises and wars we have been dealing with there during the 1980s are prototypes for future regional crises and wars involving well-armed small and medium powers in Asia and Europe, as well as in the Middle East and Southwest Asia.

These crises and wars have several distinguishing characteristics. The Soviet Union is not now a major threat in the Middle East or Southwest Asia: for example, the United States must now be concerned with the threat of Iraqi attacks on Persian Gulf oil resources, in contrast to earlier times, when it focused on Soviet threats to the Gulf as part of a global war scenario. Who is ally and who is enemy is both less apparent and less permanent. It is, however, clear that many small and medium powers have highly capable weapon and surveillance



systems. Their military capabilities will increase further in the 1990s, making U.S. (and Soviet) intervention more costly.

Further, the relevance of many future regional crises and wars to U.S. interests seems less clear than in the era of U.S.-Soviet tension, making the decision to intervene more difficult politically. Nevertheless, the United States will want to deter or influence many future regional crises and should have capabilities to intervene in selected cases. There are several reasons why the United States should be concerned about these regional conflicts. Some of the regional powers could use weapons of mass destruction, eroding current worldwide inhibitions against such use. Regional wars could escalate to involve one or both superpowers, increasing the risk of U.S. confrontation with the USSR. Further, these wars could lead to serious economic disruption, especially in connection with access to Middle East oil, or call into question U.S. commitments to close allies such as Israel.

The relatively short time in which these regional conflicts can flare up implies that the United States will have to use forces in being to deal with those it chooses to try to influence. Further, the uncertainties about these wars -- when, where, and who -- imply that U.S. forces should be structured, trained, and deployed so they can adapt to operating in a wide diversity of combat conditions involving well-armed small and medium powers in the Middle East, Southwest Asia, and elsewhere.

#### KEY OBSERVATIONS OF THE SCENARIOS GROUP

From the organization of scenarios into two rather distinct categories emerge three implications for defense planning. These implications in turn affect all four parts of the defense establishment: strategic forces, tactical forces, the intelligence system, and the technology/industrial base. The following sections apply these observations to the national intelligence system and to the technology/industrial base.

First, active U.S. forces will be significantly reduced in size. This is required by the decreases in the Dod budget that already are underway and is permitted by the decline in the Soviet and Warsaw Pact threats.

Second, DoD needs to build more flexibility into those forces that remain because of the diverse nature of the growing threat associated with small and medium powers. Thus a qualitative restructuring will need to accompany a reduction in size of U.S. forces. Some crises and wars may occur in areas remote from U.S. bases, so our forces must be able to operate at greater distances from those bases and to sustain such operations. Regional crises and wars can erupt with little warning, so our forces must be flexible enough to move quickly and to operate in geographically diverse areas. We must be able

to operate effectively against lesser powers armed with modern tactical weapons, air defenses, submarines, and cruise missiles. Some of these potential adversaries now have chemical weapons, some are acquiring ballistic missiles, and some will have nuclear weapons in the future. An alert intelligence system with global reach and technological superiority for U.S. forces everywhere will be needed.

The third important implication of the changing security environment is that the United States must build a strong reserve in its military forces, its technology base, and its production base. This reserve is needed to allow us to field a larger active military force within a period of time that is consistent with the lead times from the first clear indication that a substantially increased threat to U.S. interests is emerging until that threat reaches fruition. The reserve must hedge against several kinds of future threat increases: a reconstitution of a Soviet capability for large-scale conventional aggression (probably not before the turn of the century); the emergence of another superpower threat to U.S. interests (Japan and Germany are the only possibilities before the turn of the century); and regional powers (e.g., China) or coalitions of regional powers that in time could develop into a major military threat to U.S. interests.

Figures 6-9 sketch the guidelines for intelligence, the technology/industrial base, strategic forces and tactical forces that result from these three implications of the new security environment. The following sections treat the national intelligence system and the technology/industrial base, which were the focus of this Task Force.

## II. Meeting the New Requirements for National Intelligence

### INCREASING DEMANDS ON THE INTELLIGENCE COMMUNITY

The variety, complexity, uncertainty, and geographic scope of the scenarios described above is already making increasing demands on the national intelligence system. As the world adjusts to the new distributions of political, economic, and military power, the importance of intelligence to U.S. national security will grow. The national intelligence system therefore cannot simply be "cut" in the way that numbers of divisions, ships, and air wings can be cut. Yet it is unrealistic to expect the National Foreign Intelligence Program (NFIP) budget to grow when the overall Department of Defense budget, within which the NFIP budget is largely contained, is experiencing drastic reductions. The Intelligence Community therefore faces a particularly difficult task of restructuring to meet growing and changing demands without growing resources. This restructuring will require (a) the adoption of a new set of priorities for collection and analysis to ensure that the most important intelligence targets in the new world are covered, (b) new efficiencies in the use of people and technology, and (c) the acceptance by government officials of increased risk where lower-priority intelligence targets cannot be fully covered (see Figures 10 and 11).

### PRINCIPAL JUDGMENTS REGARDING NATIONAL INTELLIGENCE NEEDS IN THE NEW WORLD ENVIRONMENT

1. The breadth of intelligence coverage and the quality of intelligence products must rise to meet the needs of U.S. policymakers in an uncertain world.

2. It is not clear that there will be an intelligence "peace dividend" resulting in a reduction in requirements for intelligence products related to the Soviet Union. It is clear that the need has decreased for products related to Soviet and Warsaw Pact conventional forces. But three countervailing tendencies offset this potential intelligence peace dividend.

-- First, the volatile political and economic situation in the Soviet Union is leading to increasing demands by national security policymakers for current intelligence and projections for this area of the world. These requirements are particularly demanding for analysts because of the volatility of the situation, the avalanche of information on the Eastern bloc becoming openly available, and the appearance of political phenomena in the Soviet Union to which traditional U.S. intelligence methods are unaccustomed.

-- Second, future arms control agreements, if carried to completion, will likely place stringent new demands on the

Intelligence Community for monitoring. While cooperative verification measures included in arms control agreements can ease the intelligence task, agreements also frequently heighten sensitivity to intelligence uncertainties about Soviet forces and engender greater demands for more precise information than military needs alone would necessitate.

-- Third, there are standing national intelligence requirements to hold Soviet nuclear forces at risk. With a growing fraction of Soviet missile forces being mobile, namely the SS-24 and SS-25 forces, this requirement would, if sustained and pursued literally, place unrealistic demands on the intelligence system. If this requirement is not to become a driver for current and future collection systems, it will have to be scaled down to holding some smaller percentage of Soviet mobile missiles at risk at any one time.

3. At the same time, intelligence needs for the rest of the world will continue to increase significantly. These increasing needs include:

-- information about acquisition of advanced weapons by third countries, and indications and warning about their possible use, and analysis of how such weapons might be employed operationally;

-- support for counter-terrorism, counter-narcotics, counter-intelligence, and special forces operations;

-- political, economic, and military information about all nations with whom the United States has commercial and diplomatic relations;

-- continued intelligence support to the DOD acquisition process and to ongoing military operations.

4. It is also clear that new budgetary and human resources will not be available to satisfy these new requirements.

5. There are three ways to close the gap between intelligence requirements and available resources:

-- establish greater and lesser intelligence priorities and reduce or eliminate work on the lesser priorities, restructuring the intelligence community accordingly;

-- indicate to the Intelligence Community a willingness to accept higher near term risks associated with thinner or less timely coverage of moderate priority intelligence targets;

-- make more efficient use of dollars and people.

Each of the three ways of closing the budget-requirements gap will be discussed in succeeding sections. We note that in some cases, long term savings necessitate investing a small but important amount now.

## RECOMMENDATIONS FOR STRENGTHENING NATIONAL INTELLIGENCE

### 1. Adjust intelligence priorities to meet new requirements for intelligence products.

a. Accept the short-term risks associated with reduced coverage in selected areas. This recommendation applies both to collection and to analysis.

b. Preserve geographic coverage at the expense of timeliness. Intelligence consumers can afford to receive weekly or monthly, rather than daily, intelligence products on regions of the world not currently in crisis. But they cannot afford to be lacking in-depth analysis of any region.

c. Reduce significantly collection and analysis against Soviet conventional forces inside and outside the Soviet Union.

d. Reduce competitive analysis in national intelligence. In the past, it has been possible to provide competing analyses of a very broad range of national intelligence problems by CIA, DIA, and the service intelligence components. DIA and the services' role in national intelligence production should now be curtailed so these agencies can concentrate on analyses that draw upon their unique technical and military expertise, and on direct support to the operational forces. Where particularly important and contentious national intelligence problems would benefit materially from the competitive analysis approach, competing analysis teams can be established on an ad hoc basis and in the contractor community.

e. Review the advisability of continuing to attempt to track and target all categories of Soviet strategic relocateable targets, especially mobile missiles. This current requirement places a large and growing burden on collection capabilities. Without expensive new collectors that are unlikely to be fielded in the coming era of budget stringency, furthermore, the ability to hold relocateable targets at risk will be partial at best.

2. Exploit the potential of an intelligence reserve concept, both military and civilian. Establishment and use of such an intelligence reserve will both reduce the costs of current intelligence production and provide a capability to "surge" important intelligence disciplines for responding to sudden crises. Approximately 50 percent of the National Foreign Intelligence Program (NFIP) budget goes to direct manpower. Substantial savings in an era of budget stringency can therefore be attained by using people more efficiently.

a. Shift some current intelligence tasks from active to reserve military intelligence components, restructuring these reserve components in the process. The reduced need for timeliness in many intelligence products, mentioned above, makes such products ideally suited to a strategy of increased reliance on reserves. Each reserve component assigned such tasks should consist of personnel with a particular disciplinary or area expertise and should normally include a small cadre (perhaps 10-20 analysts) of active duty personnel and a larger complement (perhaps 100) of reserve personnel. Reserve personnel would normally rotate duty, contributing to current intelligence production and practicing their skills. In times of crisis the entire reserve component could be "surged" to provide a much larger cadre of proficient analysts than could be drawn from the active duty ranks. The motivation and skills of the reserve personnel will be improved if these personnel recognize that their work is directly serving priority government needs and is not just "busy work." Currently, reserve military intelligence components are repositories of considerable expertise and high motivation, but these reserve components are often assigned low-priority tasks such as maintaining data bases rather than using their expertise to improve the quality of intelligence products.

b. Develop an informal civilian intelligence "reserve" emphasizing those critical skills that cannot easily be maintained in government by broadening Intelligence Community relations with the analytic and scholarly communities outside of government. Special skills such as language proficiency and up-to-date knowledge of science, technology, and international economics are in short supply in the Intelligence Community, yet the needs for these skills are growing. In some selected areas, the Intelligence Community should develop a cadre of such critically skilled individuals, engaged in civilian employment, whose clearances and familiarity with intelligence problems are current (including as a result of recent retirement) and whose help can be reliably drawn upon by full-time Intelligence Community analysts.

3. Exploit the potential of new sources of information outside of traditional intelligence channels.

a. Exploit the burgeoning number and variety of commercial on-line data bases containing technical and economic information, as well as international business and technology surveys and forecasts.

b. Establish stronger information-sharing relationships with the private sector, especially in the fields of economics and science and technology where intelligence needs are growing. This relationship should be a two-way street: unclassified analyses and data bases created by the Intelligence Community (in the field of international economic affairs, for example) should routinely be made available to the U.S. private sector.

c. Exploit the unprecedented opportunities for overt human collection, including analyst travel and exchanges, factory visits, and so on, in the Soviet Union and Eastern Europe.

d. Ease the burden of monitoring arms control agreements by vigorously pursuing cooperative verification measures in negotiations. For example, negotiating agreements requiring high effective isotropic radiated power (EIRP) for telemetry transmitters, allowing cooperative in-country emplacement of telemetry receivers, or even trading tapes of recorded telemetry information would reduce the cost of collecting telemetry.

e. As another opportunity for intelligence cooperation with the Eastern bloc, it should now be possible to share information extensively with Soviet and Eastern European intelligence services in the areas of weapons proliferation and terrorism.

f. Expand intelligence sharing agreements with allies, including both collection and analysis. This approach is particularly important for collecting intelligence on weapons of non-U.S. and non-Soviet manufacture that might be encountered by U.S. forces.

4. Exploit the potential of technology to reduce intelligence costs in preference to adding capability, and change intelligence technology priorities to reflect the changed priorities for intelligence products.

a. Provide analysts with modern data processing equipment and data bases. Significant productivity increases for analysts can be achieved, but in budget squeezes the size of the analyst work force often wins out over its productivity.

b. Realize savings in collection budgets by adjusting collection systems to reflect the lessened demands for timeliness and for coverage of Soviet conventional forces. For example, satellite constellations might be thinned, and spares stored on the ground rather than on orbit. Orbits might be adjusted to reflect broader geographic coverage of non-Soviet areas.

c. Emphasize the potential of technology to reduce intelligence collection and production costs and to anticipate future needs rather than to enhance or preserve current capabilities.

-- Emphasize relay and communications capabilities that reduce the need for personnel and facilities outside of the United States.

-- Emphasize "smarter collection" by more discriminate tasking and by pre-processing at the collector to reduce bandwidth to be transmitted.

-- Replace manpower-intensive production processes, and thus reduce production costs, with advanced processing technologies like automated translation and gisting, channel and speaker recognition, word spotting, target recognition, and image understanding.

-- Consider the use of high-altitude, long-dwell, unmanned aircraft carrying SIGINT and IMINT collectors as an alternative to satellites where near-continuous but geographically restricted coverage is needed, e.g., in crisis areas.

-- Emphasize technology to maintain access to SIGINT targets that are changing their communications technology and increasing their security consciousness and their use of concealment and deception.

-- Emphasize the technology of miniature, emplaced sensors that can be deployed covertly to compensate for the declining overt U.S. intelligence presence overseas. U.S. opportunities to maintain large, overt collection sites will decrease in the future and present special problems when the host nation is itself a collection target.



### III. Managing the Defense Technology and Industrial Bases

#### BACKGROUND: THE CHANGING CONTEXT OF DEFENSE TECHNOLOGY

The changing spectrum of military threats to the United States, with respect both to severity and to proximity in time, is the most important factor recommending a reassessment of how the United States manages its defense technology and industrial bases.<sup>1</sup> These military scenarios were discussed in Part I. But three additional trends are changing profoundly the context within which the technology/industrial bases must be viewed: the growing globalization and commercialization of the technology base, the continuing decline in defense spending coupled with the growing real costs of defense systems, and proliferation of advanced weapons to nations around the world.

Globalization and Commercialization of the Technology Base. For several decades, private industry has been increasing its expenditures on research and development faster than the DoD R&D spending by U.S. industry has quadrupled since 1960 in real terms, while real defense R&D spending has increased by less than half over the same period. During this time, R&D investments by other nations -- especially Japan and Germany -- have increased rapidly. As these commercial and foreign sources of support for science and technology have increased, the relative importance of DoD's contribution to the technology base has declined. Thus in 1960, DoD accounted for half of all U.S. R&D spending, but by 1990 DoD's fraction had shrunk to one third. This long-term decline occurred despite the defense buildup of the Carter/Reagan years. Even more striking is the decline in DoD's share of total spending on science and technology in the Western world. In 1960, DoD funded fully one third of all R&D in the Western world; today it funds one sixth. In some high-technology sectors like electronics, the diminution in the defense role is even more dramatic. The lesson is clear: if DoD is to enjoy the benefits of the best of modern technology, it is going to have to look beyond its own programs to generate technology, and to learn to draw upon the much larger, global technology base.

Shrinking Defense Budgets and Rising Costs. The declining defense budget, coupled with the growing real costs of defense equipment, mean shorter production runs for defense systems, fewer new systems approved for production, and a

---

1. In preparing its recommendations, the Task Force drew on New Thinking and American Defense Technology published by the Carnegie Commission on Science, Technology, and Government, August, 1990.

shrinking of the defense industrial base. These trends will present unprecedented challenges to DoD for efficient production, modernization rather than replacement of existing systems, and preservation of these parts of the defense industrial base that would be most difficult to replace if a large U.S. force needed to be reconstituted in the future.

Proliferation of High-Technology Weapons. U.S. forces are accustomed to having a commanding technological superiority over potential enemies, especially in the third world. Today the arms trade in sophisticated weapons, together with the growing indigenous technological capabilities of potential opponents, mean that the U.S. defense technology base will have to work harder to provide a decisive technological advantage to the U.S. military. Preserving the technological edge will be particularly difficult in a period when money for entirely new defense systems is in short supply.

#### THE TECHNOLOGY RESERVE CONCEPT

As in the case of national intelligence described in Part II, the new situation requires a new approach to defense technology. Technology is an important hedge against future uncertainties, and a provider of the flexibility that U.S. forces will need to meet the variety of potential scenarios for the near term described in Part I. Technology is also an important ingredient of a strategic reserve in case U.S. forces need to be reconstituted in strength in the more distant future.

When asked to identify the threat to which U.S. military security should now be directed, President Bush answered, "unpredictability, uncertainty, and instability." Technology is an important insurance policy against an uncertain strategic future. It will help to preserve future options to meet a possible renewal of the Warsaw pact threat, as well as the varied and changing but pressing demands of regional conflict, proliferation of military technology to unstable nations, terrorism, and drugs. Preserving, and indeed broadening, the defense technology base in the face of a reduction in overall defense spending is an example of the "new thinking" required by the dramatic turn in world events.

Using the defense technology base as a strategic reserve will entail some changes in how DoD views the role of the research and development (R&D) it supports. Too often, R&D programs that do not lead to fielded hardware are viewed as failures, and industry has few incentives' to explore systems that are "going nowhere" in terms of production contracts. In the future, it should be normal practice for DoD to support exploration of weapon concepts, up to and including the early stages of development and prototype testing, that have no immediate prospect of deployment. The technology base will thus become not just the first stage of the acquisition process, but

a forum for analysis and exploration of U.S. options under each of many future political scenarios, a notice to potential enemies of America's latent strength, and a mobilization base if large U.S. forces need to be reconstituted quickly.

#### RECOMMENDATIONS FOR PRESERVING AND STRENGTHENING THE DEFENSE TECHNOLOGY BASE

1. Reapportion the RDT&E budget to realize real increases in technology base funding (6.1 and 6.2, corresponding to basic and applied research) at the expense of the 6.4, 6.5, and 6.6 accounts, even in the face of declining overall RDT&E budgets. The technology base has an extremely small impact on the defense budget, currently accounting for a mere one percent of the DoD budget and ten percent of the RDT&E budget, but a disproportionately large impact on the ability of U.S. forces to retain technological superiority over the long run. DoD technology base funding in 1990 is only about half what it was in the 1960s in real terms, and the technology base's share of total DoD RDT&E funding has also shrunk by half. When overall RDT&E rose dramatically in the 1980s, technology base funding remained flat. DoD is the only major federal R&D sponsor whose basic research budget failed to grow in the 1980s. DoD funds less than one tenth of the nation's basic research, yet its expenditures for development (6.3B, 6.4, 6.5, and 6.6) are almost as large as the comparable expenditures of the entire commercial economy of the United States. Both in relation to its historical practice and in relation to its demands on the nation's pool of technology and of trained scientists and engineers, DoD is underinvesting in its technology base. The technology base did not share in the defense buildup of the Carter/Reagan years; it should not share in the coming budget reductions.

2. Assign to the DDR&E the management and budget defense of the 6.1 and 6.2 activities as a consolidated program, with execution of the approved program and selection and management of projects remaining with the military services.

3. Establish an entirely different set of procurement procedures for 6.1 and 6.2 contracts from those used for development and procurement contracts. These streamlined procedures, described in the Packard Commission report, would dramatically reduce both cost and schedule and would focus technology base funding on a competition in ideas, not in cost.

4. Maintain the current level of 6.3A funding, even in the face of a declining overall RDT&E budget, at the expense of the 6.3B, 6.4, 6.5, and 6.6 accounts. This funding should be used to support a "technology reserve" consisting of a carefully selected program of modeling and testing on promising technical concepts. This program would build up a reserve of ideas and would maintain skilled engineering teams in industry that could

be "mobilized" quickly (that is, over a few rather than many years) in the event the United States faces a military threat in the future that requires a renewed military buildup. The technology reserve should include entirely new concepts to respond to new military contingencies and to exploit the progress of technology: and evolutionary improvements to existing defense systems that DoD will not be able to afford to replace (such improvements require just as much high technology and quality engineering as new systems). The technology reserve should also give attention to the manufacturing processes that would be required to produce defense systems cheaply and quickly. The 6.3A technology reserve program should employ the same streamlined procurement procedures as the technology base program.

5. In devising the Defense Technology Strategy and Action Plan, the DDR&E should not only establish priorities among the many advanced technologies identified as relevant to defense, but, more importantly, should establish a strategy for each that either (1) relies principally on the commercial sector; Or (2) relies on a national-level cooperative strategy involving other federal agencies such as the National Science Foundation, the Department of Energy, the National Institutes for Standards and Technology, and the National Aeronautics and Space Administration; or (3) relies largely or wholly on DoD programs and funding. The era is gone when DoD can go it alone across the broad front of technologies of relevance to national defense. Today the investments of the commercial sector in, for example, electronics, far exceed any foreseeable defense investments in this field. For technologies of this type, the appropriate strategy for defense is to situate itself at the margin of the larger commercial technology effort and to learn to exploit that commercial technology for defense applications. For other technologies with many applications including, but not limited to, defense (e.g., many types of advanced materials), DoD can share responsibility and funding with other federal technology agencies. Finally, there are areas of technology that are unique to defense (stealth, radiation-hardened electronics) for which DoD will need to assume sole responsibility.

6. The DoD's Independent Research and Development (IR&D) program should be used to encourage companies to align their defense and commercial technology efforts to the mutual benefit of both. IR&D reimbursements, like 6.1, 6.2, and 6.3A contract funding, should therefore not share in the anticipated decline in overall defense RDT&E and procurement funding, and IR&D reimbursements should not be supplanted by Bid and Proposal (B&P) reimbursements.

7. To make the "technology reserve" program successful, DoD will need to treat the products of this program (e.g., successive generations of prototypes or small pilot production runs) as products in their own right, and reward industry for

participating in the development of new systems even when development is not followed by large-scale production.

8. The DDR&E in cooperation with the Intelligence Community should establish a "foreign technology watch" to aggressively collect current information about technology developments in other industrialized nations, especially Japan, of potential relevance to defense. Better information about technology in the international commercial sector will aid defense managers in learning to exploit foreign-developed technology and in gauging the level of dependency of DoD systems on technology developed and produced abroad. A foreign technology watch office would institutionalize an outward perspective that is needed in DoD.

#### RECOMMENDATIONS FOR ACQUISITION OF HIGH-TECHNOLOGY DEFENSE EQUIPMENT IN AN ERA OF REDUCED DEFENSE PROCUREMENT BUDGETS

1. Improve DoD's ability to draw upon the technical strength and cost consciousness of the commercial sector.

a. Mandate use of commercial components and products, allowing DOD-unique developments on an exception-only basis. Procurement and cost accounting regulations will need to be modified to allow the cost savings inherent in the use of commercial components to be realized. These savings should be particularly large in electronics and software.

b. Adopt the Uniform Commercial Code for the procurement of commercial products. This will require DoD both to modify its procurement regulations and to seek modification of federal statutes. As long as DoD insists on having its own rules for buying, defense suppliers will be found only in enclaves isolated from the commercial sector and dedicated to meeting DoD rules at higher cost to the taxpayer. The DoD must also be prepared to waive data rights in dealing with commercial suppliers.

c. Replace military specification (milspec) standards with dual military-industrial standards guided by industrial needs whenever commercial applications dominate the market. Milspec standards should be used on an exception-only basis.

2. Emphasize incremental modernization of defense equipment by subsystem. It will not be possible in coming years to modernize defense equipment by replacing aging systems with entirely new systems including new subsystems, as is current common DoD practice. Modernization should instead focus on periodically introducing new technology into subsystems and retrofitting the new subsystems into existing systems. Since these subsystems, e.g., airborne radars, are often the most technology-intensive and mission-critical elements of defense systems, this approach will help U.S. defense capabilities to retain their qualitative edge and will also maintain intact a critical mass of industry

engineering talent in key technical fields for defense. Subsystem developments should involve much shorter development times than is currently the case with full system developments (perhaps three years as opposed to 7-10 years). Subsystem development should follow a modular approach using form-fit-function specifications, an approach already in wide use in the commercial aircraft industry. When complete new systems are procured, these modern subsystems can be forward-fit into them.

3. Since many DOD systems will have to remain in the field for longer periods of time, new attention must be paid during the incremental modernization described above to logistics support costs and to life-cycle management of systems. A life-cycle approach is particularly important for electronics, computers, and software. Maintenance costs are in fact dramatically reduced if such components are frequently modernized. Studies performed by MITRE2 and presented to the Task Force show that the cheapest way to maintain modern electronic equipment is to modernize it periodically (without necessarily upgrading function). Electronic equipment becomes obsolete quickly, and obsolete equipment is very costly to maintain. Commercial industry has found that investments in periodic modernization of electronic systems pay off within a few years in reduced maintenance personnel and costs. DoD programs rarely adopt a life-cycle maintenance approach, since development and field maintenance are the responsibilities of different communities and are supported out of different budgets. DoD should institute a four-part program to adopt life-cycle maintenance: 1. modernize electronic components and subsystems every few years, as recommended above; 2. allow the services and commands to apply maintenance funds to subsystem modernization for equipment already in the field; 3. give industry a stronger role to play in maintenance by awarding long-term, fixed price, life-cycle support and modernization contracts to development contractors; and 4. monitor and confirm savings by comparing modernization costs to foregone maintenance costs.

#### CONSIDERATIONS FOR THE DEFENSE INDUSTRIAL BASE

The size of the standing U.S. military establishment will be reduced in coming years. This reduction is, as noted above, safe for the United States because of the sharp reduction in the Soviet conventional threat and the absence of any scenario that would produce a comparable threat in less than a decade. Nonetheless, it is prudent for the DoD as it draws down the

---

2. Horowitz, Barry M., "Modernizing Electronics in DoD Systems," MITRE Document M90-48, August, 1990.

standing forces, to be attentive to how it could reestablish a large force if a new superpower threat did emerge.

In this regard it is important to distinguish three different processes for reestablishing a large standing force, corresponding to three different time scales over which the reestablishment could be attempted (see Figure 12). Surge refers to a process taking days or weeks whereby active forces are brought to their highest readiness, reserve forces are activated, and existing defense plants move to their highest practicable rate of production. Mobilization refers to a process taking months, whereby new military personnel are drafted and trained, and defense production capacity is expanded by enlarging existing plants, building new plants, and converting civilian plants to produce defense goods. Reconstitution refers to a process taking years, whereby the large military establishment and defense industrial base of the cold war period is reestablished.

The Technology and Industrial Base Group considered the implications of these three processes and arrived at the following judgments.

1. Emergence of a military threat to the United States of a severity that would necessitate reversion to a cold war footing would take a decade or more and would give ample warning to allow the lengthy process of reconstitution to occur. Thus reconstitution is the major process of importance to the U.S. defense industrial base at this time.

2. Surge is of potential relevance, especially for ammunition stocks, in a mid-size engagement of U.S. forces under the intense conditions of modern warfare. Existing defense plants have some surge capability, which should be preserved where economical. But the DoD should also give thought to purchasing replacement military equipment from friendly nations as an alternative to surge.

3. With respect to mobilization, the existing inventory of equipment should be retired and placed in storage as the build-down of active and reserve units goes forward. Thought and money should be given to maintaining and periodically upgrading this war reserve with improved subsystems.

4. With respect to reconstitution, it appears that some elements of the defense industry have no closely corresponding civilian counterparts, and some element of this defense-unique production base will have to be maintained through (necessarily inefficient) low-rate production, subsystem procurement, and R&D prototyping activities. In cases where a closely corresponding civilian industry exists, some thought will have to be given to designing military equipment to be compatible with the production equipment and skills in these civilian plants.

5. Finally, the Group noted that the entire U.S. nuclear weapons production complex will be rebuilt in coming years, in parallel with the cleanup of the old complex. This reconstruction and cleanup will constitute the most significant event in the nuclear weapons enterprise in decades. The size of this complex will be determined by the size of the overall nuclear weapons inventory maintained by the United States after arms control agreements and unilateral build-downs have run their course, by the degree of re-use of special nuclear materials taken from decommissioned weapons, and also by the shelf life designed into the weapons. In the past, nuclear weapon designs have frequently given precedence to relatively small increments of performance (chiefly yield-to-weight ratio) over shelf life. In view of the cost of building a new nuclear weapons production complex, careful consideration should be given to the desired size of the complex and to the relative roles of DoD and DoE in funding it.



# Figure 1. Global Trends

- COLLAPSE OF COMMUNISM
  - “EXTERNAL EMPIRE” DISSOLVED
  - SOVIET “INTERNAL EMPIRE” IMPLODING
- BIPOLAR TO MULTIPOLAR SECURITY ENVIRONMENT
- GREATLY INCREASED SALIENCE OF ECONOMICS
  - ECONOMIC/INDUSTRIAL REORDERING
  - SHIFTING SHARES
  - GLOBALIZATION
- GREATLY REDUCED LEVELS OF MAJOR POWER MILITARY FORCES
- CONTINUING MAJOR ARMS CONTROL AGREEMENTS
- PROLIFERATION OF HIGHLY CAPABLE WEAPONS TO LESSER, OFTEN UNSTABLE, POWERS
- INCREASED URGENCY FOR ENVIRONMENTAL ISSUES
- CONSTRAINTS ON U.S. ACTION
  - SHARP CUTS IN DEFENSE BUDGET
  - INCREASED DEPENDENCE ON FOREIGN RESOURCES (CAPITAL, MARKETS, TECHNOLOGY, OIL)
  - INDUSTRIAL RESTRUCTURING, SHRINKING OF THE “DEFENSE-ONLY” INDUSTRY
  - REDUCED DOMESTIC POLITICAL SUPPORT FOR PROVIDING SECURITY FOR OTHERS?

## Figure 2. U.S. Policy Objectives

SUSTAIN CRITICAL U.S. GLOBAL INTERESTS/INFLUENCE IN MULTIPOLAR, LESS ORDERLY,  
MORE COMPETITIVE ENVIRONMENT

PROMOTE EVOLUTION OF USSR TOWARD PLURALISTIC SYSTEM

DETER DECLINING BUT STILL POTENT RESIDUAL SOVIET THREAT

DETER SOVIET MILITARY RETURN TO EASTERN EUROPE

MAINTAIN TRANSATLANTIC SECURITY LINK TO EUROPE

DEVELOP ENDURING POLITICAL-ECONOMIC TIES WITH EUROPE

PROMOTE STABLE EASTERN EUROPE EVOLUTION AND INTEGRATION WITH WEST

## Figure 2. U.S. Policy Objectives (Continued)

IMPROVE ECONOMIC COMPETITIVENESS WHILE PRESERVING STRONG COMMUNITY OF INTERESTS WITH EUROPE AND JAPAN

ASSUME "BALANCING" AND STABILIZING ROLE IN ASIA-PACIFIC REGION IN FACE OF DECLINING SOVIET AND QUIESCENT CHINESE THREATS

MAINTAIN CAPACITY TO INFLUENCE CRISIS/WAR OUTCOMES AND SELECTIVELY PROJECT FORCE IN THIRD WORLD AREAS OF HIGHEST U.S. CONCERN

LIMIT PROLIFERATION, DETER USE OF ADVANCED TECHNOLOGY WEAPONS (E.G., MASS DESTRUCTION WEAPONS, BALLISTIC MISSILES, SUBMARINES)

ENLIST OTHER NATIONS, REGIONAL ORGANIZATIONS IN SHARING U.S. SECURITY MANAGEMENT RESPONSIBILITIES

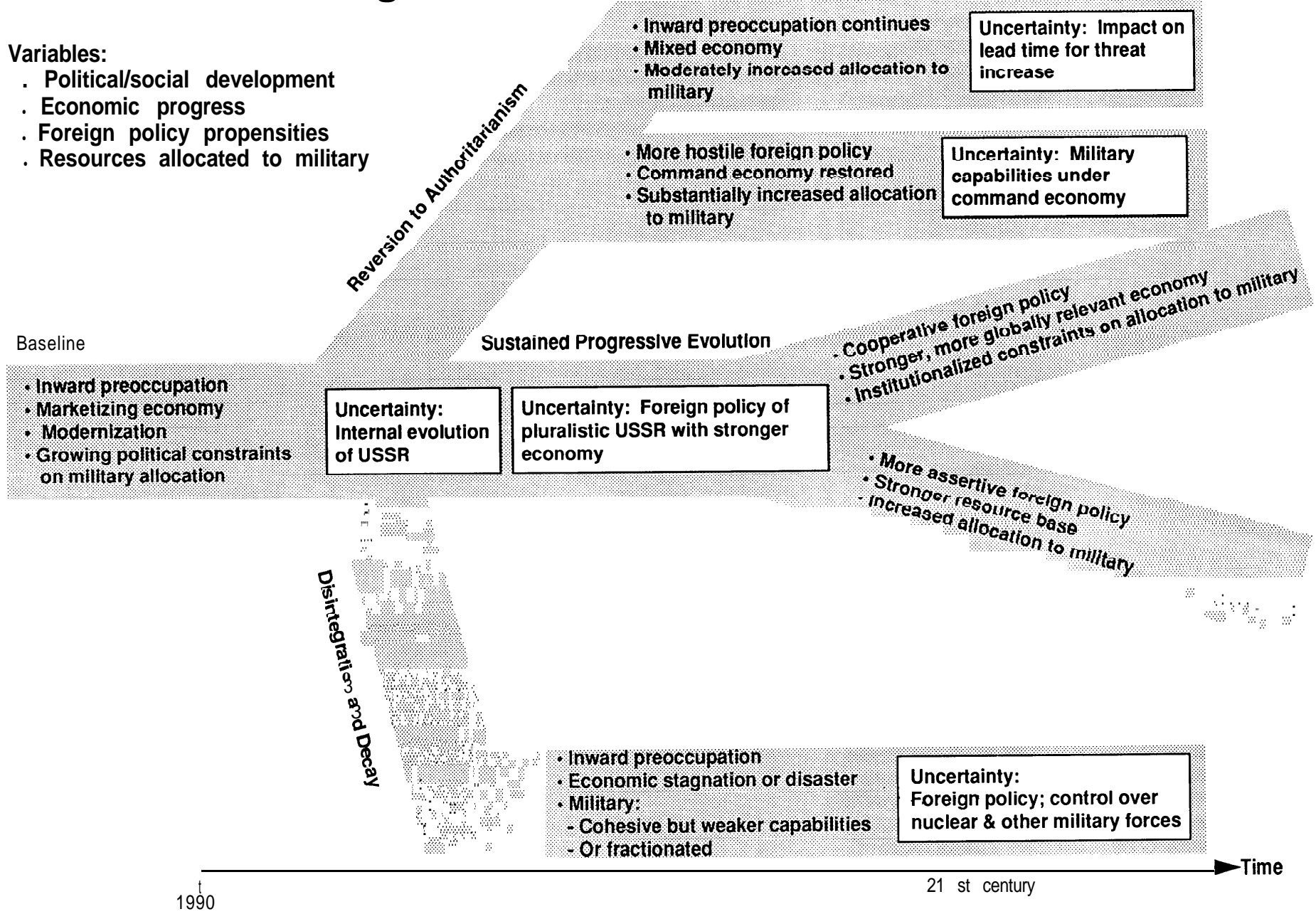
- FULLER PARTNERSHIP FOR EUROPE AND JAPAN
- INCLUDE USSR FOR SOME PURPOSES (REGION- AND ISSUE-SPECIFIC)

MAINTAIN PREDOMINANT U.S. INFLUENCE IN WESTERN HEMISPHERE

# Figure 3. Excursions - USSR

**Variables:**

- . Political/social development
- . Economic progress
- . Foreign policy propensities
- . Resources allocated to military

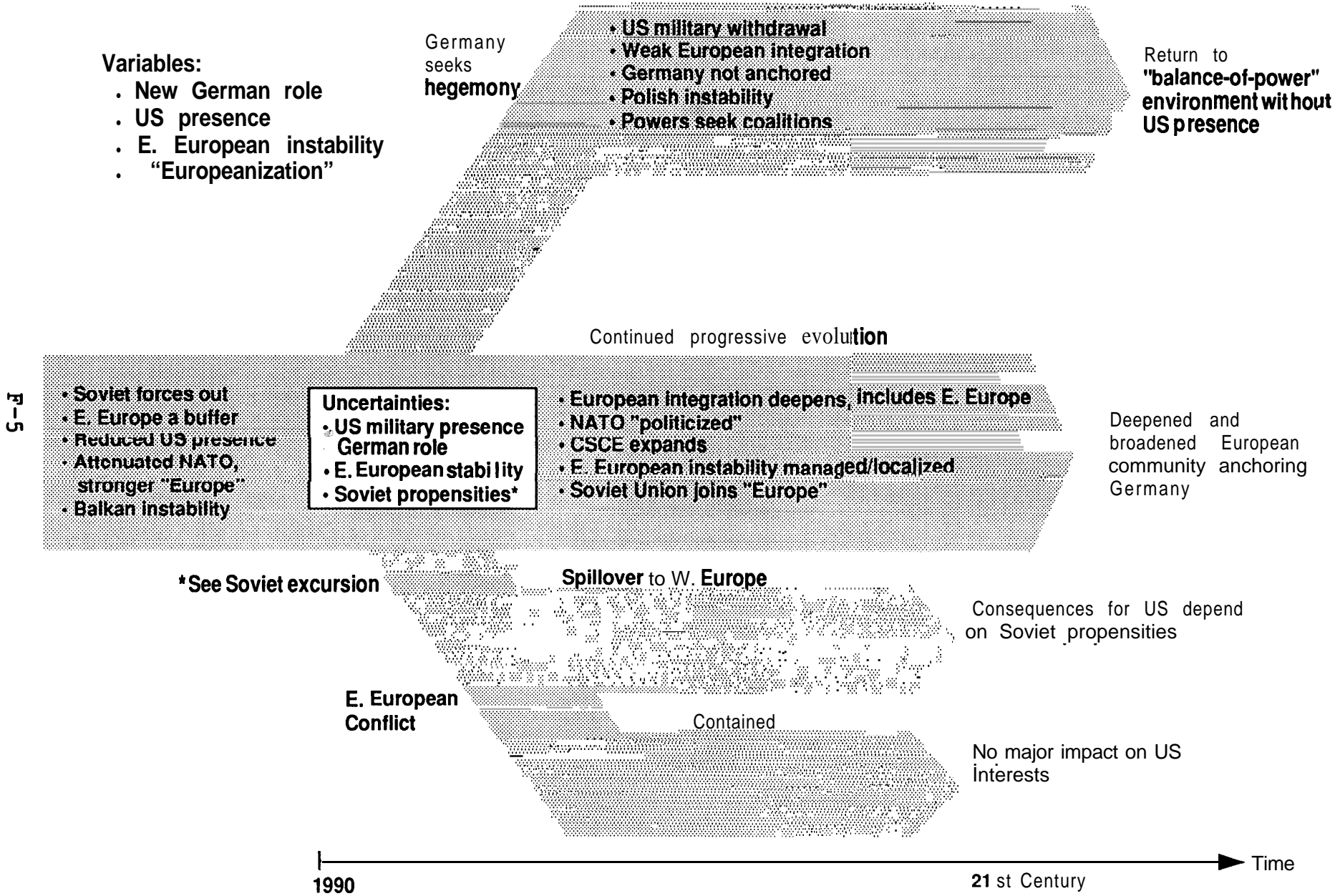


1990

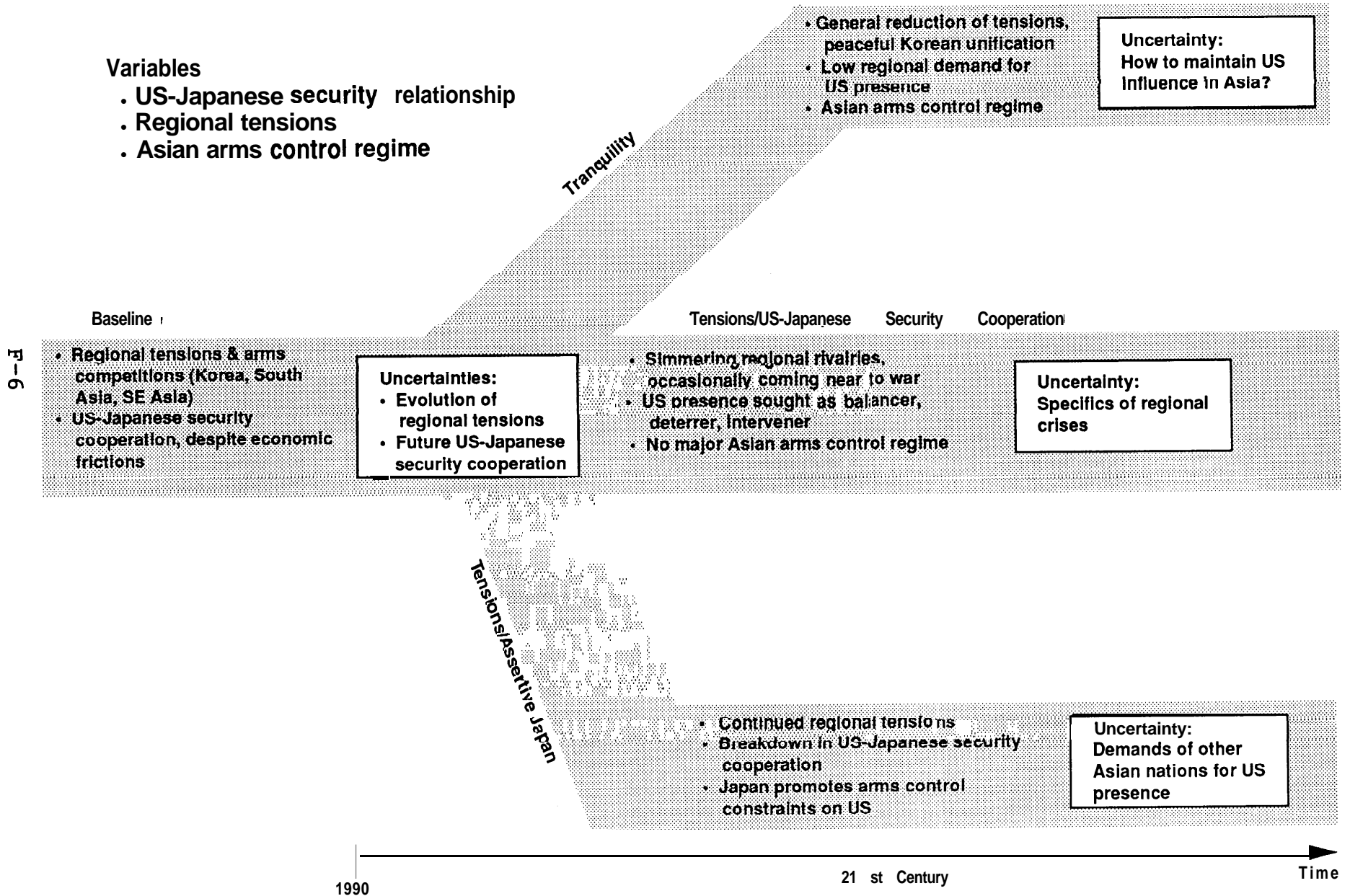
21 st century

Time

# Figure 4. Excursions – Europe



# Figure 5. Excursions – Asia-Pacific Region



## Figure 6. Guidelines for Intelligence

### Conclusions From Scenarios

---

- . Soviet conventional threat declines; short-warning threat disappears; nuclear forces retain capability to destroy US
- . Lesser threats global in nature and uncertain in time
- . More open world; warning time increases
- . Priority given to economic issues increases
- . Importance of arms control treaties with OSI provisions increases
- . Defense budget decreases

### Implications for Defense Planning

---

- . Reduced need for conventional force I & W
- . Proliferation of intelligence targets: geography, topics, language
- . Increasing burden of verification, partially offset by OSI
- . Need to reallocate resources to include new demands for political and economic intelligence
- . Need to shift resources to better exploit major new sources of unclassified data
- . Budget pressures will force emphasis on productivity
  - Make greater use of newly available unclassified data
  - Increase emphasis on reserves

# Figure 7. Guidelines For Technology Strategy/Industrial Base

## Conclusions From Scenarios

---

- . Soviet threat decreases
- . US force levels decrease
- . Lesser threats diverse and uncertain
- . Potential of reemergence of major threat over long term
- . Technology/industry becomes increasingly global
- . Defense is no longer a driver of dual-use technologies
- . Defense budget decreases

## Implications for Defense Planning

---

- . Substantially less military equipment will be produced
- . Very few new system starts
- . Need vigorous tech base for military-unique technology
- . Need limited production base for military-unique weapon systems
- . “Reserve” technology and production base (for reconstitution) will depend largely on commercial sector. Therefore need to begin immediately to:
  - Exploit private sector for dual-use technology
  - Exploit commercial industrial base for production of most military equipment



# Figure 8. Guidelines for Strategic Force

## Conclusions From Scenarios

---

- . Threat of short-warning attack in Europe disappears
- . Soviet conventional forces decline to parity with West
- . Soviet and US strategic forces significantly reduced under START I, II
- . Soviets maintain high priority on strategic force modernization
- . Probability of Soviet nuclear attack declines
- . Europeans see greatly decreased Soviet threat
- . DoD budget decreases

## Implications for Defense Planning

---

- . US strategic forces have significantly fewer platforms, warheads
- . Smaller percentages of US strategic forces on alert
- . All theater nuclear forces removed from Europe
- . US, Soviet nuclear forces remain significantly higher than other nuclear powers
- . Strategic forces need to maintain ability to reconstitute with vigorous R&D program plus a limited = production base

# Figure 9. Guidelines for Tactical Forces

## Conclusions From Scenarios

- . Threat of short-warning attack in Europe disappears
- . Soviet conventional forces decline to parity with West
- . But their capability in tactical submarines, and Naval air remain formidable – decreases here will likely come only through naval arms control
- . Superpower threat may reemerge in long term
- . Lesser (non-Soviet) threats diverse and uncertain in time
- . Lesser threats may be armed with modern tactical weapons, including weapons of mass destruction, ballistic missiles, quiet subs
- . Paramilitary missions increase
- . Overseas bases decrease
- . Defense budget decreases

## Implications for Defense Planning

- . Force planning not dominated by single threat or sum of threats  
– should be based on flexibility to adapt to any one
- . Significant decline in size of active forces
- . Significant reduction in forward deployment
- . Need continuing emphasis on maintaining SLOC. Should be an objective of arms control as well as force planning
- . Reduced active forces need high mobility and readiness to respond to lesser threats with short warning
- . Need increased emphasis on strong reserve capability; i.e., ability to reconstitute forces to respond to major threat with long warning.

## Figure 10. Changing Priorities in National Intelligence

Priority	Intelligence Mission	Required Timeliness			
		H	D	W	M
	<b>Defense Intelligence Missions</b>				
Unchanged	. Strategic forces/weapons of mass destruction				
Unchanged	- Soviet				
	- Capability				.
	- I&W of use	0			
	- Non-Soviet				
Up	- Proliferation/capability				0
Up	- I&W of use				
	. Conventional forces	0			
	- Soviet				
Down	- Outside USSR			0	
Down	- Other			0	
	- Non-Soviet				
Down	- Western Europe			0	
Down	- Eastern Europe			0	
Up	- Other			.	
Up	- Mobilization capabilities				.
Unchanged	. Support to ongoing military operations				
Unchanged	. Support to contingency planning	0			0
Unchanged	. Support to acquisition process				0
Up	. Mapping/targeting data for new weapons (e.g., cruise missiles)				0
Up	. Arms control monitoring				.

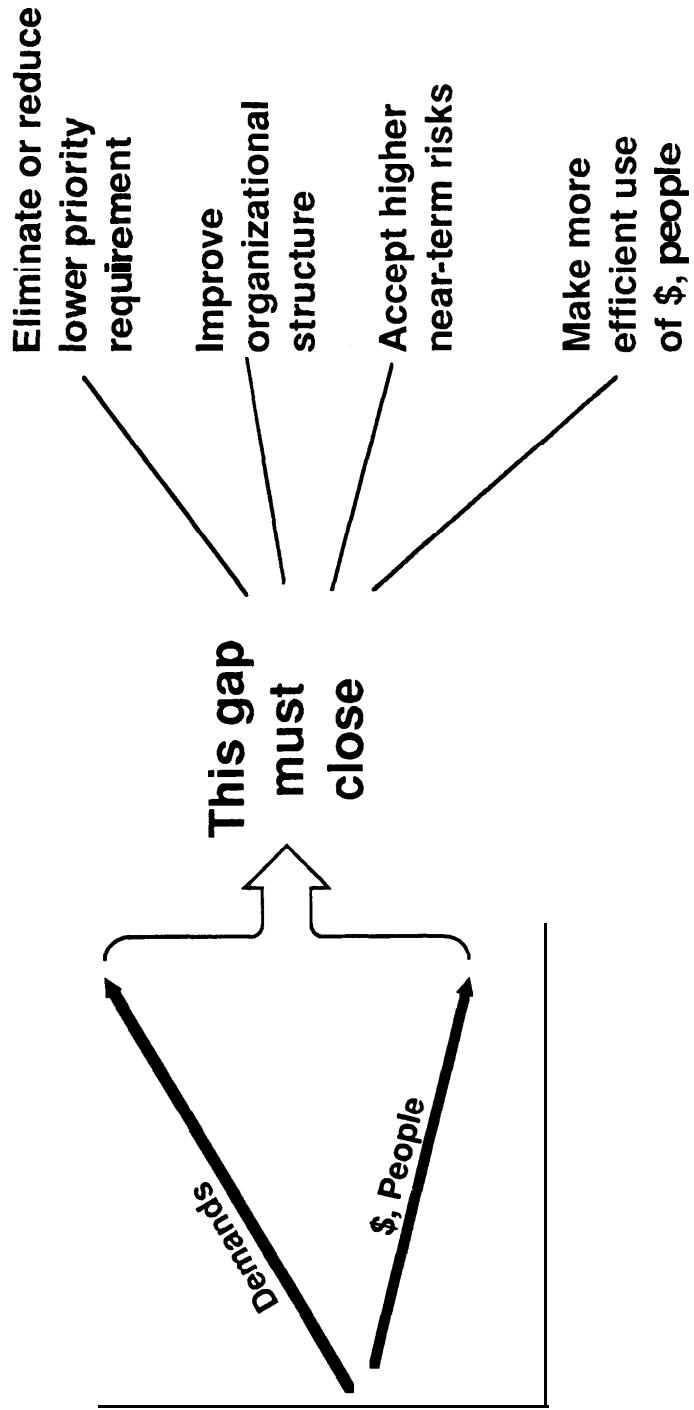
H - Hours    D - Days    W - Weeks    M - Months

## Figure 10. Changing Priorities in National Intelligence (Cont'd)

Priority	Intelligence Mission	Required Timeliness			
		H	D	W	M
	<u>Other National Intelligence Missions</u>				
Up	. Global economic/industrial assessments				0
Unchanged	. Global political assessments	0			
Unchanged	- Crisis				.
Unchanged	- Other				.
Up	0 Global environmental assessments				.
Unchanged	. Support to diplomatic and economic negotiations		.		
	. Law enforcement support				
Up	- Counter-narcotics	.			
Up	- Counter-intelligence			.	
Up	- Counter-terrorism	.			

H - Hours    D - Days    W - Weeks    M - Months

**Figure 11. The Intelligence Challenge**



**Figure 12. Surging, Mobilizing, and Reconstituting**

