NEW WORLD COMING:

AMERICAN SECURITY IN THE 21ST CENTURY

SUPPORTING RESEARCH AND ANALYSIS

The Phase I Report on the Emerging Global Security Environment
for the First Quarter of the 21st Century

The United States Commission on National Security/21st Century

September 15, 1999

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Foreword

Over 50 years ago, President Harry Truman signed into law the National Security Act of 1947, the landmark U.S. national security legislation of the latter half of the 20th century. That Act brought the U.S. Armed Forces together under the Secretary of Defense and established the National Security Council to integrate all aspects of our nation's power. The 1947 legislation has served us well, providing us a template with which to deal with our primary challenge of the last half of the century—the Soviet Union. It undergirded our diplomatic efforts, provided the basis to establish our military capabilities, and focused our intelligence assets.

Some things do not change. The survival and security of the United States remain our priority, we still cherish our freedom and the promise of a good life, and we remain committed to our friends and allies. But in the future our national security system will have to consider a world of chemicals and biological agents as well as nuclear weapons and conventional armies. We will find ourselves challenged with protecting the information networks on which our banking systems and public services will depend, the disruption of which could paralyze our economy and pose literally life-threatening dangers. Our potential adversaries will range from great military powers to "rogue" states to international criminals to malicious hackers. Future battlefields may extend beyond the air, the land, and the sea into both outer space and cyberspace.

We are changing as a nation, as well, as our human complexion, values, and skill-sets evolve. Economic recessions, environmental degradation, and the spread of disease all have the potential to tear at our nation's social fabric, which is the very foundation upon which we stand.

The thinking behind the 1947 law was rooted in the experiences of the Second World War and the earliest days of the Cold War. Fifty years without fundamental revision is a long time for any policy structure to endure, particularly during a period of such vast change. In 1997, U.S. lawmakers recognized that the country needed to conduct a thorough study of U.S. national security processes and structures. In mid-1998, that study was chartered by the Secretary of Defense under the provisions of the Federal Advisory Commission Act and endorsed by the White House and Congressional leadership. Thus was the U.S. Commission on National Security/21st Century (USCNS/21) born.

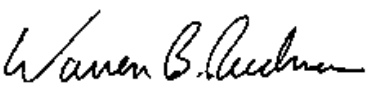
The Commission held its first business meeting in October 1998. Since then, it has conducted its effort in three phases, the latter two each designed to build upon what has come before:

New World Coming: The first phase, represented by this Report, explores the world developing between now and 2025. It identifies what we can anticipate, as well as areas that may remain uncertain or subject to dramatic change. It also tries to understand what we will look like as a nation over the next 25 years, and how we will fit into the world at large.

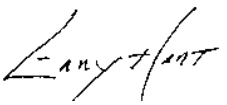
Seeking a National Strategy: The second phase will develop an overview of U.S. strategic interests and objectives for the next 25 years. It will describe an overall national security philosophy and a strategy to support those interests and objectives.

Building for Peace: The third phase of the effort will examine our current legislation, government structure, and policy integration process to determine the extent to which the system inspired in 1947 supports our needs for the 21st century. To the extent that it does not, changes will be proposed for implementation.

This Report represents the culmination of phase I of our efforts. We trust that it will prove to be the sturdy foundation we need to build the rest of the study. We believe it is that foundation.



Warren Rudman



Gary Hart

Preface

The United States Commission on National Security/21st Century was chartered to provide the most comprehensive government-sponsored review of U.S. national security in more than 50 years. The Commission's tasks are three:

First, to analyze the emerging international security environment;

Next, to develop a U.S. national security strategy appropriate to that environment;

Finally, to assess the various security institutions for their current relevance to the effective and efficient implementation of that strategy, and to recommend adjustments as necessary.

In sum, this Commission seeks to promote the security interests of the nation and its citizens at home and abroad, to safeguard American institutions and values, and, ultimately, to preserve the independence and well being of the United States for succeeding generations of Americans.

It has fallen to us, just as it has to all generations since the founding of the Republic, to "provide for the common defense." We do so, moreover, at a time when the international landscape is changing rapidly in the wake of the Cold War. Our security institutions, fashioned in an earlier era under conditions that no longer exist, may not be able to respond to circumstances their designers did not foresee. The first step in assessing the current suitability of those institutions is to anticipate the emerging conditions under which they must function. But how, as one classical historian put it, are we "to divine the unseen future that lies hidden in the present?"

Broadly speaking, there are three methods of contemplating the future. One assumes that the future will mirror the past. A second envisages abrupt change and tries to hedge against it. A third attempts to discern the underlying causes of current trends, in order to anticipate how those causal forces will shape the future. Each has its merits and limitations. The problem, of course, is to understand which method is most appropriate to the particulars of time, place, and subject.

Had a study similar to our own been undertaken in 1956, anticipating the quarter century to come, the first method would have worked best. From 1956 until 1981, much of the world was divided, geo-strategically and ideologically, into two hostile camps. The United States, the Soviet Union, the United Kingdom, Germany, France, and Japan were the centers of economic and military-industrial power. Nuclear weapons prevailed in the strategic arsenals of the world's great military powers; their surface combatants and submarines continued to roam the seas, artillery and main battle tanks dominated land operations in warfare, and air power was ubiquitous. Despite many changes in the world, both the political alignments and military technology that dominated in 1956 still remained in 1981. The world grew accustomed, uneasily, to continuity.

Had a study begun in 1925, pointing to 1950, the second method, which envisages abrupt change, would have been best. As that era began, Germany and the Soviet Union were weak powers, and Asia and Africa were still largely controlled by the great and wealthy imperial powers of Europe. The United States had recoiled from world politics following the frustrations of the Great War and its aftermath. Battleships were the capital ships of the world's great navies, infantry doctrine defined armies, and the airplane was seen primarily as a tool to support land forces. By 1950, however, European economies were just emerging from ruin, their overseas colonial empires were dying, the Soviet Union and the United States had become rival superpowers, and America was committed by treaty to the defense of Western Europe. The military domain had absorbed at least two major revolutions: the full exploitation of the third dimension through air power, and the advent of nuclear weapons. Warfare for the United States had changed dramatically through unifying the operations of land, sea, and air forces, and would never be the same again.

Given the magnitude of change now clearly underway, our study primarily adopts the third way to contemplate the next 25 years. We have attempted to distinguish the determinants of current trends so as to anticipate their effect on the future. As before, the components of change will be technological, economic, political, and military.

No one, of course, can predict exactly how that next quarter century will unfold. Through available lenses, we can foresee some things with reasonable clarity—demographic patterns, for example. Other phenomena, however, are rather more opaque. Nonetheless, we have used every analytical tool we could find to discern and analyze the emerging world. Finally, we have tried to find a proper balance between confidence and humility, both being important in any effort of this kind. We trust we have achieved that balance, and that its result will prove to be a sturdy foundation and an illuminating guide for the next two phases of the Commission's effort.

Charles G. Boyd

Executive Director

Disclaimer

This document reflects the work of the National Security Study Group, a collection of national security scholars and practitioners whose task it has been to provide basic research and analytical support for the chartered task of the United States Commission on National Security/21st Century. From this document, the Commissioners have drawn fourteen major conclusions that they have published separately under the title, *New World Coming: American Security In The 21st Century, Major Themes and Implications*. Not every proposition or nuance in this analysis is endorsed by every Commissioner.

Introduction

The future, in essence, is this: The American "moment" in world politics, which combines bloodless victory in the final stage of the Cold War with the apparent global triumph of fundamental American ideals, will not last forever. Nothing wrought by man does. In the next 25 years, the United States will engage in an increasingly complex world to assure the benefits that we—and most of the world with us—derive from American leadership.

As powerful as the United States may well be over the next 25 years, the world will not be tidily managed, whether from Washington or from anywhere else. History has not ended, mankind's cultural diversity endures, and both the will to power and the pull of passionate ideas remain as relevant as ever in political life both within and among nations.

A diffusion of power thus stands before us, but not necessarily one of the classical sort. A new balance of power may arise that would be intelligible even to the statesmen of the 18th and 19th centuries, but something more, and something different, will overlap and perhaps overwhelm it. The ever tighter harnessing of science to technological innovation, and of that innovation to global economic integration, is changing the rules of international engagement. It is even affecting the identity of its engaging parties. The sway of state power has always fluctuated within society, and states have often competed with other institutions for influence beyond their borders. But the challenges now being mounted to national authority and control—if not to the national idea itself—are both novel and mighty.

It is not a foregone conclusion that the role of the state will be permanently diminished, or the system of sovereign states reformed or replaced on account of these challenges. But both the system and its member units are certain to change as a consequence, as they have always changed from having been tested. In the years ahead, borders of every sort—geographical, communal, and psychological—will be stressed, strained, and compelled to reconfiguration. As the elements and vulnerabilities of national power shift, they will often leave current institutional arrangements at loggerheads with reality. Already the traditional functions of law, police work, and military power have begun to blur before our eyes as new threats arise.

Notable among these new threats is the prospect of an attack on U.S. cities by independent or state-supported terrorists using weapons of mass destruction.[1] Traditional distinctions between national defense and domestic security will be challenged further as the new century unfolds, and both conventional policies and bureaucratic arrangements will be stretched to and beyond the breaking point unless those policies and arrangements are reformed.

The future is also one of rising stakes, for good and for ill. Humanity may find ways to compose its disagreements, succor its poor, heal its sick, and find new purpose in common global goals. But if it fails at these tasks, it stands to fail more spectacularly than ever. That is because greater global connectedness leads one way to benefit and another way to misfortune. Economic downturns that have usually been episodic and local may become, thanks to the integration of global financial markets, more systemic in their origins and hence more global in their effects. The greater wealth that may be expected to flow from global economic

[1] See William S. Cohen, "Preparing for a Grave New World," *Washington Post*, July 26, 1999, p. A19.

integration will nevertheless produce growing inequality within and among nations. The march of science and technology, too, will provide ever more powerful tools—tools that can be used for benefit in the right hands, but that may pose even genocidal dangers should they fall into the wrong ones. The next 25 years may well force mankind back to first principles over the ethical dilemmas inherent in biotechnology. Our concept of national security will expand. Our political values will be tested as our society changes. In every sphere, our moral imaginations will be exercised anew.

Some things, however, will not change. We will no doubt revisit many times the three oldest questions of political life: How is legitimate authority constituted? What is fair in social and economic life? How do we reconcile disagreements? Historical principles will still apply as we ponder these and other questions. There will still be great powers, and their mutual engagement will still matter. As ever, much will depend on the sagacity and good character of leadership. Misunderstandings, misjudgments, and mistakes will still occur, but so will acts of brave leadership borne on the insight of exceptional men and women.

The upshot of the changes ahead is that Americans are now, and increasingly will become, less secure than they believe themselves to be. The reason is that we may not easily recognize many of the threats in our future. They will differ significantly from the dangers to which history has accustomed us: ranting dictators spouting hatred, vast armies on the march, huge missiles at the ready. They may consist instead of unannounced attacks by subnational groups using genetically engineered pathogens against American cities. They may consist of attacks against an increasingly integrated and vulnerable international economic infrastructure over which no single body exercises control. They may consist, too, of an unraveling of the fabric of national identity itself, leading several important countries to fail or disintegrate, generating catalytic regional crises in their wake.

The main policy challenge in all such cases, diverse as they may be, is the same: How does an American national leadership bring the country together and marshal its resources to both seize new opportunities and deal with novel threats? But we are getting ahead of ourselves. Before moving to arguments and evidence, let us first briefly describe ways and means.

"No man can have in his mind a conception of the future, for it is not yet," wrote Thomas Hobbes in *Leviathan*, "But of our own conceptions of the past we make a future." Hobbes meant two things by this statement: most obviously, that the past is the only basis upon which to forecast the future; more subtly, that social life tends to freeze into itself the conceptions we have of it. Hobbes was twice right. Absent the gift of prophecy, history's recurrent patterns, discontinuities, and intimations about human nature compose our only means of reckoning ahead. It remains true, as well, that the very act of probing the future tends to shape it, for we often act on our anticipations in ways that invite their arrival.

It is therefore no mean feat, and an act of no little consequence, to describe the international environment for U.S. national security 25 years hence. Let anyone who doubts the difficulty inherent in the task look back as far as this study looks ahead.[2]

In the late summer of 1974, just 25 years ago, the United States had just passed the deepest throes of a major constitutional and po-

[2] See Study Addenda, part 1.

litical crisis. Its economy was more anemic than it had been at any time since the Great Depression and it had just lost a war, a process accompanied by deep social divisions and a massive loss of faith in the national purpose. America's most serious global adversary, the Soviet Union, was steadily augmenting its strategic military clout and pursuing territorial encroachment by proxy from Africa to Central America. Meanwhile, America's key allies in Europe and Asia were hedging their bets over American leadership and seemed set to overtake the United States economically. Faith in the future of democracy and the health of market economies declined both at home and abroad. Not many predicted then that just 25 years later, the United States would be standing at a pinnacle of national prosperity and international power, its institutions very much intact and its core political values vindicated on a global scale.

Clearly, the U.S. national trajectory in the world has pointed upward since 1974. Over the next 25 years, however, it could point other ways. Nevertheless, our point of departure in this study is an assumption that the United States, a primary political, military, economic, and cultural force in the world today, will remain such a force through 2025. Its size, wealth, power, cultural sway, and diplomatic reputation render it inevitable that the United States will retain a significant role, and be a significant factor, in shaping the international security environment.

We also make three key methodological assumptions: that the definition of national security must include all key political, social, cultural, technological, and economic variables that bear on state power and behavior; that future projections based solely on today's trends are liable to be misleading; and that while forecasting a range of futures is possible, predicting a specific one is not. The reason for this last assumption is critical, and it is this: *the future is contingent*. Human history does not just happen; it is made. The state of global affairs in 2025 will be determined by an array of decisions, large and small, most of which have not yet been made. Our problem, therefore, is not how far we can see out on the road ahead with the best of analytical tools. The problem is that the road is not straight, and not even the highest power binoculars allow us to see around curves.

However difficult looking into the future may be, it is both necessary and irresistible. It is necessary because the stakes are so high that even an imperfect effort is better than none at all. It is irresistible because we are human beings: curious, emotionally engaged, beckoned to challenge. We have organized *New World Coming* in five parts. Part I, "Global Dynamics," sketches an overview of the range of major systemic changes we see arising over the next 25 years. These are organized, in turn, according to four basic categories: scientific-technological, economic, socio-political, and military-security. Part II, "A World Astir," looks at regional trends in light of global dynamics.

Part III, "The U.S. Domestic Future," examines what the United States itself will be like over the next quarter century. American resources and social cohesion will influence how much power the state will have at its disposal, and American domestic political culture will help shape how the United States exercises that power in the world at large.

Part IV, "Worlds in Prospect," translates the analyses of the three foregoing sections into four global scenarios. The purpose is not to predict which of these worlds will come into being, but rather to offer heuristic devices to help us encapsulate the forces that will drive

the world toward one of several alternative futures over the coming 25 years. The scenarios describe the interplay of developments in technology and economics with associated social, political, and military environments. These four scenarios are followed by a speculation that the first quarter of the 21st century will be a patchwork of these four worlds.

Part V, "Major Themes and Implications," is a summation of the Commission's findings.

I: Global Dynamics

The future is an enigma wrapped in familiarities. If we were suddenly transported back 25 years to 1974, we would feel much at home, yet we still could not foresee the world of 1999. We could not predict the end of the Cold War, the information revolution, the sustained economic growth of the 1990s, or the specific collection of conflicts that have lately roiled international politics. So, too, even though we are liable to feel at home in 2025—if only because our arrival there will be so comfortingly gradual—many things will have changed that we cannot foretell.

Social change involves not a single but a twin puzzle. To the one side is the ceaseless buzz of natural and human activity that seemingly amounts to nothing of real significance. But to the other side, we suddenly awake to great transformation in domains where we have sensed no activity at all. Just as we do not feel the earth turning on its axis despite the considerable speeds and distances involved, we usually do not "see" social or political change as it occurs.

There are grand theories of social change that grapple with this twin puzzle, but we need only recognize that social reality has multiple and interactive sources. Some are proximate, such as those animated by personalities, intellectual fashions, and happenstance. Others are more remote, including those embedded in the physical environment, the biological constitution of the species, and the perdurable patterns of human culture. We proceed here by examining scientific-technological trends and prospective patterns in the global economy, then move to the socio-political dynamics affecting and affected by both, and conclude with a discussion of the international military-security domain.

The Scientific-Technological Future: "What Will People Learn and Build?"

The tools that Americans and others have built in this century alone have wrought major social and political changes in technologically advanced countries, most of them unanticipated. Mass electrification transformed economies by revolutionizing both manufacturing techniques and consumption patterns. Extensive private ownership of automobiles led to vastly increased labor mobility, to new spatial patterns in residential life and, particularly in the United States, to the advent of the suburbs. Suburban life, in turn, accelerated the integration of diverse communities into a new mainstream, changed voting patterns and purchasing behavior, accelerated the separation of generational cohorts within extended families, and altered the social functions and economics of major cities. Antibiotics begot a demographic revolution and, with other advances in medical science, contributed to the transformation of religious sensibilities. Television brought a nascent commercial culture still at the margins of social consciousness in the mid-1940s into the core of social life. Birth control technologies have altered gender roles and family patterns.

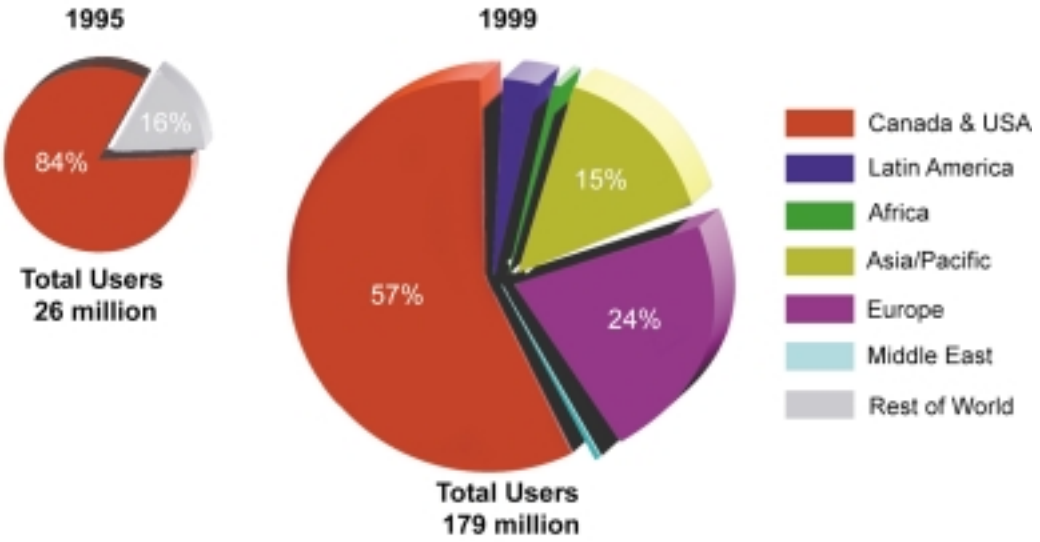
The political impact of these developments is virtually incalculable. Skill-sets and civic values, even the foci of national identity, have all been altered. If the point that technology influences social and political life is not sufficiently clear at the national level, consider the epic struggles of the 19th and 20th centuries between various forms of socialism and liberal democracy. The basis for those struggles was the enormous social and psychological discontinuities unleashed by the Industrial Revolution, since it was that Revolution that turned the socialist idea into programmatic ideologies. New social and political discontinuities will surely

flow from the major scientific discoveries and technological innovations that await us in the next century. Indeed, so vast are their implications that we can only hint at them here.

What technologies will emerge over the next 25 years? The general characteristic that stands out with respect to new technology is a major shift in paradigms of scale. Until the 1970s, the reigning industrial-technological paradigm was one in which factories grew larger to serve global markets; buildings grew taller, concrete spread wider, and continents were linked by ever larger jumbo jets. Gigantic rockets lifted men to the moon and, with multi-megaton warheads, underwrote the nuclear standoff. Efficiency and status lay in large scale. Now, however, miniaturization, adaptability, and speed are primary traits. Ever more capacity is being placed on tiny silicon wafers, and we are beginning to mimic the molecular assembly capabilities of biological systems.

The most striking innovations of the next quarter century will occur in three basic categories, and combinations thereof. These categories are information technology, biotechnology, and micro-electromechanics (MEMs).

Internet Users Are Increasing



Source: NUA Internet Surveys/NUA Analysis.

Great strides in information technology will continue, and the social impact will be great. Internet use is increasing dramatically around the globe and will continue to do so.

Computing power will grow and costs per unit of value will decline. Networks will be ubiquitous, software will be smarter, and computers will assume more "human" characteristics in terms of voice and visual

capacities. There will be near-universal access to information and many forms of expertise on a global scale by 2025, if not before. The entire world will be linked, so that from any stationary or mobile station it will be physically possible to send and receive near-instantaneous voice, video, and other serial electronic signals to any other station. If the millennium about to pass into history is remembered as the time when humanity first recognized its common planetary space, the first century of the coming millennium may be remembered as that in which humanity achieved the potential, if not the reality, of full connectedness in real time. We will witness, as it has been called, the death of distance.[3]

Information technology will make much of our environment interactive, both with respect to devices that respond to our wishes, and with respect to other people. By 2025, vast numbers of people—large majorities in advanced societies—will carry their own personal infospheres with them, perhaps wearing them in their clothing and powering them with the mere kinetic motion of walking.[4] Most people and vast amounts of information will be accessible at all times, in all places, in a world where a tailored virtual work environment will accompany us whenever we wish. When we travel, our cars will have GPS receivers networked to central databases, allowing for a constant update of map and traffic information. Upon arriving home, the environment will adjust to our presence thanks to linked, programmable appliances. Entertainment will take on a more cosmopolitan flavor since it will reflect global connectivity. We will be able to associate "virtually" with any person or group sharing our interests in hobbies, politics, ethnicity, or religion.

Even more dramatic than new innovations in information technology, major developments await us in biotechnology. By 2010, biotechnology may overtake information technology in terms of economic investment; whether it does or not, it will almost certainly overtake it in terms of macro-social impact.[5] Both business and, to a lesser but not small extent, governments will sustain large research and development funding in biotechnology. This funding, along with parallel advances in genetic engineering and tissue-growth research, will spur rapid innovation and related economic growth.

Capabilities could be startling by today's standards. If governments permit, genetic engineering will allow sex and specific trait selection in infants. Cloning human organs will be possible, and in some instances common. Many viral diseases will be better understood, and stem-cell technology could allow treatments for many degenerative neurological ailments. Treatments to enhance the human immune response against diseases will be possible. "Farmaceuticals" will be readily available, with cows, pigs, and sheep with altered genes providing proteins with medical value in their meat and milk. Agriculture will be transformed by higher productivity, nutrition- and vaccine-enhanced foods, and greater plant resistance to (known) pests. Taken together, these innovations suggest that the human life span in the developed world could shift from the present average of about 75 years to at least 85 years—and perhaps to as

3 Coined by Frances Cairncross, *The Death of Distance: How the Communications Revolution Will Change Our Lives* (Boston: Harvard Business School Press, 1997).

4 MIT's Lincoln Lab is experimenting with a sneaker-borne battery powerful enough to drive integrated circuits. Merely walking produces sufficient energy. See T. Starner, "Human-powered Wearable Computing," *IBM Systems Journal*, Vol. 35, Nos. 3&4, 1996.

5 See *Forecast `98: A Vision for Advanced Research and Technology* (Fort Meade, MD: National Security Agency, 1998), p. 29; and *The U.S. Biotechnology Industry*, Office of Technology Policy, 1997.

much as 120 years—within the next quarter century.

Between now and 2025, cheap, high-density microelectronics will proliferate in the tools and the physical environment of those living in technologically advanced societies. We will become familiar with MEMs: micro-electromechanical devices in which sensors, transmitters, receivers, or actuators (switches that activate mechanical devices) have been miniaturized to the size of a transistor. Such technologies will affect our lives in many ways. Should we become sick, our doctors will know as soon as, or even before, we do, for micro-sensors will constantly monitor our health. Smaller, more capable sensor devices will help insure the safety of both home and work. Energy bills will drop due to the use of low power devices. Airplane wings will feature microscopic sensors on their surfaces, allowing for faster travel at more efficient speeds. MEMs may also allow far more intrusive and cost-effective exploration of outer space, with unknown economic, political, and possibly moral implications.

Dramatic new capabilities in MEMs devices will appear as the long awaited nanotechnology revolution takes hold. In nanotechnology, devices are manufactured using molecular fabrication techniques not unlike those found in the human body. Many new technological advances will be based on bio-mimicry—the deliberate attempt to capitalize on what nature has learned through millions of years of evolution. To borrow from Eric Drexler, one of the founding fathers of nanotechnology, we will be engaging the "engines of creation" to alter the tools we use.[6]

Current developments indicate that nanotechnology, though in its early stages, will develop rapidly. In July a research team was able for the first time to fashion simple computing components no thicker than a single molecule.[7] This is a breakthrough that, in retrospect, may come to rival in importance Enrico Fermi's nuclear chain reaction in a squash court at the University of Chicago in 1942.

The implications of nanotechnology are particularly revolutionary given that such technologies will operate at the intersection of information technologies and biotechnologies. This merging and melding of technologies will produce smaller, more stable, and cheaper circuitry that can be embedded, and *functionally interconnected*, into practically anything—including organic life forms. The implications of such a fundamental innovation for advances in materials science, medicine, transportation, energy, manufacturing, and agriculture are simultaneously huge and still mostly unknown.[8]

What is clear is that such basic innovation will allow for more sophisticated scientific explorations of our environment. It will facilitate the gathering of information and advance our understanding of complex distributed systems. Such technologies may also merge with, and aid, major advances in theoretical physics, particularly in the areas of complexity and chaos theory. The results will not be just theoretical and intellectual, but will have dramatic implications for creating new technological synergies and for developing ever more sophisticated applications of our new tools.

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6 Eric Drexler, *Engines of Creation* (New York: Anchor-Doubleday, 1987). Many of Dr. Drexler's concepts await experimental verification.

7 John Markoff, "Tiniest Circuits Hold Prospect of Explosive Computer Speeds," *New York Times*, July 16, 1999, p. 1.

8 There are several ongoing projects that estimate technological innovation. See, for example, William E. Halal, Michael D. Kull, and Ann Leffman, "Emerging Technologies: What's Ahead for 2001-2030," *The Futurist*, Nov.-Dec. 1997.

However dramatic such potential breakthroughs may be, they will not revolutionize everything within a 25-year period.

The belief in a revolutionary shift in world energy patterns will not die. Many scientists hold faith in nuclear fusion, or in a hydrogen-based energy economy. Some believe that energy may one day be mined from the vacuum of space—zero-point energy, so called. Still others believe that substituting ethanol for standard gasoline can make a major impact on energy balances, and that genetic engineering can radically increase the biomass available to make ethanol, thus radically reducing the price.[9]

The problem with these prognostications, save for the last one, is that they offer no viable solution for the inertia inherent in existing fossil fuel infrastructures. Even if a major innovation does come from the laboratory, it will take most of a 25-year period to create the supportive production, transportation, and marketing infrastructures necessary to make a major difference on a global scale. We should expect steady advances in the labs and important practical innovation, not so much in energy *sources* as in the *efficiency* with which new devices use energy. Major advances in batteries are a near certainty, and urban-use automobiles that run on fuel cells are likely, too. As the economies of many advanced countries become more knowledge-based, and as telecommuting, telemarketing, and e-commerce become more prevalent, energy consumption patterns may change for the better, as well.

But unless the ethanol solution transforms the global energy industry, fossil fuels and their locations will still matter economically and in the political calculus of major powers. Indeed, demand for fossil fuels will grow as the economies of Asia and other parts of the developing world expand.[10] American dependence on foreign sources will also grow over most of the next quarter century. If prices remain moderate enough to depress the exploitation of marginal or difficult-to-extract fossil fuel reserves—as may well be the case over the next two and one-half decades—then the importance of Persian Gulf producers will actually *grow* back to levels reminiscent of the mid-1970s.

This is not the place to detail all the various innovations in science and technology that will shape our lives in the next 25 years, or to speculate about those that will not. In any event, what matters for the purposes of this study is less the devices themselves and more their social and political impact, and here the prospects are mixed. While new scientific discoveries and technological innovations hold out the promise of enormous benefits, they will also present many challenges, some of them cognitive and practical, others moral and philosophical.

One reason to expect new challenges is that change will come upon us faster than ever. The speed with which new technological innovations enter the commercial and thus the social mainstream will continue to increase, leaving society less time to adjust. It was with great and

[9] See R. James Woolsey and Richard G. Lugar, "The New Petroleum," *Foreign Affairs*, Jan./Feb. 1999. The Clinton Administration endorsed major research in this area in August 1999.

[10] See Energy Information Administration, *Annual Energy Outlook 1999* (Washington, DC: Department of Energy, December 1998); Geoffrey Kemp, *Energy Superbowl: Strategic Politics and the Persian Gulf and Caspian Basin* (Washington, DC: Nixon Center for Peace and Freedom, 1997); and Anthony H. Cordesman, *The Changing Geopolitics of Energy* (Washington, DC: Center for Strategic and International Studies, August 12, 1998).

justified anticipation that Thomas Alva Edison threw the switch that electrified Pearl Street in lower Manhattan in 1882, but it took another thirty years before the commercial and social implications of electricity hit full stride in the United States. Nowadays, moving from the germ of a scientific breakthrough to the mainstreaming of new devices may take little more than a year.

There are good reasons for the picking up of this pace. First, basic science is increasingly wedded to technological innovation, and this new conjunction in turn is increasingly wedded more closely to industry than to government defense labs. One result is that considerably more research and development investment is flowing to basic science, in both universities and commercial labs, than ever before. This trend, almost certain to widen and accelerate, means that the propensity for breakthroughs has been virtually systematized.

Second and closely related, in much of the world, and particularly in the United States, markets allow for the rapid commercialization of new technologies, and populations have become used to ceaseless innovation. The result is a cultural propensity to accept and adapt to innovation, which in turn works as an accelerator to innovation itself.

Third, information technology accelerates innovation because it is simultaneously a product and marketing device. The first thing that television advertising stressed was the purchase of more televisions, so that the technology became self-replicating in market terms. The array of new commercial information technologies, from personal computers to Internet nodes to GPS devices to cell phones, trumps the self-replicating capacity of television by orders of magnitude. This technology is its own infrastructure and its own commercial multiplier effect—and it will be used in the future to market other innovations, many of which will doubtless be linked with information technology and biotechnology.[11]

Fourth, the technologies of the future will be far more knowledge-based than physical resource-based, and the constraints imposed by extracting and processing bulk materials will shrink proportionately. What once required tons of steel and concrete to create a given increment of GDP growth now requires a tiny fraction of that weight in plastic and silicon. While the presumed "de-materialization" of the world can be exaggerated, knowledge-based innovation is freer to move ahead rapidly, constrained only by the availability of human capital and the organizational capacities of society to marshal and exploit that capital.

One of the inevitable consequences of an increased pace of innovation married to an interweaving of basic science fields is that our capacity to anticipate specific developments shrinks. In a way, we become smarter and dumber at the same time. We see this already in the way that the information revolution has played out in the last two decades; while very few wish to turn back the clock, there is no denying the disruptions in business and personal lives that many have experienced.

Information technologies have already had a significant impact on most individuals in the United States and other technologically advanced countries. We already have a rudi-

[11] See Daniel A. Losk and Randall P. Nottingham, "Global Market Penetration of Communications Equipment: Computers, Telephones, and Televisions," *Standard & Poor's DRI World Economic Outlook*, First Quarter 1999, p. 39.

mentary personal infosphere: witness the number of people driving down the freeway using cell phones and staying in daily contact with relatives and business associates via e-mail. We know, too, that individuals in technologically advanced societies are in many respects more powerful than ever before. They know more, and, by extending their senses more effectively, are more efficacious than any generation before them. They are more long-lived than any previous generation, as well.

The domain of the personal infosphere will grow over the next 25 years, both vertically and horizontally. In other words, the sophistication of such spheres will rise, and the number and types of people who have them will proliferate over much of the world. As a result, the physical boundaries of our neighborhoods and business locations will become less relevant as individuals create virtual communities of common interests—"communities of choice" or "hobby tribes," some have called them—by electronic means. Through our computers we will visit any business site or read the latest in science and culture as we choose, or communicate with others who share our interests anywhere at virtually any time. The Internet will provide interactive rather than mainly passive information; it will become a tutor rather than just a reference resource in subjects of our own choosing. In that sense if not also others, as one observer put it, "time zones will become more important than borders."[12]

This prospective technological environment will pose certain problems. Individuals will have to cope with new levels of complexity. No one will fully understand the environment or be able to master the massive, continuous flow of information about it. One of the key social implications of the technologies in our future is that they will tend to confound all attempts at centralized control, not unlike the logic of the marketplace. To succeed, as individuals and as organizations, will mean adapting to a life of continuous education and operational redesign. New information/knowledge tools will become our tutors and guides. Compared to the present, everything will be hurled into relative motion. Some people and some organizations will cope better than others in such circumstances, and those left behind will suffer economically. In short, new technologies will create new filters for sifting out winners and losers in society.

Adding to the press of complexity and information overload will be the pressure of short reaction times. The Internet already allows us to do things globally in near real time that used to take weeks or months. In the past we have always had time to prepare and react, and to weigh the potential consequences of our actions. In the future, we may process more information but, held in thrall by the grip of the technology itself, we may actually be prone to think less about it. Many will learn the hard way the differences between data, information, and knowledge. Hard as this challenge will be on individuals, it will be even harder on large organizations and especially on governments.

As a consequence, we may be headed for a considerably more stressful cognitive environment. While stress is a subjective notion to some extent, it does have an objective physiological basis, and potential health implications flow from it. Disease patterns could shift; we might learn to cure many forms of cancer only to be plagued by a host of cardiovascular and psychological maladies that rest today at the fringes of our health concerns. Stress may also lead some people to seek more predictability in

[12] Walter B. Wriston, "The Third Technological Revolution," *Foreign Affairs*, Sept./Oct. 1997, p. 172.

their lives and to compensate for uncertainty in some realms by magnifying certainty in others.[13]

But it is not a foregone conclusion that a high-technology future will be more stressful for most people. More prosperous and healthier people with more recreational time on their hands may well be under far less stress. If, in addition, telecommuting saves countless hours of being stuck in traffic and allows more people to live in idyllic environs, then, rather ironically, more people would experience more of nature thanks, in essence, to high technology.

New technologies will also affect developmental and educational issues. As with any young animal, a human child's neural networks form as a function of the pace and nature of the stimuli the child encounters in the environment. Some neurophysiologists believe that a child who has spent hundreds of hours watching "action" television and playing fast-paced computer games before reaching age six may have a hard time sitting still in a standard classroom, where the pace of activity is far slower. This does not necessarily mean that there is anything inherently wrong with the technology or the games. But this technology does bear implications for better understanding controversies over the definition and treatment of hyperactivity, or attention deficit disorders, in pre-adolescent children, and for educational methods generally.[14] There is a good prospect that educational methods will be revolutionized for the better once we fully understand and learn how to apply the new technologies at our disposal.

Families as well as individuals will have to cope with new circumstances. The denizens of the most advanced countries will face new responsibilities as parents and citizens in managing and utilizing the information age. As the natural limits and disciplines imposed by physical and social borders shift and sometimes dissolve, individuals will have to accept more responsibility for their own mental and moral balances. As one observer put it, a totally open and unfiltered network, operating amid the frenetic pace of contemporary life, means that "the most important thing parents need to understand about preparing their kids for the Internet world is that it requires not more whiz-bang high-tech skills, but rather more old-fashioned fundamentals" such as good parenting, a functional family life, and high quality basic education.[15]

Borders between generations and sexes will shift, too. As to the former, the faster the rate of technological innovation, the more likely that younger people will be at the forefront of it as "technological generations" grow ever shorter. This is despite the fact that so many people living longer and healthier lives may compose a "new middle-aged"—those between, say, 55 and 75—who may be far more active and productive as a group than ever before. The relatively greater economic utility and status of young people may have enormous social implications in many societies.

For much of human history, advanced age signified deeper knowledge in nearly every

[13] Some believe that the growing popularity of gated communities owes something to this motive, particularly for those invested in the fast-paced, high-stress corporate world. See Robert D. Kaplan, *An Empire Wilderness: Travels into America's Future* (New York: Random House, 1998), pp. 33-5; and Edward J. Blakely and Mary Gail Snyder, *Fortress America: Gated Communities in the United States* (Washington, DC: Brookings, 1997).

[14] Empircal research relevant to this connection is detailed in Jane N. Healy, *Your Child's Growing Mind: A Guide to Learning and Brain Development from Birth to Adolescence* (New York: Doubleday, 1994). See also, "Understanding TV's Effects on the Developing Brain," AAP News, May 1998; and Committee on Communications, American Academy of Pediatrics, "Children, Adolescents, and Television (RE9538)," American Academy of Pediatrics, October 1995.

[15] Thomas Friedman, "Are You Ready?" *New York Times*, June 1, 1999, p. A23.

society. Old people used to be relatively rare, and it has always made a certain evidential sense that the more experience someone has the wiser they are liable to be. The nature of prospective technological processes turns this tradition on its head. With younger minds more flexible and absorptive, and hence more valuable to a continuously innovating society, the continued veneration of elders will make less evidential sense, particularly as population pyramids invert and there are more elderly than young. This may be especially problematic in Confucian societies, but it will have an impact on Western ones, as well.

As to gender differences, as we head into a knowledge-based economy driven by technologies characterized by smallness and speed, the relevance of males' greater size and physical strength will further diminish. Historically, the larger average size and strength of males determined the division of labor in families. As first animal and then machine calories were substituted for those of human muscle, the economic relevance of gender distinctions and divisions began to fade. The lag time between economic reality and culture has been considerable, but culture has been catching up. The next few generations of technology should close the gap further, and one implication is that women will move in greater numbers into positions of public authority.

There are honest differences as to what this implies, but most speculation on the point exceeds the grasp of current evidence.[16] It is clear, however, that women's issues are the main barometer of social change in many non-Western societies, and in some places the vanguard force in breaking down patterns of social stasis.[17] So while the impetus for sexual equality has been mainly a Western phenomenon in this century—and while technology has had a good deal to do with it—its main global impact in the next century is likely to be in non-Western domains. The arrival and acculturation of new information technologies in such areas are likely to greatly reinforce this impact, as women have an equal chance as men to make themselves master over such tools.

Several divisive issues will arise on account of some new biotechnologies that will affect gender and other human traits. Many ethical problems reside in the growing technical ease with which parents may choose the sex, and other traits, of their children. Similar ethical—and practical—problems will also inhere in the use of increasingly precise means of altering mental states, including new psychopharmacological methods of inducing happiness, self-esteem, and other emotions, entirely divorced from any behaviors in the world.

Many problems will also be raised by the prospect of radically prolonged life spans. First and foremost is the question of access: Who will get to use such technologies, and who will not? How will scarce medical resources be apportioned if everyone claims a right to a radically lengthened life? Should finite resources be spent on prolonging life when those resources are needed for saving younger lives from the ravages of disease? How will advanced countries deal with social policy issues concerning retirement age and benefits, pension funds and medical insurance?

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[16] See Helen Fisher, *The First Sex: The Natural Talents of Women and How They Are Changing the World*, (New York: Random House, 1999); Francis Fukuyama, "Women and the Evolution of World Politics," *Foreign Affairs*, Sept./Oct. 1998; and the response to Fukuyama by Barbara Ehrenreich and Katha Pollitt in the Jan./Feb. 1999 issue.

[17] For one example, see Celia W. Dugger, "India's Poorest Are Becoming Its Loudest," *New York Times*, April 25, 1999, (Week in Review), p. 3.

Individuals, too, may confront totally novel issues, such as how to relate to their grandchildrens' grandchildren.

All of this has an international dimension, as well. Those few Americans who have recently been able to choose the sex of their children have preferred females to males, but the cultural bias in most other parts of the world, particularly the Far East, is the opposite.[18] If choosing the sex of children becomes widespread, it could in time create sharply divergent population profiles in different societies. Moreover, the resentment toward advanced societies by those farther behind is likely to grow if, for example, people in the Near East or Latin America come to have average life spans several decades shorter than those in more technologically advanced societies. The lack of availability of advanced medical technologies could prove a stimulus for immigration from the developing world.

The boundaries of communities and workplaces will shift, too. As to the former, virtual communities may replace actual ones to some extent, the limit defined by the instinctual human proclivity to sociability and social order.[19] If virtual communities proliferate very widely at the expense of real ones, then our public space itself may contract. The Internet, and the merging of the Internet with commercial entertainment culture, will allow individuals to virtually select their own news. That may reinforce preexisting biases, and it may narrow people rather than broaden them, leading them to be less concerned about society-at-large rather than more.[20] If so, our public space may shrink, and democracy may be hollowed out from the inside, even as all of its outward forms still appear normal.

On the other hand, local communities could flourish in reaction to the proliferation of virtual communities. People who spend more time at home as they telecommute may take a greater interest in local concerns and local politics. That, in turn, could revivify communities and nurture higher levels of political participation at the grassroots.[21]

As to the latter, telecommuting will not make workplaces obsolete, for workplaces have an indissoluble human dimension and need such a dimension to function effectively. But it will change how workplaces function.[22] The fact that many people will be freer to live farther from a central workplace will also affect residential patterns, and could have significant implications for land and water use. Closely related, if, as many expect, e-commerce composes half or more of all commercial transactions before the year 2025, there are implications for the spatial and social compositions of city and suburb. The ratio of residential to commercial uses of real estate will rise as fewer stores are necessary to sell similar volumes of goods. Labor profiles will change, too: There will probably be fewer

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18 Note the data in Nicholas Eberstadt, "Asia Tomorrow, Gray and Male," *The National Interest*, No. 53 (Fall 1998), pp. 63-5.

19 See also Francis Fukuyama, *The Great Disruption: Human Nature and the Reconstitution of Social Order* (New York: Free Press, 1999), and David Whitman, "More Moral," *The New Republic*, 22 Feb. 1999, pp. 18-9.

20 Andrew Shapiro, "The Internet," *Foreign Policy*, Summer 1999, p. 25.

21 There are signs that this is already happening in the United States. See *Deconstructing Distrust: How Americans View Government* (Washington, DC: Pew Research Center, 1998), pp. 15-6.

22 Hamish McRae, *The World in 2020: Power, Culture, and Prosperity* (Boston: Harvard Business School Press, 1994), p. 179.

retail clerk jobs in stores, but more delivery, sales, and inventory management jobs.

The new economy will transform entertainment culture as well as residential and business patterns. Here, too, there are implications for the spatial layout of communities. New places will allow for new social mixing and new ideas; new vocabularies will form and new cultural symbols will evolve. This matters because the spatial features of community—human geography, so to speak—have always had political implications.[23]

Telecommuting, telemarketing, and e-commerce are also parts of a wider reality that is introducing new patterns into work- and marketplaces alike. The ability to bypass traditional lines of communication has introduced new efficiencies in business—the much discussed "flat," non-hierarchical organization. The wealth-producing potential of what amounts to a new way to use human capital is enormous, and we have probably seen only the beginning of it so far.[24] But new technological patterns have created a need for different organizational structures and processes to allow decision making authorities to function. It has not always been easy to devise them, nor will it get much easier in the future. Obviously, a completely flat organization is not an organization at all, but just an agglomeration. Moreover, what private business can do, public bureaucracies in democratic countries cannot do as easily, for the latter do not measure success in keeping the public trust by standard accounting methods. Nor can they, or should they, override the rules of accountability essential to democratic governance.

A related technology-driven issue that will have an impact on both individuals and society at large concerns privacy and secrecy. Privacy will be more difficult to maintain. Ever expanding capabilities to monitor individual workers, to intercept messages or monitor conversations, and to obtain personal data from databases may conflict with individual rights in democratic countries. Secrets will be difficult to keep—whether individual, business, or governmental—but individuals and organizations will still try hard to keep them. We do not yet know who will win the race between encryption and decoding, but it is likely that more basic information will be available to those who wish others ill. There will be a pervasive tension between divulging information, so that one may benefit from the social networks of the future, and holding back information to foil the efforts of those who would abuse such networks.

As to the physical environment itself, the future is likely to bring a mixed picture. No one doubts that human activity has altered the biosphere. The expansion of human numbers and habitations has changed the face of the planet, although there is much debate over particulars and over the moral balance inherent in human activity. Pollution is bad for humans and other animals, but economic growth lifts people out of misery and the condition of a life nasty, brutish, and short. Moreover, the technology of environmental remediation is now keeping pace with the damage that industrialization causes in advanced countries, and it will be increasingly available in developing countries as well.

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[23] For historical examples, see Michael Vlahos, "Entering the Infosphere," *Journal of International Affairs*, Spring 1998.

[24] For a brief review of the debate over the relationship between information technology and gains in productivity, see Steve Lohr, "Computer Age Gains Respect of Economists," *New York Times*, April 14, 1999, pp. A1, C14.

Still, even with advances in remediation technology, limits to resources are real, including the availability of fresh water as populations grow. There is also a problem inherent in sharp reductions in biodiversity owing to anthropogenic activity.[25] These limits represent a major challenge to posterity. That said, there is fierce disagreement over several major environmental issues. Many are certain that global warming will produce major social traumas within 25 years, but the scientific evidence does not yet support such a conclusion. Nor is it clear that recent weather patterns result from anthropogenic activity as opposed to natural fluctuations.

There is no doubt that natural disasters will roil the future as they have always roiled the past. It is also clear that as population pressures and other factors drive large numbers of people in developing countries to build homes in river flood plains and coastal areas, the human toll from such disasters will rise.[26] Some 40 of the 50 fastest growing cities in the world are in earthquake zones. Already half the world's population lives in coastal zones prone to flooding and to the spread of malaria and other diseases. Environmental refugees now account for more than half of all refugees worldwide, and that percentage may grow.[27] There is doubt, however, about the severity of future trends, depending on how one reads the pace, depth, and source of climate change.

Socio-economic borders will also be stressed by new technologies. The new requirements of an information-based economy may create novel social divisions with serious political implications. For example, international connectivity will allow job competition over an increasingly wide geographical area. The good news here is that efficiencies will rise, and greater efficiency in business translates overall into more wealth in society. But there is a downside, too. British Telecom now uses operators located in New Zealand because they are wide awake when most people are snoozing in England; that brings lower costs and greater efficiency to the company but greater employment pressures in Manchester and Leeds. Such changes are likely to affect white-collar jobs as much or more than blue-collar ones that are physically bound to a particular place.

The polarization of work forces is also a potentially serious social issue. Those members of society who are not adept at symbol manipulation may have difficulty adjusting to the new techno-economic environment. It is not clear, for example, that there will be enough low-skill service jobs for those echelons of the population that require them for independent sustenance. If there are not, the sprawling and very liberally defined American middle class—and the middle classes of other formerly industrial societies, too—will split, with the upwardly mobile joining the international cyber-economy and the rest headed toward more marginal economic domains.

Moreover, whenever educational segmentation reflects racial or ethnic segmentation, the new geography of labor stratification may exacerbate existing social divisions. This could be a particularly volatile issue in those societies, including that of the United States, that have a

[25] This activity includes the burning of rain forests for sedentary agriculture, the destruction of estuaries and mangroves, desertification, and the overuse of pesticides in conjunction with monocultural methods in agriculture.

[26] See Steve Lonergan, "The Roles of Environmental Degradation in Population Displacement," *Environmental Change and Security Project*, The Woodrow Wilson Center, Issue 4 (Spring 1998), pp. 5-15.

[27] International Federation of Red Cross and Red Crescent Societies, *World Disaster Report 1999* (New York: IFRC, 1999).

relatively benign history of social mobility. New technologies may also affect social patterns related to socio-economic stratification. Already in advanced countries the advent of automated service devices such as automated tellers at banks and voice mail in offices has reduced the number of face-to-face encounters between people of different socio-economic echelons. The social and political implications of increased isolation among socio-economic groups is unclear, but it is not something to be taken lightly in mass democracies.

Clearly, then, technological drivers will affect social patterns and raise questions of social justice. Such questions will doubtless become major items on the political agendas of advanced societies. This is already so to some extent. Over the last several decades there has been a greater skewing of income distribution in the United States, as well as in many other advanced societies. Some blame regressive tax policies for this, but more likely we have witnessed a technology-driven asset expansion among the wealthy not different in essence from the basic economic dynamic of the Gilded Age. As before, this asset-driven expansion of wealth is likely in time to generate a wage-driven expansion, and there is some indication that it already has done so. The democratization of capital that seems to be inherent in the new technological environment could also lead to a greater leveling of income and status amid a greater prosperity for all. But we do not yet know how new technologies, and their effects on domestic and international economic arrangements, will remix opportunity and economic achievement in various societies. Most likely, there will be more polarization in some domains and less in others.

A concern with social justice is not the only macro-social area liable to be put to new tests by technological dynamics. Changes ahead will threaten all vested interests whose power resides in the familiarities of the status quo. For those who have achieved high incomes and status, the prospect of rapid change can be threatening, and those who have "made it" very often have the power to arrest or even derail change—at least for a while. One manifestation of such fears is the way in which technological innovation is often depicted by tenured elites. National politicians extol the promise of the Internet, for example, and then turn their attention to ways of limiting it through regulation, censorship, and taxation.

Depending on the wider cultural milieu, some tenured elites do better at resisting change than others. All of this suggests that the culture wars of advanced societies will shift over time as new technologies work their way down and into social patterns. We may stop arguing so much over abortion, gun control, and the coarseness of entertainment culture, and more over evisceration of public space, the ethics of selling synthetic life-forms for profit, and government regulation of cyberspace. But argue we shall and, as we do, new content will fill the vessels of our political vocabulary, changing what it means to be liberal or conservative, progressive or reactionary.

New knowledge-based technologies could also divide societies in terms of basic values. Some unknown percentage of adults in advanced societies may opt out of a life characterized, in their view, by a frenetic pace of cognitive demand, a lack of privacy, the dissolution of comforting boundaries, and the misapplications of human priorities. Some citizens will be actively hostile to the new cyberworld, perhaps violently so.

This suggests that the adversary cultures of advanced societies will form new ideologies on the basis of opposition to the sort of technology-driven social changes outlined above. One sees such signs already at the fringes of the environ-

mental movements in many technologically advanced countries. This is a trend likely to grow in intensity, and it has potential security implications in the form of eco-terrorism, a taste of which we have already experienced both in North America and in Europe.

While some will rue the new machines, and while environmental concerns will doubtless take many forms, others will relish the personal empowerment that the new technology will provide to those ready and able to embrace it. But this, too, poses a potential social challenge, and one with profound implications for democratic political cultures. The growing sense of power that will accrue to many individuals, not to speak of societies and states, as their senses are extended by technology could corrupt moral balances and erode moral discipline. If that were to happen on an extensive basis, it could undermine the very sources of the cultural system that has facilitated such individual empowerment in the first place.[28] It could threaten the balance of healthy civic habits that have long sustained democratic communities.

International borders will become more porous, too. States will find it increasingly difficult to prevent the flow of ideas, economic goods, and dangers into their territories.[29] At the interstate level, technology portends a sharp leveling effect in the ability to do harm to others across territorial borders. It will no longer require a major investment in scientific and industrial infrastructure for small states and even reasonably well-heeled groups and individuals, whether they be criminal syndicates or terrorists, to get their hands on very dangerous technologies.

As important, while all societies will be exposed to technology and its effects, not all societies will master them equally. While the implements of new innovations will be more widely diffused, the benefits may be more unevenly distributed than ever. Some countries, and groups within countries, will embrace technological innovation, while many others will go through life in a technological environment that is pre-1940s by Western standards. Thus, new technologies will divide the world as well as draw it together.

This is extremely important for the long run. All major technological-economic revolutions have tended to empower some groups and diminish others. As we move ever deeper into a time of knowledge-based power, those nations, societies, and groups that excel at education and human capital generally will find themselves with daunting relative advantages over those that do not. This is already obvious in some respects through the postwar examples of Hong Kong, Singapore, and Israel, small and natural resource-poor places that have nevertheless been able to generate considerable wealth and relative power. This is why education, as well as social capital and cohesion, will be increasingly important components of national power in the future.

In this regard, the Internet may play a powerful role. On the one hand, the Internet has considerable potential to spur greater literacy in much of world, and to bring knowledge to millions who might otherwise not have the opportunity to learn. That is all to the good. But a global Internet culture may also produce far more half-educated people. The proverb that a little knowledge can be a dangerous thing may be trite, but that does not make it false. When one recalls that some of the most dangerous leaders, and followers, in the 20th century have been half-educated men—Stalin, Hitler, Mao,

[28] Daniel Bell, *The Cultural Contradictions of Capitalism* (New York: Basic Books, 1976).

[29] See *Human Development Report 1999*, United Nations Development Program, pp. 29-30

and Pol Pot come readily to mind—the possibility begins to take on a worrisome dimension.

This is a potential problem not just at the level of national leadership, but at a level far deeper in society. The Internet is already full of information, but not necessarily of knowledge—and it is utterly unfiltered. For those who lack a solid basic educational grounding, it is difficult to distinguish accurate from false information, serious ideas from half-baked ones, practical proposals from those both dangerous and fanciful. After all, any person, even a child, can use the Internet to visit with "hate" groups, or be unwittingly influenced by many sundry forms of unhealthy or just unusual propaganda from any of the four corners of the earth. It is as easy to get the Aryan Nation website up on a computer as it is to load Amazon.com. "Big ideas" hatched anywhere on earth may rush around the world far more quickly than ever before—both good and not so good "big ideas." The potential for the growth of an international "know-nothing" populism cannot be ruled out just because the web will also facilitate coordination among groups lobbying for peace and human rights.

Nor can it be assumed that essentially anti-modern forces will abjure using the Internet. In some Muslim societies, religious fundamentalists are often the first to seize upon modern techniques of communication to spread their messages. The quasi-religious martial arts societies of China, though mystical and anti-modern at heart, may do so as well if their leaders argue that they need to use technology in order to "humanize" technology.

New technologies may also affect the bonding strength of national identities. Through the Internet, Americans and other citizens of technically sophisticated societies will have far greater exposure to peoples of other nations, and greater levels of interaction with them.[30] Tourism may become the world's largest industry by 2025, as interest in other climes and the ease of getting to them both increase, and the costs of doing so decline. Technology may also allow a near-universal language translation capability, resulting in the potential for a far wider exchange of ideas. In many countries, this will likely create a greater sense of something like a global citizen, and it may change dramatically how people identify themselves and how they see their country's place in the world. Americans, and other traditionally patriotic nationals, could come to develop strong associations both above the level of existing national identification—that of the "world citizen"—and below it, with ethnic, sectarian, or otherwise local community symbols. In other words, we may witness the birth of the post-modern state, a phenomenon with potentially huge implications for international politics.[31]

This is a crucial uncertainty because major changes in the global political order have occurred historically only under two conditions: when the nature of legitimate political units changes (for example, from empires to nation-states in the 19th and 20th centuries), and when new values generate the redefinition of personal identifications and loyalties. It is hard to say how much eroded the idea of the unitary national state may be over the next quarter century, but the splaying of political associations both upward and downward from the level of the state is already in evidence in Europe. Skeptics doubt the possibility of building an economy in order to build a state, and a state in order to build a nation—which is the logic of a

[30] See the special issue on the impact of the Internet in the *Indiana Journal of Global Studies*, Spring 1998.

[31] See James Kurth, "The Post-Modern State," *The National Interest*, No. 28 (Summer 1992); and John Lewis Gaddis, "Living in Candlestick Park," *The Atlantic Monthly*, April 1999, pp. 65-74.

federated Europe from the European elite point of view. But what would never have worked in the old world may work in the new; already many Germans, Dutch, and Portuguese younger than age 30 think of themselves as European as much as they do German, Dutch, and Portuguese.[32] And if it does work, it will do so largely because, thanks in part to new technologies, the sinews of intersocial communications will break down existing cultural as well as economic borders in favor of new ones.[33]

Oddly enough, too, but still quite logical, existing national units are more likely to break down in circumstances where an overarching transnational edifice is in place, or is seen to be coming into being. Thus will forms of integration and fragmentation coexist. The slogan of the Scottish National Party (SNP), for example, in this past spring's first election for a modern Scottish parliament, was "Scotland independent in Europe." The SNP did not win the day, but in the future it might; and roughly similar logic applies to places such as Corsica, Lombardy, Wallonia, Catalonia, and the Basque country.

We may also face, as a species, new ethical and philosophical challenges to human civilization itself thanks to the prospects of biotechnology. While biotechnology harbors tremendous potential for good, the potential for permanent damage to humanity and the biosphere is also a reality. This technology, for example, will allow for the creation of ever deadlier and harder to detect weapons of potentially genocidal dimensions. The linkage between biotechnology and nanotechnology methods poses dilemmas even more profound. For example, it will soon be possible to connect human brain cells to silicon chips.[34] It will also be possible to alter more precisely human behavior through genetic engineering.[35]

While such abilities hold out promising techniques for healing many mental and physical illnesses, and for a very advanced form of robotics, it also suggests that the very constituency of humanity may change—not just from altering the human genome through genetic engineering, but also from mixing it with non-organic mechanics. When philosophers have spoken of the co-evolution of man and machine, until now they have spoken metaphysically. Notions of "androids," "cyborgs," and "bionic" men and women have dwelled exclusively in the realm of science fiction. But at least the beginnings of such capabilities could literally exist within the lifetime of today's elementary school children.

The implications of such developments should not be underestimated. Our understanding of all human social arrangements is based, ultimately, on an understanding of human nature. If that nature becomes subject to significant alteration through human artifice, then all such arrangements are thrown into doubt.[36] It almost goes without saying, too, that to delve into such matters raises the deepest of ethical issues: Can humanity trust itself with

32 But still not most, according to the European Commission's *Eurobarometer 50*, cited in Dominique Moisi, "Dreaming of Europe," *Foreign Policy*, Summer 1999, p. 49.

33 See John Newhouse, "Europe's Rising Regionalism," *Foreign Affairs*, Jan./Feb. 1997.

34 Scientists have already grown brain cells from a rat on a silicon chip, the result exhibiting certain characteristics of each. A photograph may be found in *Business Week*'s special Summer 1999 issue on innovation, p. 106.

35 This has already been achieved with mice. See "Social Behavior Transformed With One New Gene," *Science Daily*, August 19, 1999, p. 1.

36 Argued by Frances Fukuyama, "Second Thoughts: The Last Man in a Bottle," *The National Interest*, No. 56 (Summer 1999).

such capabilities? Should it? How can it know before the fact? Who gets to decide?

There have always been technological pessimists among us, yet despite the disruptions of several iterations of major technological innovation over the past few centuries, the lives of the vast majority are longer, healthier, happier, and more secure as a consequence.[37] Most likely, the new discoveries and devices of the next quarter century will also tend to enhance life in quality and quantity. Still, there is growing unease that we are upping the ante to the point that a single mistake or a single act of sheer evil could leave a potentially fatal wound. So it may be that mankind will come face to face with technological choices that make us think twice before we plunge ahead. If so, then we will have reached a new and higher stage of civilization in which man as a tool-making animal and man as a moral being will devise an explicit reconciliation between these two core facets of his nature.

Global Economics: "How Is Wealth Created?"

In its essence, economics comes down to a simple question: How is wealth created, distributed, and used? But the answer to that question is anything but simple. We have moved far beyond undifferentiated subsistence means for making ends meet. Local, regional, national, and international economic dynamics have become extraordinarily complex, involving matters of matching resources, sophisticated production techniques, education and human capital, marketing, finance, trade, and the corpus of custom and law that binds all of these activities together.

As far as the next 25 years are concerned, most important in any consideration of U.S. national security is the extent to which the global economic system will continue its path toward integration. That is because such integration will affect the distribution of economic, political, and, ultimately, military power in the world. Some countries will prosper more than others, and some alert developing countries, such as China, may prosper most of all.

Continued integration promises greater wealth for most countries, including the United States, but it also promises a host of novel vulnerabilities. If integration stalls or is reversed, however, other problems will come to the fore. Beyond the broad distribution of wealth and power, political destabilization could arise from the tendency of knowledge-based economies to exacerbate divisions within and among states. Economic interdependence will create vulnerabilities for the U.S. economy. Capital markets and trade may well be exploited by others for purposes at odds with U.S. interests. New economic patterns may also affect national identities and the capacities of states to govern.

Most observers believe that the international economic system is in a state of rapid transition, but they often disagree about where this transition is leading. That is partly because outside the domains of professional economists—and sometimes within them—*prescriptive* disagreements shape most discussions of globalization. Nevertheless, a reasonably objective picture of the new global economy can be drawn. It requires first a grasp of structural changes in the international economy having to do with its financial and production dimensions, and how world economic cycles are being influenced as a

[37] The optimist-pessimist debate goes on. See Virginia Postrel's *The Future and Its Enemies* (New York: Free Press, 1998), which describes the contest as it takes the optimists' side.

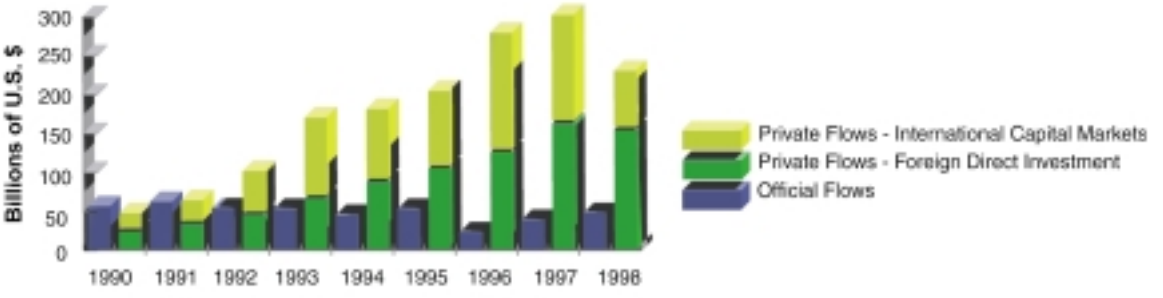
result. It means understanding the connection between trade and capital flows, especially in the developing world. And it means understanding the various barriers to economic change.

A key to the changing global economic environment is the explosion in the volume of international capital flows. The basic data tell the tale. In 1990, the first full year of the post-Berlin Wall epoch, developing countries absorbed a little over $100 billion in total long-term capital flows. More than half of these reflected official aid and assistance from governments or multilateral institutions such as the World Bank. By 1998, the contrast was stark. Total long-term capital flows to the developing world increased to $275 billion. Of that amount, private capital flows both from international markets and foreign direct investment accounted for over 80 percent.[38]

Perhaps as important as the increased capital flows are the changes in the nature of the private parties participating in the market, and how they are doing so. There have been dramatic increases in the numbers and types of participants in the market, the size of discrete transactions, the types of instruments and funds involved, and the overall speed at which trading takes place. Large commercial banks still play a major role in global capital flows, and in their volatility. But the sources of investment have expanded to include pension and insurance funds as well as individual portfolios.[39] In sum, the global financial system has grown from a small core set of players to a much larger and more disparate set of investors and creditors. This has created new vested interests across a wide range of economic, financial, and political domains worldwide who are wagering increasingly larger sums for investment and short-term speculation.

Technology has been an important enabler in this development. Advances in information technology have made it possible for financial

Capital Flows to Developing Countries



Source: The World Bank, Global Development Finance, 1999, p. 14.
Note: Data for 1998 is preliminary.

[38] According to the World Bank, international capital markets consist of bonds, loans, and portfolio equity flows. Foreign direct investment consists of the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital, as shown in the balance of payments. Official flows consist of the sum of net flows of long-term debt from official creditors such as multilateral institutions and governments.

[39] According to the Organisation for Economic Co-operation and Development (OECD), pension fund assets invested in capital markets increased from $4.9 billion to $8.2 billion between 1990 and 1995. OECD, *The World in 2020: Towards a New Global Age (*Paris: OECD, 1997), p. 52.

institutions and individual investors alike to collect, analyze, and act on information about markets with unprecedented speed. This trend will grow because, as the technologies spread, others around the world will be able to participate in global markets just as ever more individual and corporate investors in developed countries like the United States do today.

Technology has had an even more profound effect on production itself. Technological advances have changed the way companies are being run in terms of operation, size, and location. On the one hand, it is now possible—and will become increasingly so—for many businesses to be truly global. On the other hand, information technology facilitates the shaping of specific production to specific markets. This phenomenon, known as niche production, will expand in coming years as the diffusion of knowledge about production techniques, and of smart machines themselves, merges with a far more specific and near-instantaneous knowledge of the market. This is true for old product areas, such as textiles, and for new product domains that technology itself helps bring into being. In different ways, the globalizing of business organization, the expansion of international markets, and the advent of niche production will force the restructuring of industrial and service sectors alike. It will also tend to improve standards and quality, and to put a premium on achieving speed, efficiency, and knowledge-based processes at every level and for every kind of business activity.

Information technology has also influenced inventory strategies, and these too have national security implications. Inventories are expensive to carry, and businesses prefer to maintain lighter loads in that regard. The problem is that disruptions in supply for whatever reason—not least war—leave dependent countries vulnerable. For example, should China attempt to seize Taiwan by force, and in the process cut the economic links between Taiwan and the United States, American industry might well find itself short of important economic components.

Then there is the Internet, which is revolutionizing traditional methods of marketing and distribution. The Internet already provides a novel source of commercial advertisement—less for particular products than for classes of products—and its influence in that domain will grow exponentially over the next quarter century.[40] It also lowers the cost of entry to new markets, facilitating the expansion of smaller enterprises into international business. The Internet is allowing markets to become truly global, with fewer middlemen taking profit and slowing transaction times. Not only is the international market becoming larger, it is also becoming less hierarchical, and that has significant implications for the structure of commerce and competition across both the service and industrial sectors of the global economy.

The integration of the world economy now afoot is different from earlier episodes of economic integration. First, the ratio of trade to global GDP, at least according to some measures, is at historically high levels.[41] States today benefit more from economic interaction with other states than at any other time in the modern age, and they are also more dependent on those interactions to maintain

[40] See Matthew Symonds, "The Net Imperative," and "When Companies Connect," *The Economist*, June 26-July 2, 1999.

[41] Trade as a percentage of world GDP approached 15 percent in 1992. Trade as a percentage of GDP in the pre-World War I era was just over 9 percent. But see Benjamin J. Cohen, "Phoenix Risen: The Resurrection of Global Finance," *World Politics*, January 1996, and Mark Hallenberg, "Tax Competition in Wilhelmine Germany and Its Implications for the European Union," *World Politics*, April 1996.

levels of growth and consumption. An ever larger number of countries, including the United States, increasingly relies on imports for consumer goods, export assembly, and technology inputs. In addition, the prosperity of domestic companies, financial institutions, and individuals is increasingly tied to the success of overseas operations.

Second, trade is less dominated by the exchange of commodities and manufacturing, having spread to include the export of services. It also now encompasses a far wider range of the world's countries. This spreading of international commerce has been particularly profound in the developing countries, the traditional suppliers of commodities to more industrialized states, which have emerged as important sources for a range of manufactured goods.[42]

Third, the cross-border reach of multinational corporations and other business production networks has accelerated. Large corporations can create truly global production networks, seeking out the lowest production costs worldwide for major components as well as whole products. U.S.-based corporations are increasingly shifting their operations overseas, depending more on global markets for revenues and production. More important, perhaps, multinational corporations are increasingly becoming transnational corporations, the difference being in the extent to which ownership and the flow of revenues internal to the corporation tend to coalesce at one hub as opposed to many hubs around the world.

Fourth, stock markets have been created throughout the world, and many of them have already become important engines of savings and investment. The most significant long-term implication of these new equity markets lies in their capacity to allocate investment resources according to market-based criteria. In many countries this is an important new phenomenon, serving to advance other economic and also political reforms.

Fifth, international and multilateral institutions hold a prominence in today's economy unparalleled in the global economic systems of the past. These institutions are responsible for resolving trade disputes and designing national financial policies, among other functions, and these functions will expand as the global economy becomes increasingly integrated.

Sixth, expectations themselves are important. Large numbers of people in most countries are well aware of the economic benefits of a more integrated world. They have reason to pressure their governments to remove impediments, such as barriers to the inflow of capital, that stand between them and the presumed benefits of global economic integration.

Additionally, an increasingly integrated global economy is speeding the spread of international best practices. When economies are linked closely to world financial markets, governments cannot so easily maintain protectionist policies, and they must increasingly respect the discipline of the market. This is a good thing not just for bankers and financiers, but also for ordinary people, who have suffered far more from bad government than from the herding instincts of international investors.

Taken together, these changes suggest an important political implication. That so many people might be spared the miseries of poverty, and even become downright wealthy, opens up the possibility of more pluralist

[42] For details, see OECD, *The World in 2020*, p. 37.

politics and less violence over more of the globe. The wealthier a country is and the deeper its integration into the global economy, the stronger its incentives to avoid major conflicts with its neighbors. Of course, economic logic does not necessarily coincide with political interests, and states have often done economically irrational things for political purposes. But such incentives do matter.

It would seem, then, that the prospect of an increasingly integrated global economy lies before us. The integrative process, however, is not so simple. There are several reasons to doubt that global economic integration will proceed rapidly or smoothly. It may not even proceed at all, and it may even retreat in some areas. Let us visit the possibilities.

Resistance to change can be strong, and resistance to rapid change stronger still. Global integration, to the extent that any society engages in it, necessarily increases its exposure to market forces through the reduction of trade and investment barriers and the deregulation of the domestic economy. While the market tends over time to reallocate resources from less to more productive endeavors, it also disrupts local communities and traditional patterns of commerce. It requires wrenching structural shifts within a country's industrial base and employment profile.[43] Alterations in the patterns of wealth production, and consumption invariably destabilize the location of social status and both political and moral authority.[44] Since those who have status and authority are generally reluctant to part with it, some resistance to change is inevitable.

Resistance to the spread of global economic integration can take many forms. One historic form is protectionism. Whereas the benefits of international trade are general, the costs are frequently distributed more narrowly among a country's less competitive industrial sectors. As an industry feels the brunt of international competition, political pressure is often generated to shelter it. In the developed world, perceptions that competition with the lower-wage developing economies will threaten traditional but relatively uncompetitive industries, and thus cause downward pressure on wages, are likely to engender protectionist sentiment over the long term.

Support for protectionism has also been developing in the United States, which is not surprising since free trade and globalization are the main reasons for the decline of high-paying manufacturing jobs. Protectionist sentiment has manifested itself in proposals to raise tariffs on imported steel and in opposition to extending presidential fast-track authority in negotiating trade agreements. All this is occurring at a time of record employment, high growth rates, and ebullient economic optimism. That poses a troubling question; as former Labor Secretary Robert Reich put it: "If free trade inspires this much antipathy now, when the economy is surging,

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[43] Some of these shifts are the function of oscillating exchange rates, which make products either cheaper or more dear without any reference to the objective productivity base of the industry. See Dani Rodrik, "Has Globalization Gone Too Far?" *California Management Review*, Spring 1997, pp. 29-53.

[44] Mexico is lately a stellar example, from the banishing of U.S.-educated technocrats from the upper echelons of party politics to the largest student strike in 40 years. See Sam Dillon, "Mexico's Presidential Hopefuls Are All New Breed," *New York Times*, June 24, 1999; and Julia Preston, "Student Strike in Capital Jarring All of Mexico," *New York Times*, June 25, 1999.

what will happen when the economy slows, as it inevitably will?"[45]

Elements of protectionism can come in multilateral as well as bilateral form. Regional ties are expanding and serving as a basis for economic growth, particularly through groupings such as Mercosur, the European Union, and NAFTA. So far, too, these groupings have tended to reduce trade barriers not only within their borders but also, with the exception of agricultural products, to the world at large. Nevertheless, should these blocs turn into de facto regional cartels when times get rough, world growth would be threatened instead of boosted. Competing regional trading blocs could mute, not encourage, the integration of new markets and resources in the global economy as a whole.

We can already see examples of protectionist proclivities within regional trading blocs. Tensions between the EU and the former Soviet satellites in eastern and central Europe owe much to this problem. EU agricultural goods are subsidized and thus bribed into export to places like Poland and the Czech Republic, putting great pressure on Polish and Czech farmers. Meanwhile, many east European goods are effectively kept out of EU markets by tariffs and quotas that specifically target those east European products that are competitive within EU markets. Obviously, in such a case trade is limited as a whole by what amounts to a regional cartel.

Culture, too, can be a source of resistance to economic integration. Resistance to change is liable to be more vigorous to the extent that the cultural carrier of that change is thought to be alien and dangerous. The implements of modern technology are overwhelmingly Western, and many equate the emerging information society with American culture. In some societies, and particularly among younger generations, this culture is widely embraced. In other societies, however, this pop global culture is much resented, and it often divides generations in a way that irritates and worries national elites. Such resentment is discernable not only amid obviously reactionary forces—say, the Taliban—but is also widely present in Europe and in other countries that Americans presume to be their allies and friends.

Like it or not, we are entering an era of global culture conflict, the contours of which will be shaped by the pattern of how different cultures assimilate new technologies and avail themselves of emerging global economic patterns. Experience and common sense teach that it is frequently more difficult to acquire the attitudes—the social software, so to speak—that underlay a successful open economy than it is to acquire the capital and the desire to build one. Just as hopes were dashed 35 years ago that "technology transfer" would generate widespread spontaneous indigenous economic growth in the Third World, so today it takes more than a technical process for major social innovation to set roots and succeed.[46] Culture matters. As with the diffusion of technology, parts of the world are as likely to be pulled apart as brought closer together in the process of global economic integration.

Those peoples who do not benefit from a more integrated global economy are unlikely

[45] See Robert B. Reich, "Trading Insecurities," *Financial Times*, May 20, 1999.

[46] Note Thomas Sowell, *Migrations and Cultures: A World View* (New York: Basic Books, 1996); and Lawrence E. Harrison, "The Cultural Roots of Poverty," *Wall Street Journal*, July 13, 1999.

to blame their own lack of social capital; they are more likely to sense conspiracy and feel resentment. That, in turn, prompts the question: Can a world half-integrated through Western techniques and technologies and a world half-alienated by them stand together in an era of dissolving borders? If the issue comes to be not just one of "haves" and "have nots," but "wants" and "want nots," can the latter successfully spoil the brew for the former?

A deterioration of the security situation in a given country or region would also radically affect the economic prospects of that area—possibly of the whole world if the region is large or important enough. It almost goes without saying that war obstructs commerce, destroys human capital and infrastructure, and diverts investment from productive to destructive sectors; capital withdraws to safer zones, undermining development and employment, thereby creating the conditions for still more instability and violence. Zones of the world that, for whatever reason, fail to stem the tide of violence, will fall ever farther behind in the 21st century. The result will be even greater discrepancies between rich and poor, not just among regions and countries, but also within them. Bouts of warfare between major powers would threaten the entire global economic system.

A major disruption in global energy markets could also have a profound impact on economic growth and integration worldwide. Developing economies will have a large appetite for energy as they seek to join the new global economy. Asia's energy consumption will likely increase over 250 percent between 1996 and 2020.[47] The availability of abundant cheap oil from the Persian Gulf has been the major contributor to the sustained low prices of the past decade. If this supply is somehow threatened or limited, then growth in developing countries could be stymied. Many regimes in the developing world might not survive the economic shocks resulting from an unstable oil market.

Still other discontinuities could affect economic integration. One, possibly an offshoot of biotechnology gone awry, could be major unexpected epidemics; another could be the further massive spread of AIDS to countries such as India or China. Should the world face the threat of pandemics, all bets would be off with respect to projecting economic growth rates. Human capital, population distributions, and the economic interconnectedness of the planet itself could all shift dramatically.

Clearly, then, further global economic integration is not a certainty. Nor can we assume the absence of a major systemic crisis over the next 25 years. Another major "boom-bust" cycle in the developing world, such as was experienced in 1997-98, could undermine political support for the market-based policies upon which the emerging global economy is based. But of all the dangers to the new economic arrangements we see aborning, the most critical, at least for the near term, concerns the health of the U.S. economy.

For the next five to ten years, the continued strong performance of the U.S. economy will be crucial to avoiding a systemic crisis. In the aftermath of the financial crisis of 1997-98, the United States is the only major economy continuing to experience robust economic growth. A sharp downturn in the U.S. economy, were it to occur before the demand for goods and services picked up sig-

[47] *International Energy Outlook 1999* (Washington, DC: Energy Information Administration, 1999), p. 141.

nificantly in Europe and Asia, would lead to a world recession.[48] That would radically alter current rosy projections of U.S. and global prosperity.

How likely is a severe downturn? Few serious economists believe that the United States can maintain its current brisk rate of economic growth, with little or no inflation, over a 25-year period. There will be downturns. The crucial question is how severe they will be, and that in turn raises the question of what might cause them.

Some experts believe that the current vulnerability of the U.S. economy relates to the overvaluation of the U.S. stock market and unsustainable levels of consumer spending. Others disagree, believing that real gains in productivity, thanks to the cumulative impact of the information revolution, presage a surge of real growth such that the market may be undervalued. Others see vulnerabilities in the trade deficit on the one hand and the capacity of the United States over time to attract sufficient overseas investment to finance its national debt. If, for example, real economic reform in Japan led to greater Japanese consumer spending, that would reduce the amount of capital the United States could borrow. Conjoined to the further development of a euro bond market, the United States might have to raise interest rates to attract capital.[49] That could have a serious recessionary impact that might also affect world growth rates.

But a "hard landing" is not inevitable. The U.S. current account deficit is only about 2 percent of GNP, not an extreme number, and lower than was the case during much of the 1980s. Moreover, the current period of high deficits has also been a period of high investment. But if there is a "hard landing"—in which a depreciated U.S. dollar results in a compression of U.S. imports, lower foreign financing of the U.S. deficit, and higher domestic interest rates—its impact on the rest of the world could be considerable.

There is a related issue. The global economy as a whole is dependent on the willingness of the private capital markets to continue their primary role in circulating savings from capital rich countries to capital poor ones. As it happens, the majority of the funds in those capital markets is now either American money or foreign money managed by American firms—although that could change fairly quickly. Thus, what happens in the U.S. economy will have an effect on the willingness and the capacity of private capital markets to function. Economic conditions in the world's major economies, and particularly the U.S. economy, will still matter most in determining the size and nature of private capital flows.[50]

Some further volatility in capital markets is likely—how much, no one knows. But if there were an extended retrenchment of capital from developing countries, prospects for economic growth in many individual countries and the global economy as a whole would be reduced.[51] Without sustained economic growth, the prospects for political stability would dim in many places. While growth cannot solve all problems, it works well enough as a political pal-

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[48] Japan's economy has already picked up. See Stephanie Strom, "Japan Grows 1.9%, to Economists' Disbelief," *New York Times*, June 11, 1999, p. C1.

[49] See C. Fred Bergsten, "America and Europe: Clash of Titans?" *Foreign Affairs*, March/April 1999.

[50] Foreign direct investment is the exception to this. FDI flows to developing countries dropped less than 5 percent between the crisis years of 1997 and 1998. *Global Development Finance*, p. 14.

[51] Capital flows to the developing world have been unevenly distributed. Therefore, since most of the flows have been concentrated in only a few large developing markets, it is misleading to lump all developing countries together insofar as the significance of global capital flows is concerned.

liative much of the time. And of course, the problem is circular: the more social and political instability, the poorer the economic prospects, and the poorer the economic prospects, the more political and social instability—at least once people have gotten a taste of what they are missing.

But what is most likely to happen? Continuing global economic integration, a slowing or stalling out of the recent pace of change, or even retrogression?

Barring a major disruption of the global economic or political system, the major trends in global finance, manufacturing, transportation, telecommunications, and trade described above will not be reversed anytime soon. The cross-border web of global networks will deepen and widen as strategic alliances and affiliates increase their share of production and profits.[52] The internationalization of production networks will also continue. But the speed at which other parts of the globe join the integrative process, and the inclusiveness with which countries are transformed as a result, is likely to be uneven, and in many cases much slower than anticipated.

What will this imply for the global economic system of the next century? Savings in the developed world will continue to finance growth in at least some of the developing world—unless major countries suck up too much of the world's investment capital. The judgments of markets and key market institutions, such as the major debt rating services, will remain critical in determining the size and sustainability of capital flows to all economies, not just to large developing ones such as Russia, Mexico, and Brazil. As important, the ability of developing economies to gain access to these funds will play a major role not only in how they fare, but also in how advanced ones fare, because their fortunes are increasingly linked.

Further global economic integration also means that there will be global economic growth, a remark that sounds rather banal but, on historical reflection, is not. Annual economic growth in several non-OECD economies (Brazil, China, and India) could average between roughly 5 and 7 percent. Today's OECD countries will average annual growth between 2 and 3 percent. Thus, the non-OECD share of world GDP is likely to rise from 44 percent to between 56 and 67 percent, depending on whether growth rates tend toward the higher or lower end of growth predictions. Thanks to its very large population, projected moderate to high growth rates, and a particular method of making economic comparisons, some have made the surprising assertion that China's economy could overtake that of the United States as the world's largest in absolute terms by 2020.[53]

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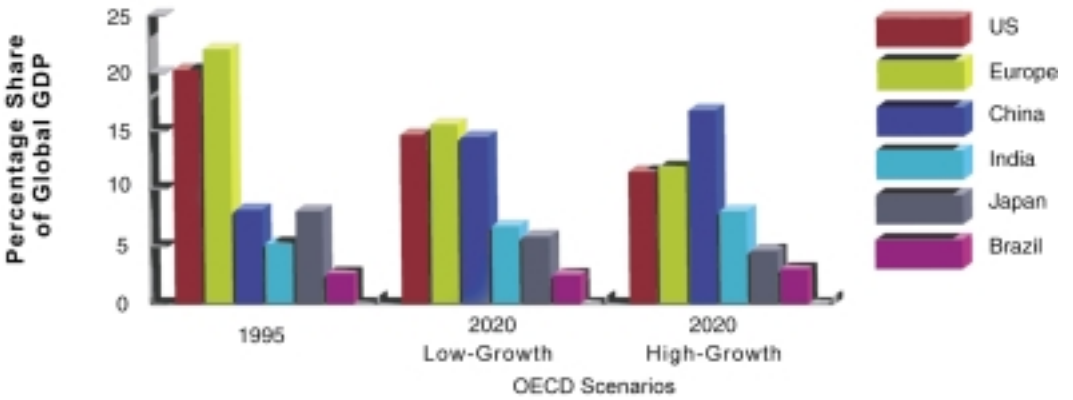
[52] For example, the National Association of Securities Dealers announced in June that it would team up with the Softbank Corporation to develop an electronic version of its electronic Nasdaq Stock Market in Japan to trade both U.S. and Japanese stocks. This will create literally a 24-hour market, and it is only the first of many likely joint enterprises of this sort. See Edward Wyatt, "Market Place," *New York Times*, June 16, 1999, p. C11.

[53] In order to make this projection, the OECD uses a metric for comparing countries' economies called the Purchasing Power Parity (PPP) standard. PPP is used now for GDP output comparisons by the CIA, the Department of Commerce, the World Bank, and the IMF as well as by the OECD. While this method avoids the distortions of using exchange rates to compare economies, it introduces distortions of its own. For details, see Murray Weidenbaum, "China's New Economic Scenario: The Future of Sino-American Relations," *Orbis*, Spring 1999, pp. 223-4. More conventional measures suggest that China would have to grow at an average of 12.4 percent per year for 25 years to equal the size of the U.S. economy—obviously an impossibility. Finally, it almost goes without saying that OECD and other professional institutional estimates of economic growth have often proven fallible in the past.

These general trends are hugely important. For at least the last century, global economic power and influence have resided in the large countries of western Europe, North America, and Japan. The global economic system in 2025, however, will be multipolar. In *both* low growth and high growth scenarios, China, India, and Brazil could become significant economic centers and attractive export markets for OECD and non-OECD countries alike.[54] This will represent a major realignment in the patterns of global economic influence and power. Increased tension is possible in consequence as these states try to assert their newfound influence in various arenas. They are bound to want to influence the rule-making processes in international economic regimes, processes that are dominated today by the United States and its allies.

Coincident with these likely trends in the economic future will be ongoing debates at the regional and international levels concerning the integration and regulation of this increasingly complex and still volatile global economic system. The volatility of today's capital markets, well illustrated by recent crises in Asia, Russia, and Brazil, has led to widespread demands for a "new financial architecture." Such an architecture must mesh policymakers' demands for stability with market requirements for flexibility, and coming up with an acceptable formula has been tricky.[55] We are therefore likely to witness a continuing

An Emerging Multipolar Economic World



Source: OECD, *The World in 2020*, p. 92.

[54] For the purposes of the graphic, Europe is defined as the 15 countries of the EU plus Iceland, Norway, and Sweden. The high and low growth scenarios differ primarily with respect to whether trade barriers and export taxes/subsidies decline to 50 percent or to zero, whether fiscal consolidation and labor market reforms take place, and what increases occur in energy efficiency, oil prices, and population growth. See OECD, *The World in 2020*, p. 63.

[55] A major new study from the Council on Foreign Relations takes a stab at the problem. See *Safeguarding Prosperity in a Global Financial System: The Future International Financial Architecture*, Report of an Independent Task Force (New York: Council on Foreign Relations, September 1999).

debate over how to keep international capital flowing, while, at the same time, reducing the volatility of those flows.

One school of thought likens infant international economic institutions to immature national ones. According to this argument, we should expect several sharp fluctuations in international business cycles before the much more difficult task of coordinating policy among many countries moves far forward. After all, the IMF was created at a time when most experts worried more about managing trade flows than capital flows and currency fluctuations.[56] But others oppose the notion of regulating international capital flows from above.[57] The more unfettered a market, the more liable it is to produce both extraordinary successes *and* extraordinary excesses. The way to tilt reality in the former direction, many argue, is not solely through regulation, but by forcing actors to learn best practices, and by exposing them to the penalties of occasionally getting it wrong.

This argument will not soon run its course. Future international financial crises are therefore inevitable; but of what magnitude and duration we do not know. As for their location, the developing world is the most likely epicenter, for that is where banking systems and internal regulatory regimes governing capital flows are most fragile. Since the pain of disruptions can be severe, the temptation to restrict capital movements will continue to exist. We have seen such a temptation at work in Malaysia's application of capital controls in 1998. Nevertheless, given the importance of attracting capital for economic development, attempts to limit the freedom of financial markets are unlikely to be applied to anything but short-term capital flows.

The volatility of capital markets has important security implications. First of all, the growing magnitude and nature of capital flows suggests a potential for ever bigger global waves in the movement of capital—bigger at their crests and also bigger at their troughs.[58] It is as though regional business cycles that were not harmonious in the past may become so in the future. If so, such waves can be large enough to capsize entire governments and destabilize entire regions. Second, and even more important, the nature of future regulations on capital volatility, and how they evolve, will set the tone for how states interact and for how technology and wealth are used. In other words, the process could shape the results such that getting there—to a new international economic architecture—could be nearly tantamount to being there—in a stable security environment.

A different approach to ameliorating the negative effects of huge and sudden flows in capital focuses on currency blocs. Some experts believe that by 2025 the world will be dominated by dollar and euro currency zones, and that such zones may be an effective way to allow smaller economies to enjoy the benefits of increasing global capital mobility

[56] Such efforts may go hand in hand with debt reduction for the developing world, for the size of that debt not only harms those who owe, but ultimately also those who are owed. See Bob Davis, "G-7 Moves to Revamp Financial Systems," *Wall Street Journal*, June 21, 1999, p. A23.

[57] Some even propose abolishing the IMF, whose task has metastasized since the end of the era of fixed exchange rates. This includes former Secretary of State and Treasury George Shultz. See his testimony before the Joint Economic Committee of the U.S. Congress, May 5, 1998.

[58] This is not an entirely new development. The movement of "hot money" in the 1930s raised similar problems. See Harry Gelber, *Sovereignty Through Interdependence* (London: Klewer Law International, 1997), especially chapter 2.

while avoiding some of its hazards.[59] Through the course of the Mexican Peso crisis of 1995 and the 1997-98 financial crisis, fixed exchange rates became increasingly associated with damaging exchange-rate volatility. While even large economies are not immune from such volatility, the small size of many developing economies' financial markets—often no bigger than a regional bank in the United States—makes it harder for them to avoid damage in a world of ever increasing capital flows. Some developing countries may seek exchange-rate stability by creating currency boards that fix the exchange rate to a given currency or basket of currencies. More radically, however, they can join with other countries to create a new currency (such as the euro), or they can adopt the currency of another country, as Panama has done with the U.S. dollar.[60]

The widespread implementation of any of these options would likely signify the de facto return to a largely fixed exchange rate system.[61] But there are problems. Should Argentina formally adopt the U.S. dollar, for example, as has been widely discussed in recent months, it would make the U.S. Federal Reserve the ultimate arbiter of Argentine monetary policy and reduce significantly the sovereign power of the Argentine state.[62] The Federal Reserve bristles at the former now, and the Argentine government would no doubt bristle at the latter in the fullness of time.

The debate over currency blocs has only just begun, and it will probably not end for many years. That is because, at base, international monetary policy involves a relationship among three factors—capital mobility, the existence of independent monetary policies, and an inclination to fixed or at least stable exchange rates—that seems impervious to permanent settlement. While it is too soon to say how the currency bloc debate will turn out, it is not too soon to conclude that it will be a major arena of policy discussion and experimentation over the next quarter century.

What will be the implications for U.S. national security of global economic shifts? As noted above, these can be summed up by reference to four basic phenomena: greater disparities; increased interdependence; the exploitation of both trade and private capital markets for parochial purposes; and challenges to the identity of nations and hence to the capacities of states to rule them.

The harnessing of ideas, knowledge, and global resources has the capacity to increase world economic output tremendously, but with it will also come greater disparities in wealth and income. Such disparaties will appear among countries, with significant implications for relative national power.[63]

Knowledge-based economies will also continue to create internal divergences in which the wealthy, well-educated, and well-placed will tend to get richer while the poor will tend to stay poor or get poorer. Middle classes, such as they are, will tend to split.[64] This trend is discernable already in those countries in the vanguard of knowledge-based economies. For

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59 See Zanny Minton Beddoes, "From the EMU to AMU? The Case for Regional Currencies," *Foreign Affairs*, July/August 1999, pp. 8-13.

60 "Global Financial Survey," *The Economist*, January 30, 1999, p. S15.

61 Ibid.

62 Argentina has already made the Federal Reserve the de facto arbiter of Argentine monetary policy.

63 The key conclusion of the *United Nations Human Development Report*, 1999.

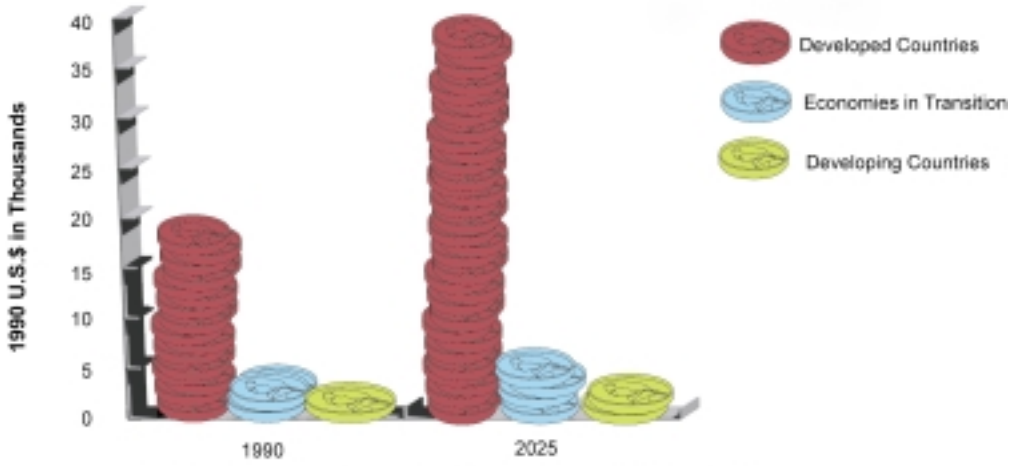
64 See Peter F. Drucker, "The Age of Social Transformation," *Atlantic Monthly*, November 1994.

roughly twenty years, nearly 60 percent of the U.S. population has experienced falling real wages.[65] It is also in keeping with recent trends in economic history, where disparities in per capita income within developed countries outpaced those in both economies in transition and in developing countries.[66]

Internationally, the pockets of poverty amid wealth will also be more closely interlaced than is the case today. Some regions of the world are still almost entirely devoid of the accoutrements of the information revolution; the huge and densely populated area within a circle drawn at a radius of 1,600 miles around Kabul is a good example. That will almost certainly change over the next 25 years. Once the world is fully "wired" together, skilled labor will be far more mobile, both literally and in terms of who people can choose to work for from computer stations in their home regions. Economic disparities will be more visible to more people, which could be a new source of frustration and social tension.

Second, interdependence will characterize relatively open economies, including the United States. Those U.S. companies, investors, and consumers that depend on overseas production, imports, and revenues will be implicated by all those events overseas

Per-Capita Income Disparities



Source: United Nations - Critical Trends: Global Change and Sustainable Development, 1997, p. 65.

[65] For a brief discussion of recent trends, see Laura D'Andrea Tyson, "Wages and Panic Buttons," *New York Times*, August 3, 1999.

[66] As defined by the United Nations, developed countries include Canada, the United States, the EU, Iceland, Israel, Malta, Norway, Switzerland, Australia, New Zealand, and Japan. Economies in transition include Russia, Southeastern Europe, the Baltics, the Czech Republic, Hungary, Poland, and the CIS. Developing countries include all other countries in Africa, Latin America and the Caribbean, and Asia, including China.

that affect major companies, affiliates, and suppliers. The key point is that a globalized economy renders all participating states more vulnerable to exogenous shocks and disruptions, whatever their sources. The channels of transmission for such shocks are simply growing faster than our understanding of them.

Very much related, as multinational corporations become increasingly international in character, the link between the corporation and its country of origin will be rendered more ambiguous. National governments, including that of the United States, will be increasingly subject to competing interests with constituencies that represent cross-border interests and alliances. Such competing interests could involve sensitive technology: transnational companies will seek minimal restriction in sourcing, selling, and licensing technology worldwide, but the U.S. and other governments will maintain an interest in controlling and regulating dual-use technology for military-security reasons. An already difficult problem may get worse.

Even more portentous, as global and domestic infrastructures become indispensable to modern life, their disruption can have literally life-threatening consequences. Such infrastructures, including crucial transportation, health, sanitation, and financial systems, are bound to become targets of the disgruntled, the envious, and the evil—individuals, groups, and potentially hostile countries alike. They will be very difficult targets to defend. Cyberwar, the attempt to shut down sophisticated systems with sophisticated means, is a serious threat, well worth worrying about.[67] Complex systems can also be disabled by primitive explosives detonated at the "right" time and place. And if we turn to genetic engineering to enhance yields from cereal and other crops, we make those crops uniformly vulnerable to *deliberate* attempts to ruin them—as well as to the lucky insect, fungal, or bacterial pest.[68]

A third national security problem concerns the potential exploitation of the new scale and nature of private capital markets. The transformation of international financial markets allows governments as well as companies to raise money in different ways and from different sources than was the case when governments and commercial banks supplied the lion's share of such financing. Since the end of the Cold War, important states have taken advantage of this new environment. Russia, for example, has raised considerable sums through private capital markets, transfers that have been facilitated by U.S. policy and international lending institutions such as the International Monetary Fund. It is unclear whether the money has helped advance fundamental reform in Russia; some believe that it may have hindered reform by rendering it less urgent. Worse, since money is fungible, it is possible that funds raised from bond offerings in the United States can be used in ways that violate the spirit of U.S. laws.

Even if such activities are not technically illegal, they can be politically sensitive. Clearly, we are entering an era in which major

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67 The White House, "Protecting America's Critical Infrastructures: PDD 63," May 22, 1998; Critical Infrastructure Assurance Office, *White Paper on Critical Infrastructure Protection*, May 1998; and the Marsh Commission Report itself, called the President's Commission on Critical Infrastructure Protection, *Critical Foundations: Protecting America's Infrastructures* (Washington, DC: GPO, October 1997).

68 For an edifying fright, see Paul Rogers, Simon Whitby, and Malcolm Dando, "Biological Warfare against Crops," *Scientific American*, June 1999, pp. 70-5.

"private" financial transactions have major political implications.[69] China has issued some 134 bonds in global markets since 1980, totaling some $26 billion. Of this $26 billion, $10.5 was dollar-denominated, and of these nearly 60 percent was offered by just three entities, all of which may be implicated either in espionage directed against the United States or in military activities inimical to U.S. national security interests.[70]

The Russian and Chinese governments have made extensive use of the private market mainly because that is where most of the money is. They have done so, as well, because borrowing from such sources is often less expensive overall, for there are no underlying trade transactions or projects involved to be financed. This, in turn, makes it easier to divert funds for non-productive or even nefarious purposes. Until fairly recently, the use of private capital markets also made it easier to avoid conditionality, transparency, investment discipline, or the provision of collateral compared to using government-to-government funds or large commercial banks. Moreover, it is easier to recruit new sources of funding, such as insurance companies, pension funds, and securities firms.

The use of private financial markets also enables the cultivation of powerful political constituencies in both recipient and investor countries. Many experts have argued that the "bailout" packages put together for Mexico, Korea, and Russia have encouraged creditors, investors, and some private sector borrowers to think that if they stumble, the governments of the affected states, along with assorted multilateral institutions, will also bail them out with public funds and politically motivated loan forgiveness packages.

The use of private capital markets in the United States for purposes at variance with U.S. economic or security interests will continue. What is less clear is how to deal with such problems without placing new restrictions on capital flows.

Finally, global economic integration may bear important implications for the nature of states and the state system itself. Here, too, there is disagreement as to what those implications might be.

Some believe that the internationalization of economic life will affect the very foundation of political identity. Commercial organizations are becoming global, it is argued, and so are the science and technology bases of those operations and their associated labor markets. If people's livelihoods become increasingly international in source, it follows that their sense of emotional attachment to the state will wane. This will be particularly the case where there is no obvious physical or ideological threat at the state level over an extended period. The implications for civil-military relations, broadly construed, can hardly be overstated: unless they feel themselves directly at risk, citizens will not risk

[69] More accurately, perhaps, *re-entering* such an era, for the same phenomenon was common before the present century. The manner in which Benjamin Disraeli obtained the Suez Canal for Great Britain from the penurious Khedive Ismail is a picturesque case in point, but only one of many.

[70] Figures are taken from "The National Security Dimensions of the Global Capital Markets," remarks of Roger W. Robinson before the Alaskan World Affairs Council, May 7, 1999; and "Can We Prevent U.S. Credit Flows From Fueling Russian Proliferation," remarks of Roger W. Robinson before the Non-Proliferation Policy Education Center, May 19, 1999

their lives for a state with which they feel little or no emotional bond.[71]

While emotional bonds to the state may erode, demands made upon the state may increase in an era of great economic and social dislocation. This will put many states in a serious bind, with simultaneously less legitimacy from which to draw and less power to influence increasingly salient global economic issues. This condition, it is averred, will come to define the very crucible of national security policies in most advanced countries: greater social demands and expectations with respect to major economic stresses, combined with less state influence over the issues at hand. Many states, it is suggested, will not be able to survive such conditions, at least not as they are presently constituted.

How convincing is this view? Parts of it certainly make sense. It is true, for example, that most states' control over economic power and policy has been reduced from that of the Cold War era. Six reasons come to mind.[72]

First, while governments still matter in economic policy, the private sector now dominates more than ever the sources of economic growth, employment, and technological innovation. As governments rely more on private financing and market perceptions, their ability to manage fiscal policy without imposing penalties on the cost and availability of capital decreases. Second, the adoption of international standards that augur for liberalized and improved regulatory regimes translates into less capacity for states to manipulate national economic policy. Third, the pressures of economic and political decentralization could push many national governments toward the further empowerment of local governments. Fourth, increased economic dependence on others makes it harder for governments to plan, predict, and control their financial futures.

Fifth, interest groups operating across borders, often in broad coalitions, can influence the strategies of private sector entities as well as the policies of governments. Already such private activities—those of the Soros Foundation, Amnesty International, Doctors Without Frontiers, Alert International, and many others—dwarf the organizational and financial capacities of many of the states in which they operate. Such activity could grow sharply if government regulatory regimes cannot keep pace with business activities, as may well be the case in many countries. Cross-border uses of mass action to police business activities may grow in rough proportion to the decline in governmental capabilities. The potential exists for millions of individual decisions to shape the future without the mediation of existing political institutions.[73] Sixth, most governments will experience continued pressures to reduce budgets, improve the transparency of decision-making, and develop policies that leverage private sector resources. All else equal, this will make it harder for governments to assist directly in income redistribution and provide social safety nets to vulnerable segments of their populations.

But will this mean that most states—and even great powers—will necessarily be constrained from implementing policies that materially interfere with this growing web of economic interdependence? No, it will not. Pressures against state authority and control

[71] See Peter F. Drucker, "The Global Economy and the Nation-State," *Foreign Affairs*, Sept./Oct. 1997, pp. 159-71.

[72] See Saskia Sassen, *Losing Control? Sovereignty in an Age of Globalization* (New York: Columbia University Press, 1996).

[73] Noted in Jean-Marie Guéhenno, "The Impact of Globalization on Strategy," *Survival*, Winter 1998/99.

may be taken for granted, but states will fight hard to retain their role as the ultimate arbitrator of sovereign economic policies. They have done so many times in the past, and usually successfully. This suggests that the struggle for new forms of national maintenance and control will become the key to renewed state power.

The evidence thus far in our own era suggests that at least some states have a good chance to manage the process of economic change effectively.[74] One reason is that societies need them to succeed. The state is, after all, an expression of political community, with all its historical and emotional associations, as well as a vehicle of economic functionality. Those states that rule over coherent nations enjoy a store of symbolic capital against which they can draw. It is thus misleading to read into a reduction of state prerogatives over economic issues a reduced role of the state overall, or to assume that the core principle of state sovereignty is necessarily put at risk by increasing global economic integration. What does seem unarguable, however, is that if economic issues become more important, those states that manage to master the processes of change will see their relative international power increase over those that do not. National power is not the same as state power, the latter being that share of the former that governments learn to collect, manage, and deploy. The formula for translating national power into state power is changing, but it is not beyond mastery.

In a way, too, the state's role in shaping its domestic environment to achieve market based economic growth is even *more* vital in an increasingly integrated global economy than it has been in the past. The state will be responsible for maintaining appropriate fiscal and monetary policies, establishing coherent and market based regulatory regimes, maintaining social policies that ensure the effective education of its population, and developing an adequate physical infrastructure. Increasingly caught between local social forces, international business interests, and perceived national interests, states will retain their legitimacy by delivering on their citizens' expectations for security and economic prosperity. As important, those dislocated by new global market forces will inevitably turn to the state for help, and the state, if it expresses a true national community, will want to respond. All of this suggests that the role of the state may be different in future, but not necessarily smaller, from what it is today.

It also suggests that a greater polarization of state power will probably result from the uneven capacities of states to manage and control economic change. Regional power balances may shift and some states might be tempted to push their new advantages. Others may elect to use force preemptively against those seen to be rising above the pack. Thus, while some vectors suggest that global economic integration will bring the world closer together, others suggest that it will be driven farther apart.

Much is at stake in the argument over how the state will react to global economic integration, and much needs sorting out. It is usually assumed in the West that democracy and free-market economics are mutually supportive. But the state is the only secure locus of democracy as we know it. So what does it mean to say that the future will beget a world in which states are increasingly beholden to other authorities—that of the

[74] See Linda Weiss, *The Myth of the Powerless State* (Ithaca, NY: Cornell University Press, 1998). Weiss analyzes in detail several case studies, including South Korea, Taiwan, Japan, Sweden, and Germany, and concludes that states can learn to reimpose effective governance over economic policy.

market, that of transnational organizations—and at the same time to celebrate the anticipated expansion and solidification of democracy that the triumph of market economics ought to support? Could it be that the liberalization of commerce on the global level will undermine and not support the spread of democracy—that one devoutly held Western principle would work at cross-purposes with another, equally cherished one? Quite possibly, yes.

There is plenty that we do not know about the global economic future, that we cannot know, and that we will not know in time to make a policy difference. Clearly, what people think and do over the next 25 years will determine the answers to most of the questions raised here. Ultimately, these thoughts will be political as well as economic in nature, and so will the acts that produce the world stretched out ahead of us. And that brings us to the key questions of society and politics.

The Socio-Political Future: "How Will the World Be Governed?"

Individuals have historically granted their allegiance to the state in return for domestic peace, economic well-being, and security from external threats. Sometimes they have done so in the context of a national political community, where the state is an organic expression of social life among kindred people. More often these days, states are composed of more than one ethnic, social, and religious group, leaving the essential social contract of government to rely either on more abstract contractual arrangements, such as those exemplified by the U.S. Constitution, or on more coercive means of implementation. Sometimes they survive mainly by the weight of habit.

The point is that there is nothing immutable about the present arrangements wherein certain peoples are ruled within certain fixed territorial units. It was not always so in the past, and it may not be so in the future. The ties that bind individual or group loyalty to a state can change and even unravel, and the next 25 years portend a good deal of unraveling.

As illustrated above, new technologies will change the way that people do business, on many levels. In some cases, those changes will enhance international cooperation and regional integration; in others, they will divide states and peoples. Many states will lose much of their control over many economic decisions, limiting the means by which they can provide domestic economic growth or domestic peace and security. Violence may increase as disaffected individuals and groups within states attack the agents of change. And the territorial borders of states will not as easily keep dangers at bay as they once did, given the technological advances in weaponry and the global character of potential threats. In all cases, the changes ahead have the potential to undermine the authority of states, and the political identities and loyalties of citizens over the next quarter century will be put through a series of unannounced, and sometimes undetected, tests.

Many observers think that several states will not pass such tests. Some suggest that the principle of state sovereignty itself, and of the state system, is wasting away.[75] The sovereign state as the key actor in international politics is said to be undermined by all of the following: globalization, defined as technological connectivity coupled with transnational economic integration; fragmented nationalism and a return to tribalism;

[75] Wolfgang H. Reinicke, "Global Public Policy," *Foreign Affairs*, Nov./Dec. 1997, p. 137.

ecological pressures; international terrorism; an "outbreak" of stable peace; and more besides. Of all these, clearly, globalization is the most widely discussed and debated.

For some, globalization is basically good not only because it encourages global economic growth, but because it may be a vehicle to transcend the system of state sovereignty, seen to be the font of the war-system that plagues humanity. Globalization thus represents for some the withering away of the state by the advent of other means. But others oppose the sovereignty-eroding elements of globalization on ideological grounds. Some do so because the state is the only reliable locus of political accountability, others because globalization is destructive of local community and community control, and still others because they believe that the market theology behind globalization is being used by the corporate rich to grow still richer at nearly everyone else's expense.[76]

Evocative as these arguments may be to some, and as ideologically attractive as they are to others, the contention that the state is about to be overwhelmed as the main organizational principle of global politics is not convincing. The state—whether as multinational empire, nation-state, or any of several other kinds of political entities that preceded them both—has never been at complete equipoise with other social forces. Its role has ebbed and flowed before other challenges many times over the years. Indeed, the centralized state of the 20th century is an historic anomaly, and those who foresee the end of the system of sovereign states too often take as their model of the state a highly centralized and fixed entity that does not rest comfortably with historical realities.[77] For all the challenges ahead, the principle of sovereignty, as vouchsafed within the territorial state, will remain the key organizing principle of international politics for the next quarter century and probably for long after that as well.

That said, the challenges ahead are many and varied, and they go right to the heart of the core relationships between states, and among the state, the nation, and the individual citizen. Even as many states face diminished control and authority over their populations, demands on the state are rising. What will this mean for global politics?

One challenge is demographic in nature. Populations are growing in many developing countries. At the same time, the populations of nearly all developed countries—and some developing countries, too, such as China—are rapidly aging.[78]

As a result of demographic change, many states will have very different social balances in 25 years than they do today. Labor shortages will bring a rising demand for immigrant workers to older and wealthier societies, accentuating social and cultural tensions. Still, the bulk of the dependent population world-

[76] Critics of different persuasions include John Gray, *False Dawn: The Delusions of Global Capitalism* (London: Granta, 1998); William Greider, *One World, Ready or Not: The Manic Logic of Global Capitalism* (New York: Simon & Schuster, 1997); and Zygmunt Bauman, *Globalization: The Human Consequences* (New York: Columbia University Press, 1998).

[77] Note Peter F. Drucker, "The Rise, Fall and Return of Pluralism," *Wall Street Journal*, June 1, 1999.

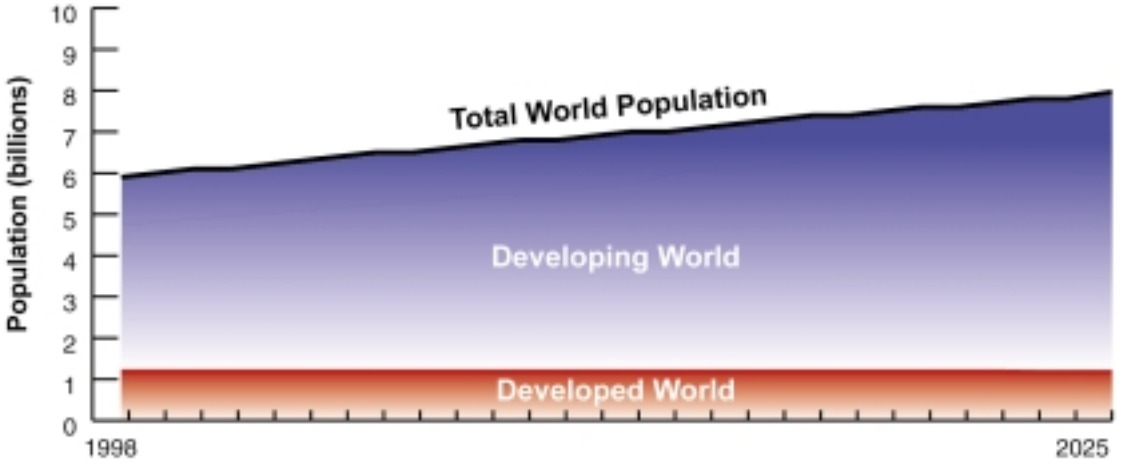
[78] While today's ratio of working taxpayers to non-working pensioners in the developed world is 3:1, in thirty years, absent reform, the ratio could fall to 1.5:1 or even lower, costing an additional 9-16 percent of GDP to finance benefits for the elderly. Peter G. Peterson, "Gray Dawn: The Global Aging Crisis," *Foreign Affairs*, Jan./Feb. 1999, p. 46.

wide will remain children rather than the aged. If these young people are educated and able to find productive employment, economies will benefit; if not, social unrest could follow.

As suggested above, the policies required for economic growth, especially amid high population growth, may result in significant dislocation within a state and directly challenge long-held political or social values. Economic growth will frequently be accompanied by growing disparities in income and wealth, and those with economic and political influence will find that influence under siege. This is bound to generate significant social and political strains within both developed and developing states. It may also lead to increased corruption, including among justice and security officials, which would undermine effective government. Rapid urbanization will accelerate in many developing countries, as well, severely straining many states' ability to provide basic social services, particularly health care, sanitation, and education.

If these tensions and dislocations are sufficiently severe and prolonged, some states could unravel. It was no coincidence that the Asian crisis of 1997-98 was soon followed not only by the collapse of the Suharto government in Indonesia, but by increased strains on unity. Malaysia, too, suffered a political crisis that nearly led to mass upheaval—and still may. Even such major states as China, India, Pakistan, South Africa, the Democratic Republic of Congo, Kenya, and Mexico—all of which have large and growing populations—are not immune from partial or even complete collapse.[79]

Population Growth in the Developing World



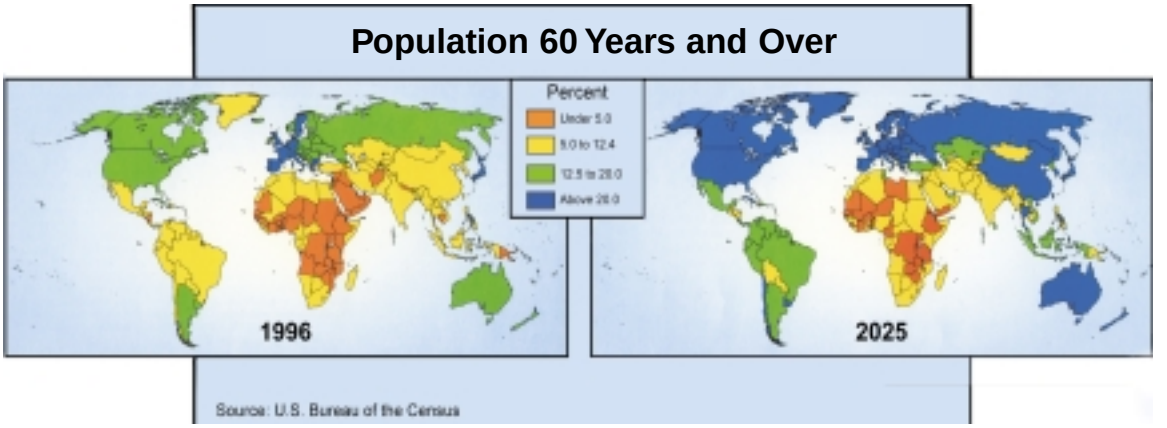
Source: U.S. Bureau of the Census, International Data Base.

[79] See Secretary of Defense William S. Cohen, *Annual Report to the President and the Congress, 1999;* Edward Warner, Assistant Secretary of Defense for Strategy and Threat Reduction, Testimony to the House National Security Committee, January 29, 1998; and *1998 Strategic Assessment: Engaging Power for Peace* (Washington, DC: National Defense University, 1998), pp. 15-6.

But there is also good news. An integrated global information network may presage the expansion of political pluralism.

Consider in this regard the collapse of the Soviet Union. There are many ways to account for that collapse—not least the effectiveness of the U.S. strategy of containment over several administrations. But the inability of a closed political system to accommodate itself to economic imperatives based on openness, the flow of information, and new market demands was a major complementary factor. If this was true for an age of television and relatively primitive personal computers, the age of the Internet may doom nearly all closed political systems to the ash heap of history. In short, vast new pressures for democratization are likely to be felt and, where those pressures succeed, it will make states more responsive to the needs of their citizens. In most cases, at least, that suggests both better and more legitimate governance.

The steady progress in Asia, Africa, and Latin America in mass education and literacy also comes into play here. After all, the diffusion of information technology can only carry social clout to the extent that people can read and write. As one scholar has put it with reference to the Muslim world, "The combination of mass education and mass communications is transforming the Muslim majority world. . . . Multiple means of communication make the unilateral control of information and opinion much more difficult than it was in prior eras and foster, albeit inadvertently, a civil society of dissent. . . .The result is the collapse of hierarchical notions . . . and the emergence of a new common public space." The emergence of a civil society is a precondition for genuine democracy, and by "multiplying the possibilities for creating communities and networks among them," civil society tends to advance democracy's way.[80]



One must be careful here, for literacy does not guarantee democracy, and mass education and authoritarian political styles can co-exist for a long time. Nevertheless, seen together, the spread of mass communications, broad progress in education and literary, improving economic well being, and the growth of political liberalism on a global scale have potentially

80 Dale Eichelman, "The Coming Transformation of the Muslim World," The 1999 Templeton Lecture on Religion and World Affairs, Foreign Policy Research Institute, June 9, 1999.

huge implications. Economic logic may also join with and magnify an important social impact of 20th century technology. Citizens of the advanced states are increasingly less willing to fight or support messy wars partly because technology has made life much less risky and frail than it once was. Since life is no longer so "cheap," casualties have become far more expensive.[81] The spread of such characteristics to more of the world could have a similar effect, the sum being to make war less frequent and bloody. Some even believe that, for this and other reasons, major war will soon become obsolete.[82]

A combination of increasing wealth, personal security, education, and more widespread democracy may indeed herald a new era, not one created by grand treaties and the solemn inauguration of multilateral institutions, but one that grows from individual hearts and minds. But even if peace and democracy do not triumph worldwide—and it is not very likely that they will in the next 25 years—autocrats and dictators will find it more difficult to control their citizenry for a new reason as well as for older ones. Beyond the inability of authoritarian governments to control the flow of information *within* their borders, individuals and groups will be able to act *internationally* without reference to the state in a way and at a level heretofore unimaginable. Mass action across borders is already establishing new international norms, and there is a good prospect that non-governmental organizations and grassroots interest groups will have influence across even those frontiers guarded by authoritarians.[83]

In democratic states, such developments may promote stability by facilitating greater citizen participation in the political and civic life of the state. Possibly, however, such developments can have less than sanguine effects. Democracy can have an illiberal and even a demagogic side, and new democracies seem prone to aggressive behavior. Pressure for democracy in heterogeneous states can also portend their fragmentation into smaller units that better reflect cultural, ethnic, or religious identities. Sometimes this fragmentation will occur without violence, but often enough it will not—and when it does not, catalytic regional crises could follow in its wake. Pressures for democracy in Indonesia contributed to secessionist movements in East Timor, Aceh, Irian Jaya, and the South Molucca Islands. Pressure for democracy in China, too, will likely stoke independence movements in Tibet and in Xinxiang province. Not only will there likely be a wider economic polarization between haves and have-nots, but also a wider *polarization of legitimacy* between democratically governed polities and authoritarian ones.

States unable to provide economic well-being, political liberty, or domestic security

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81 A point nicely put, with some supporting data, in Janna Malamud Smith, "Now That Risk Has Become Our Reward," *New York Times*, July 25, 1999 (Week in Review), p. 15. This does *not* mean that citizens of advanced societies are casualty averse in any absolute sense. The data show that most Americans will accept high casualties if they can be justified on the basis of threats to key interests. See John Mueller, "The Common Sense," *The National Interest*, No. 47 (Spring 1997).

82 See, for example, John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989), and Michael Mandelbaum, "Is Major War Obsolete?" *Survival*, Winter 1998-99.

83 A brief but vivid account, with some examples, is Barbara Crossette, "The Internet Changes Dictatorship's Rules," *New York Times*, August 1, 1999 (Week in Review), pp. 1, 16. See also Akita Iriye, *Cultural Internationalism and World Order* (Baltimore, MD: Johns Hopkins University Press, 1997).

for their citizens may also be subject to significant emigration, particularly of their most educated citizens. Advanced states may need more technically educated workers, too, the combination giving rise to unprecedented levels of emigration among educated elites from those states that do not work to those that do. This will make successful states more diverse and cosmopolitan, and others more prone to failure.

Clearly, then, there are forces at work straining the mythic fabric that links society to the state. Other strains may rend the link between the individual and the anchors of authority in society itself.

During periods of great tumult, people frequently turn to religion or ideology to explain change and to gain some psychological security from its disruptions. As noted above, the dislocations of the Industrial Revolution helped produce the socialist ideologies of the 19th and 20th centuries. On a lesser scale, the dislocations of the post-World War II era in Western societies created parallel social and political perturbations in many countries: the undermining of urban economies; rising divorce, suicide, and crime rates; and a significant decline in voting and other forms of political participation.[84] It makes sense, then, to ask what similar reactions we might expect from the tumult in our collective future, and what those reactions might mean for state cohesion and effectiveness.

Since different societies begin from different circumstances, their reactions to rapid change will surely differ. Many in the West think that its notion of modernity, where the sacred is privatized and secular values predominate, is a model that other societies must invariably follow. But this is not so. The replacement for an enfeebled Iranian royal regime in the 1970s did not come from radical leftist groups, but from the pre-modern Shi`a religious community. So, too, we have seen a turn to pre-modern forms in much of the Muslim world, among some Jews within and outside of Israel, and within India in the form of Hindu nationalism. Pressures toward secularization inherent in the Western technology that will flood much of the world over the next 25 years will not necessarily overcome traditional ways, but might instead reinvigorate them. One consequence of psychological dislocation in individuals may be to drive them closer to their own social mores, and to the extent that the state is seen as a legitimate expression of those mores, closer to the state as well.

In short, some states may elect not to join in rapid technological innovation or an integrated global economy. Among such states history will not have ended, and the world of contending "isms" will remain very much alive. There is a chance, too, that those states might ally to oppose these developments. Geopolitics could become, in essence, a form of culture politics.[85] The conflicts one might expect from such culture politics would not exactly fit the definition of a religious war, but there could be some striking similarities.

Even if secularization does make many inroads, the vistas along the path will not be the same in all cases. Every culture that accepts, or cannot resist, a synthesis of the old and the new, or between the West and the rest, will find its own way to cope with conflict. What seems clear, as well, is that in-

84 Fukuyama, *The Great Disruption.*

85 This possibility is, of course, consonant with Samuel Huntington's *The Clash of Civilizations and the Remaking of World Order* (New York: Simon & Schuster, 1996).

dividuals in societies will have more options as *individuals* than before. They will have greater access to other ways of thinking, they will know more about other cultures than did preceding generations, and they will have greater opportunity to experience them firsthand. Hence, it seems likely that in more cases than ever before, an individual's or a group's identification with the state may be superseded by other forms of associations beyond the state, as well as within it in the form of ethnic, religious, ideological, or tribal based organizations.

It also stands to reason that states lacking a secular cultural and historical heritage will be particularly vulnerable to the increased porosity of cultural boundaries. Most modern Western polities are culturally as well as politically pluralist. Most traditional, non-secular cultures tend not to be either.

What are we to make of all this? The most persuasive conclusion that emerges from looking at the pressures liable to be brought to bear on states, and on how states of different capacities may respond to those pressures, is that we will have a mosaic of consequences—as we have always had. States will differ in various ways, in their power and influence, their histories, and the degree to which their citizens give them their allegiance. They will differ in their economic development, strength of social and political institutions, and demographic profile. They will differ, too, in the extent to which the national identities in their midst predispose them to exist as nation-states, as multinational empires, or as stateless nations within an evolving international system.

The role and characteristics of states in the next century will depend on how they respond to the challenges that will confront all countries. Some will be able to seize technological and economic opportunities, while others will find themselves threatened. Some will be able to establish the regulatory regimes and the social and political infrastructure necessary for economic growth, and some will be able to introduce political institutions that are responsive to the new demands of their citizens. But others will not. Some will wish to resist change but fail, garnering the worst of all worlds. And perhaps most important, only some will find the leadership they need to guide them through an era of considerable uncertainty.

The result will be that some states will succeed in meeting the multiple challenges of global economic integration—we know this because some have already found formulas to do so.[86] Some states will survive, but have such serious difficulties that their citizens turn to other groups (ethnic, cultural) to give allegiance and seek shelter, which will further undercut the state's authority and capacity to respond to challenges. Some states will disappear, and new ones will be formed on the basis of ethnic, national, or religious identities. Some states will fail, and in failing fall into social and political chaos, exporting refugees, famine, disease, and violence across neighboring borders.

The ideal of universal human rights will also challenge the traditional concept of state sovereignty. A small army of certain NGOs is carrying forward the old idea that state sovereignty is more a menace to individual human rights than a protector of them, and this idea is gradually being armed

[86] See again Weiss' *The Myth of the Powerless State*; and "The Thing That Won't Go Away," *The Economist*, July 31, 1999, pp. 8-10.

institutionally, most significantly in the proposal to create an International Criminal Court. The contentious case of Augusto Pinochet, too, has illustrated the "spontaneous" evolution of international law toward views that undermine sovereignty in favor of undifferentiated human rights criteria. And while the legal spillover of the NATO military campaign against Serbia on behalf of the Kosovar Albanians is still evolving, it may establish a powerful precedent in validating the ascendancy of the right to self-determination over that of sovereignty within the United Nations Charter, which, famously, includes both.[87] Whatever the full range of its motivations, the campaign in Kosovo was the clearest example in modern times of a major power or alliance intervening militarily into the internal affairs of another sovereign state, avowedly on behalf of minority rights.

Honest people disagree over whether this is a benign legacy or not. There are those who believe that a minimally decent world order cannot arise so long as depredations such as those of Kosovo can go on with impunity anywhere in the world. They applaud the erosion of sovereignty over such questions, as well as others.[88] There are other observers, however, who point out that international stability depends on respect for the prerogatives of the state. And many object to Americans assuming the right to decide unilaterally when some other country's behavior exceeds America's self-defined moral standards.[89] Moreover, others worry that the denaturing of sovereignty begs the question of who gets to decide when a depredation is internationally actionable—in other words, who gets to say what is and is not a "just war"? Nor is it at all clear what line of democratic accountability at the transnational level will substitute for that of the state.[90] Can a host of international civil servants, professional human rights lobbyists and lawyers, and aid organization trustees—formally accountable to no one—really be trusted to know what is best in every case, or any case?

This is a question recently born as far as the history of international relations goes. It will mature rapidly over the next 25 years, as will several others. For example, it may become necessary to design some sort of legal personality for political entities that are less than states but more than mere groups of individuals—such as Kosovo and the Kurdish areas of northern Iraq. If we are to see more efforts by minorities to establish zones of autonomy for themselves, as seems likely, then how will an increasingly salient number of non-national institutions, such as the World Bank, the International Criminal Court (should one come into being), or UNESCO, deal with such ambiguous entities?

In any event, there is little doubt that transnational actors of other sorts will grow in number over the next 25 years. Some will represent positive responses to technological, economic, and political challenges (multinational corporations, non-governmental organizations) and others negative responses (drug cartels, terrorist networks, and criminal

87 Chapter 1, Article 1, paragraph 2, as opposed to Chapter 1, Article 2, paragraph 7.

88 See Marianne Heiberg, ed., *Subduing Sovereignty: Sovereignty and the Right to Intervene* (London: Pinter, 1994).

89 See Samuel Huntington, "The Lonely Superpower," *Foreign Affairs*, March/April 1999; and David Sanger, "America Finds It's Lonely At the Top," *New York Times*, July 18, 1999 (Week in Review), p. 1.

90 Some of these issues are discussed in David Rieff, "The Precarious Triumph of Human Rights," *New York Times Magazine*, August 8, 1999.

cells). In some cases, these latter groups will take on certain aspects of statehood, controlling territory, levying taxes, even raising armies.

States will also find themselves in need of cooperation with other states, if they are to seize the opportunities presented by global changes and respond to the dangers. Of this we may be sure. What we do not know is whether and how regional groupings of various sorts may emerge, and with what kinds of responsibilities and authorities. We do not know whether the United Nations and other global political institutions will continue to exist as creatures of states, or whether they will be empowered to act in certain areas in place of states. We do not know whether regional or global regimes will be established to prevent the spread of dangerous technologies and weapons, and if they will have the authority and ability to enforce their mandates.

This is a lot not to know, and there is yet more. At the risk of seeming quaint, it behooves us to note a final uncertainty. Not all of what befalls the world of states over the next quarter century will be a function of how leaderships and populations adjust to the challenges of new technologies or accelerating global economic integration. The beginning of wisdom is perhaps to recognize that what counts is not only what is changing, but also what is not. There is still the old-fashioned problem of geopolitics, and nowhere does this problem look clearer—and more dangerous—than in the Pacific rim, where the triangular relationship between Chinese, Koreans, and Japanese holds the key to peace or war.

Within the logic of geopolitics is the unpredictability of personality and the happenstance of illness and death among leaders. Not every historian is convinced, but most believe that had it not been for the hypnotic political skills of Adolph Hitler, World War II would never have happened. While Hitler is the 20th century's most obvious example of evil enthroned, history bears other examples from this century and other centuries, too. It is not possible to rule out the rise of "crazy states"[91] with psychologically aberrant or evil leaders in the future, and the shock to the system that such a leader can produce should never be underestimated. In the future, it may be that, with weapons of mass destruction more widely available, even the unglued leader of a relatively small state will exceed the threshold of danger to the system as a whole.

The Military-Security Domain: "How Will Societies Protect Themselves?"

The military-security environment of the next 25 years will be shaped by a unique and substantially unfamiliar set of political, economic, technological, social, and cultural forces described elsewhere in this study. As in the past, conflict will be driven by perturbations in the political order, social dislocation, passionately held beliefs, economic competition, and cultural division. In this section, however, the purely military and security dimensions of the future are brought into focus. Societies will still need to protect themselves in 2025, and they will have to do so against an unprecedented range of threats and actors.

As with most periods of rapid change, both the actors and the means by which

[91] Yehezkel Dror, *Crazy States: A Counterconventional Strategy* (Lexington, MA: Heath Lexington Books, 1971).

violence is used in pursuit of political goals may shift abruptly. Non-state actors, individuals as well as groups, will gain power and influence, and many will have at their disposal alarming means of destruction. Many states may see the coherence of national identification lose its grip at the individual level, with critical implications for their ability to mobilize and fight, as well as for the structure of their civil-military relations.

Even in a world in which major wars are less frequent, and in which growing prosperity adds incentive for the peaceful resolution of disputes, there will still be enough unsettling change to touch off any number of wars, internal upheavals, incidents of terrorism, and general mayhem. The end of the Cold War did not mean the end of all conflict and, with a decade to ponder the emerging evidence, no sentient person can doubt the potential lethality of future conflict.

We explore these trends and patterns in three parts. First, we look at what sorts of states, groups, or individuals will incline to use force. Second, we look at what kinds of military capabilities are likely to be on the loose for such use. And third, we look at the environment likely to be formed by the conjunction of the two.

Interstate wars will not disappear over the next 25 years.[92] Developed nations will be loath to fight each other, but as proven in 1914, neither the bonds of interdependence nor a taste for affluence can guarantee peace and stability indefinitely. Major powers—Russia and China are two obvious examples—may wish to extend their regional influence by force or the threat of force. Conflicts among old adversaries may continue, such as between India and Pakistan.[93] Misperception or miscalculation will remain possibilities and both may be exacerbated by the introduction of new military technologies. Conflicts could arise out of efforts to right perceived wrongs or to gain strategic advantage, and wars will still be fought over disputed borders, resources, and irredentist claims. The history of the 1930s remains instructive, too, for the reversion to assertive nationalism by leaders faced with unsettled social and economic conditions is not beyond imagination. Conventional war—ships, tanks, and planes—will remain the most relevant *modus operandi* for most of these conflicts.

Violence within states, on the other hand, could reach unprecedented levels. Generated by ethnic, tribal, and religious cleavages, and exacerbated by economic fragmentation and demographic shifts, such violence will form by far the most common type of conflict in the next quarter century. Brutish, nasty, not necessarily short, and potentially genocidal in scope, these conflicts—mostly but not entirely in non-Western domains—could result in major disruptions, killing hundreds of thousands of people each year.[94] Undisciplined tribal or ethnic based paramilitary groups will often be the primary agents of such conflicts, which will involve soldiers and civilians alike. They may also take place

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[92] See the arguments in "Is Major War Obsolete: An Exchange," *Survival*, Summer 1999, pp. 139-52.

[93] As noted below, a war involving India, Pakistan, and possibly Iran is not so very unlikely, but analysts differ over whether such powers should be defined as "major."

[94] Not that the toll from such wars is vastly different now from Cold War times, despite a common perception to the contrary. See Yahya Sadowski, *The Myth of Global Chaos* (Washington, DC: Brookings INstitutino Press, 1998), p. 121; and Shashi Tharoor, "The Future of Civil Conflict," *World Policy Journal*, Spring 1999, pp. 1-11.

in urban areas or in other terrain that tends to neutralize the current technological advantages of modern militaries.

While such conflicts need not disrupt the core strategic interests of major powers, they will do so if they trigger larger interstate conflicts, grossly violate internationally accepted norms, or create massive flows of refugees, disease, and environmental degradation. The latter is particularly likely since such conflicts often generate humanitarian disasters that are hard to ignore in an age of mass communications. Yet major powers cannot intervene for humanitarian purposes without also intervening in the underlying politics that create such troubles in the first place. The Somalias, Bosnias, Rwandas, Kosovos, and Haitis of the world will not disappear, and neither will the dilemmas they pose.

There will also be a greater probability of a far more insidious kind of violence in the next millennium: catastrophic terrorism.[95] While terrorism itself is nothing new, the nature of terrorism and the means available to tomorrow's terrorists are changing.

Future terrorists will probably be even less hierarchically organized, and yet better networked, than they are today. Their diffuse nature will make them more anonymous, yet their ability to coordinate mass effects on a global basis will increase. Teamed with states in a regional contingency, they could become the "ultimate fifth column."[96] Terrorism will appeal to many weak states as an attractive asymmetric option to blunt the influence of major powers. Hence, state-sponsored terrorist attacks are at least as likely, if not more so, than attacks by independent, unaffiliated terrorist groups. Still, there will be a greater incidence of ad hoc cells and individuals, often moved by religious zeal, seemingly irrational cultish beliefs, or seething resentment. Terrorists can now exploit technologies that were once the sole preserve of major states and pose attacks against large domestic population centers.

The growing resentment against Western culture and values in some parts of the world—as well as the fact that others often perceive the United States as exercising its power with arrogance and self-absorption—is breeding a backlash that can take many forms. Terrorism,

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95 Government studies on this topic include: *Combating Proliferation of Weapons of Mass Destruction*, Report of the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction, July 14, 1999; "Executive Summary," *Report of the Commission to Assess the Ballistic Missile Threat to the United States*, July 15, 1998; *Transforming Defense: National Security in the 21st Century*, Report of the National Defense Panel, December 1997; and W. Cohen, *Proliferation: Threat and Response*, OSD Report to Congress, November 1997. Major private research studies include: Fred C. Iklé, *Homeland Defense* (Washington, DC: CSIS, 1999); and William Webster, et al., *Wild Atom: Nuclear Terrorism* (Washington, DC: CSIS, 1998). Key periodical literature includes: Fred C. Iklé, "The Problem of the Next Lenin," *The National Interest*, No. 46, Spring 1997; and Walter Laqueur, "The New Face of Terrorism," *The Washington Quarterly*, Autumn 1998. Recent books include: Joshua Lederberg, ed., *Biological Weapons: Limiting the Threat* (Cambridge, MA: MIT Press, 1999); Richard Danzig and Pamela Berkowsky, *Biological Weapons—Limiting the Threat* (Cambridge, MA: MIT Press, 1999); Jessica Stern, *The Ultimate Terrorists* (Cambridge, MA: Harvard University Press, 1999); Richard A. Falkenrath, et al., *America's Achilles' Heel* (Cambridge, MA: MIT Press, 1998); Philip B. Heyman, *Terrorism and America: A Commonsense Strategy for a Democratic Society* (Cambridge: MIT Press, 1998); Ken Alibeck with Stephen Handelman, *Biohazard: The Chilling True Story of the Largest Covert Biological Weapons Program in the World* (New York: Random House, 1999), and Bruce Hoffman, *Inside Terrorism* (New York: Columbia University Press, 1998).

96 Hoffman, *Inside Terrorism*, p. 196.

however, appears to be the most potentially lethal of such forms. Therefore, the United States should assume that it will be a target of terrorist attacks against its homeland using weapons of mass destruction.[97] The United States *will be vulnerable to such strikes.*

If that were not a sobering enough prospect, most advanced conventional military weapons and systems will also be more broadly distributed between now and 2025. Domestic political and economic incentives will lead to the development and sales of advanced aircraft, modern ground fighting vehicles, and new naval systems throughout the world. Only cutting-edge systems will remain closely held.

It is not even clear whether the major arms exporters will cooperate to prevent the sales of such weapons systems to states and other groups that pose major potential threats to regional stability and peace. A minimal export control regime already in operation, the Wassenaar Arrangement, could be enhanced, but this depends on the positive evolution of the international political climate. It also depends to some degree on the ability of the exporting states to find alternatives to legacy industries still heavily in the business of manufacturing weapons.

Conventional weapons systems will be characterized by an increasing emphasis on speed, stealth, lethality, accuracy, range, and networked operations. The era of Industrial Age platforms operating with impunity in the open may become outdated, as long-range precision capabilities proliferate in all dimensions of warfare (air, sea, and land).[98] There will be a greater premium on highly integrated and rapidly deployable forces. The age-old interaction of capabilities and counter-measures will continue, of course, and physics probably favors detection and the ultimate demise of stealthy systems and large platforms. But "ultimate" can mean a long time, and, as opponents try to defeat existing U.S. technologies, new technologies and ways of employing these weapons will abet the continuation of current U.S. advantages. The widespread adoption of MEMs into U.S. military technology, for example, may provide significant new qualitative advantages over a broad range of capability. New intelligence capabilities derived from biotechnology, including the use of insects for selected purposes, may also be at hand.

Nonetheless, many states will pursue strategies to acquire today's modern weapons. These weapons will no longer be cutting-edge technology by the 2015-2025 timeframe, but they may be widely available and, in local wars, could prove decisive.[99] Just as likely, the relatively rapid spread of modern conventional weapons could destabilize several trouble zones and make regional wars both more likely and far more destructive.[100] The acquisition of such weapons will probably be pursued with alacrity by military regimes and other regimes

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97 See Ian O. Lesser, Bruce Hoffman, John Arquilla, David Ronfeldt, and Michele Zanini, *Countering the New Terrorism* (Santa Monica, CA: RAND, 1999); and Zalmay Khalilzad, David Shlapak, and Ann Flanagan, "Overview of the Future Security Environment," *Sources of Conflict in the 21st Century: Regional Futures and U.S. Strategy*, Zalmay Khalilzad and Ian O. Lesser, eds. (Santa Monica, CA: RAND, 1998).

98 See Michael G. Vickers, *Warfare in 2020: A Primer* (Washington, DC: Center for Strategic and Budgetary Assessments, 1996).

99 Obtaining equipment is one thing, assimilating it intelligently is another. See Chris C. Demchak, *Military Organizations, Complex Machines: Modernization in the U.S. Armed Services* (Ithaca, NY: Cornell University Press, 1991).

100 See John Weltman, *World Politics and the Evolution of War* (Baltimore, MD: Johns Hopkins University Press, 1995).

for whom robust military capabilities play a major role in internal security.

While the market for 20th century conventional weapons will remain brisk, some important states will choose acquisition strategies to compete *asymmetrically* against major powers. These potential adversaries will invest in relatively inexpensive systems intended to deny the United States the advantages that naturally accrue with technological superiority. Weapons of mass destruction would serve this purpose.[101] Developing such weapons does not require a large industrial base or extensive scientific research support as it once did. The international norms against the spread of these weapons are being challenged, and the global export control regimes covering nuclear, chemical, and biological weapons will not effectively keep them from state and non-state actors that are determined to acquire them.[102] Some countries will supply these weapons, or components for them, for commercial and political purposes. Problems will also exist in ensuring the security of these weapons and weapons components in individual countries.

The extent to which nuclear, biological, and chemical weapons will be developed and used will depend on a variety of factors. Nuclear materials and technology are available, but the cost of producing nuclear weapons is high, as are the risks of detection. The development and use of radiological weapons would be easier and cheaper. By pairing conventional explosives with radioactive materials like plutonium, such a weapon could generate both a major explosion and contaminate a large surrounding area for an extended period.

Chemical weapons are much easier to produce than nuclear and radiological weapons, but they are harder to store and use effectively. Their effectiveness is subject to uncontrollable climatic elements and the lethality of chemical weapons per unit of weight is generally low.[103] This makes chemical weapons generally suitable for use in attacking conventional armies concentrated in the field, or against small groups of surprised or immobile civilian populations. But such weapons are unlikely to be a preferred tool for terrorizing entire cities.

Biological weapons are the most likely choice of means for disaffected states and groups of the 21st century. They are nearly as easy to develop as chemical weapons, they are far more lethal, and they are likely to become easier to deliver.[104] At present, many biological agents require special technical expertise to distribute them effectively, such as drone aircraft that are capable of dispersing agents in the right concentrations at the right altitudes and under the right meteorological conditions. This is not simple, as extensive but unimpressive Iraqi efforts in the 1990s have shown. On the other hand, given enough time, perfecting methods of dispersal will take far less technical sophistication than that required to build a nuclear bomb.

Moreover, bio-weapons can be produced at small, dual-use facilities, and then reproduced

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101 Cohen, "Preparing for a Grave New World."

102 SECDEF address at the Conference on Terrorism, Weapons of Mass Destruction, and U.S. Strategy, University of Georgia, April 28, 1997; SECDEF News Conference, Release of OSD Report on WMD Proliferation, November 25, 1997; SECDEF Annual Report to the President and the Congress, March 1998, p. 26; and Acting CIA Director George Tenet, Testimony to the Senate Armed Services Committee, February 5, 1997.

103 There are some exceptions, VX being the most important.

104 Weight for weight, microbial agents such as anthrax are thousands of times more potent than nerve gasses such as sarin. Lederberg, p. 286.

in mass quantities using technologies and procedures common to micro-breweries and civilian pharmaceutical labs. A bio-weapon arsenal can be acquired for as little as $10,000-$100,000.[105] Several countries are pursuing biological agents, and some are getting help from outside their borders. Biological weapons experts formerly employed by the Soviet Union have testified that the extent of the Soviet program was massive, but that control of the physical and intellectual assets of the former program is virtually nonexistent. Accordingly, a variety of improved toxins and biological agents are becoming more widely available. Technological developments in genetics and biotechnology portend even more sinister advances with the design and deployment of genetically engineered pathogens that could thwart most antibiotics and vaccines, and readily outcycle our detection, antidote development, and distribution timelines. These could include genetically-altered smallpox.[106]

Given such circumstances, the prevention of the proliferation of biological weapons through treaties and a regime of export controls is unlikely to be effective. A Biological Weapons Convention (officially, the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological [Biological] Toxin Weapons and on Their Destruction) has been signed and ratified by 140 countries. But since the treaty was open to signature in April 1972, the number of countries known to have or suspected of having biological weapons has doubled.[107] The BWC has no enforcement or inspection mechanism, although negotiations are underway to provide for them.

U.S. deterrence policy will remain effective against acknowledged nuclear states, and the deliberate use of these weapons will remain a low probability. But as other states acquire nuclear weapons, that probability will likely increase. Whether states take such a step will be a function of many factors, primarily related to the threats they see within their own region. The literal costs of developing nuclear weapons, the political costs associated with their use, and the difficulty of hiding their development, make them less likely to emerge as a primary instrument of state policy. Still, given their vast destructive power, the United States will continue to deal with the threat posed by nuclear weapons throughout the next 25 years. There will be no abolition, and even the existence of the Non-Proliferation Treaty and wide ratification of test ban treaties will not significantly reduce the problem.

Non-state actors will also use these weapons in direct attacks. Such attacks expose the Achilles' heel of the modern world. All open societies are vulnerable to extensive psychological and physical harm from weapons of mass destruction. The potential for covert delivery of these sinister products will be high, much higher than during the last half century. Covert threats are more likely than overt ones since they avoid easy attribution and hence likely reprisal. The immense lethality, portability, and accessibility of WMD will be major sources of concern over the whole of the next quarter century.

Missile threats will also continue to proliferate. While the regime of missile producers, known as the Missile Technology Control Regime (MTCR), will survive and may

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105 Falkenrath et al., p. 112.

106 See Richard Preston, "The Demon in the Freezer," *The New Yorker*, July 12, 1999, pp. 44-61.

107 J.D. Holum, *Remarks for the Fourth Review Conference of the Biological Weapons Convention* (Geneva: U.S. Arms Control and Disarmament Agency, November 26, 1996). See also Robert P. Kadlec, Allan P. Zelicoff, and Ann M. Vrtas, "Biological Weapons Control: Prospects and Implications for the Future," in Lederberg, pp. 95-111.

be strengthened, it is becoming increasingly easy for states not party to the MTCR to master the technology necessary for such production. If Iran, Iraq, North Korea, Pakistan, and India can foil the best efforts of the MTCR, the prospect is that even less technologically sophisticated states may be able to do so in future.

Ballistic and cruise missiles are liable to be the long-range weapons of choice, given their capabilities to threaten land and sea targets from afar. The accuracy and lethality of such systems will increase significantly between now and 2025, even for the delivery of conventional ordnance.[108] The competition between missile developments and defensive systems will be a key operational challenge over the next several decades. Large-scale missile attacks will be able to overwhelm defensive systems, despite considerable improvements to them. American bases abroad will become vulnerable to these weapons.[109] Additionally, a number of new lethal and non-lethal technologies will be developed and fielded, including microwave, directed energy, and chemical/biological agents that could give small powers the ability to thwart power projection operations by any major power.

In addition to "traditional" weapons of mass destruction, new forms of Strategic Information Warfare (SIW) will be developed and perhaps used as a new form of offensive warfare. SIW involves cyber-attacks against major national command systems and military-related operating systems.[110] Bytes will not replace bullets and bombs in conflict, but those who cannot match the conventional strength of major powers will have strong incentives for such asymmetric attacks. Given that the commercial world, not governments, is developing these technologies, and that military telecommunications are heavily dependent on commercial access, the potential exists for serious disruption of routine military operations in both peacetime and war. The United States and its allies are particularly vulnerable to such methods since our economies and military forces are heavily, and increasingly, reliant on advanced information technologies. While countermeasures can be developed, this new form of warfare will be an important part of the military landscape for some time.

In addition to weapons of mass destruction, there is a new concept—the "weapon of mass disruption"—to which modern societies, rather than their militaries, are increasingly vulnerable.[111] As noted above, the computational and information processing capacities generated by the computer revolution are critical to modern financial, banking, energy, telecommunications, medical, and transportation networks. The health, welfare, and prosperity of the citizens of the developed world depend upon this infrastructure. But that infrastructure is an enticing target to disaffected states and terrorists, who can achieve almost as much damage with a keyboard as with a bomb. Imagine, for example, a well-planned

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108 Center for Counterproliferation Research, *The NBC Threat in 2025* (Washington, DC: National Defense University, 1997).

109 See Paul Bracken, "America's Maginot Line," *The Atlantic Monthly*, December 1998, pp. 85-93; and Paul Kugler, *Changes Ahead: Future Directions for the U.S. Overseas Military Presence* (Santa Monica, CA: RAND, 1998).

110 See Frank J. Cilluffo, et al., *Cybercrime, Cyberterrorism, Cyberwarfare….Averting an Electronic Waterloo* (Washington, DC: CSIS, 1998); and Roger C. Molander, Peter A. Wilson and Robert H. Anderson, "U.S. Strategic Vulnerabilities: Threats Against Society," in Zalmay M. Khalilzad and John P. White, *Strategic Appraisal: The Changing Role of Information in Warfare* (Washington, DC: RAND, 1999), pp. 253-80.

111 Including the United States. See *Preparing for the 21st Century*, Commission on the Roles and Capabilities of the United States Intelligence Community, 1996, p. 27; Organisation for Economic Cooperation and Development, *21st Century Technologies—Promises and Perils of a Dynamic Future* (Paris: OECD, 1998), pp. 14-5; and Walter B. Wriston, "Bits, Bytes, and Diplomacy," *Foreign Affairs*, September/October 1997, p. 172.

attack against the air-traffic control network on the east coast of the United States as more than 200 commercial aircraft are trying to land in rain and fog on any given weekday morning.

Numerous incidents of computer penetration have already occurred, often mounted by teenagers using relatively unsophisticated systems. Better educated or well-financed "automata assassins" could do far more damage, especially if they are abetted by insider personnel. A plethora of new tactics and techniques to "infovade" critical systems now exist. Modern hacker techniques such as "sniffers," logic bombs, mutating viruses, and Trojan horses, are increasingly common. The innate complexity and connected nature of information-based systems generate opportunities for hackers, terrorists, or antagonistic states to cause mischief and harm. Our increased reliance on these information systems ensures that disruption to them will create serious dislocations within our society. *No nation in the world is more vulnerable in this regard, or has more to lose, than the United States.*

Outer space, as well as cyberspace, will become a warfare environment. Space-based systems are increasingly critical to both international commerce and military capabilities. By the early 21st century, such systems will offer such an invaluable advantage that continued access to space will be considered synonymous with national security. Space access will become as important as access to the open seas was for major powers in the 18th, 19th, and 20th centuries. Not surprisingly, therefore, there are complications ahead.

The benefits to global commerce derived from space have vastly increased investment in space technology and expertise, a trend that will no doubt continue. The national security implications of such investments are dramatic.[112] With more than $100 billion invested today, the United States has a clear economic interest in ensuring its own continued access to space.[113] But the number of states and groups capable of exploiting space as an environment is expanding as a result of commercialization. More than two-thirds of today's 600 satellites are foreign-owned, and of the more than 1,500 new vehicles that will be launched over the next decade, most will be internationally owned or operated by various consortia. This raises a major intelligence challenge, for, as space systems proliferate, it will be more difficult to determine their capabilities and who has access to their data.

Since satellites are the ultimate pre-positioned asset and, because they are so central to military operations, what happens in space will be critical.[114] Most likely, weapons will be deployed in space. Some systems may be capable of direct fires from space against targets on earth. It is possible that international treaties will ban such weapons, as is the case today for weapons of mass destruction, but that is not assured. What is clear is that space will become permanently manned.

Space will also enter into competitive planning and strategies in ways that are barely conceived today. Future adversaries

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[112] See Lt. Gen. Patrick M. Hughes, Director, Defense Intelligence Agency, "Global Threats and Challenges to the United States and Its Interests Abroad," Statement for the Senate Select Committee on Intelligence, February 5, 1997.

[113] Institute for National and Strategic Studies, *Strategic Assessment 1999* (Washington, DC: National Defense University, 1999)

[114] See Thomas T. Bell, *Weaponization of Space: Understanding Strategic and Technological Inevitabilities*, Occasional Paper No. 6 (Air University, Maxwell Air Force Base: Center for Strategy and Technology, Air War College, January 1999); Dana J. Johnson, Scott Pace, and C. Bryan Gabbard, *Space Emerging Options for National Power* (Santa Monica, CA: RAND, 1998); and Christopher Lay, "Can We Control Space?" presentation to Electronics Industry Association, October 1997.

will realize that assured access to information is a key component of U.S. military strategy and, specifically, to the sort of military operations envisioned by the Joint Chiefs of Staff.[115] Thus, negating U.S. conventional superiority through the denial or negation of information sources based in space is an obvious and lucrative strategy for some countries or groups to employ.

All of this suggests that information superiority will be relative. While the United States will retain relative superiority in C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) systems development and integration, the nature of information technologies and their ubiquity in the commercial market place make any presumptions about assured information superiority unwise. Globally, military forces will rely on highly networked, space-based and ground-based intelligence and reconnaissance systems, but backup systems will be available to protect against successful anti-space operations. Due to the wide availability of commercial sources of space-supported information, by 2025 the United States will no longer enjoy a monopoly in space-based C4ISR. It will, however, maintain a preponderant edge, using its technical systems to produce timely and usable information.[116]

What do these developments portend for the strategic environment of the future? Most essentially, they mean that both conventional and nuclear deterrence will remain a priority in the coming century, but will be harder to achieve than ever before. The predictability of deterrence cannot be assumed based on Cold War experience for several reasons.

First, the convenience of focusing on a single antagonist has been eclipsed, along with the comforting knowledge that deterrence was essentially a bilateral interaction between two superpowers with shared vulnerabilities and known capabilities. Such conditions no longer exist, nor will they in future. A wide diffusion of actors and destructive capabilities will instead characterize the context of deterrence. Exactly who is being deterred, exactly which value hierarchies and decision systems need to be affected, what relative costs and benefits are at issue, and what behaviors are supposed to be shaped by deterrence, will all be very problematic questions.[117] Rogue irrationality and the potential for misperception or ignorance remain possibilities, as well. In short, Cold War concepts will have to be revised, adapted, or in some cases abandoned in the face of new circumstances.

Of crucial importance, too, the deterrence problem is also likely to be inverted and thrown back at the United States by many actors and in several forms. It is one thing for the United States to deter others by threatening use of nuclear weapons or massive force, and to make such threats not only credible to others but also acceptable to Americans. But it is an entirely different matter to avoid being deterred by threats to use weapons of mass destruction against the United States, against U.S. forces abroad, or against U.S. allies. While the United States will remain superior to all rivals in measurable military capabilities over the next 25 years, there are ways that "bronze" technology in the hands of a potential adversary can blunt "gold" technology in our own hands. If more countries acquire weapons of mass destruction, and the ability to

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115 U.S. Department of Defense, Joint Chiefs of Staff, *Joint Vision 2010* (Washington, DC: USGPO, 1996).

116 See Roger C. Molander, Peter A. Wilson, David A. Mussington, and Richard F. Mesic, *Strategic Information Warfare Rising* (Washington, DC: RAND, 1998).

117 Keith Payne, *Deterrence in the Second Nuclear Age* (Lexington: University of Kentucky Press, 1996).

deliver those weapons in a wide variety of venues, the flexibility and credibility of U.S. regional security policies could be sharply limited *despite* overall U.S. military superiority. This is the problem of *inverted deterrence*.

We should also expect to be both strategically and tactically surprised despite our prowess in the information revolution. History is in many ways little more than a cavalcade of such surprises. As suggested above, no amount of technology will ensure perfect intelligence about the capabilities or intentions of every possible opponent. Generating knowledge and insight from raw data requires the analytical capacity of the human mind, and human intelligence will remain a key component of any first-rate intelligence operation. We should remain humble about the ability to predict events or the reactions of adversaries to our own initiatives. The range of variables is endless, and our potential enemies will be both intelligent and adaptive. They will try to deny or distort any information that we may process into useful intelligence. If history is any measure, specific predictions will never unfold exactly as foretold.

One underlying reason for this is cultural. Strategic surprise is abetted by mirror imaging—viewing future opponents as having similar values or beliefs to one's own when they in fact do not. Some leaders and societies are motivated by values and goals that are different if not antithetical to our own, and their resort to extreme violence—often against civilian populations—will doubtless surprise and shock us in the future as it has in the past. We may not comprehend either the stakes or the commitments that some opponents may make in using such violence. Since conflicts frequently occur from miscalculations borne of ignorance or misperception about opposing views, knowledge of foreign cultures is a necessary component of strategic intelligence and a bulwark against catastrophic surprise in the future. Antagonists who share our strategic culture and values, who have similar political institutions, and who maintain the same sense of proportionality or rationality about their interests and the means employed to secure them, are not our likeliest adversaries in the future. To assume otherwise, as one strategist has noted, reflects "an a priori detachment from the well-springs of conflict and violence in the modern world."[118]

While new actors and new weapons will change the character of conflict in the next century, the essence of war will remain the same. States, groups within states, and extra-national organizations will still rely on force and the threat of force to pursue a variety of political, economic, and military aims. Asymmetries in both capabilities and objectives will be exploited in the onset, prosecution, and termination of conflict. Since human emotions will still infuse warfare, conflict will not be limited to purely rational goals, nor can we count on rough proportionality between ends and means. Fear, uncertainty, risk, and ambiguity will still characterize conflict despite the advent of unprecedented levels of information technology.[119] That is because, not least, clever and determined adversaries will find new methods of deception and denial to thwart superior U.S. technical capabilities—such as burying communications cables so that U.S. intelligence assets cannot "hear" from space. Ultimately, as in the past, the character and conduct of future conflict will be influenced by *who* is fighting whom, *how*, and over *what*. Surprise will remain a

[118] Lawrence Freedman, "The Revolution in Strategic Affairs," Adelphi Papers 318, 1998, p. 77.

[119] See Barry Watts, *Clausewitzian Friction and Future War*, McNair Paper 52 (Washington, DC: National Defense University, October, 1996).

risk, not because technology will fail us, but because our judgments may not anticipate the full range of strategic contingencies.[120]

Nevertheless, presuming continued investment at roughly today's resource levels, no state will acquire the strategic mobility and expeditionary capabilities that currently provide the United States with global reach and sustained combat power. But U.S. military superiority will continue to rest on the performance of educated and well-trained military forces and appropriate military doctrines as well as modern equipment. While technology is a crucial enabler, it is only one component of military capability.[121] Military power is more than the sum of the various armed services or the size of the defense budget. Continued national support for the military and the preservation of the political will to pursue national interests will remain necessary ingredients of success.

The United States will also retain its traditional advantage in high technology, but the blurring of man, machines, and information systems will accelerate.[122] As has always been the case, having new devices is one thing, and integrating them into the human subculture of the military is another. American commercial successes should also keep the United States the leader in command and intelligence system development, systems integration, and information management.

At the same time, however, America's coalition partners will lag behind American collective achievements in high technology and the integration of advanced computational capabilities into advanced military systems. This will lead to widening gaps in compatibility and interoperability that will affect the ability of allies to operate with the United States in an integrated fashion. In addition to technologically-driven gaps, potential challenges to alliance relationships could also arise from burden sharing and risk sharing disputes. As always, unequal burdens and risks will make creating coalitions of the willing more difficult.

Nor will the causes of war change in their essence. Men have always fought for reasons that some other men could not understand. That will still be the case. New forms of ideological struggle cannot be ruled out, and neither will religion disappear. Such motivations will generate intense passions and will ensure that tomorrow's conflicts are not fought solely according to American definitions and rules of conflict. War will not be like a video game, and although American forces may face some contingencies with dispassion, we cannot count on our adversaries taking the same attitude.[123]

Clearly, there are new challenges in our future, especially for a U.S. military strategy that has relied on forward-based and forward-deployed forces as a key component of that strategy. The permanent stationing of U.S. forces abroad will become more difficult to sustain. The political cost of such bases within American alliances will likely rise, as will the vulnerability of such forces to attack with bal-

120 See "Making Intelligence Smarter: The Future of U.S. Intelligence," Report of an Independent Task Force, Council on Foreign Relations, February 1996.

121 For eloquent testimony to this point, see Stephen Ambrose, *Citizen Soldiers* (New York: Simon & Schuster, 1997).

122 But this will not happen automatically, and there are bureaucratic impediments to its progress. See Andrew Krepinevich, "Emerging Threats, Revolutionary Capabilities, and Military Transformation," Testimony before the Senate Armed Services Committee on Emerging Threats and Capabilities, March 5, 1999.

123.See Robert H. Scales, *Future Conflict* (Carlisle, PA: U.S. Army War College, 1999).

listic missiles, cruise missiles, terrorism, and weapons of mass destruction. The latter circumstance may erode support for such bases from the home front. Taken together, the pressures against the permanent forward basing of U.S. military forces have profound implications for U.S. strategy, power projection capabilities, and alliance relationships.

The future strategic environment will therefore be one of considerable turbulence. Stability may simply not be achievable at small cost—or at any cost—and riding out the storm at anchor is not an option. The international system will be so fluid and complex that even to think intelligently about military issues will mean taking an integrated view of political, social, technological, and economic developments. Only a broad definition of national security is appropriate to such a circumstance.

In short, we have entered an age in which many of the fundamental assumptions that steered us through the chilly waters of the Cold War require rethinking. In the decade since the fall of the Berlin Wall a start has been made, but a start is not good enough. The very facts of military reality are changing, and that bears serious and concentrated reflection. The reflexive habits of mind and action that were the foundation for U.S. Cold War strategy and force structures may not be appropriate for the coming era. How the United States and other states respond to these changing dynamics will determine the relative peace and security of the next century.

II: A World Astir

If nothing else, the intellectual investment represented by the preceding section proves that the world is a vast and complicated place about which our knowledge is limited and our powers of forecasting uncertain. But it offers more than that. A composite picture of global dynamics suggests a plausible range of influences that will affect regions and countries. It suggests, too, that regions will not be as self-contained in 2025 as they are today.

Nevertheless, global dynamics are not wholly determinative, and they are not uniform across the globe. That is why a regional analysis, undertaken below in five sections, is still necessary to capture the shape of the world ahead.

Greater Europe

During the past century, Europe has had a very significant impact on U.S. national security. The United States fought two world wars and sustained a 40-year Cold War with the Soviet Union to prevent Europe from being dominated by a power with interests inimical to its own. In so doing, the United States expended enormous financial and military resources and risked its own survival as a state.

Greater Europe—which includes the countries of western Europe, eastern and central Europe, and Russia—will retain lasting importance for U.S. security interests in the next quarter century for an array of reasons.[124] Greater Europe will have a population of approximately 761 million by 2025.[125] An economically integrated European Union would have an economy slightly larger than that of the United States.[126] This region will remain an important center of international trade and finance, a pivot of scientific and technological innovation, a region capable of deploying sophisticated military capabilities, and a significant actor in global politics.

Europe's importance to the United States also rests on cultural factors. Most Americans trace their historical and cultural roots to Europe, and will continue to do so throughout most of the early 21st century. More important, America's political institutions and philosophies are essentially European, and the region will remain the largest and strongest community of states sharing the basic democratic values that undergird U.S. political culture. It is also the region of the world most tightly bound to the United States by an unprecedented array of economic, cultural, and political ties.[127]

For all these reasons, Greater Europe's evolution in the 21st century and its relationship with the United States will be as important to U.S. national security interests as it has ever been. But there is yet another reason why this region is liable to be important: it could become a major source of trouble—trouble that could take three intersecting forms.

First, the evolution of west European institutions over the next quarter century will likely spark economic competition, diverging political interests, and serious tensions with the United States. This will be so whether the European Union manages to transform itself into a federal state with a unitary foreign and security policy, or whether a failed effort to do so leads to re-nationalized security policies.[128] Second, Russia's post-communist future could mire Europe in pressing security concerns if that future produces either chaos and disintegration or a reborn authoritarianism prone to imperial ambition. A third source of trouble could come from the states located between western Europe and Russia, where the prospects of economic and political reform vary markedly.

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124 In this study we use "western Europe," not "Western Europe," and the same goes for eastern and central Europe. We have a specific reason for so doing. Capitalization of these terms, which settled into a pattern during early Cold War times, indicated a political/ideological disposition: West meant democratic and East meant Communist. This made sense, for through capitalization English usage gave us the ability to distinguish between the merely geographical and the abstract. Today, obviously, this distinction no longer applies—although we still use the cultural phrase the West, as distinct from the geographical term the west, to indicate the domain of free-market democratic countries whose intellectual origins are to be found in the Renaissance and the Enlightenment.

125 U.S. Bureau of the Census figures and projections, 1999.

126 1996 base GDP figures by country are drawn from *1998 World Development Indicators* (Washington, DC: The World Bank, 1998), pp. 180-2. For growth rates used to derive 2025 figures, see OECD, *The World in 2020*, p. 92. It is worth noting that these OECD statistics were compiled before the 1997-98 Asia crisis. But at the time of this writing, there is no inclusive post-crisis data set from which to draw.

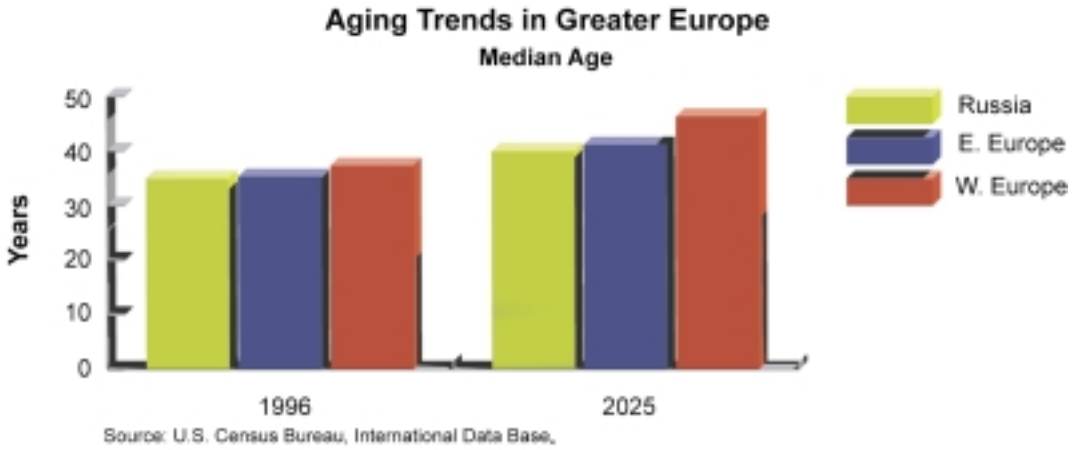
127 See Paul S. Schroeder, "The New World Order?" *Washington Quarterly*, Spring 1994; and Daniel Deudney and G. John Ikenberry, "The Logic of the West," *World Policy Journal*, Winter 1994.

128 See generally Robert Blackwill, ed., *The Future of Transatlantic Relations: Report of an Independent Task Force* (New York: Council on Foreign Relations, February 1999).

In the coming decades, three critical macro-social, economic, and political forces will strongly affect the states of Greater Europe. First will be changing demographic patterns and the resulting need for new social policies.

With the exception of Turkey, no state in Europe today even maintains a population replacement rate, and this trend is unlikely to change through 2025. Aging populations strain existing pension provisions as the number of workers paying into the system declines relative to the number of retirees.[129] Fears of politically unsettling migrations from the EU's periphery are likely to yield immigration policies far more restrictive than those in operation today, closing off one available means of countering prevailing demographic trends. It is not even clear that unrestricted immigration within the EU will last 25 years, due in part to different historical and cultural dispositions toward immigration.

East of the European Union, a similar demographic story yields a different set of possible outcomes. Russia's population will both age—25 percent of the population will be over 60 by 2025—and shrink from approximately 148 million in 1995 to approximately 139 million in 2025 largely due to low birth rates and acute health and environmental crises.[130] Russia's aging population will increase pressures for social spending, but problems of unemployment and a non-functional tax collection system will make it hard to raise adequate funds. Worse, Russia's dire economic conditions will probably stymie the adoption of anything more than stopgap measures across the range of social policy. Moscow's inability to address such problems will add to those social tensions, reducing further the legitimacy of the central government.



In the states of eastern and central Europe, the critical challenge will be two-fold: whether governments can rebuild the social safety nets that were destroyed after the fall of the Berlin

[129] Sheetal K. Chand and Albert Jaeger, *IMF Occasional Paper 147: Aging Populations and Public Pension Schemes* (Washington, DC: International Monetary Fund, 1996), p. 12.

[130] All population figures, here and below, are drawn from the U.S. Census Bureau's International Database.

Wall; and whether societies can maintain their nascent democratic political cultures in the face of episodic economic stress.

Second, economic growth rates will be a major factor in the region's prospects. The achievement of a common EU foreign and security policy, as well as the success of the euro, will require a growth rate at the upper end of the current OECD forecast range—an average of 2.5 percent or better over 25 years.[131] Lower growth rates could limit the European Union to the creation of common economic, fiscal, and monetary policies, and it could possibly doom the euro. These lower growth rates could also place at risk the ability of current members or EU aspirants to attain the economic targets required by the Union—a condition states may be unwilling to resolve through difficult structural adjustments.

For the west Europeans, it will be especially critical whether they find a way to reconcile their deeply embedded views on welfare with the new macroeconomic orthodoxy sweeping the world. The future of the euro may well be at stake. Some believe that the initial fall in the euro's value over the first six months of 1999 was mainly the result of an expectation that U.S. interest rates would rise. Others, however, have seen a structural cause in the relationship between the size of Europe's welfare function and the foreign exchange value of its currency. Expensive welfare states tend to have low growth economies, which leads central bankers to lower interest rates in order to stimulate the economy. That creates trade surpluses, but it also devalues the currency, making efforts to restructure the EU's approach to welfare crucial to the future economic success of the European Union.

Economic growth rates will also have a major impact elsewhere on the continent. The relationship between improving economic prospects and the institutionalization of democratic governance is to some extent circular. Economic prosperity cannot guarantee political stability—but it helps. So whether in Russia or Romania or Latvia or Poland, good times will make it easier for reformers to gain support for their future visions, and lean times will make it harder. The level of integration between eastern and central Europe, including Russia, with the rest of the world will also play an important role in the area's prospects. If global economic dynamics are essentially healthy, there will be a greater impetus to adopt international best practices, and that will spur positive policies for the region. If international economic dynamism stumbles, such incentives will be weaker and their positive impact smaller.

Third, political leadership will play a vital role in determining the region's future. For the European Union, bold leaders reared mostly in the post-Cold War period could build on their experience with a common European currency and the unimpeded movement of goods and persons across state boundaries to create a common foreign and security policy. Absent such leadership, states in the European Union may be unwilling to yield sovereignty to a supra-national body.

While Russia's political system will probably not achieve a fully institutionalized democracy, strong leadership committed to democratic ideals will be crucial to prevent disastrous backsliding. Such leadership would enable the central government to retain some measure of control over newly empowered regions. It could also help to ensure continued aid and investment from the OECD countries and international financial institutions to what will remain a precarious economic and political

[131] OECD, *The World in 2020*, p. 92.

system. Without a democratically oriented leadership, Russia may disintegrate, or a strong authoritarian leadership may emerge in its stead.

The danger posed by poor or divided leadership elsewhere in Europe will be a freezing of national futures in limbo between the democratic West and the problematics of Russia. The Czech Republic, Poland, and several other states "in the middle," so to speak, have deep Western cultural roots, whether through the impact of religion, history, geographical propinquity, or all three. Others, to one extent or another, do not. At the outer edge of the Cold War, all these societies are being pulled toward the West, but not equally or with similar results. The quality of political leadership over the next 25 years will be critical to determining which of these societies find the will and way to change themselves into the states they now wish to be, and which will not. The result will mark a new cultural and political boundary for the future.

What follows is an analysis of a range of plausible alternative futures for Greater Europe. It begins by depicting a region enjoying relative stability and prosperity and assays the conditions conducive to such good fortune. It next turns to less positive alternatives from the U.S. point of view, similarly seeking to isolate likely causal factors.

In one view of the region's future, the European Union would continue to be at the forefront of many of the positive trends highlighted in the discussion of global dynamics. It will continue to be the prototypical case of a group of states, committed to market-based liberal democracy, that relinquish increasing degrees of sovereignty to achieve greater economic success. That effort, in turn, would result in the EU assuming a more significant leadership role within the international arena.

If the political integration and economic expansion of the EU go as planned, it could help to institutionalize democratic governance and market economies in at least some neighboring countries to the south and east. As important, it would finally put to rest any lingering fears that the major European countries would ever again go to war with each other. Many believe that it would also create a like-minded and similarly powerful partner for the United States with which to share the burden of global leadership.

By 2025, a mature European Union could be a successful economic, monetary, and trade union, with a common justice and legal structure. It would pursue a common foreign and security policy under the leadership of its Secretary-General of the European Council and High Representative for the Common Foreign and Security Policy. It would assume primary responsibility for Europe's own security, based on a unified headquarters and staff for an all-European defense force. It would most likely include some twenty states, with new members coming from central and eastern Europe. There is no more than a fifty-fifty chance, however, that Turkey will become a member of the EU during this period.

Uncertain is whether the EU will invite the Baltic States or Ukraine to join, given their proximity and historical ties to Russia. Economically, the Baltic States will probably meet the criteria, but Ukraine probably will not. Russian opposition will be a significant obstacle, especially as the EU accrues serious military-strategic functions. If the EU takes in the Baltic States and Ukraine, it risks a significant further deterioration of its relationship

with Russia. If it does not take them in, it perpetuates a series of unsettled relationships.

Whatever its precise size, a mature European Union would be a global political, economic, and technological force. Annual growth rates averaging over 2.5 percent, and concomitant productivity gains, would drive a successful euro and rival U.S. GDP growth.[132] If this occurs, the euro would become a main reserve currency and unit of international exchange. Unless the euro appreciated too rapidly against the dollar, this would further EU competitiveness in international trade and finance. Such economic success would provide a sound basis for addressing social welfare problems brought on by aging populations.

The EU would be responsible for the defense of its members and capable of responding effectively to regional security threats. It would have developed the ability to conduct multi-divisional peace enforcement, peacekeeping, and humanitarian assistance operations within Europe. Most EU states would have small, professional militaries. Their force structures would be bifurcated between high-readiness forces available for such missions as peacekeeping and larger national defense forces requiring significant reconstitution to be effective. Because of the newness of the European Union's common security policies and stronger military capabilities, its policies would probably have a regional focus aimed to prevent the spilling over of instabilities and chaos on its periphery.

In such a world, NATO's future would be uncertain. It is hard to see how a truly integrated and independent European defense force could coexist with NATO, as it is presently constituted. NATO could remain formally the ultimate guarantor of European security, based on Article 5 of the North Atlantic Treaty. But in this case, NATO's operational military command structures would gradually disappear. The U.S. military presence would probably diminish sharply, though the United States might still remain engaged in peacetime through periodic deployments. The political entry to Europe that U.S. leadership of NATO provides today would diminish.

Even if the EU were to build a unified and independent military structure, a significant military technology gap would exist between the United States and its European allies. The United States would continue to spend more on defense than its EU associates combined. The establishment of a single, integrated European defense industry could increase European self-sufficiency in defense, but only if the Europeans were prepared to expand their defense spending and procure their arms and equipment almost exclusively from this industry.

Over the period through 2025, Russia is unlikely to achieve a fully institutionalized democracy. The time is not at hand for corruption-free political and economic institutions, investment-fueled economic development, and a foreign policy oriented toward full integration with the democratic world. But Russia could evolve in such a way as to be neither a great democratic success nor a great threat to Europe. That is a condition well described as either status quo-plus or status quo-minus.

While still facing enormous problems, Russia in a condition of status quo-plus would have acquired a post-sclerotic leadership

[132] The OECD under a high-growth scenario predicts long-term U.S. GDP growth rates to be 2.6 percent per annum. A weighted average of high-growth estimates for current EU members and for the newly admitted states envisioned by this paper yields a GDP growth rate for the European Union of 2.6 percent, as well. See OECD, *The World in 2020*, p. 92.

capable of some political and psychological dynamism. It will also have created a governing political party able to accomplish institutional reform. An active and reasonably popular president, supported by his party in the Duma, would finally be in a position to firmly establish the rule of law, privatize land, and enact tax legislation that could give the government a stable expectation of essential resources. As a result, Russia's increasingly autonomous regions would likely be drawn back toward the center. This is not beyond possibility over a 25-year period, and it could occur far more quickly than that. Even under such conditions, however, Russia could not grow economically at more than 2 percent a year. But at least the malaise so pervasive today would lift, and a new post-Communist generation could begin to inherit social and economic power in an environment dotted with islands of hope and progress.

Why would growth be so slow even if a more propitious political environment were created? Because Russia faces an enormous problem in renewing and diversifying its industrial and commodity base after 70 years of distorted markets and under-investment. It is also likely to continue to suffer chronic unemployment, pervasive corruption, and massive tax evasion even under the best of circumstances. In such an environment, status quo-minus is just as likely as status quo-plus. In this case, Russia's share of global GDP would contract and growth would stall, with occasional periods of severe economic contraction, between now and 2025. This would hamper Russia's ability to attract private foreign investment, causing continued reliance on assistance from international lenders such as the IMF.

In this view of Russia's future, mostly untreated health and environmental problems would grow very serious. The spread of Multi-Drug Resistant Tuberculosis (MDRTB) and HIV/AIDS would debilitate the work force, lower national morale, and cost large sums of scarce capital to control, if not resolve. Health risks owing to environmental conditions will grow. Thousands of former biological, chemical, and nuclear weapons sites will exist, but little money will be available for remediation. Chemicals and toxins in the soil and water left over from industrial processes now abandoned will have direct and possibly serious effects on the health of Russians as well as many north and east Europeans.

The result of the combination of economic, health, and environmental trends could be an increase in Russia's existing political and social strains. In some regions, such strains could spark backlashes against the country's formal but largely dysfunctional experiment in democracy.

Given Russia's importance to Europe, the major European countries as well as the United States are likely to persevere in their efforts to help Russia develop institutionalized democracy, a more robust civil society, and a more effective economy. But even extensive external aid is likely to achieve little more than a rough preservation of the status quo—whether plus or minus—and it could end up holding off just enough pain in Russia to delay real reform.

Under most any circumstance, the Russian government's control of its national borders will be problematic. Central authority could well be limited to matters of national defense policy, monetary policy, and the coordination of inter-regional transportation and communications. Political violence within Russia and along its periphery will likely attract and subsequently coexist with widespread, highly entrepreneurial criminal syndicates that may develop strong economic and political ties to regional and local elites. These dynamics, in

combination with the lack of financial resources available to maintain the quality and professionalism of its military and nuclear forces, will cause continuing concern within Europe and the United States. "Loose nukes" and "loose bugs" are obvious problems, but so is the lack of effective oversight for the many still functioning Chernobyl-design nuclear energy plants.

Some of Russia's regions could become political power centers in their own right, performing most vital public functions. In the event that Moscow cannot exert effective control over its own federation, regional elites will play a major role in the selection of military commanders and their staffs. Regional leaders would most likely develop their own foreign policies as well, seeking closer ties to wealthier neighboring powers and other potential allies. The Far East regions may gravitate toward Korea and Japan, and those in Central Asia (such as Tatarstan) may move closer to their Muslim neighbors, particularly Turkey, Iran, Pakistan, and Uzbekistan. The regions closest to Europe would most likely seek closer ties to the European Union and to Germany in particular, but also with the Baltic states, Ukraine, and other Slavic states (Bulgaria, and even Belarus) that may be doing better than Russia. The question of Russia's stability and national cohesion will have a major impact on the security calculus of all the states on Russia's periphery. Russia will have become the "sick man" of early 21st century Eurasia—sick enough to worry everyone, but neither so deathly ill nor so imperially healthy as to pose the kind of threat to the rest of Europe that could decisively throw it off track.

In this view of Greater Europe's future, most of the states between the European Union and Russia would improve economically and politically—in absolute terms—from where they are today. The OECD expects an average economic growth rate over this period of 4.9 percent.[133] Such growth, if it occurs, will likely be facilitated by continued investment by EU countries, the United States, and other global economic players who will continue to view the future of a market of about 194 million people as an important investment priority. Free from Communism only about five years, their combined GDP in 1996 amounted to about $423 billion—around 2 percent of the global share.[134] In the coming 25 years, this region will very likely increase its global standing in GDP and other economic terms.

Politically, most of central and eastern Europe will benefit from the positive trends of deepening democracy and expanded international commerce, even if many states do not achieve full global competitiveness. Many, if not most, central and eastern European states will have mature democratic systems by 2025. There will be regular fair elections, the institutionalization of the rule of law, democratic and civilian control over military institutions, respect for civil liberties, and a willingness to pursue peaceful solutions to territorial disputes and irredentist claims. Even if some are not full members, most of the these states will be linked politically with both the European Union and NATO.

At the same time, the situation in the Balkans will remain tenuous even in the rosiest of futures. Only Slovenia and Greece have a good chance to escape economic stagnation and political instability, because they are relatively stable democracies and have enough highly educated people to succeed in

133 OECD, *The World in 2020*, p. 92.

134 *World Development Indicators* (Washington, DC: The World Bank, 1998), pp. 180-2.

an age of economic integration.[135] Bulgaria, Romania, Serbia, and Croatia face greater challenges but may still succeed. But elsewhere, Balkan countries will continue to experience economic dislocations and more than occasional bad government, complete with corruption, manipulation of state finances, suppression of the media, and a lack of elite concern for pressing national problems.

No enduring settlements to the conflicts in Bosnia or Kosovo are likely to emerge from the U.S. and NATO-brokered agreements that ended the wars there. As a result, ethnic tensions and the security fears that go with them will remain, regularly threatening to erupt into outright conflict. Moreover, with Bosnia and Kosovo stuck in a state of suspended political animation, problems in Macedonia, Montenegro, and Albania will become more likely. As a result, it is highly improbable that any of these countries will be integrated into western Europe's political and economic institutions within the next quarter century.

A more dour future for Greater Europe is also possible. It would turn on three basic elements of potential bad fortune. The first is that the European Union collapses, leading to the rise of re-nationalized economic and possibly security policies. The second is that the Russian state disintegrates altogether or acquires a revanchist authoritarian leadership. The third is that the lands between the EU and Russia fall into a pattern of economic failure, governmental ennui, internal violence, and cross-border wars sufficient to generate a steady stream of strategic and humanitarian crises for most of the next 25 years. Any one of these developments could encourage the other two.

A collapse of the European Union could result from a failure to sustain annual economic growth at rates of at least 2 percent. Such slow growth could arise from a loss of confidence, growing disillusionment among political leaders and their citizens, and likely popular resistance to further funding any joint policies. A collapse could occur, as well, as a result of shifts in leadership with a concurrent reluctance to yield national sovereignty over critical political and economic policies. The unwillingness of a population to endure the pain of meeting economic targets, or of undertaking structural changes to address failures in the social safety net, might also serve as occasion for leadership changes.

Another possibility is the specter that a coalescing governmental authority at the EU level might be essentially undemocratic. Currently, the European parliament does not have binding authority over national member governments, but the EU bureaucracy in Brussels does in selected policy areas. Already the creation of a European central bank and currency has greatly diminished the power of national legislatures to affect crucial pocketbook issues such as interest rates and money supply, which in turn diminishes the significance of citizens' votes for those legislatures. Unless EU political institutions manage to keep pace with economic and security ones, a significant popular and elite backlash against integration could ensue, especially in times of economic adversity.

More than that could go wrong, as well, in the form of external pressures on young EU institutions. Conflict in North Africa could result in the movement of large numbers of migrants to southern Europe and points north, upsetting political equilibria and fracturing common immigration and social policies. A significant security threat from Europe's periphery, from

[135] We use the term Balkans here in a strictly geographical sense.

Russia or the Balkans, might empower a strong preference for NATO—which is to say, American—leadership, and sharply diminish interest in pan-European solutions and institutions.

Regardless of the precipitating events, the implications of lost European confidence in the inevitability of a federated Europe would be significant. Outside Europe, the euro would lose value as demand waned for holding European assets. Lower growth rates and a weaker euro would limit domestic consumption, while higher interest rates would dampen investment. In the face of this loss of confidence and resulting economic effects, and with no alternative plan in place, the EU could begin to unravel. Germany would probably reassert its national interests politically, economically, and possibly even militarily both within and outside Europe. France might move sharply to the right as it finds that it can no longer use international processes and institutions to limit Germany's return to independent major power status. The far right would probably prosper more generally, too, in countries such as Spain, Portugal, Italy, and Austria. Additionally, the United Kingdom might attempt to separate itself from Europe and focus instead on its special relationship with North America and the wider English-speaking Commonwealth.

If any of these events occurred singly or in combination, competition among European states would most likely become the norm, with significant undertones of national chauvinism and regional and global economic protectionism. Elements of the re-nationalization of European defense would soon emerge, if not on the scale of the pre-World War II period, then much more vigorously than in the post-World War II period.

While such a situation might increase the importance of the U.S. dollar, of NATO, and of the U.S. role in Europe, many negative consequences would flow as well. The collapse of the euro could send major shocks through the international financial system. A failure of the European Union would also send a signal, and at worst deal a mortal blow, to other more nascent regional organizations trying to achieve free trade and other common arrangements. The United States might be forced to undertake much of NATO's financial burden. Tensions between a Europe perceived to be shirking its financial responsibilities and a United States being asked to contribute more to European defense would strain the trans-Atlantic link despite a U.S. willingness to pay and do more. Alliance coherence would be harder to maintain during the transition period as old national biases and animosities resurfaced.

The second concern at the more dour end of our continuum is two-fold: either the collapse of the Russian state or the rise of a new authoritarianism. Both could be disastrous, albeit in different ways.

Russia's disintegration would have serious consequences. Unemployment in Russia would reach severe levels. Corruption and inadequate tax collection efforts would leave insufficient funds for even basic social services. Economic growth would plummet to negative rates over sustained periods. The magnitude of its social and economic problems would probably be so great, and the decentralized power of the regions so comparatively strong, that Russia's central government might essentially disappear. Regional and ethnic tensions, compounded by sharp economic disparities, would fuel eruptions of conflict and the mass migration of civilians fleeing instability and violence. Military forces, including tactical nuclear weapons, might come under the control of local

military commanders and political warlords. The last Russian civil war and collapse, from 1917 to 1921, was horrible. A future one might be even worse, and not just for Russians.

A significant Eurasian power vacuum would flow from a Russian collapse, encouraging states with ties to various Russian regions, such as Iran, Turkey, and Japan, to seek means of furthering their own interests in the face of Russian weakness. Faced with Russian disintegration and the unlikely possibility of restoring Russian central authority, the European Union and NATO might draw the Baltic States and Ukraine into their organizations, in effect redividing Europe in order to prevent the spillover of Russian instability into other areas of Europe. Diplomatically and economically, the United States and other countries would have to negotiate with multiple entities and factions with claims to statehood, and deal simultaneously with massive economic dislocations. Finally, the dangers associated with wildly diffused control over nuclear weapons, fissile materials, and biological agents would present a security crisis of the first order.

The resurrection of an imperial Russia, on the other hand, however much it strains the imagination to credit the possibility, would pose other dangers. It would feature centralized controls and a new leadership that would tap into rekindled nationalist sentiments and nostalgia for Russia's great power prerogatives. Political structures and the creation of economic dynamics designed to provide for basic human and social needs would be governmental priorities, but at the expense of democratic values.

Authoritarian control in Russia could result in greater internal stability, if it were to succeed in maintaining near full-employment and in providing essential welfare needs. It might be able to crack down successfully on corruption and organized crime. But this is not clear. Such a regime might be such an international pariah that it could not successfully connect to the international economy, making its economic prospects dire. If the government were not able to solve the unemployment problem or ensure domestic security, it is hard to see how any such "solution" could produce stability. Such a "solution" would also be likely to generate separatist movements in non-Slavic areas of the Russian Federation, particularly in the Caucasus.

This would be particularly true given that a post-"democratic" Russia would probably be resentful of those who tried to help the Yeltsin regime. In such a scenario, the already widespread belief that Western aid was part of a plot to keep Russia weak and to invade its geographical spheres of traditional influence would likely become accepted truth. Not only would such a Russia be a nuclear power, it might also elect to emphasize military spending as a means to national industrial regeneration. After all, what remains of the old Soviet military-industrial complex is today virtually the only Russian economic sector still breathing, if barely so. It would be a natural focus of investment and political patronage for a new, and nationalistic, authoritarian Russian regime.

While such a regime could not credibly threaten Europe as a whole with conventional military force, it could nevertheless pose obvious new threats to Russia's closest neighbors. Russia could turn Peronist, or it could turn fascist, and the difference in the implications for the world at large is not trivial. A weak corporatist regime would be unlikely to do very much harm outside Russia's borders, but a form of Russian national socialism, emboldened by a revived form of pan-Slavism, could do enormous harm over all of Eurasia and beyond.

In either event, Russia would cast a significant political shadow over the region in a way that it does not do now, and in a way that neither muddling along or disintegration would produce. An authoritarian Russia could pose an effective challenge to the West and act to reinforce its image as a power whose geostrategic interests and calculations must be taken into consideration. If this future develops, the United States will have lost its investment in fostering liberal democracy and in creating the economic preconditions of a free-market system in Russia. The apparently conclusive failure of democracy in Russia might even trigger a reconsideration of the presumed universality of core American principles and beliefs—with unknown consequences for our own future.

Finally, the third misfortune that might plague Europe in the 21st century concerns those very diverse lands in between the European Union and Russia. The Balkans have furnished a nearly non-stop political and humanitarian crisis since the early 1990s, and things might get even worse despite the EU's redoubled determination to funnel major amounts of aid to the region. Albania, Macedonia, Montenegro, Bosnia, and Serbia are ripe for further violence and chaos. Belarus, Moldova, and especially Ukraine are new states with unproven track records and many problems. Romania has made only sporadic progress despite the end of the Ceaucesçu regime, and both Slovakia and Bulgaria have struggled hard to get even a little ahead of where they were in 1989. Ethnic and border questions aplenty remain unresolved, and the quality of future leadership is unknown.

If the global economy falters, all of these countries would be hit hard. If NATO acquires a reluctance to intervene in such domains after the experiences of Bosnia and Kosovo, the potential for on-going violence and cross border wars can only rise. Obviously, too, the specter of re-nationalized security policies in western Europe seeking agents and allies to the east—repeating the patterns of the interwar years—will not make things any easier. Nor will a Russia in the throes of collapse, exporting refugees, criminals, drugs, and weapons westward.

Amid the various possibilities sketched out above, the most dramatic changes are probably the least likely. The EU will neither collapse nor achieve a fully unified foreign and security policy. Habit and hope will prevent the former, while British reluctance, differences of interest, and an unwillingness to buy the military assets necessary to undergird such a policy will brake the latter. Hence, a rebalanced NATO is likely to remain the premier institution of Atlantic relations and the main instrument of U.S. power in Europe. The political and economic profile of the EU is likely to rise, however, and insofar as there are differences in U.S. and European perspectives, it will make the political management of trans-Atlantic relations a more challenging task.[136] Similarly, in all likelihood, Russia will muddle through. In central and eastern Europe, what is today a very mixed picture will likely change in its particulars, but remain mixed in its overall circumstances.

American policies will clearly be important to Greater Europe over the next quarter century. Keeping the trans-Atlantic link alive even as Europe bears more responsibility for its own security will require tact and forbearance on all sides. It will be worth a major effort, for Greater Europe will remain very important to the United States. U.S. political leadership through NATO has been a vehicle to organize the continent's overall security and to mollify jeal-

136 See Peter W. Rodman, *Drifting Apart? Trends in U.S.-European Relations* (Washington, DC: The Nixon Center, 1999).

ousies and historical fears among the European members. American military forces in Europe have been instrumental to these purposes. Determining the extent and nature of the U.S. military presence in Europe will therefore be one of the key issues for the United States and its allies over the next 25 years. The general tenor of the U.S.-EU relationship will determine whether this and other critical alliance issues are managed in a relatively cooperative or a more adversarial manner.

U.S.-European cooperation will also be crucial in the case of Russia, which will depend upon the continued willingness of international institutions to provide financial and other kinds of assistance. Without it, the potential for economic collapse will loom larger and make the emergence of an undemocratic future more likely. On the other hand, overly vigorous U.S. involvement in the management of Russia's problems may risk provoking a backlash. A careful balance will be critical.

American policy will also be critical to the future of the countries of eastern and central Europe. If the United States remains economically engaged, it could help offset the in-between status that these states are liable to have with the EU for many years ahead. And if the United States remains culturally and politically engaged, it will continue to buttress the evolving democratic political cultures in many of these countries. The American example, as well as that of the EU states, is crucial to their evolution as democracies. It is all the more important, then, that U.S. policy deal with states in their own right, rather than cast them as strategic adjuncts of Russia to the one side and its NATO partners to the other.

The range of futures for Greater Europe is wide indeed, but even the most positive view that one could reasonably take of the future is far from ideal. Russia will not be robustly democratic and prosperous, a unified European Union will present challenges as well as opportunities, and eastern and central Europe will compose a patchwork of successes and failures. The alternatives, on the other hand, provide warning as to how bad things could get—and this is in the part of the world that most closely shares U.S. values and civilization, and that is as advanced economically and politically as any other continent. It is a sobering visage.

East Asia

East Asia—here defined as including Northeast Asia, Southeast Asia, Australasia, and all their oceanic appendages—contains not only upwards of a third of the world's population, but also what is widely taken to be the most likely future politico-military near-peer competitor for the United States (China), two of its most critical allies (Japan and South Korea), and one of its most intractable problems (North Korea). The region's importance to the United States will grow between now and 2025, whether due to its successes and strengths, or to the problems it could generate from weakness and strife. Asia, and particularly Northeast Asia, is the region of the world most likely to witness a major war. It is the only region in which significant territorial disputes among major powers exist, in which the use of military force would alter the regional balance, and in which an alteration of the regional balance would invariably affect the world as a whole.

Recent trends suggest that East Asia embodies vast potential for economic growth, peaceful development, and scientific as well as cultural achievement in the decades ahead. In the last quarter of the 20th century we have witnessed a stunning, if lately stunted, economic performance there. With it has come significant social change, much of it tumultuous but most of

it positive. There have been notable improvements in education and basic health care, as well as more equal opportunity for citizens of most nations irrespective of gender or ethnic origin. We have also seen the transformation of some of the region's erstwhile dictatorships into fledgling democracies, and, not least, East Asia has managed to avoid major interstate violence.[137]

West. This is a major datum, for aside from a few isolated examples (Turkey, Japan, Finland, Israel), no cultural area as vast as East Asia has heretofore replicated the sharp growth of living standards occasioned by the Industrial Revolution. The last four decades of East Asian history prove that economic modernity comes in more than one cultural form.

In short, we have witnessed strikingly successful modernization over most of a vast region, and we have seen it take place mainly on its own cultural terms—while influenced by those of the

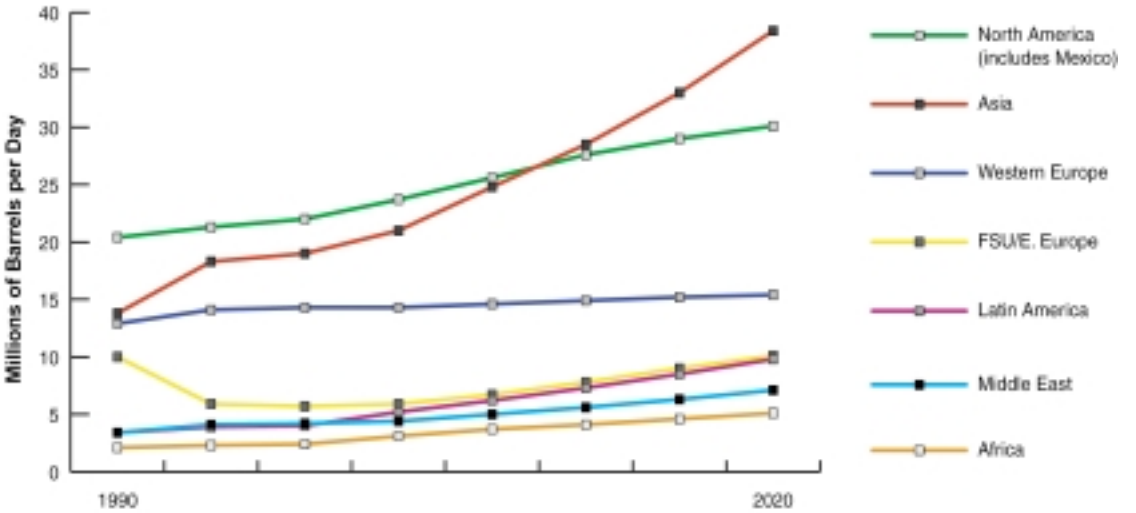
137 The Vietnamese invasion and occupation of Cambodia (1979-89), and the Sino-Vietnamese border war of 1979 are the partial and somewhat peculiar exceptions.

These accomplishments represent only a foretaste of the harvest of prosperity and intellectual and cultural achievements that could arise in East Asia by 2025. By then the region may well be the largest and most powerful economic grouping in the world.[138] East Asian economies may grow at an annual average of about 6 percent over the next two decades, more rapidly than any other area.[139] If so, the region's share of global GDP could increase to slightly less than one-third, with Europe, the next largest regional economy, accounting for about one-fifth. Significant Asian trade and investment among the countries in the region as well as with the United States, Europe, the Near East, and Latin America would be assured. East Asia is also likely to be the largest source of capital for international markets.

At the same time, energy consumption in developing Asia will surpass that of North America by 2020. Almost half the world's increment in energy consumption will come from developing Asia.

No doubt, the proven facility of East Asian peoples to adapt and develop science-driven technologies will lie at the heart of the region's economic dynamism—if it comes to pass. If the information revolution continues its long march through the economic institutions of the world,

Increased Demand for Oil in Asia Will Outpace World



Source: *International Energy Outlook* 1996, Washington, DOE, EIA-0484(96), May 1996, p. 92, and *International Energy Outlook* 1997, April 1997, DOE/EIA-484(97), Reference Case, p. 119.

[138] Population expansion will in part drive the absolute size of East Asian economies. The populations of the five largest states in the region in 2025 will have changed from 1999 roughly as follows: China from 1.2 to 1.4 billion; Indonesia from 213 to 288 million; Japan from 126 *down* to about 120 million; the Philippines from roughly 80 to 121 million; and Vietnam from 76 to about 104 million people. East Asia's population as a whole in 2025 will be 4.84 times the size of that of North America, and 6.56 times the size of the European Union's.

[139] OECD, *The World in 2020*, p. 92.

and if an essentially liberal global economic order is maintained, then it is clear that extremely lucrative cutting-edge technology of virtually every kind will be available in East Asia. Japan is likely to be a leading global innovator and manufacturer of technologies such as micro-electromechanical systems (MEMS), artificial intelligence (AI), robotics, and computers. Japan's commercial space industry will provide launch capability to many states and private licensees worldwide. Korea and Taiwan will continue to produce world-class communications and information technology, in some cases challenging U.S. and Japanese technological superiority and marketing success.

Australia, New Zealand, Singapore, the Philippines, Thailand, Vietnam, Indonesia, and Malaysia may also play major secondary roles in the region's technology-driven growth by providing a mix of raw materials, human capital, financial services, affordable labor, and major expanding local markets. Rural areas as well as the cities and major towns of the region will be even more deeply linked electronically than they are today, providing an important economic multiplier effect. As these economies grow, they will be able to afford infrastructures that provide wide access to regional and global communication grids and media resources. As a result, expectations regarding quality of life are liable to rise steadily. First in cities and later in rural areas, people will aspire to better public services, education, environmental quality, crime control, medical care, and job-training. In addition, greater access to media and information will whet appetites for political news and participation. In short, new and expanding middle classes will want what such classes always want: economic stability and a piece of the political action.

Greater information linkages within the region will also encourage labor migrations from less developed and urbanized countries of the region to more rapidly developing ones.[140] Such labor migrations could also boost the educational levels of the migrants, allowing them in turn to raise the labor and educational standards of their home countries.

Barring major political upheaval and economic collapse, China will compete with U.S. firms in space launches, and have several world-class high-technology firms engaging in a wide range of corporate partnerships worldwide. China will also most likely be well-linked into the global communications grid, and will be in a position to use surveillance, communications, and positioning technologies for commercial and military applications. Also, under almost any imaginable political regime, China is likely to pursue biotechnology for commercial, medical, and military purposes.

Along with economic and technological dynamism, East Asia over the next 25 years could become a zone of relatively peaceful relations, characterized by predominately democratic governments well connected to a range of global economic and political institutions. The Association of Southeast Asian

[140] By 2025 more than half of the region's population will live in cities, up from 35 percent in 1999. The graying of East Asian populations is a major phenomenon to be coped with in the next 25 years. Between 1995 and 2025, the numbers of 15-64 year olds per person 65 years and older will have fallen as follows: China, from 11 to 6; Japan, from 5 to 2; Indonesia, from 14 to 8; South Korea, from 12 to 4; North Korea, from 14 to 6; Australia/New Zealand, from 6 to 4; Malaysia, from 14 to 8; and the Philippines, from 17 to 10. For more detail and some likely social implications, see Nick Eberstadt, "Asia Tomorrow, Gray and Male," *The National Interest*, No. 53 (Fall 1998), pp. 56-65. On Japan specifically, see Milton Ezrati, *Kawari: How Japan's Economic and Cultural Transformation Will Alter the Balance of Power Among Nations* (Reading, MA: Perseus Books, 1999).

Nations (ASEAN), the ASEAN Regional Forum (ARF), and the Asia-Pacific Economic Cooperation (APEC) forum will have matured and expanded their functions. Multilateral institutions could arise to address new transnational issues. It is possible, too, that East Asia will at least begin to develop security and arms control arrangements comparable to those in Europe.

Problems and tensions will persist. The mutual suspicions bequeathed by some hard history will not disappear. Not every state will be a democracy, and very destructive weapons will be available to ambitious leaders without their countries having to first establish a large or sophisticated industrial and scientific infrastructure. Economic competition could get nasty between similarly endowed nations. Vested political leaderships with a lot to lose from rapid change could fail occasionally to rise to enlightened levels, and the social stresses of modernization could still overwhelm some of them even if they are enlightened.

But there is a good prospect that, with so much more to lose, governments in the region will find ways to bound their difficulties short of war and beggar-thy-neighbor economic policies—as has been the case in western Europe for the past half century. Presumably, too, such an evolution in East Asia would be encouraged by timely help from the United States and other major global players with an interest in the region's peace and prosperity—again, just as Europe's postwar success is partly explained by U.S. policy during the Cold War.

Finally in this view of East Asia's future, a growth in living standards, higher educational levels supporting a technologically driven economy, and the relative openness of governments required to sustain an entrepreneurially-minded business culture, would all conduce to positive changes in the social attitudes of younger generations. This does not imply that economic modernization points to one set and one set only of attitudinal patterns—i.e., Western ones. But many traditional East Asian attitudes—the emphasis on community and extended family as opposed to the individual; toward social hierarchies expressed through traditional occupational, age, and gender roles; toward educational institutions; toward paternalist social authority vested in government—would probably change. Thus, East Asian cultures could come to accept, on indigenous cultural terms, values more harmonious with representative democracy and greater personal liberty than has heretofore been the case.

If East Asia develops in such a fashion, or something like it, nearly everyone in the region and beyond it will be better off, and U.S. national security concerns with East Asia will probably be modest. But there is no guarantee that it will develop so benignly. Plenty of things could go wrong, and some of them probably will.

An optimistic appraisal of East Asia's future is predicated in large part on an assumption: that the rising tide of economic development, buoyed by both a dynamism infused by major technological innovations and a more integrated international economy, will bring benign political and social developments in its wake. There are plenty of examples in human history, however, of parochial political interests—if not sheer irrationality, ideological rigidity, and myopic leadership—foiling such scenarios. After all, if enabling global economic patterns and a skilled population with an affinity for science and technology were all that really mattered, then it would be impossible to explain the Japanese economic doldrums of the past eight years. Sclerotic in-

stitutions and poor executive decisions clearly matter.

So what could go wrong for East Asia over the next quarter century? Three things come to mind: economic meltdown, major upheaval in China, and a serious spiraling downward of geopolitical stability among China, Japan, and Korea. Let us take them in turn.

A large-scale Asian or global recession could occur, leading to widespread unemployment, social instability, increasing nationalism and protectionism, and heightened political repression in several East Asian countries. To see how the latter could occur, all one need do is examine the case of Indonesia. As Indonesia's economy began its free fall in late 1997, the wheels were set in spin for the fall of its government, murderous attacks on its ethnic Chinese minority, and the rise or reanimation of several secessionist movements.

In contemplating the social and political volatility that could issue from an economic downturn in East Asia, one must start not from theoretical speculations but from the actual situation extant today. Despite recent signs of recovery, large parts of the region remain in disastrous shape following the financial crisis of 1997, with falling incomes and sharply rising poverty levels. Meanwhile, the rapid social change and attendant dislocations caused by earlier bouts of globalization, urbanization, and rising educational and economic expectations continue to flow through the affected societies. Seen against the dashed hopes of recent years, another cycle of boom and bust could touch off significant violence and a sharp backlash against enemies of the region, perceived or real, between now and 2025. That, in turn, would amount to a huge waste of human potential. Lives preoccupied by fearful, embattled conditions rather than engaged in scientific, commercial, and cultural pursuits would translate at the least into fewer gains from trade, fewer investment opportunities, and fewer East Asian children nurtured to contribute positively to global knowledge and culture.

Widespread East Asian economic trouble could also lead to virulent anti-Americanism. A backlash against the United States could be based on claims of U.S. insensitivity to East Asian suffering or to U.S. "cultural imperialism," particularly as expressed through U.S. influence over International Monetary Fund (IMF) and World Bank policies. U.S. public opinion, in turn, could move increasingly against liberalized trade in view of mounting U.S. trade deficits and losses of American jobs, as East Asians once again try to export their way out of their economic problems. U.S. protectionism would worsen any regional or incipient global economic recession many times over, leading to a vicious downward spiral.[141] Protectionist sentiments, were they to be deep and long lasting enough, could also encourage isolationist impulses, and lead the United States to disengage from East Asia.

How likely is that possibility? An answer may start from the simple observation that the Asian economic crisis that began in July 1997 is still under the analytical knife. Some argue that structural defects in East Asian economies caused the crash, and that once bloated to a sufficient level, the bubble economies of the region inevitably had to burst. Others argue that the herd instincts and poor risk management of Western speculators and financiers were principally to blame. And still others believe that the international economic policies of the U.S. government were insufficiently attentive to the limits of East Asian institutions, and that IMF

[141] See Peter Schwartz and Peter Leyden, "The Long Boom: A History of the Future, 1980-2020," *Wired*, July 1997.

policies made things worse than they otherwise would have been. Depending on which explanation one accepts, divergent explanations for why some countries were not hit as hard as others, and why some have recovered faster than others, follow in turn. Proposals over how to regulate international financial exchanges and reform the IMF also invariably raise contentious debate, all of which shows that there is no consensus about what went wrong or how to prevent it from happening again. Since the urgency of reform has waned as many countries have managed to set themselves aright, even without fixing most of their structural flaws, it could very well happen again.

But of all the potential problems that could throw East Asia for a proverbial loop, none is as portentous or controversial as the future of China. China is so huge, even relative to its Japanese and Korean neighbors, that it is bound to affect East Asia's future. If Chinese authoritarianism decompresses as per capita income reaches around $7,000, (as several observers have predicted), and the political system moves toward bounded pluralism even if not genuine democracy, optimism about East Asia's future would receive a major boost.[142] If China undergoes major political reform after the terminal but essentially peaceful crisis of the communist system, leading to the creation of a parliamentary system no less democratic than that in Taiwan, then so much the better still.

Under either scenario, with its state-owned enterprises and its banking system successfully, if painfully, reformed, China's GDP could be the largest in the world in absolute terms in 2025.[143] China's share of global GDP could shoot up from about 8 percent in the late 1990s to about 14 percent. China would also be a major source of international financial liquidity. With dependencies and economic interests around the globe, China would conduct itself as a major world power, with active policies outside of Asia.

Such a China would not necessarily have irreconcilable conflicts of interest with the United States or other major powers. Presumably, even a China energized by broad, rekindled nationalist sentiment would be constrained by its many crucial linkages with international economic and political institutions. China will require an enormous amount of energy, more than twice what it consumed in the late 1990s when it burned one of every three tons of coal worldwide. Even with better-developed hydroelectric, coal, and domestic oil resources as principal sources, China's requirements for imported oil will rise from a projected 1.4 million barrels a day in 2000 to 5.2 million barrels a day by 2020.[144] The parade of supertankers streaming to Chinese ports would be vulnerable to interdiction in a crisis. China would share with other major oil importers in East Asia, such as Japan, a strong interest in keeping oil flowing from key sources and keeping strategic sea-lanes open. Beijing might also foster positive economic, political, and security relationships with key oil producers around the globe, especially in Central Asia, Russia, and the Near East. That may lead China to fashion policies toward these regions similar to those of the west European countries; namely, a policy aimed at appeasing major regional actors in search of preferred commercial status.

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142 For example, Minxin Pei, "Is China Democratizing?" *Foreign Affairs*, Jan./Feb. 1998, and Henry Rowen, "China: A Short March to Democracy?" *The National Interest*, No. 45 (Fall 1996).

143 See note 53 for references and detail.

144 *International Energy Outlook 1999* (Washington, DC: Energy Information Administration, 1999), Tables A4, D1.