



Office of Health, Safety and Security Visiting Speakers Program



CSIS | CENTER FOR STRATEGIC &
INTERNATIONAL STUDIES

September 15, 2008
U.S. Department of Energy
Washington, DC



Office of Health, Safety and Security

The Office of Health, Safety and Security (HSS) is the Department of Energy's (DOE) corporate organization responsible for health, safety, environment, and security; providing corporate leadership and strategic vision to coordinate and integrate these vital programs. HSS is responsible for policy development and technical assistance; corporate analysis; corporate safety and security programs; education and training; complex-wide independent oversight; and enforcement. The Chief Health, Safety and Security Officer advises the Secretary and the Deputy Secretary on all matters related to health, safety and security across the complex.

Through its research on sustainability and industry's successful use of its concept, HSS has a clear idea of the types of organizations with which it would be beneficial to collaborate on sustainability. Such outreach efforts provide a cooperative advantage of sustaining an organization's efficiency and vitality by bringing together creative thought and diverse viewpoints toward common goals while demonstrating leadership's commitment to listening to and reflecting the concerns and issues of its shareholders and stakeholders.

As the first phase of its outreach efforts, HSS created a Focus Group forum. The HSS Focus Group forum integrates senior HSS managers from across the organization to discuss and address topics and issues of interest to DOE managers and stakeholders. The objective of the Focus Group is to establish a means for responding to questions and concerns regarding HSS initiatives and activities for improving, the health, safety, and environmental and security performance within the Department and to maintain an ongoing dialogue with involved parties supportive of these efforts. HSS believes an outcome of these continuing discussions and collaborations will be improved worker health and safety programs and the solidification of a safety culture at DOE sites.



Glenn S. Podonsky
Chief Health, Safety and Security Officer



HSS Visiting Speaker Program

The next phase of HSS outreach activities is the creation of the Visiting Speaker Program. The Visiting Speaker Program consists of presentations by leaders drawn from a variety of disciplines to include business, organizational theory, performance management, sustainability, and organizational resilience, made to HSS management and selected attendees from other interested organizations (i.e., Office of Science, Office of Environmental Management, and the National Nuclear Security Administration).

The program is intended to focus agency attention at the management level to the emerging challenges and issues threatening the national security and economic prosperity of the United States. DOE's mission, supported by HSS and other agency organizations, requires the most efficient and resilient leadership and organizational structure for successful mission completion and the continued safety, security, and prosperity of the nation. By inviting and having presenters from the wide range of public and private sector organizations, HSS is encouraging the transformation of government and demonstrating the various stages for change. This includes understanding the depth of the global issues, need for change, tools and means for transformation, and knowing the appropriate performance measurements to determine success and implement evolving management initiatives.



Center for Strategic and International Studies

CSIS provides strategic insights and policy solutions to decision makers in government, international institutions, the private sector, and civil society. A bipartisan, nonprofit organization headquartered in Washington, DC, CSIS conducts research and analysis and develops policy initiatives that look into the future and anticipate change.

Founded in 1962 by David M. Abshire and Admiral Arleigh Burke, at the height of the Cold War, dedicated to the simple but urgent goal of finding ways for America to survive as a nation and prosper as a people. During the following four decades, CSIS has grown to become one of the nation's and the world's preeminent public policy institutions on U.S. and international security.

Since 1962, CSIS has grown to become one of the world's preeminent international policy institutions, with more than 220 full-time staff and a large network of affiliated scholars focused on defense and security, regional stability, and transnational challenges ranging from energy and climate to global development and economic integration. From its beginning, CSIS has been committed to bipartisan problem solving. While partisan competition advances ideas, America prospers when policy leaders develop a consensus across the political spectrum. CSIS actively unites leaders from both parties to join in shared problem solving.

CSIS trustees are drawn equally from the worlds of public policy and the private sector. They contribute a wealth of expertise to the Center's mission and management.

CSIS experts conduct research and analysis and develop policy initiatives that are organized around more than 25 programs grouped under three themes:

Defense & Security Policy

With one of the most comprehensive programs on U.S. defense policy and international security, CSIS proposes reforms to U.S. defense organization, defense policy, and the defense industrial and technology base. Other CSIS programs offer solutions to the challenges of proliferation, transnational terrorism, homeland security, and post-conflict reconstruction.

Global Challenges

With programs on demographics and population, energy security, global health, technology, and the international financial and economic system, CSIS addresses the new drivers of risk and opportunity on the world stage.

Regional Studies

CSIS is the only institution of its kind with resident experts studying the transformation of all of the world's major geographic regions. CSIS specialists seek to anticipate changes in key countries and regions—from Africa to Asia, from Europe to Latin America, and from the Middle East to North America.



Revolution 1 population

8,700 people every hour, 145 people every minute, and 2.4 people every second are now being added to our global population...

Population Growth

By the time Christopher Columbus reached the New World, global population had reached about 500 million. By July 1, 2005, population had increased by a factor of thirteen, to 6.5 billion—the majority of this growth having occurred between the end of the Second World War and the present. By 2025, global population will probably reach 7.9 billion; and by 2050, there will be around 9.2 billion people on Earth.

Over the next 20 years, 80 percent of the world's population growth will occur in those countries least capable of supporting it—politically, environmentally and/or economically. In fact, according to the United Nations Population Division, between the years 2005 and 2050 nine countries alone are expected to account for nearly half of the world's population growth, and only one of these fast-growing countries—the United States—is located in the developed world.

Global Generation Gap

In contrast to the rapid growth in the developing world, much of the developed world will face the prospect of static or negative population growth. By 2025, at least 51 countries across the world are expected to be substantially less populous than they are today. The median and mean age of people in these countries will also increase significantly. By 2030 almost one in four Western Europeans will be over the age of 65. Compare that with Sub-Saharan Africa, where those over the age of 65 will account for less than four percent of the population.

Migration and Urbanization

Migration will be another key challenge facing the world of 2025, both within countries and between them. By 2025, nearly 60 percent—some 3.9 billion people—of the total world population will live in cities. In addition to resource, health and governance challenges, many of these mega-cities will be located along coastlines, making them vulnerable to natural disasters such as typhoons, tsunamis and hurricanes. The high population growth in developing countries and the negative population growth in developed countries will further increase the current rate of migration. Increased social and political backlash related to immigration issues in developed countries is likely unless governments and citizens can envision new approaches to integration and harmonization.

DID YOU KNOW?

- One person in five—1.3 billion globally—is between the ages of 10 and 19 and part of the largest youth generation in history. One-fourth of this youth cohort lives on less than \$1 a day.²
- 87 percent of young people, ages 10-19, live in the developing world.³
- By 2007, over 50 percent of world population will be located in urban areas, marking the first time in history that there will be a larger urban than rural population. The proportion of the world population that is urban is expected to rise to 61 percent by 2030.⁴
- Between 2005 and 2030, the world's urban population is projected to grow at an average annual rate of 1.8 percent—nearly double the rate expected for the total population of the world (almost one percent per year). At this rate of growth, the world's urban population will double in 38 years.⁵
- By 2050, 1.2 billion of the projected 1.5 billion people 65 years or older will live in less developed countries.⁶
- Between 2002 and 2003, the world's urban population increased by 27 million, an amount larger than the entire size of Mexico City.⁷
- Nine countries—India, Pakistan, Nigeria, the Democratic Republic of Congo, Bangladesh, Uganda, the United States, Ethiopia, and China—will account for one-half of all world population growth through 2050.
- Between 2005-2050, the United States, Germany, Canada, the United Kingdom, and Australia will be the destinations of the most total international immigrants, while China, Mexico, India, Philippines, Indonesia, Pakistan, and the Ukraine will be the major exporters of these immigrants.⁸
- According to the United Nations Environment Programme, within the next three decades, 75 percent (6.4 billion) of the world's population will live within 37 miles of the coast.⁹
- Future annual fatality rates from earthquakes will rise over the next thirty years, principally from a few earthquakes near megacities with populations of 2-28 million.¹⁰

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of population and demographic trends. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

1) What exposures—from retiring baby boomers in the U.S. to a graying China to the massive overhang of Europe's elderly—do private corporations, governments, and other sectors have to worry about as the aging revolution unfolds across the globe? How will changing demographics impact workforce composition? Retirement age? Pension outlays? Taxation? Immigration? Economic growth? How can governments, corporations, and nongovernmental organizations work together to address these issues?



2) Immigration and immigrant groups already account for over 60 percent of population growth in developed countries. Do you believe that governments in developed countries are ready to deal with the massive immigration that will accompany, in many cases, a sharply decreasing number of citizens? What recent world events highlight pessimism or reason for optimism in this regard?

3) According to the United Nations Population Division, by 2050, the four largest countries in the world will be, respectively, India, China, the United States and Pakistan. What will this mean for the geopolitical balance of power? Pakistan is a prime example of the overarching global trend of the highest population growth occurring in those countries with the lowest prospects for economic development, the most dire resources scarcities, the most daunting public health challenges, and the least transparent and effective systems of governance. What will be the impact of this population growth in terms of global stability and security?

From CSIS

Visit the CSIS Global Aging Initiative (<http://www.csis.org/gai>) to learn more about the international economic, financial, political, and security implications of aging and depopulation. Learn more about how global aging will affect Eastern Europe, Latin America, East Asia, and South Asia in the decades to come.

Explore other recent activities, papers, and events of the Global Aging Initiative:

- *Preparing for China's Aging Challenge: The Demographics and Economics of Retirement Policy in the 21st Century*
- *The Graying of the Middle Kingdom: The Demographics and Economics of Retirement Policy in China*
- *Germany and the Challenge of Global Aging*
- *CSIS Global Aging Vulnerability Index*
- *Projecting Immigration*
- *Building Human Capital in an Aging Mexico*

Web Resources

The United Nations Population Division (<http://www.un.org/esa/population/unpop.htm>) remains the standard of reference for global population figures, as well as analysis of trends.

The Population Reference Bureau (<http://www.pbr.org>) provides detailed articles, datasheets, and reports on key population issues including mortality rates, gender, race/ethnicity, and fertility. PRB also offers specific country data.

Further Reading

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Revolution resources

The combined effects of population growth and income growth are expected to double global food consumption in the next 30 years...

Food

With the exception of Sub-Saharan, despite dire predictions and a projected tripling in global population, starvation and malnourishment have declined dramatically since the end of the Second World War. Food productivity has increased around the globe and we have not yet reached the "limits to growth" that were predicted in the 1970s. However, the world is reaching a point of diminishing returns. Water scarcity and quality will be a prime determinant of expanding current food production. Poor land management and the overuse of fertilizers are causing land degradation, soil erosion and desertification are taking place on a massive scale in agricultural areas from the Amazon to the Yangtze. Agricultural productivity gains and biotechnology are the big wildcards.

Water

Global trends in population growth, economic development, industrialization, and food production, among others, are placing increasing stress on the most precious finite natural resource: water. These trends are leading to a period marked by unprecedented, sweeping water scarcity, toxic water quality, and daunting sanitation challenges. By 2025, an estimated 54 countries, home to four billion people, or nearly half of the world's population, will face serious constraints on their capacity to meet water demands.¹ If not effectively addressed, global water shortages will significantly hinder economic development and could spark conflicts within and between countries. In addition, the lack of access to safe drinking water and sanitation could claim more lives by 2025 than the HIV/AIDS pandemic.

Energy

On the extensively analyzed issue of global energy futures, our view is that the trends in global demand for hydrocarbons are not likely to change significantly even through 2030. The world will become increasingly reliant on hydrocarbons during our forecast period. Not surprisingly, we expect to see an increased share of production from the Persian Gulf. By 2025 OPEC will account for up to 50 percent of the world supply of oil. Skyrocketing demand—primarily in Asia—will drive these trends. Goldman Sachs recently estimated that the number of cars in China could rise from 12 million in 2004 to 500 million by 2050. In India, the number of cars could increase even faster, from 5 million to 600 million. Compare these numbers to the 200 million vehicles currently on the road in the United States—a vehicle fleet which consumes about 11 percent of the world's current daily oil output. Aggregate increases in other sources of energy will be overshadowed by the exponential consumption of coal, oil, and natural gas in the decades ahead. As a percentage of total world energy production, nuclear energy's portion of the pie will shrink while alternative energy sources will maintain their share at 8 percent. The impact of this rise in consumption is startling in terms of potential geopolitical conflict and environmental consequences.



DID YOU KNOW?

- At the time of the 1973 Arab oil embargo, the United States imported 36 percent of its oil. It now imports 56 percent. By 2020, more than 65-75 percent of U.S. oil and refined products will be imported from foreign sources.²
- Nigeria and Pakistan are projected to contribute the most to global population growth. In Nigeria, per capita arable land will shrink from 0.15 to 0.0728 hectares per person by 2050; in Pakistan it will shrink from 0.09 to 0.04 hectares per person.³
- Americans use an average of 20 pounds of coal per person per day for electricity, which adds up to over 7,000 pounds per person per year.⁴
- By 2020, India's demand for water will exceed its supply.⁵
- In developing countries, 90-95 percent of sewage and 70 percent of industrial wastes are dumped untreated into waters where they pollute the usable water supply.⁶
- Energy consumption in developed countries is projected to increase by about 29 percent between 1999 and 2020, compared to an increase of 129 percent in Asia's developing countries.⁷
- More than 40 percent of growth in electrical production out to the year 2030 will take place in Asia, and will be based principally on coal and natural-gas-fueled plants.⁸
- The Millennium Ecosystem Assessment (2005) estimates that between 5 and 25 percent of global freshwater use exceeds long-term accessible supplies. Agricultural uses are the biggest concerns, with an estimated 15 to 35 percent of irrigation withdrawals in excess of sustainable limits.⁹
- The FAO estimates that 842 million people worldwide are undernourished.
- 950 million people, or 40 percent of urban dwellers in the developing world, live in slums where they lack one or more of such basic services as access to sufficient living space, clean water and improved sanitation facilities

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of resource management. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

- 1) How do the strategic resources of food, water and energy interrelate? How will increasing standards of living increase demand for these resources? How can countries develop sustainable strategies for ensuring the availability of these resources for human health and economic growth?
- 2) Despite skyrocketing demand for energy, a transition from hydrocarbons to alternative sources of energy



on a large scale is not expected to occur in the short term. Why? What actions could organizations and governments take to speed this transition? What is the long-term cost of a gradual versus a rapid move to alternatives?

3) How does poor governance in donor and recipient countries hinder the dissemination of water purification and sanitation technologies to communities in need around the globe? What steps can be taken to work around existing obstacles of governance? To improve governance?

From CSIS

The CSIS Global Strategy Institute (<http://www.csis.org/gsi>) zooms in on the strategic resource management question of water with its Global Water Futures Project.

Frank Verrastro directs the Energy Program at CSIS (<http://www.csis.org/energy>) where he, Bob Ebel, and other CSIS scholars examine issues that include nuclear energy, Caspian energy, oil market studies and strategic issues of energy. Recent publications include "The Changing Geopolitics of Energy."

Dr. Anthony Cordesman, CSIS Arleigh A. Burke Chair in Strategy (<http://www.csis.org/burke>), conducts a number of research endeavors on Middle East energy and security and areas pertinent to global energy policy and security.

Web Resources

Food: Authoritative global sources include the United Nations World Food Program and United Nations Food and Agriculture Program (<http://www.wfp.org/english>).

Water: The World Water Council's (<http://www.worldwatercouncil.org/>) mission is to promote awareness and build political commitment on critical water issues at all levels.

Energy: The International Energy Agency's annual publication entitled World Energy Outlook 2005 (<http://www.worldenergyoutlook.org/>) provides a global energy survey that includes detailed long-term projections of energy demand, energy supply and CO₂ emissions. The United States Department of Energy offers a range of resources on energy sources, efficiency, environmental implications, pricing trends, and new technology.

Further Reading

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evolution 3 technology

“There is always likely to be anxiety about the jobs of the future, because in the long run most of them will involve producing goods and services that have not yet been invented.”- Alan Greenspan ¹

Computation

In June 2005, IBM's two eServer Blue Gene Solution computers achieved computational capacities of 280 teraflops (280 trillion calculations per second) and 114 teraflops, respectively, making them the most powerful supercomputers in the world.² In addition to achieving unimaginable new speeds, computers are becoming ubiquitous. Wireless laptops, personal e-mail and communication devices, media players, and on-board navigation systems are just a few examples of how technology has already made computational power and networked information constantly available. Decreased costs, more user-friendly interfaces, and smaller, lighter, less expensive materials will push the further integration of computers into our daily lives.

Genetics and Biotechnology

The completion of the Human Genome Project, mapping the 30,000 genes and sequencing the three billion chemical base pairs that make up the human genome, marked an incredible achievement in the history of humankind. In the future, we can expect greater scientific advances in the areas of proteomics—the study of the role of and interaction between the body's more than 300,000 proteins—as well as genetic and even germ-line therapy. With the advancement of new technologies and medicines, children born today could live into the 22nd century.

Nanotechnology

Scientists have already achieved significant successes in the micro-miniaturization of sensors, activators, and actuators. Micro-electromechanical machines (MEMs), smaller than dust mites and formed out of microscopic gears, chains, and computer chips, are already being deployed in medicine, agriculture, supply chain management, materials science, manufacturing, and warfare, to name just a few. According to M.C. Roco, Senior Advisor on Nanotechnology at the National Science Foundation, “[T]he worldwide annual industrial production in the nanotech sectors is expected to exceed \$1 trillion 10 to 15 years from now, which would require two million nanotechnology workers.”³ During this time frame, nanotechnology will move from the current microscopic level down to the molecular and atomic level.

Technology Backlash

Unfortunately, each of these technological advancements also carries potential downsides. The combination of deep computing and pervasive computing through data mining could be used for serious violations of individual privacy. The unprecedented level of control over crops, livestock, and even human life itself has already prompted serious backlash. Future discoveries will challenge leaders to respond to new ethical complexities and public policy challenges.

DID YOU KNOW?

- There are more mobile phones in China than people in the US—some 350 million.⁴
- We have reached a point, as MIT's Nicholas Negroponte has noted, at which "a fiber the size of a human hair can deliver every issue of the Wall Street Journal ever made in less than a second."⁵
- About 60 percent of food products on US shelves have at least one ingredient that is likely from a genetically engineered crop. Byproducts of soybeans, corn, canola, and cotton constitute the vast majority of these crops.⁶
- There are no genetically modified animals approved for consumption in the U.S.⁷
- The U.S. biotechnology industry's revenue in 2004 was \$42.7 billion, 78.2% of the global total.⁸
- Microbes offer unusual capabilities reflecting the diversity of their environmental niches. These may prove to be useful as a source of new genes and organisms of value in addressing bioremediation, global change, biotechnology, and energy production.⁹
- Computing elements are expected to drop so dramatically in price that they can be integrated at negligible cost into fabrics and other materials (offering early warning smoke detection, for instance).¹⁰
- In 2002 the world spent an aggregate of \$2 billion a year in nanotechnology research. In 2005 alone, the US government invested approximately \$1.1 billion in such research—eight times its 1997 funding level.¹¹
- If built with molecular components using nanotechnology, the equivalent of a modern microprocessor will fit in roughly 1/1000 of a cubic micron. Megabytes of fast RAM and gigabytes of tape-like storage with sub-millisecond access times will fit within a cubic micron.¹²
- Nanotechnology has the potential to detect and destroy cancer cells at the molecular level. The National Cancer Institute believes that nanotechnology is vital to its stated goal of "eliminating suffering and death from cancer by 2015."¹³

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of technological advancement. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

1) In an age of massive data storage and information ubiquity, who should control our personal information? What will happen when an individual's genome is routinely digitized and archived? Who should control such information? The government? The private sector? The individual? How can such information be secured? What benefits and dangers does this information expose an individual to?



2) In a coming age of personalized medicine—medicine based on the genetic makeup of an individual—scientists are predicting life spans of 120 years of age and beyond for children born today in parts of the developed world. How will longer, healthier lives change concepts of retirement? Of social security and pensions? This technology is unlikely to be widely available. What consequences will result from this furthering divide in access to healthcare between rich and poor, developed and developing worlds?

3) Only in its infancy, nanotechnology has already yielded materials harder than diamond and technologies to attack cancer on the molecular level. It will likely be a trillion dollar industry by 2020. Surprisingly, it may also be the first industry to emerge simultaneously in the developed and developing worlds. What are the prospects in other fields to begin to address the massive technological gap between the developed and developing “worlds”?

4) Why is it important that developed countries not simply leave behind the developing world as they continue the age of technological revolution? Is Thomas Friedman correct in his statement that information technology is bridging the gap and allowing geniuses in developing countries to “innovate without having to emigrate”? Will we see the end of the emigration of skilled workers from the developing world or more internal migration of skilled workers within it?

From CSIS

The Technology and Public Policy Program (<http://www.csis.org/researchfocus/TechnologyPolicy>) at CSIS provides a look at emerging technologies and the issues they present for public policy and national security in the twenty-first century.

The CSIS Biotechnology Project (<http://www.csis.org/biotech>) hosts a series of debates, working groups, and in-depth analytical efforts to inform the public debate on biotechnology; strengthen U.S. biotechnology research, innovation, and

Web Resources

Computation: The Top 500 (<http://www.top500.org>) is the list of the 500 fastest supercomputers in the world and provides interesting information on trends as well as geographic location of computers.

Genetics and Biotechnology: The Genetically Engendered Organisms Public Issues Education Project (<http://www.geo-pie.cornell.edu/>) provides educational materials exploring the complex scientific and social issues associated with genetic engineering.

Nanotechnology: The Center for Responsible Nanotechnology (<http://www.crnano.org>) researches nanotechnology-related issues—political, economic, military, humanitarian, and technological. Its purpose is to investigate the societal implications, long-range risks, and effective use of nanotechnology, and to educate those who will influence its use, or who will be affected by it. The National Nanotechnology Initiative coordinates the multiagency U.S. efforts in nanoscale science, engineering, and technology. It gathers and conducts research on applications of nanotechnology and the societal and safety implications of the technology

Further Reading

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evolution 4 information

M.I.T. is now developing a durable wireless laptop computer made for use in the developing world. This laptop will be sold for \$100 each to nations around the world for free distribution to students.¹

Death of Distance

We are witnessing the growth of what former Federal Reserve Chairman, Alan Greenspan, has termed the “weightless economy”—an economy in which knowledge and technical capacity assume ever more significant positions relative to the “material” world. The best students and entrepreneurs of the developing world are no longer limited by geography and their home country’s development. As information technology continues to reach these workers, they will be able to compete more directly with those in the developed world.

Re-Learning Process

In the wake of this competition, information will become increasingly perishable. Furthermore, as the information economy continues to mature, average workers will experience a half-dozen major career changes during the course of their professional lives. In a highly dynamic, knowledge-based economy, constant learning and retraining are not simply desirable; they are necessary to stay relevant. Education systems must adapt to prepare individuals to compete in the global arena. The growing prevalence of cyber-universities and distance-learning courses are an outgrowth of this anticipated need, both in the developed and developing world.

Truth Defined

The information revolution is also facilitating the decentralization and proliferation of media. The dominance, credibility, and profitability of traditional print and television has faced a succession of challengers: infotainment, headline news, talk radio, satellite stations such as Al Jazeera, and today, blogs. With the proliferation of these diverse sources, individuals can choose their own sources of information and thus choose their own truth. Groups that were once outsiders can organize and impact policymaking on a real-time basis. However, the vast majority of humanity still lacks access to information and communication technologies, and they are locked out of the digital revolution—especially in Latin America, Africa and the Middle East. With governments and traditional media elites facing stiff competition, what forms of media will dominate this new era?

DID YOU KNOW?

- Ninety-nine percent of the public schools in the US have access to the Internet.²
- The University of California-Berkeley estimates that 14 million jobs are vulnerable to moving overseas in the next few years (“outsourcing”). These jobs will be replaced with more qualitative (knowledge-based) positions, for which an adequate supply of workers may not be prepared.³
- Blog search engine Technorati estimates that there are 16.5 million blogs as of September 2005. This count doubles every five months.⁴
- By 2015, 80 percent of people currently entered into the workforce will remain. Yet, 80 percent of current technology will be replaced with new technology to which existing workers must adapt.⁵
- Between the early 1980s and the Iraq War in 2003, American news coverage of foreign affairs dropped by two-thirds.⁶
- About three in ten Americans now get their news primarily from online sources.⁷
- Open and distance learning has existed for about 100 years in the more developed regions and for one or two generations in the developing regions.⁸
- In the U.S. in 2000-2001, 89 percent of public four-year institutions offered distance learning courses, compared with 40 percent of private four year institutions.⁹
- The People’s Republic of China has 50,000 government workers monitoring and censoring the internet.¹⁰
- William Nordhaus, an economist at Yale University, has calculated that under 30 percent of the goods and services consumed at the end of the 20th century were variants of the goods and services produced 100 years earlier.¹¹

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of the knowledge era. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

1) Why are work and learning becoming “the same thing”? How can basic education prepare workers for a lifetime of adaptation, retraining and continuing education? What role will the online world play in this process? How might online education level the playing field between developed and developing countries?



2) What is the impact on media objectivity of the profusion of available information sources? Will individuals increasingly live in worlds of their own ideological and moral construction by further isolating themselves from competing ideas? Are we entering an era of “choose your truth”? How does information technology further expand the rifts between civilizations and between individuals in the same communities? How does it bridge these divides?

3) Information technology has changed the context in which governments must operate. Individual citizens and groups now have the ability to quickly organize and contest or influence the direction and mode of governance. From 24/7 news to flash mobs to blogs to political tell-alls, the rapid flow of information demands rapid results from systems of governance. How has information technology compressed the ability of governments and organizations across the board to implement long-term strategic planning? How has information technology redefined sovereign and cultural borders that once existed? How can the government leverage information technology to “fight back”? What kinds of skills and resources are needed both by the people sending the message and those receiving the information?

From CSIS

The Technology and Public Policy Program at CSIS (<http://www.csis.org/researchfocus/TechnologyPolicy/>) offers a look at emerging technologies that are creating the knowledge era and the public policy and security issues they raise.

Explore some recent projects of the Technology Program:

- *Data Mining and Data Analysis for Counterterrorism*
- *Government in the Information Age*
- *Information Technologies*
- *Intelligence, Surveillance, and Privacy*

Web Resources

The World Bank Group’s Global Information & Communication Technologies Department (GICT) (<http://www.worldbank.org>) plays an important role in developing and promoting access to information and communications technologies (ICT) in developing countries.

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Revolution 5 integration

According to the UN Development Program, the accumulated wealth of the 225 richest individuals in the world is equivalent to the combined annual earnings of the 2.7 billion people at the bottom of the global income ladder.¹

March of Globalization

Despite the rising international debate against continued economic liberalization, we believe that further global integration will continue out to the year 2025. The benefits of integration to both developed and developing countries are clear. The Euro area's GDP now rivals that of the United States while the UN maintains that economic integration has allowed a number of developing countries to achieve in 30 years what it took industrialized nations up to 100 years to accomplish.² Consider, for example, that real per capita GDP in Asia more than doubled between 1980 and 2000. While there may be temporary setbacks along the path to deeper integration, the world has clearly benefited from liberal economic reforms and continued momentum for greater integration appears to be likely in the long-term

"BRIC" Economies

The "BRIC" countries—Brazil, Russia, India and China—will increasingly define the world's new economic center of gravity. According to a report from Goldman Sachs, if they can consolidate conditions conducive to structural growth, the total GDP of the "BRIC" economies by the year 2025 could equal half the aggregate level of the G-6 countries (United States, Japan, Germany, UK, France and Italy). By 2040, assuming strong and sustained growth rates by the BRIC countries, they could overtake the G-6 altogether. However, the massive populations of the BRIC countries—equal to 40 percent of global population in 2025—will prevent economic growth from being translated dramatically in per capita income gains and the concentrated growth will exacerbate growing income inequity. For instance, "Forbes Asia" magazine's annual list of the richest Chinese found that there are now ten billionaires in China compared to three only a year ago. Meanwhile, GNI per capita in China remained under \$1,300 in 2004.

Inequality

Income disparities will not be limited to the BRIC countries alone. Global aggregate output growth has increased on average by more than 3.6 percent annually over the last quarter century, and we expect the trend to continue through 2050. While this growth in global GDP and falling poverty rates indicate a rising economic sea level, global income inequalities have also grown. The fact remains that a staggering 2.8 billion people live on less than \$2 a day. The costs for basic commodities continue to fluctuate, meaning that it is increasingly difficult for the poorest of the poor to meet daily requirements for life. These disparities - between the "haves" and "have-nots"- are fueling populist backlash against global inequity and integration. Globalization's greatest enemy is not its absolute success, but its relative concentrations.

DID YOU KNOW?

- During the 1990s the economies of developing countries that were integrated into the world economy grew more than twice as fast as the rich countries. The “non-globalizers” grew only half as fast and continue to lag behind.³
- During the 1990s, the average annual rate of growth of gross domestic product (GDP) for developing countries as a whole increased to 4.3 percent.⁴
- 15 percent of the world’s population, located in the high-income countries, accounts for 56 percent of total consumption, while the poorest 40 percent, living in low-income countries, accounts for only 11 percent of consumption.⁵
- The poorest 10 percent of the world’s people have only 1.6 percent of the income of the richest 10 percent, and the richest 1 percent receives as much income as the poorest 57 percent.⁶
- Multinational corporations virtually control economic integration; two-thirds of international trade is accounted for by just 500 corporations.⁷
- International trade is expanding faster than the world’s economy – adding evidence to the claim that trade is one of the main engines of economic growth.⁸
- International trade has grown 12-fold since World War II and is expected to grow 6 percent annually for the next 10 years.
- In 1947 the average trade tariff on manufactured imports globally was 47 percent; by 1980 it was only 6 percent.⁹
- The US and Canada are the largest trading partners in the world. In 2003, two-way trade in goods and services surpassed \$441.5 billion.¹⁰
- In absolute terms, FDI to developing countries increased from \$36 billion in 1991 to \$178 billion in 2000.¹¹

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of economic integration. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

1) An integrated global supply chain means that, as Nobel Laureate Milton Friedman put it, “It is possible to produce a product anywhere, using resources from anywhere, by a company located anywhere, to be sold anywhere.” What vulnerabilities are intrinsic in this system—the “just in time” supply chain—for countries, governments and organizations? How do labor and the mobility of people (migration) fit into the logic of this globally integrated economic system? In such a system, what is the importance of traditional notions of state sovereignty? Of cultural borders?



2) What will a potential shift of the economic center of gravity from the traditional G-6 countries—United States, Japan, Germany, UK, France and Italy—to the “BRIC” countries mean? Does it signal hope for a new wave of economic growth and new engines of regional prosperity to drive the global economy or does this signal the fading importance of Europe and the US? Will the rise of the BRIC countries signal the rise of middle classes within those countries or a further expansion of inequity in income distribution? How can governance challenges in each of the BRIC countries derail their economic growth? Resource challenges? Demography and population? The threat of conflict?

3) 2.8 billion people—nearly 45 percent of the world’s population—live on less than two dollars a day. To what extent can global economic growth address addressing this massive need—especially in the face of information technology and the ability to quickly organize political and social movements? The rise of radical Islam, opposition movements to environmental degradation and urban-rural divides in China and India, and the “Bolivarian” movement in Venezuela led by Hugo Chavez are all examples of how perceived inequality in the global playing field can manifest itself into political movements. What is the long-term impact of such movements to the further integration of the world economy? How can the benefits of globalization be more widely distributed and the costs minimized? What specific role should the United States play in addressing global inequity? What specific role should current global powers (the EU, Japan) and rising powers (China, India, Brazil) play?

From CSIS

The William M. Scholl Chair in International Business (<http://www.csis.org/schollchair/>) was established to further the role that international business plays in advancing economic growth, innovation, prosperity, security, and freedom in the United States and throughout the world.

Dr. Sidney Weintraub holds the Simon Chair in Political Economy (<http://www.csis.org/simonchair/>). Dr. Weintraub examines issues of trade, investment and international finance, particularly in Latin America and Canada.

Web Resources

The Corporate Social Responsibility Newswire (<http://www.csrwire.com/>) is a reliable source to track increasingly visible corporate involvement in international affairs.

The Economist Online (<http://www.economist.com/>) is a premier online source for the analysis of world business and current affairs.

The World Bank (<http://www.worldbank.org>) works to eliminate poverty around the world by helping connect countries and their people to the benefits of globalization.

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Revolution **conflict**

In 2000, there were more than 500 incidents of illegal transportation of nuclear and radioactive materials across the Russian border.¹

Asymmetric Warfare

This new era of conflict can be characterized by asymmetric warfare in which dominant military powers are confronted by a wide range of adversaries—from non-state radical ideologies to transnational criminal elements to rogue states—employing unconventional tactics in a war ambiguous in both place and time. From suicide bombers to information warfare, the threat is multi-dimensional.

The attacks of September 11, 2001 introduced the possibility of asymmetrical super-violence, and they have been echoed time and again from London to Indonesia. In the future we can expect this trend to continue and at an ever-greater scale. Zbigniew Brzezinski, CSIS Counselor and former U.S. National Security Advisor, has warned that, “[F]rom now on, any terrorist group planning its own terrorist activity is going to use what was done on September 11 as the standard for success.”

Weapons of Mass Destruction

This leads us to our second conclusion—that asymmetric foes will increasingly focus on the acquisition and use of chemical, biological and nuclear weapons (known collectively as weapons of mass destruction or WMD). As CSIS Chairman, former U.S. Senator and co-founder of the Nuclear Threat Initiative, Sam Nunn, has noted, “The terrorists are racing and we are crawling.” The global nuclear black market of Pakistan’s A.Q. Khan, loosely secured fissile materials in the Russian Federation, and al-Qaeda’s documented pursuit of WMD all point to the urgency of this threat. The unsolved anthrax and ricin attacks in the United States underscore the threat of biological and chemical weapons.

Force Transformation

These trends—asymmetrical warfare, homeland security and WMD in the hands of non-state actors and radical regimes—represent just a few of the drivers that will shape the security landscape for the foreseeable future. In order to respond to these threats, militaries and police forces will need to employ the whole spectrum of technological solutions in coordination with a new range of human skills. They will need to change to match an amorphous, swift and deadly enemy.

DID YOU KNOW?

- One percent of the victims of significant terrorist attacks in 2004 were Americans.²
- More than 30 suicide bombings since 2000, according to *Time* magazine, have been carried out by children, and multiple juvenile al-Qaeda terrorists have been detained at the U.S. military prison on Guantanamo Bay in the special "Camp Iguana" facility.³
- The first U.S. soldier killed from hostile fire in Afghanistan was shot by a 14-year-old sniper.⁴
- The United States accounts for almost half of the world's total arms production; France and the United Kingdom for 10 per cent each; and Germany, Russia and Japan for roughly 4 per cent each.⁵
- In June 2004, the U.S. Department of Energy announced that "almost half" of the warheads in the U.S. stockpile would be retired by 2012 and eventually dismantled. The current total stockpile of 10,350 is estimated to be reduced to about 6,000 by 2012.⁶
- In 1997, A.Q. Khan began shipping nuclear supplies to North Korea. Included among these shipments were "drawings, sketches, technical data, and depleted uranium hexafluoride."⁷
- The 2005 US military budget at \$420.7 billion was more than 29 times as large as the combined spending of the seven "rogue" states (Cuba, Iran, Iraq, Libya, North Korea, Sudan and Syria) that spent \$14.4 billion.⁸
- The 2005 Chinese military budget was approximately 25 billion dollars.⁹
- According to the GAO, there are 120 countries or groups developing information warfare systems. Coupled with the 30,000 hacker-oriented sites, cyber-warfare will constitute a major threat in future.¹⁰
- The DOE estimates that only 4 kilograms of plutonium are needed to make a bomb.¹¹

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of conflict and conflict resolution. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

1) Asymmetrical violence (including terrorism) has historically accompanied eras of global economic expansion and rapid technological change. How might the very technologies, movement of goods, people and money that power globalization also inspire violent reaction? What steps can be taken to mitigate the spread of reactionary movements to the forces of globalization? Is this violence nihilistic or simply "politics by other means"? How are economics likely to drive conflict in the future?



2) How would the global risk calculus of individuals, organizations and governments shift if a weapon of mass destruction were used in a way that resulted in massive casualties in a heavily populated city? The likelihood of such an event is high according to experts around the globe. Would such an event promote closer cooperation between countries in fighting the spread of WMD or would it drive the world further apart and back within sovereign borders and previous conceptions of the nation-state?

3) How does fighting a war against an ambiguous, non-state foe alter existing relations between countries? What are the keys to transforming military and police forces to meet the challenges of guarding against the threats of today and tomorrow? How must justice systems and international cooperation be reformed to meet these threats? How many civil liberties will citizens give up to increase their feelings of security? What actions carried out by the state on their behalf will they tolerate?

From CSIS

The CSIS International Security Program (<http://www.csis.org/isp/>) tracks the major security concerns the United States faces today and beyond, including strategy and regional security issues.

View the reports of the Strategic Assessment Project, prepared by Anthony H. Cordesman, Senior Fellow and the Arleigh A. Burke Chair in Strategy at CSIS (<http://www.csis.org/burke/>). The reports summarize the global military balance in graphic and tabular form. They are divided by region and sub-region, cover the trends in conventional forces, nuclear forces, proliferation, military effort and spending, procurement and arms import activity, force modernization, and force quality.

Visit the CSIS Transnational Threats Initiative (<http://www.csis.org/tnt/>) to learn more about the breadth, depth and impact of transnational threats including crime, terrorism, information warfare, and weapons of mass destruction proliferation.

The CSIS Homeland Security Program (<http://www.csis.org/researchfocus/HomelandSec/>) is focused on providing policy solutions to the U.S. government's newest agency by considering in a broader context the challenges it faces. The program sponsors a number of simulation exercises to help prepare for a variety of possible contingencies.

Web Resources

The National Memorial Institute for the Prevention of Terrorism (<http://www.mipt.or/>) located in Oklahoma City is dedicated to preventing terrorism and mitigating its effects. The Institute is a repository of knowledge on all aspects of terrorism around the world.

The Small Arms Survey (<http://www.smallarmssurvey.org/>) is an independent research project located at the Graduate Institute of International Studies, Geneva, Switzerland. Its reports and databases examine the role Small Arms play in destabilizing various regions and is a resource for governments, activists, and policy makers.

The Human Security Report (<http://www.humansecurityreport.info/>) is a document examining world wide political violence. The report was produced by the Human Security Center at The University of British Columbia.

The International Crisis Group (<http://www.crisisgroup.org/home/index.cfm?>) is a non-governmental organization that is dedicated to monitoring regions of instability throughout the world. The ICG provides resources and background information on all current and potential conflicts worldwide.



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evolution 7 governance

Ninety-one percent of surveyed business executives in large companies believe that the public has a right to expect good corporate citizenship.¹

Corporate Citizenship

Increasingly, companies face the challenge of juggling a triple bottom line from shareholders, management, and the public at large in a new form of civic engagement known as corporate citizenship. Revenues of the Wal-Mart Corporation in 2004 totaled \$263 billion, placing it between Austria and Indonesia as the twenty-second largest economic entity in the world (when total revenue is compared with gross domestic product). This success comes with new responsibilities. The 2004 Cone Corporate Citizenship Study shows that eight in ten Americans say that corporate support of social causes wins their trust in a company—a 21 percent increase in this response since the first survey in 1997.²

Civil Society

As globalization, trade and technology impact societies, non-governmental organizations (NGOs) have become increasingly influential in world affairs—filling gaps in the provision of social services, leveraging positions in political arenas, and connecting people, money, and ideas across the world. The United Nations Human Development Report counted 37,000 registered international NGOs in 2000, and those numbers are expected to grow significantly in the decades to come.

Strategic Leadership

National and international government organizations have struggled to keep pace with the rapid change enveloping the world. They have failed to redefine core competencies vis-à-vis the emerging capacities of the private sector and NGOs. Dynamic, innovative, strategic partnerships between and amongst governments, NGOs, the private sector, and international organizations will be necessary to address the challenges highlighted in the Seven Revolutions. Just-in-time delivery, the reach of information technology and the pressures of the quarterly profit statement, election cycle, or annual report deny leaders the opportunity to think strategically and for long-term gains. In an increasingly integrated world, seeing the big picture requires a daunting breadth and depth of knowledge. Those leaders able to bridge these gaps and create a strategic vision will enable the innovative partnerships necessary to invent a better future. But such leaders and precious few are far between.

DID YOU KNOW?

- Americans, 18-25 years old, are significantly more likely to consider a company's citizenship practices when making purchasing, employment, and investment decisions.³
- Nine out of ten surveyed CEOs feel that partnerships between business, government, and civil society must play either a major role or some role in addressing key development challenges facing the world today.⁴
- A recent report from the World Economic Forum finds that the mainstream financial community places little emphasis on social, environmental, and ethical issues in its investment decisions.⁵
- Sixty-four percent of surveyed U.S. executives from large companies believe corporate citizenship is part of their business strategy.⁶
- For the third consecutive year, Transparency International has ranked Bangladesh in 2005 as the most corrupt country in the world. According to a World Bank study, in the absence of widespread corruption, the country could achieve 2-3 percent additional GDP growth and over the long term could double per capita income in the absence of such high levels of corruption.⁷
- Thirty new sovereign countries have been created since 1990, largely due to do the dissolution of the USSR.⁸
- Well over half of American adult men and women believe the United States would be better off if there were more women in leadership positions. However, women are significantly less likely than men to agree with this finding.⁹
- In a recent U.S. survey, more than four in five agreed with this statement: "Americans who don't keep up on important issues are a big part of today's leadership problem."¹⁰
- The older an American is, the less confidence she or he has in leaders of NGOs (including traditional charitable organizations).¹¹
- About 2 billion people live in countries that are in danger of collapse.¹²

LEARN MORE

Use the questions below to structure a discussion on the promise and peril of challenges in governance. We offer some suggested sources to complement your consideration of these important issues.

Discussion Questions

1) We live in a world in which 13 of the top 50 economies in the world are companies, not countries. How does this change the responsibility companies now maintain for providing for social needs and addressing big ticket challenges of the future? How can companies ensure their own future prosperity by beginning to engage looming issues of concern—from energy needs to public health to income inequity?



2) If we have truly crossed the bridge from the Westphalian nation-state model, then what is the next step in the evolution of our societies? Will governments around the world continue to be overwhelmed by this new environment? Will they adapt to meet the constellation of new challenges and opportunities? Will authority become increasingly decentralized? What importance does leadership play in this new system and how can it help guide countries, corporations, organizations and institutions to necessary reform?

3) Is the proliferation of non-governmental organizations (NGOs) the result of a lack of capacity on the part of governments? Or are NGOs an innovation in human social organization and a leap forward in the diversity of participation in addressing global and local challenges? How can NGOs and governments work together to complement one another? How should the private sector involve itself in such coalitions?

From CSIS

The CSIS Hills Program on Governance (<http://www.hillsgovernance.org/>) focuses on the need for multinational companies and governments to work jointly to promote good governance, especially in emerging markets. Its central task is to develop an actionable agenda that promotes good governance at the intersection of the private and public sectors through dialogue and training at the mid career and university levels.

Web Resources

The United Nations (<http://www.un.org>), consisting of 191 countries, strives to maintain international peace and security, develop friendly relations among nations, cooperate in solving international problems, promote respect for human rights, and be a center for harmonizing the actions of nations.

The Center for Public Leadership (<http://www.ksg.harvard.edu/leadership/>) is dedicated to leadership education and research. It provides research, profiles of leadership role models, and polling data on leadership.

Further Reading

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SCIENCE AS A SOLUTION: AN INNOVATION AGENDA FOR THE NEXT PRESIDENT

The next President will make decisions that determine our nation's place in the 21st century. We remain the world's military and economic superpower, yet at home and abroad we face economic and national security challenges to our leadership with serious consequences for future generations of Americans. During the 2008 presidential campaign, Americans will judge candidates on their ability to lead the nation in addressing these challenges.

As each candidate considers the resources on which his or her administration might draw for ideas and talent, few are as valuable as the people and organizations that comprise America's matrix of innovation. The elements of this matrix—universities, businesses, nonprofit organizations, government agencies, and individual innovators—are seeking and creating real solutions for the challenges we face. It is this innovation matrix—decentralized, networked, cross-disciplinary, and sparked by the intellectual genius of Americans and people from around the world—that can ensure America's national and economic security and world leadership in the 21st century.

At the core of this great national innovation matrix is our system of higher education and research. This system sets the standard for the world, in part because of the autonomy and extraordinary diversity of its 4,000 institutions. Our colleges and universities educate the men and women who, in turn, create the ideas that spark innovation. Among these institutions, America's research universities serve particularly as drivers of innovation because they fully integrate research with education. With strong government support, these institutions have made America the world's leading incubator of innovators and innovation.

The 60 U.S. universities of the Association of American Universities educate more than half of the nation's Ph.D.'s and 58 percent of those in science, mathematics, and engineering. As the only American higher education association composed solely of leading research universities, AAU focuses on the current and potential contributions of such universities.

In the next few pages we offer Presidential candidates and the next administration a vision for science, technology, and education that can help ensure that the nation remains strong and capable of answering the daunting challenges we face.

AMERICA'S RESEARCH UNIVERSITIES: INCUBATORS OF IDEAS AND INNOVATION

University research is a vital building block in our nation's R&D enterprise. Universities perform 54 percent of the nation's "basic" research. Such research is aimed at increasing fundamental knowledge and understanding rather than developing a specific device or application. But new products and processes would be impossible without basic research. The competitive system of merit review—or peer review—ensures that most federal support for basic research is based on scientific merit.

The economic benefits of academic research have been well documented. One of the most comprehensive analyses concluded that the average annual rate of return to society from academic research ranges from 28 to 40 percent.¹ The successes of this system are so extraordinary that we often take them for granted. Scientific and technological advances such as the laser, the Internet, magnetic resonance imaging, global positioning systems, and even the MP3 player are results of federal investments in university research. Our nation's commerce, security, and culture would be profoundly different without the technologies that have emerged from university research.

Moreover, this system is a "twofer." U.S. universities use their research activities not only to create the new knowledge that provides the foundation for new products and processes but also to educate the next generation's scientists, engineers, teachers, and leaders in government and industry. More likely than not, the next significant advance in technology will come from the federally supported research of scientists and engineers who earned their degrees working as graduate students in university laboratories substantially funded by federal research agencies.

At one time, the federal government's system of supporting basic research and graduate education at universities was uniquely American. But a number of our European and Asian economic competitors have recognized the value of this system and are adopting the American model rapidly and effectively. As global competition in science and technology intensifies, America must work harder to retain our lead.

A HALF-CENTURY OF INNOVATION ADVANCES

Fifty years ago, on October 4, 1957, the Soviet Union launched Sputnik, a tiny satellite that shocked the nation and signaled the possibility that American scientific preeminence had been overtaken by our Cold War adversary. Sputnik triggered, virtually overnight, a national strategy of investing in education and research to reclaim American scientific and technological leadership.

Congress vastly strengthened the government's scientific enterprise, creating new agencies such as the National Aeronautics and Space Administration (NASA) and the Defense Advanced Research Projects Agency. In just four years, Congress doubled the federal R&D investment and tripled funding for basic research at the National Science Foundation (NSF), the National Institutes of Health (NIH), and other agencies. Much of this funding

¹ Edwin Mansfield, "Academic Research and Industrial Innovation," *Research Policy* 20, no. 1 (1991): 1-12; and Edwin Mansfield, "Academic Research and Industrial Innovation: A Further Note," *Research Policy* 21, no. 3 (1992): 295-96.

was invested in universities, the government's main partner in basic research.

At the same time, the National Defense Education Act of 1958 created new programs to improve the teaching of science and mathematics in elementary and secondary schools; created new graduate fellowships to strengthen Ph.D. programs in all disciplines; provided need-based, low-interest student loans to undergraduate and graduate students; and expanded instruction and teacher training in foreign languages and cultures.

Together these measures created an unrivaled research and education enterprise that helped quadruple the number of U.S. Nobel prize winners in science in the second half of the 20th century and led to discoveries that transformed the country and much of the world.

THE FUTURE OF U.S. SCIENCE AND INNOVATION

To maintain America's global leadership, we must build on our history of scientific advancement to revitalize our innovation system for the 21st century. In fast-moving fields, competitive advantage accrues to those nations that make research breakthroughs. Others are investing heavily in scientific research and facilities because they recognize the benefits of building a strong internal science capacity. We need a long-term plan to keep America in the forefront of scientific advancement and innovation.

To ensure a robust system of science and innovation, AAU calls upon the next President to do the following:

- **Harness the nation's innovation matrix to help address major national and international challenges;**
- **Expand and nurture U.S. talent in science, mathematics, and engineering to create a workforce ready to meet the innovation challenges of the 21st century;**
- **Reaffirm and strengthen the government-university partnership; and**
- **Elevate the role of science in White House policy decisions.**

Following is a more detailed discussion of each of these recommendations.

1) Harness the nation's innovation matrix to help address major national and international challenges.

In his seminal 1945 report to President Truman, *Science the Endless Frontier*, Vannevar Bush recognized the important role that science and universities could play in addressing issues of vital national importance relating to health, the economy, national security, and quality of life. This vision led to the unique system of government support of science at universities described above.

University research and the people who conduct this research are an important part of the solution to nearly every major challenge facing our country. Recognizing this, AAU calls upon the next President to use interagency,

multidisciplinary scientific initiatives to coordinate and harness the tremendous resources and talent at our universities and elsewhere. Following are some of the national and international challenges for which science is an important part of the solution:

- **Energy self-sufficiency.** Basic research is critical to the development of alternative forms of energy as well as conservation of fossil fuels. The nation must develop the research and talent base needed to meet future energy needs and ensure our future energy independence. Existing resources are not sufficient. It will take a significant commitment to develop a foundational research base in renewable and energy-efficient technologies in areas such as biofuels, solar, wind, geothermal, fusion, coal, and nuclear fission.
- **Environment and climate change.** Beyond contributing to conservation and alternative forms of energy, additional basic research is essential to understanding and addressing major environmental problems, including climate change. Significant efforts must be devoted in the next administration to carbon dioxide mitigation and to learning how to address the likely effects of climate change. A comprehensive approach to addressing this far-reaching problem will require an effective multidisciplinary engagement of physical and biological sciences, social sciences, and engineering.
- **Twenty-first century life sciences.** In the past two generations, U.S. health care has advanced from relieving symptoms and pain to intervening in the disease process and preventing death. A new administration can spark the next transformation in health care to personalized, molecular medicine, using knowledge from the sequencing of the human genome to prevent cancer and other diseases. Life sciences research of the 21st century can also provide solutions for new and emerging pandemics and the diseases of the developing world, global climate change and our need for alternative energy sources, and spark another green revolution in sustainable food production.
- **National and homeland security.** University research has played a major role in developing the technologies that have helped make America's men and women in uniform the most effective in the world. One need only consider the impact of global positioning systems or stealth technology to realize that investments by the Department of Defense (DOD) in basic research yield extraordinary benefits to national security. Moreover, new investments in the social and behavioral sciences can help us to understand and fight terrorism. Unfortunately, Defense basic research has been neglected in recent years. To develop the technologies and strategies needed to protect the nation from a broad range of security threats, we must revitalize the investment in Defense basic research.

2) Expand and nurture U.S. talent in science, mathematics, and engineering to create a workforce ready to meet the innovation challenges of the 21st century.

There are not enough American students well-versed in science and mathematics, and too few are pursuing careers in science and technology fields. There have been recent encouraging developments in this area, including enactment of the America COMPETES Act and the establishment of new science and mathematics programs at NSF and the Departments of Education, Energy, and Defense. But more needs to be done. The next President should cultivate talent by launching a major science, technology, engineering and mathematics (STEM) education initiative. Among other things, this initiative should:

- **Increase graduate fellowships and traineeships.** The initiative should fund a substantial increase in the

number of graduate fellowships and traineeships supported by federal science and education agencies as authorized by the America COMPETES Act. This should include increased funding for such programs as NSF's Graduate Research Fellowship and IGERT programs and the Department of Education's GAANN programs, as well as funding for the new Department of Energy (DOE) fellowship program aimed at training a new generation of scientists and engineers to tackle energy security challenges.

- **Expand the DOD National Defense Education Program.** This program provides scholarships and fellowships to students in critical fields of science, mathematics, and engineering in return for a commitment of federal public service.
- **Support young scientists.** Create new sources of competitive research funding at federal science agencies targeted toward exceptional young scientists and engineers. This could include expanding existing early career award programs, creating new young investigator research awards for promising scientists under 45 years old, and grants to top postdoctoral appointees who are seeking their first faculty appointments.
- **Enhance K-12 STEM education.** Actions should include: expanded support for summer STEM and foreign language teaching institutes at universities for K-12 teachers such as those already supported by the NSF through its Teacher Institutes for the 21st Century program; creating a college mentoring and tutoring program that offers students a stipend for tutoring K-12 students in STEM and foreign language coursework; and encouraging states to create innovative programs, modeled on UTEACH and CALTEACH, to develop a larger and more diverse generation of STEM teachers.
- **Encourage the best students from around the world to study and live in the United States.** The federal government should create clear pathways to permanent residency and U.S. citizenship for talented international students who earn U.S. academic degrees, as well as for outstanding international scientists and engineers teaching and conducting research in the U.S.

3) **Reaffirm and strengthen the government-university partnership.**

Steps we take to cultivate a larger and more-highly skilled science and technology workforce will be for naught without accompanying actions to strengthen the nation's research and innovation capacity. Key to strengthening that capacity is a revitalized government-university partnership. Below are four actions to strengthen that partnership that warrant special attention from the next President.

- **Provide adequate resources for basic research.** There is strong support within the current administration and Congress to increase funding for key federal research agencies, particularly NSF, the DOE Office of Science, and the National Institute of Standards and Technology. But the bipartisan agreement on the need for greater funding of basic research has been stymied by the larger budget battles between the White House and Congress. The nation's innovation system cannot afford another year of dismal basic research funding, as the FY08 appropriations process produced.

AAU calls upon the next President to increase funding for these agencies over a seven-year period in accordance with the recommendations in the National Academies' 2005 report, *Rising Above the Gathering Storm*. Similar increases should be provided to other key research agencies, including the Department of Defense and NASA. Finally, NIH's budget has been cut by nearly 15 percent since 2003, when adjusted for inflation. Sustained and steady growth is critical for medical science that can take years to plan and

perform. The next President should restore our nation's biomedical research capacity and restore funding for NIH to historical rates of growth.

- **Support continued university technology transfer.** Our government must continue to encourage the transformation of cutting-edge basic research into commercial products and medical advances for the public good. We can do this by continuing to abet collaboration between private sector firms and federally funded scientists at universities and federal laboratories. The Bayh-Dole Act, which provides universities and companies an effective incentive for developing new knowledge generated with federal funding, should be preserved. It has proved a valuable and uniquely American means of transferring the fruits of scientific discovery to broader societal benefits. Other countries, such as Japan, seeing its wisdom, are considering creating a similar system.
- **Ensure that research decisions are based on scientific quality.** Merit review of research grant proposals helps protect the taxpayers' investment in science. The President and Congress are responsible for ensuring that appropriate policies and procedures are in place to determine the allocation of scarce funds. By protecting the scientific peer review system, where research proposals undergo rigorous review for scientific quality, the President and Congress can help ensure that only high-quality research is funded with federal dollars. The next President should take a strong stand against research funds allocated by means other than peer review.
- **Establish a new federal government advisory committee on the university-government partnership.** The post-World War II basic research partnership between the federal government and universities has been a fundamental reason for American leadership in science and technology. But recent developments threaten this unique partnership, undermining universities' ability to conduct important research on behalf of the federal government and the American people. These include increasing federal regulations and associated compliance costs; arbitrary restrictions on reimbursement to universities for the costs of conducting federal research; and growing restrictions on communication of, and access to, scientific results.

Because the continued health of the federal government-university partnership is vital to the nation's future, AAU urges the next President to establish a new federal advisory committee aimed at maintaining and strengthening this partnership. The panel should be composed of a select group of university presidents and key administration officials and be able to respond to issues as they arise so that this partnership continues to thrive and serve the nation's needs. The committee should be tasked immediately with assessing the enterprise's current health and providing a report to the President with recommendations that can be implemented to strengthen the partnership in the public interest.

4) Elevate the role of science in White House policy decision-making.

Many of the issues facing an administration require scientific knowledge and expertise. To ensure that science is adequately incorporated into policy making, the next President should give high priority to seeking and seriously considering scientific advice. Here are specific ways to give science its appropriate role in policy making:

- **Raise the status of the President's science advisor.** The science advisor should be designated as an Assistant to the President and/or sit with the President's cabinet. The President needs a science advisor with the authority to ensure that Presidential programs include appropriate components related to science,

research, and technology and to ensure that administration officials and agency heads respect the role of science in making decisions.

- **Respect and use the recommendations of scientific advisory committees.** Scientific advisory panels exist throughout the government, including the President’s Council of Advisors on Science and Technology. The next President should see that only individuals with strong scientific credentials are assigned to serve on these advisory committees. The President should heed these committees’ advice and recommendations and encourage Cabinet officials to use their recommendations as well.
- **Enhance coordination of scientific research across the government.** The National Science and Technology Council, chaired by the President, should develop and coordinate major new cross-cutting scientific initiatives across federal departments and agencies. These initiatives should be aimed at meeting grand challenges of all kinds—including but not limited to the scientific challenges discussed above. Many of the next major scientific discoveries will be multidisciplinary, and the foundational research that goes into them will be more effectively sponsored by coordinated programs of multiple federal agencies.

CONCLUSION

America’s research universities generate human and intellectual capital that are the twin engines of innovation and economic growth. By conducting research that serves science and the public good, by teaching the next generation of leaders in every field, and by producing the ideas that advance civilization, these institutions can continue to serve as a foundation of continuing American leadership in the 21st century.

The nation’s entire higher education system plays an even broader role in society. Millions of America’s most talented young people come to our campuses to learn, discover, challenge, debate, study, cooperate, and compete. This process makes students into citizens, prepared to make our country and the entire world better. Many of them are emerging with an extraordinary determination to do just that, and they are finding ever more creative ways to do so.

The nation’s challenges are daunting. But America’s colleges and universities, particularly its research universities, will provide the people, ideas, and discoveries that will help us to meet and overcome them. To ensure the continued vitality of the nation’s research and education enterprise, the federal government and universities must work together in partnership.

As Campaign 2008 continues, we are prepared to work with candidates and their staffs to respond to their ideas on these and other vital subjects.

Ultimately, AAU and the nation’s research universities want to work with the next administration to address problems at home and abroad and maintain this nation’s global leadership in the 21st century.



VISION

2015

A Globally Networked and Integrated
Intelligence Enterprise

Mission

Create Decision Advantage

Vision

**A Globally Networked and
Integrated Intelligence Enterprise**

Strategy

Integrate foreign, military, and domestic intelligence capabilities through policy, personnel and technology actions to provide decision advantage to policy makers, warfighters, homeland security officials and law enforcement personnel

Values

Commitment • Courage • Collaboration





DIRECTOR OF NATIONAL INTELLIGENCE
WASHINGTON, DC 20511

Fellow Intelligence Professionals:

We are engaged in a dynamic global environment, in which the pace, scale, and complexity of change are unprecedented. It is a networked world where what happens in Peshawar affects Peoria — and vice versa. Risks are often unforeseen and threats are hidden and agile, making the job of intelligence professionals more critical and more challenging. Our national security depends on anticipating risks and out-maneuvering our adversaries, not just out-muscling them. Therefore, intelligence is more critical than ever. We must address these risks and threats by integrating all elements of national power — defense, homeland security, diplomacy, development, and intelligence. However, the Intelligence Community is still largely structured, staffed and operated around a design optimized for a different era. Adapting the Community to this new environment is our fundamental challenge. The purpose of this Vision document is to chart a new path forward for a globally networked and integrated Intelligence Enterprise for the 21st century based on the principles of integration, collaboration, and innovation.

The mission of the Intelligence Community is to create decision advantage for our customers — policymakers, military commanders, law enforcement and homeland security officials. This means we collect and analyze intelligence to improve our customers' ability to make a decision while denying our adversaries the same advantage. To transform the Community and create decision advantage, we will need to accomplish the following:

- Develop integrated capabilities to address emerging challenges in cyber space and support new missions such as energy security.
- Create a customer-driven intelligence model.
- Improve our ability to anticipate and prevent strategic surprise through better global awareness and strategic foresight.
- Integrate the Community through mission-focused operations that transcend agency and functional silos. This also requires us to network our collection assets to allow them to work, autonomously and cooperatively in near-real time, to penetrate the most difficult targets.
- Field a net-centric information enterprise that enables end-users to discover, access, and exploit intelligence information in a secure, tailored manner.
- Remove the barriers to cross-agency collaboration by integrating the strategic enablers of the Intelligence Enterprise — human capital, education and training, business systems, facilities, science and technology, and acquisition and procurement.

A vision without a map is just a wish. To make this Vision real, I challenge the Community's senior leaders, who participated in creating it, to develop a well-defined roadmap that details the steps we will take immediately, and throughout the next several years, to translate this Vision into reality. While our Vision extends to 2015, we must make real progress sooner rather than later. Our commitment to this Vision will be manifested in our budget priorities and implementation plans.

In 1996, the Chairman of the Joint Chiefs of Staff, General John M. Shalikashvili, published Joint Vision 2010, which detailed the conceptual template for our military forces. The document was brief, conceptual, and controversial, but it proved an effective guide for developing the superb military capabilities the United States now possesses. I invite all intelligence professionals to join in this fundamental transformation of our Community into an Intelligence Enterprise poised to continue to succeed for the foreseeable future.

J. M. McConnell



1

THE SHIFTING STRATEGIC LANDSCAPE

**Era of Uncertainty
Implications for the Intelligence Community**

2

CREATING DECISION ADVANTAGE

3

MAKING IT REAL - IMPLEMENTING THE VISION

1 THE SHIFTING STRATEGIC LANDSCAPE

"When the rate of change outside your organization exceeds that within your organization, the end is near."
- Jack Welch, former CEO, General Electric

We live in a dynamic world in which the pace, scope, and complexity of change are increasing. The continued march of globalization, the growing number of independent actors, and advancing technology have increased global connectivity, interdependence and complexity, creating greater uncertainties, systemic risk and a less predictable future. These changes have led to reduced warning times and compressed decision cycles. Although this interconnected world offers many opportunities for technological innovation and economic growth, it also presents unique challenges and threats. In this environment, the key to achieving lasting strategic advantage is the ability to rapidly and accurately **anticipate and adapt to complex challenges**.

The integration of international politics and economics over the last century outpaced the integration of U.S. institutions. Our statecraft adapted over the decades with new policies and institutions. The future portends discontinuities with new threats from non-traditional actors, new modes of attack, and more lethal impact. Intelligence must be more integrated and agile to assist in preventing and responding to these challenges.

Era of Uncertainty

Many drivers and trends are shaping the future global environment in which the Intelligence Community must operate —



Figure 1: Drivers and Trends

demographic and social change, increased economic integration and competition, rapid technological innovation and diffusion, environmental pressures and growing energy demand, broad geopolitical changes and new forms of governance. Each driver and trend independently produces unique changes and challenges; those points where factors intersect often reinforce and amplify the effects of change and create a series of complex and often unpredictable threats and risks that **transcend geographic borders and organizational boundaries**.

Global networks of information, finance, commerce, transportation, and people shape and empower these threats. This infrastructure increasingly is being targeted for exploitation, and potentially for disruption or destruction, by a growing array of state and non-state adversaries.

"We see globalization – growing interconnectedness reflected in the expanded flows of information, technology, capital goods, services and people throughout the world – as an overarching 'megatrend,' a force so ubiquitous that it will substantially shape all the other major trends in the world of 2020."
- National Intelligence Council,
"Mapping the Global Future, 2020"

Persistent Threats

For the foreseeable future, we will act to prevent the next terrorist surprise, while addressing the root causes that fuel extremism. We will track the spread of technologies that enable individuals, groups, or rogue states to acquire weapons of mass destruction. We will compete with adversary foreign intelligence services to prevent exploitation of our security vulnerabilities. We will encounter deft attempts at denial and deception as we conduct our collection activities. Finally, we will monitor the economic, military, political and ideological dynamics of regional powers to identify and warn of impending challenges.

Emerging Missions

To these persistent threats we add a growing array of emerging missions that expands the list of national security (and hence, intelligence) concerns to include infectious diseases, science and technology surprises, financial contagions, economic competition, environmental issues, energy interdependence and security, cyber attacks, threats to global commerce, and transnational crime. Foremost among these challenges is the **blurring** of lines that once separated **foreign and domestic intelligence**, and the increased importance of homeland security. By necessity, we must be involved with numerous new partners in interactive relationships, but we must also **respect and maintain the privacy and civil liberties of all Americans**.



Figure 2: Persistent Threats and Emerging Missions

Old problems assume new dimensions: information operations with emphasis on a cyber domain, asymmetric political or military responses, and illicit trafficking. Lastly, we confront the challenge of acting in an environment that is more time-sensitive and open to the flow of information, in which intelligence sources and analysis compete in a public context established by a global media. By 2015 we will need integrated and collaborative capabilities that can anticipate and rapidly respond to a wide array of threats and risks.

Implications for the Intelligence Community

In this new environment, geographic borders and jurisdictional boundaries are blurring; traditional distinctions between intelligence and operations, strategic and tactical, and foreign and domestic are fading; the definitions of intelligence and information, analysts and collectors, customers and producers, private and public, and competitors and allies are changing. Simply distinguishing between intelligence and non-intelligence issues may prove a major challenge.

To succeed in this fast-paced, complex environment, the Intelligence Community must change significantly. The implications are already apparent. For example, our counterintelligence activities face an array of new and traditional adversaries, yet we must operate within a protected information-sharing environment that challenges existing notions of security and risk.

For collection, the challenge will extend beyond developing a critical source or exploiting a key data stream to determining how to synchronize dissimilar platforms and sources against fleeting and vaguely defined targets, using our collection assets to prompt, detect and respond to what the collection system discovers. **Deep and persistent penetration** is key for collection.

Our analytic professionals will collaborate with world-class experts in academe, commercial interests, and think tanks, all with similar knowledge and personal networks. Deep expertise will require **broad access to open source information**, our unique collection results, and a network of outside experts. Our understanding of the breadth and depth of U.S. policy, intelligence doctrine, and global situational awareness must match the depth of our analyses.

Our most senior intelligence users will place a premium on synthesized presentations that **meld deep expertise with relevance** to the policy agenda and understanding of the nuance of the global situation. Analytic precision and accuracy will be merely the minimum requirements expected by our customers; our analysis must be clear, transparent, objective, and intellectually rich.

Customer demographics and expectations will change; the typical customer in 2015 will be a new generation of government decision-maker, accustomed to instantaneous support, comfortable with technological change, and unfamiliar with intelligence as a privileged source. Such users will expect intelligence to provide customized, interactive support “on demand,” and will expect to be treated as a partner – both a source of input and an ultimate intelligence end user.

A Tradition of Evolution & Adaptation

The American intelligence system has long evolved in the face of strategic and technological shifts. Over the first half of the last century, we responded to challenges with advances in aerial imagery, analysis, cryptology, and human intelligence with new organizations like the Federal Bureau of Investigation (FBI) and the Office of Strategic Services (OSS).

During the Cold War, the Intelligence Community fielded high-altitude (e.g., U2/A12), space-based (e.g., Corona), and terrestrial sensors and platforms to peer inside the denied territory of the Communist bloc. The continuing acceleration of change associated with globalization will challenge the Community to respond with innovation once again.

By 2015, a globally networked Intelligence Enterprise will be essential to meet the demands for **greater forethought and improved strategic agility**. The existing agency-centric Intelligence Community must evolve into a true Intelligence Enterprise established on a collaborative foundation of shared services, mission-centric operations, and integrated mission management, all enabled by a smooth flow of people, ideas, and activities across the boundaries of the Intelligence Community agency members. Building such an Enterprise will require the sustained focus of hard-nosed leadership. Services must be shared across the entire spectrum, including information technology, human resources, security, facilities, science and technology, and education and training.



1

THE SHIFTING STRATEGIC
LANDSCAPE

2

CREATING DECISION
ADVANTAGE

Customer-Driven Intelligence
Mission-Focused Operations
Net-Centric Information Enterprise
Enterprise Integration

3

MAKING IT REAL -
IMPLEMENTING THE VISION

2 CREATING DECISION ADVANTAGE

To respond effectively to the changing strategic landscape, we need structures, people and systems aligned to ensure a **unified effort**, ready to adapt with greater agility. As we adjust to new challenges and customers, we reaffirm our enduring mission: to provide objective and relevant support to help our customers **achieve decision advantage**.

The Role of Intelligence

Intelligence employs quiet means **to improve our decision-making** while frustrating that of our enemies. We work behind the scenes to inform and facilitate the actions of diplomatic, military, law enforcement, and other customers. We seek to ensure that they know as much as possible about a situation and that their initiatives have the best chance for success. At the same time, intelligence also helps to impair the reliability, speed, and efficacy of adversaries' decision-making.

Although they may be incremental and short-lived, the advantages provided by intelligence may yield significant results — disrupting a terrorist plot, identifying an illicit account, or halting the proliferation of sensitive technology. Intelligence provides a wealth of leads and opportunities that might otherwise be missed. The fragility of such advantages reinforces the need to preserve our sources and methods.

The historical record provides examples of intelligence providing a competitive edge to American and allied decision-makers:

- **Midway, 1942:** American code breakers provided our military forces with a decisive understanding of enemy intentions and capabilities during the darkest days of World War II. Intelligence provided our military commanders the assurance to turn the tables on an intended Japanese naval trap and gain the strategic initiative in the Pacific.
- **Cuban Missile Crisis, 1962:** Imagery intelligence and analysis provided strategic warning of Moscow's dangerous nuclear gambit. The Community provided excellent situational awareness and estimates of possible Soviet responses that greatly assisted the President in navigating a successful outcome from a nearly catastrophic confrontation.
- **The Six-Day War, 1967:** Community all-source analysts correctly forecast the timing, duration, and outcome of the Arab-Israeli crisis. Their pithy, well-reasoned product enabled the President to modulate U.S. involvement and avoid a larger U.S.-Soviet confrontation.

Decision Advantage

Decision advantage results in the ability of the United States to bring instruments of national power to bear in ways that resolve challenges, defuse crises, or deflect emerging threats. Such advantage will not be permanent or absolute.

"...the key to intelligence-driven victories may not be the collection of objective 'truth' so much as the gaining of an information edge or competitive advantage over an adversary. Such an advantage can dissolve a decision-maker's quandary and allow him to act. This ability to lubricate choice is the real objective of intelligence."

- Jennifer Sims, Director of Intelligence Studies, Georgetown University

In dealing with future challenges, it is vital to understand how intelligence makes a difference to the decision-maker. The purpose of intelligence is not solely to determine truth, but to enable decision-makers to make better choices in dealing with forces outside their control. Intelligence helps reduce the degree of uncertainty and risk when critical choices are made. Our measure of success is simple: did our service result in a real, measurable advantage to our side?

This approach neatly resolves the potential tension between intelligence objectivity and relevance, often summarized by the axiom that the Intelligence Community **"speaks truth to power."** At times, members of the Intelligence Community have sought to distance themselves from the customer, in order to remain objective; yet such distance could come at a cost in terms of relevance. This is a false choice; **we must be both objective and relevant.** We will do so by acquiring information more crucial to winning, and by denying competitors that same information (e.g., through denial and deception). We will use all facets of intelligence to accomplish this pledge, without confusing



Figure 3: Creating Decision Advantage

the functions with the essentials. For example, some view secrecy as inherent to the intelligence mission. Secrecy, however, is only one technique that may lead to decision advantage; so may speed, relevance, or collaboration. We will not rely on any single, "time-honored" approach in creating decision advantage.

Global Awareness and Strategic Foresight

Another important aspect of decision advantage lies in preparing our decision-makers for **strategic surprises** — those forces or issues that lie off the decision-maker's agenda but may emerge to challenge our intended outcomes. The ability to anticipate change — recognizing key early indicators and alerting decision-makers — is a key role of intelligence. While our capabilities to monitor already-known threats are well-honed — with mission managers generally assigned to oversee our handling of top-tier threats — adaptive intelligence also requires strategic capabilities for sensing and evaluating "weak signals" and other indicators of emerging issues and security risks. The need to prevent strategic surprise was one of the prime factors in the genesis of the U.S. Intelligence Community in 1947. America's rise to superpower status, combined with the complexity and interconnectedness of the emerging strategic landscape, demand that our Intelligence Enterprise provide global awareness and strategic foresight.

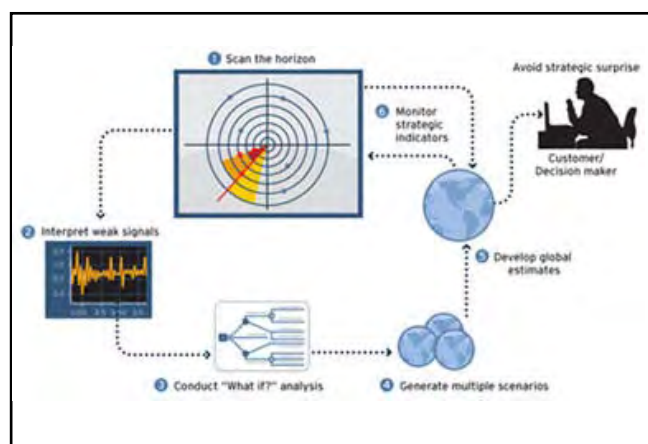


Figure 4: Global Awareness and Strategic Foresight

Strategic warning and predictive estimates were standard art forms in the less dynamic Cold War period. Our anticipated strategic environment models closely on chaos theory: initial conditions are key, trends are nonlinear, and challenges emerge suddenly due to unpredictable systems behavior. In this environment, one prerequisite for decision advantage is **global awareness**: the ability to develop, digest, and manipulate vast and disparate data streams about the world as it is today. Another requirement is **strategic foresight**: the ability to probe existing conditions and use the responses to consider alternative hypotheses and scenarios, and determine linkages

and possibilities. We believe our customers will seek our inputs on what may surprise them, if we are capable of placing such inputs in a larger context and demonstrating rigor in our analytic approaches to complexity.

To carry out its mission in an increasingly turbulent and complex global environment, the Intelligence Enterprise must enhance capabilities to evaluate global risks affecting our national security. Greater systems interconnectedness increases the need to identify **vulnerabilities emerging at the nexus of multiple systems** (e.g., critical information infrastructures, disruptions in energy supplies, fragile financial markets, and climate change-related spread of diseases) and the potential for multiple, simultaneous crises. Global awareness and strategic foresight will provide the response to these challenges, linking methods for strategic forecasting and assessment of systems vulnerabilities in constantly renewed communities of diverse expertise and insight. As much of this expertise will be outside of the Intelligence Community, our efforts will be **done in partnership with business, academic, other government, and non-government sectors**.

Customer-Driven Intelligence

By 2015, the Intelligence Community will be expected to provide more details about more issues to more customers. We anticipate different types of customers — with greater expectations — and new demands to change the basic engagement model by which we serve them.

Although there is no typical customer, we will be providing intelligence to a computer-literate generation that grew up with the Internet and user-generated content (e.g., YouTube, blogs, wikis), in which they acted as both a consumer and contributor of information in an "on-demand" environment.

As a consequence, customers in 2015 will define their relationships with the Intelligence Enterprise differently — shifting focus from today's product-centric model toward a **more interactive model** that blurs the distinction between producer and consumer. To create and sustain deep partnerships, the Intelligence Community will require greater use of liaisons who can build relationships and leverage networks to connect information, expertise, and needs in a fluid environment. We will also need to exploit commercial technologies to develop new ways of providing service.

Not only will the type of customer change within our existing federal policy-making sets, but the range of customers will broaden to emphasize other federal departments (e.g., Health and Human Services, Agriculture, Commerce), state and local agencies, international organizations, and private sector and non-governmental organizations.

Generation Y Mindset for 2015

- Born around 1980; they have no meaningful recollection of the Reagan era or the Cold War.
- “Digital natives” who have owned a cell phone their entire adult lives.
- Always received most of their news from the internet.
- Sept 11, 2001 dramatically changed their college experience.
- Comfortable multi-tasking and working in teams.
- Currently in the third career (not job).
- Telecommuting is a way of life, not an agency initiative.
- Savvy in rapidly accessing and evaluating public domain knowledge.

Tailored Support

Not all customers will expect the same level of interaction with our Intelligence Enterprise. Our approach to providing customers with tailored support resulting in decision advantage will span a spectrum of customer types, **from partners to clients to consumers**. Our partners will demand the most intense, personalized support and desire to be actively engaged with us while jointly coming to conclusions. Partners will seek to provide us with their expertise, access to their networks, or feedback from their actions and policies. Clients will prefer a more consultative role: close and sustained interaction focused on outcomes relevant to their agenda. Consumers will accept a more transactional relationship with the Enterprise; they will ask questions and expect quick, straightforward answers. One common theme among all of our customers will be a growing substantive and technological sophistication.

Customer Relationships

The importance of the customer in the future clearly calls the Intelligence Community to apply best practices in customer support. To engage customers effectively, we must use sophisticated techniques to elicit their needs and to evaluate our performance. Rather than asking customers, “What are your intelligence priorities?,” we will engage them with, “What do you want to accomplish?” Intelligence support to customers will become more of a relationship than an event.

We will begin by extending the lessons learned from our own successful customer support activities (e.g., the President’s Daily Brief). We must offer customer service at many levels (not just for the most senior customers) and monitor our progress to inform future changes. We must build an approach that exposes our intelligence professionals to customers and familiarizes new customers with our capabilities and limitations. Key to this will be development of a customer engagement and management model that assigns “**channel managers**” to support specific customers, and apportionment of the channel management

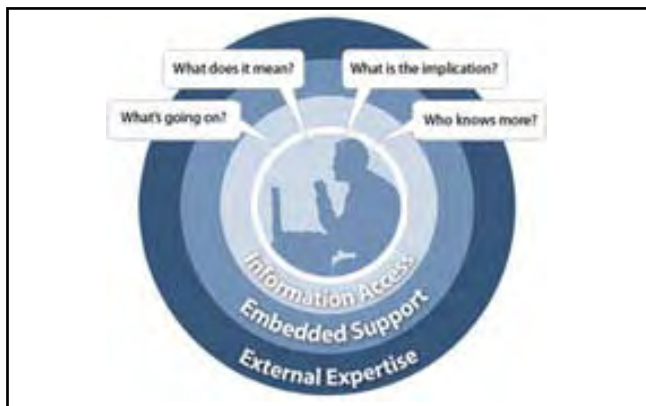


Figure 5: Customer-Driven Intelligence

function by customer type, by functional topic, or by other means.

Our analytic products will increasingly resemble **customized services**, with an emphasis on maximum utility rather than simple releasability. Under concepts such as effects-based analysis, we will engage customers with “What if?” considerations in addition to “What?” conclusions. To do so, our analysts will leverage disparate data and analytic tools and services, working in mission-focused distributed analytic networks.

We also anticipate a growing public demand for intelligence. Most intelligence work will remain classified and limited in distribution to ensure it produces the desired decision advantage for our U.S. government clients. However, the Intelligence Community must adapt to the growing requirement for its analysis to inform the American public.

Although the customer sets, expectations, and engagement models will change, the Intelligence Community will still be expected to provide objective, relevant, and timely intelligence to give our customers a sustained decision advantage in support of our national security objectives.

Mission-Focused Operations

In the past, the Intelligence Community was siloed into discrete disciplines (e.g., signals intelligence, human intelligence, geospatial intelligence, counterintelligence) and functions (e.g., tasking, collection, analysis, dissemination). These silos often led to competition and duplication. Although the agency-centric operating model worked well during the Cold War, it cannot succeed in the current environment, which changes rapidly. We need a mission-focused operating model that is agile, lean, and flexible enough to respond to a dynamic environment. Our new operating model must adapt our enduring roles to our new challenges, incorporate new technologies and processes, and build on our initial successes at integration and collaboration. On the one hand, we

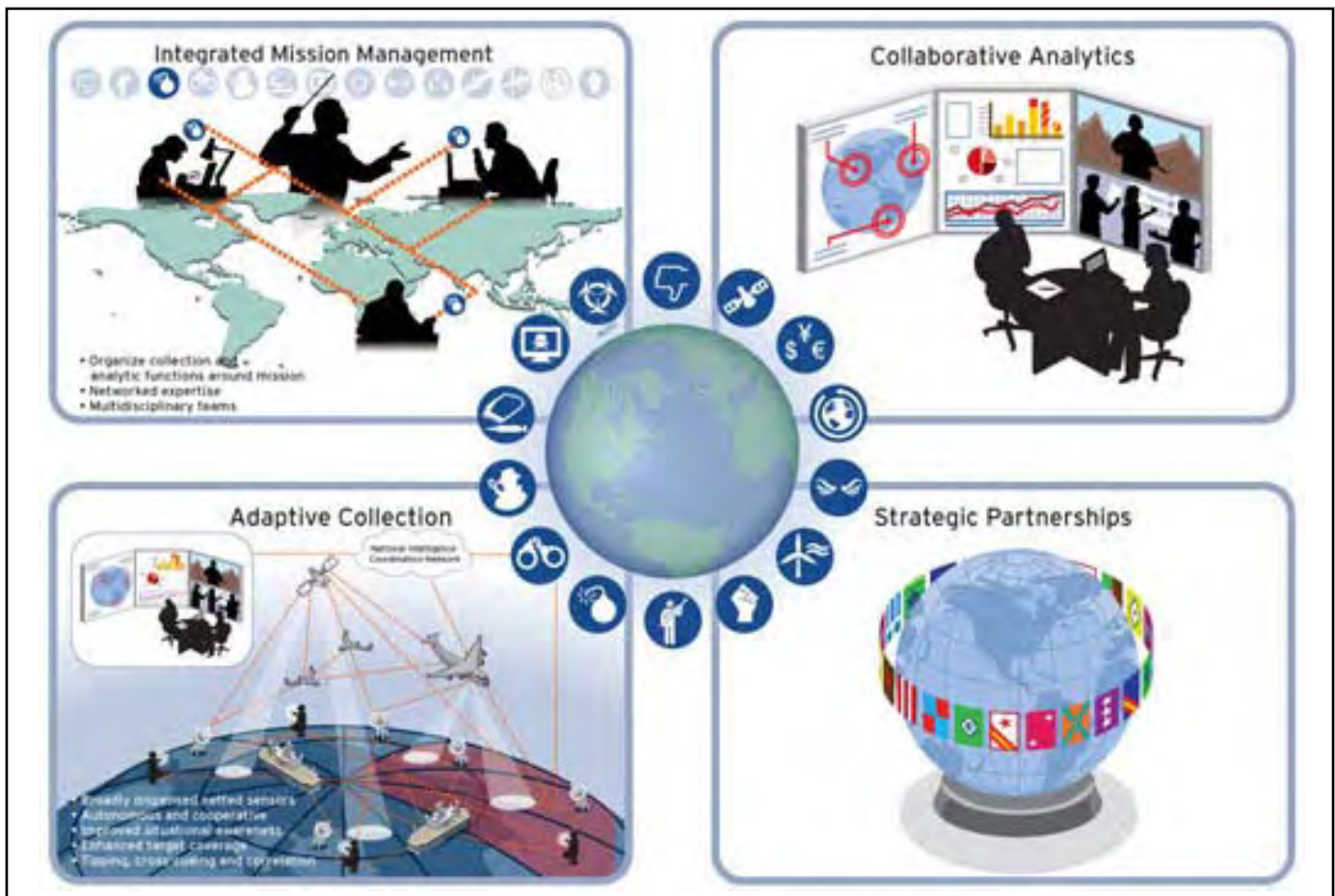


Figure 6: Mission-Focused Operations

must maintain excellence in separate disciplines; on the other, we must develop greater functional integration. More specifically, we must transcend the current agency-based linear model — task, collect, process, exploit, and disseminate — and develop a more mission-based model that is fluid, synchronizes collection, collaborates on analytic issues in real time, and broadens our partnership strategy.

Accordingly, this **integrated operating** model will transform the traditional intelligence cycle into a more dynamic series of interactions among four key operating principles: Integrated Mission Management; Adaptive Collection; Collaborative Analytics; and Strategic Partnerships. This model is designed to promote accuracy, speed and agility without the constraints of organizational equities or functional stovepipes. This new operating model has a simple objective: to operationalize the Intelligence Enterprise, raising mission focus from the unit or agency-level up to a Community-wide activity. To this end, we will need to clarify roles and responsibilities, streamline decision rights, and establish Enterprise-wide governance to enable this new operating model. When this objective has been realized, the Intelligence Enterprise will be both agile and capable, and our partner-customers will benefit from an intelligence-based decision advantage.

Integrated Mission Management

With some exceptions, the current structure and operation of the Intelligence Community are oriented toward agencies, disciplines and specific functions rather than around priority missions. To respond to the dynamic and complex threat environment of the 21st century, our operating model must emphasize **mission integration** – a networked knowledge-sharing model that rapidly pulls together dispersed and diverse expertise and resources against specific missions. This model could manifest itself through an array of networking options – national intelligence centers, mission managers, task forces, and communities of interest.

Integrated Mission Management will improve collection and analysis speed by reducing vertical levels and clarifying tasking authority; enhance innovation through diversity and cross-pollination of ideas; ensure completeness by leveraging niche expertise; and reduce duplication through better coordination. Mission managers will oversee all aspects of national intelligence related to their mission areas and serve as the customer interface for their respective mission responsibilities. Historically, the Community has employed **mission-focused opera-**



Figure 7: Integrated Mission Management

tions as a best practice for forward-deployed intelligence support. The time has come to import this “lesson learned” back to our stateside organizations and activities. Doing so will require **resolute leadership**, since it will entail a **dramatic reconceptualization of how we organize, train, and operate.**

Adaptive Collection

To overcome uncertainty, the collection community will have to “hedge its bets” about future targets and technologies, and adapt quickly to challenges and opportunities; reaction time will be the key to success. The elusive, transitory nature of our targets, and the imbalance between the increasing demand for information and the capacity of our means to collect it, **require multiple, integrated collection systems.** Each of the collection disciplines — human intelligence, signals intelligence, computer network exploitation, geospatial intelligence, measurements and signatures intelligence, open source intelligence, acoustic intelligence, and foreign materiel acquisition — will continue to play key roles, although their relative importance will almost certainly change over time. Our future success demands integration of collection capabilities at all levels.

The principle of Adaptive Collection emphasizes the dynamic allocation and re-allocation of collection, processing, and exploitation. It also provides a mandate to prioritize between open and secret collection means, since secret sources and methods must be reserved for use against those targets that cannot be penetrated using other, more efficient (i.e., open source) means. No aspect of collection requires greater consideration, or holds more promise, than open source information; transformation of our approach to open sources is critical to the future success of Adaptive Collection.

Adaptive Collection is built on a global collection network comprising many netted sensors that can work autonomously and cooperatively in near-real time. Collection assets would move into and out of specific areas of interest, using already collected information to inform their activities, and in turn, focusing on collecting only that which cannot be obtained by other means. These assets would both push and pull data — raw, semi-processed, and final — into and from our information technology backbone network. The collected data will belong to the Intelligence Enterprise; no single agency “owns” its collection take. We would improve situational awareness, reduce collection time, enhance target coverage, increase robustness of collection capability, and sharpen accuracy through cross-cueing and correlation.

Above all else, the collection community will be measured against its ability to achieve deep and persistent penetrations that are key to understanding foreign leaders’ intentions, foreign nuclear programs, terrorist groups, and proliferation networks. Second, there will be more emphasis on multi-agency teams pursuing “multi-INT” collection strategies. Third, we envision a collection community comprising people who speak the languages and know the cultures in which we must operate. Fourth, we envision a collection community capable of rapidly fielding technological innovations that obtain needed information. Finally, we envision a collection community with a **fully integrated processing, exploitation, and dissemination architecture** that moves information quickly to its users. Such architecture will feature both automated and “user-in-the-loop” collection and processing. It will also entail modernization of the collection enterprise to facilitate a holistic awareness of sensor status, tasking and alignment of all collection systems to better respond to its customers. Above all else is the demand that the information reach those who need it, when they need it, in a form that they can easily absorb.

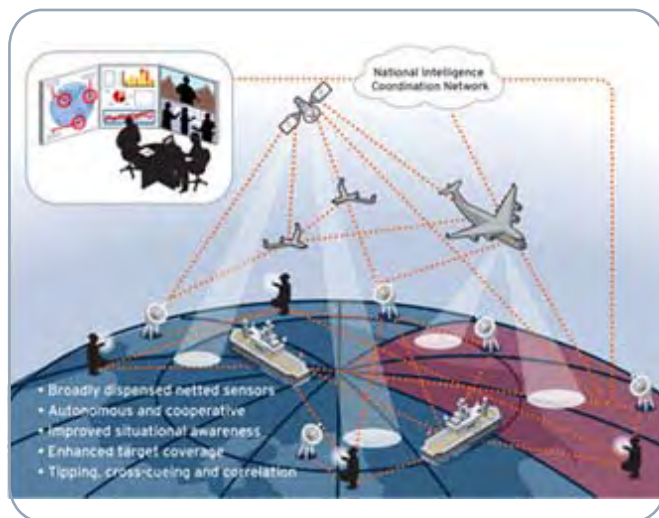


Figure 8: Adaptive Collection

Collaborative Analytics

The analytic community will be expected to understand and develop judgments on a broad spectrum of national security threats, support a more diverse customer set, and cope with access to unprecedented amounts and types of information. Information overload already presents a profound challenge to our business model. Given these challenges, the analytic community has no choice but to pursue major breakthroughs in capability. Applying the principle of Collaborative Analytics, analysts will be freed to work in a fundamentally different way — **in distributed networks focused on a common mission.**

Analytic organizations will therefore make a dramatic shift from traditional emphasis on self-reliance toward more collaborative operations — a shift that will allow the Community as a whole to perform routinely at levels unachievable in the past. Analysts will act individually and as members of Community teams — addressing customer queries, driving collection, trying new methodologies, and collectively building corporate knowledge. The focus of their collaboration will shift away from coordination of draft products toward regular discussion of data and hypotheses, early in the research phase. Collaboration will be aided by expertise registries updated automatically. Managers will use these registries with smart networks to disseminate customer requests directly to the Community analysts best able to contribute. Analysts who offer to join in a response will be directed to a collaborative work site ready to support them.

Information overload will be averted through sophisticated data preparation and tools. In 2015, new information will be tagged so tools can trace related data across our holdings. Analysts will use such tools to mine the data, to test hypotheses and to suggest correlations. Analysts will routinely employ advanced analytic techniques, including scenario-based analysis, alternative analysis, and systems thinking. The move toward extensive use of data, tools, and modeling is at the heart of collaborative analytics.

Collaboration in analysis will also foster smarter collection. The Library of National Intelligence and shared postings of ongoing research will continuously record what we know — and this will help avoid unnecessary new collection. In 2015, the library will hold half a decade of disseminated intelligence, where analysts can discover all available reports — granting immediate access if they are cleared and offering guidance on next steps if they are not. Analyst proposals for new collection will be posted for collaborative review. Collectors will mine that data to improve their own collection planning. Many collectors will share large amounts of newly collected data, tagged for easy discovery and linking, in secure environments with analysts. Bringing analysts and collectors closer together will promote deeper knowledge of collection across the analytic

community, which will further improve both the quality of collection requests and the sophistication of analytic judgments.

As analysis becomes more integrated, collaborative efforts will emerge to serve our customers. Our products and services will change to meet evolving needs for timely information and insight, delivered in ways that are personalized. Demand will vary from one client to the next, including virtual meetings, models and simulations, mobile access, and user-selectable versions at different classification levels. New breakthroughs will be driven by timely corporate sharing of information about the needs of key clients, plans for meeting those needs, actual intelligence provided, and feedback received.



Figure 9: Collaborative Analytics

Without obscuring critical disagreements, the Community will free customers from the burden of doing their own intelligence comparison, integration, and deconfliction. Close ties between an integrated analytic community and its customers will allow real-time engagement and clarification of customer needs. By 2015, we will track Community performance against priority topics in a standardized fashion. Managers will be able to see the impact of local contributions to overall Community support to key customers, and will use this information to drive continual improvement and **rapid adaptation** to changing customer needs.

Strategic Partnerships

Given the broad spectrum of threats, looming budget constraints, and the need for deep analytic expertise, the Intelligence Enterprise will have to expand its network beyond the boundary of the traditional Intelligence Community. The global nature of intelligence makes it imperative that we continue to seek opportunities to collaborate with our allies and foreign partners. Our strategic partnerships will



Figure 10: Strategic Partnerships

include traditional international allies, opportunistic partners, multinational organizations, civil societies, academe, and industry.

The U.S. Intelligence Enterprise clearly benefits through **increased global coverage, local expertise, and improved synergies**. These benefits span the entire partnership spectrum, depending on the breadth and depth of the relationship: historical bilateral partnerships, alliances, joint programs, transactional, and ad hoc. To reach their full potential, strategic partnerships will need Community-wide strategies and policies, strong relationship managers and liaisons, and a flexible and secure information-sharing environment. Our partnerships are based on a series of personal relationships reinforced by policy and process. While we must have oversight into the full range of our partnership activities, their success ultimately comes down to the flexibility and effectiveness of those representing us in the relationship. Our representatives must be empowered to engage in the relationship with a strong understanding of the overall “commander’s intent” of our activities.

Net-Centric Information Enterprise

Information — classified and open source — is the fuel that powers intelligence. Sharing products is no longer adequate; collectors and analysts have the responsibility to provide much more of what they produce beyond final reports. As a consequence, the Intelligence Enterprise must be built on a robust information infrastructure, based on a culture of information sharing and supported by a range of common services that allow the analytic end user to transform the **deluge of data** into predictive, actionable intelligence.

The end state will be **seamless access** to all intelligence information, tools and processes across multiple agencies and databases. Our information architecture will have to undergo a fundamental shift: from the multiple hub-and-spoke model of

information collection, analysis, and dissemination based on specific discipline to a **unified architecture** designed around a common “cloud” (i.e., a distributed peering network) containing our information. This information infrastructure will allow authorized end-users to discover, access, and exploit data through a range of services, from federated query to integrated analytic tool suites.

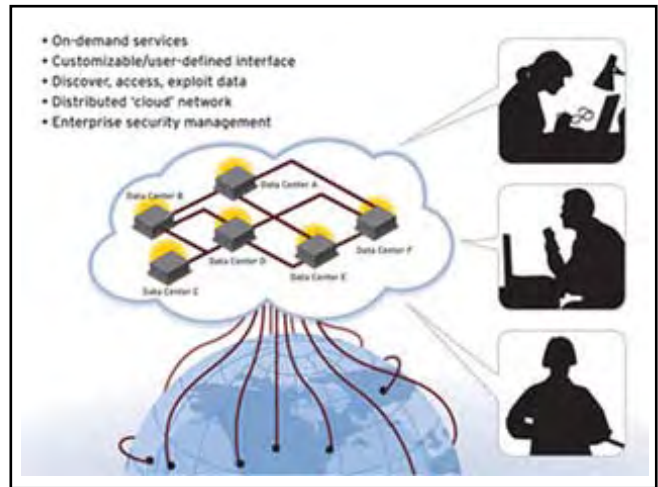


Figure 11: Net-Centric Information Enterprise

Common Information Infrastructure

Currently, each intelligence agency operates and maintains its own network and information infrastructure: power, cooling, circuits, switches, routers, databases, information management systems, data centers, security and enterprise systems management tools. By 2015, we will migrate to a common “cloud” based on a single backbone network and clusters of computers in scalable, distributed centers where data is stored, processed, and managed. The shared data centers will be unique facilities designed and located for access to communication and power supplies. The Intelligence Enterprise will benefit greatly from a more robust, secure, and effective means to organize, update and retrieve all of the information it collects. The centers will also allow experience and technologies employed across the Community to be leveraged, focusing scarce technical resources and reducing costs.

On-Demand Services

Over the last 20 years, the Intelligence Community has been challenged to keep pace with rapidly evolving information technology. Although a less-than-agile acquisition and procurement system has been part of the problem, the Intelligence Community is also undermined by its basic approach. If we are to maintain a technology edge, we must adopt an enterprise-wide, **service-oriented architecture** that is interoperable with systems in other federal departments, and can share information with non-traditional partners. A service-oriented architec-

ture provides a proven means to adapt new technologies while responding to changing user needs. By creating “software as a service,” this architecture reduces system complexity and deployment risks through a shared development style, uniform standards, and common interfaces. These services will enable a user-defined analytic environment through the use of **composite applications** – discrete services that can be pulled from a central library and dropped into a user-defined workspace.

The range of Enterprise-wide services that should be deployed by 2015 include communication services (e.g., common e-mail, directories, calendaring, and collaboration); data services (e.g., federated queries and searches, tagging, entity extraction, and storage); security services (e.g., single sign-on, access control, monitoring, and auditing); and analytic services (e.g., portals, data mining, visualization, and modeling and simulation tools).

Enterprise Integration

Providing our customers with a decision advantage and collaborating around our core mission areas require a **strong foundation** that integrates the vital components of the Intelligence Enterprise — people, processes, and technology. Historically, organizational differences — competing cultures, non-interoperable systems, unclear decision rights, and conflicting business rules — acted as barriers to collaboration, greatly undermining our ability to adapt and reducing our organizational agility. Although we have progressed since the 9/11 attacks, and significant initiatives are under way, we will need **continued leadership and organizational commitment** to truly integrate the Intelligence Enterprise by 2015.



Figure 12: Enterprise Integration

Human Capital and Knowledge Management

At the core of the Intelligence Enterprise in 2015 are our people. One of our biggest challenges will be the ability to attract, train, and retain a highly skilled, innovative and adaptive workforce. The intelligence workforce of the future will be more distributed, virtual, and flexible than at anytime in the past; the implications for our information technology infrastructure and facilities are significant. We need professionals with strong linguistic skills, deep cultural understanding, and mastery of the “human terrain.” **Cultural, linguistic, and technical diversity** will be critical to the workforce of the future. Moreover, the changing strategic environment will require a **more entrepreneurial** and customer-focused workforce that can combine deep functional knowledge and expertise with broad networking and collaboration skills. Strict boundaries, such as the distinction between collectors and analysts, must become permeable divisions that highlight different roles our intelligence professionals play during an intelligence career, not exclusive memberships.

Echo of the Future: Joint Duty

In 2007, with the support of the leaders of the six affected US government departments, the DNI signed the Joint Duty policy guidance, making joint duty a prerequisite for promotion to senior executive within the Community. This policy sets a firm standard that -- for the first time -- rewards Enterprise-minded culture

Our leaders will need to transcend the traditional independent, agency-centric orientation, and move toward a leadership style based on cross-agency collaboration and interdisciplinary experience. In particular, this will require **leadership** that can build coalitions across agencies and cultures, bound by a shared purpose and unity of action to achieve mission objectives. Managers will adopt a new role more focused on professional development and measuring work unit quality, less focused on product oversight and review. We will need leadership development programs, performance evaluation systems, and an **incentive structure** that span the Intelligence Enterprise.

By 2015, the focus should shift from information sharing (e.g., interoperable systems, information discovery and access) to knowledge sharing (e.g., capturing and disseminating both explicit and tacit knowledge). Just as we are dismantling today’s information “silos,” we will need to bridge the knowledge “archipelagos” of tomorrow in a systematic way that combines both content and context in an on-demand environment. Robust social networking capabilities will be required — expertise location, ubiquitous collaboration services,

integrated e-learning solutions, visualization tools, and enterprise content management systems. More importantly, a strategic approach to knowledge sharing and management must be incorporated that includes lessons learned and concept and doctrine development.

Modern Business Practices

The Intelligence Community cannot depend on ever-increasing budgets to develop leading-edge technologies, field new capabilities and run current operations. We have to adopt modern business practices that will make us more effective, efficient, nimble, and **accountable**. The current business model is burdened by archaic rules, fragmented practices, and non-interoperable business systems. If we are to optimize our limited resources, we must transform the model; our procedures and systems for planning, programming, **budgeting** and managing personnel **security** must fundamentally change.

Business System Modernization

A key enabler of organizational adaptability and operational agility is an integrated planning, programming, budgeting, enterprise management, and finance system that links and **aligns strategy to budget, budget to capabilities, and capabilities to performance**. We need processes and systems that allow us to anticipate the future for long-term planning, programming and budgeting, and also enable us to respond rapidly to time-critical issues. An integrated business management system must support these business processes. Senior managers must receive timely, accurate and reliable financial and performance information. We must have simple, reliable performance criteria and metrics that demonstrate progress toward our goals.

As part of business modernization, we will move toward a **core financial system** that integrates budget and performance data, while standardizing and streamlining common business processes (e.g., procurement, travel, acquisition, human resources). This will allow us to employ business analytics to drive evidence-based decision-making and more effectively manage our resources.

Security Transformation

By 2015, the security function within the Enterprise will be transformed while growing in importance. Our security practices must parallel, in pace and direction, our technology and workforce efforts. Personnel security must transition from a barrier approach to a **full lifecycle approach**. A web of personal, information technology, and physical security measures will ensure all professionals maintain the highest security standards across an intelligence career. The security officer of the future will be analytically trained and technologically adept, capable of adapting broad security policy to constantly changing technological or customer demands. The

Intelligence Enterprise will function on common security standards to empower continuous monitoring. The demands of knowledge sharing with strategic partners will push the security function into a new role: determining classification, and monitoring and governing the overall development of classified information. Security professionals will become primarily responsible for ensuring that our “secrets” are truly secret — and remain so. This new role for security will demand a radical simplification of the classification system and its many codewords and caveats. In the end, the foundation for classification will remain the potential for damage to our nation’s security.

Agile Infrastructure

By 2015, employees from different agencies will have to be collocated to more remote locations, away from centralized headquarters. The needs for cross-organizational collaboration, cross-functional teams and programs such as Joint Duty will require a more agile infrastructure. By this, we mean to suggest a deliberate strategy that shifts from agency-centric, massively consolidated facilities towards a more distributed and integrated model that uses **hoteling practices** and creates more **open** and collaborative **workspaces**. Agile infrastructure will be based on two principles — **collocation** of cross-functional teams (e.g., collection disciplines, science and technology, analysts, mission managers) around projects or specific missions, and **virtual collocation**, where a dispersed workforce can rapidly coalesce to respond to new tasking. A facilities strategy will be developed that takes into account both physical and virtual collaboration; a common badging and credentialing system will be required to allow the intelligence workforce to move seamlessly among facilities.

Innovation, Science and Technology

Most of the technology base comes from the private sector; technology cycle times are decreasing, and technological innovation has its source in many countries. Thus, the Intelligence Community will need to fundamentally reconceptualize and redesign our acquisition and procurement policies and processes to emphasize adaptation, speed, and agility. Moreover, since services are a large and increasing portion of the budget, we require procurement policies and practices that acquire capabilities, not simply buy “hours.” Innovative, performance-based acquisition solutions will be required. These solutions must reward innovation, performance and risk-taking from our partners in the private sector.

Although we will continue to rely on commercial best-of-breed technologies and best practices, the Intelligence Community will still need to research, develop and field disruptive technologies to maintain a competitive advantage over our adversaries. We cannot evolve into the next technology “S curve” incrementally; we need a revolutionary approach. Breakthrough innovation, disruptive technologies, and rapid transition to end-users

will be required, as well as a high tolerance for risk and failure. We need to encourage and reward risk-taking, creativity, and entrepreneurial behavior both with our government employees and our private sector partners. We will need to leverage organizational options (e.g., creating an Intelligence Community version of the Lockheed model Skunk Works®) as well as process improvements (e.g., leveraging workforce diversity to improve cognitive diversity) to foster the creativity we seek. We must work closely with our congressional oversight colleagues to enable an innovation-friendly culture.

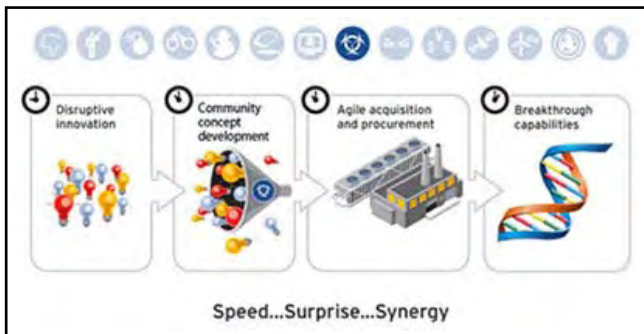


Figure 13: Innovation, Science and Technology

Creating a culture of innovation will require greater focus on advanced concepts, technology, and doctrine to enhance leadership, organizational alignment and resources. We need to establish a mechanism that allows us to continuously survey the future, capture potential mission impacts, and develop and experiment with new integrative intelligence concepts and technologies.

1

THE SHIFTING STRATEGIC
LANDSCAPE

2

CREATING DECISION
ADVANTAGE

3

MAKING IT REAL -
IMPLEMENTING THE VISION

THE WAY AHEAD
KEY DESIGN CONCEPTS
STRATEGIC ROADMAP
MANAGING CHANGE

3 MAKING IT REAL – IMPLEMENTING THE VISION

“It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change.”
- Charles Darwin

The Intelligence Community of today is composed of some of the most dedicated and capable public servants, and they continue to advance the intelligence reform agenda. However, our efforts to incrementally improve the existing operating model and capabilities will be insufficient in the rapidly evolving, dynamic environment we have entered.

Our many improvements since 2001 have been fueled by sorely needed additional resources, but anticipated budget pressures will likely end this largess in the future. We cannot afford to retreat into incremental improvements or simple efficiencies, which will cause us to fall further behind. We have **no choice but to transform** our profession along the lines presented in our new operating model.

The Way Ahead

Our national security institutions have demonstrated a tendency to focus on their areas of authority and expertise while proving less able to organize joint efforts that fall between domains. The Intelligence Community has suffered the consequences of this problem and perpetuates it. As we learn to unify all instruments of national power in truly joint, interagency initiatives, we will find that intelligence only grows in importance for the new players on the national security team.

The National Intelligence Strategy of October 2005 proclaimed a vision of our Community as “a unified enterprise of innovative intelligence professionals...,” but it did not further define that end state. Vision 2015 outlines the rationale for becoming an enterprise, and details the differences in our new operating model. Our Intelligence Enterprise will advance along the distinct paths of adaptability, alignment, and agility.

Key Design Principles

To succeed in this new environment, the Intelligence Community must undertake fundamental organizational and cultural change, moving from a bureaucratic command-and-control model to an integrated, collaborative, networked Enterprise. As we build this Intelligence Enterprise, we need to adhere to a few simple design principles — adaptability, alignment, and agility.

Adaptability is an organization’s aptitude for anticipating, sensing, and responding successfully to changes in the environment. It is a process that requires us to continuously survey the external environment, identify discontinuous threats or opportunities, understand the gaps between challenges and capabilities, experiment with new ideas, and learn from experience. The keys to adaptability are active engagement and an openness to outside ideas and influences.

Alignment is the degree of consistency and coherence among an institution’s core strategy, systems, processes, and communications. Alignment occurs within a context of strategic direction, ensuring our activities are prioritized to realize a specific vision, without predetermining “how” the vision will be accomplished. It is a control mechanism ensuring that strategic goals, objectives, deployed capabilities, and organizational performance are clearly linked and focused on mission achievement. The key challenge to achieving alignment is ensuring unity of effort without succumbing to conformity of thought.

Agility is an organization’s ability to reconfigure processes and structures quickly — with minimal effort and resources — to seize opportunities and address strategic risks. In a complex, dynamic environment, no amount of forecasting can predict every change. We need to create an organization that responds with speed and precision to unforeseen events. Agile organizations possess flexible, modular design, shared infrastructure, and an innovative, risk-tolerant culture.

These design principles need to be integrated and reinforced. Adaptability without alignment creates chaos and wastes resources on duplicate and conflicting efforts; adaptability without agility results in an organization that can “see the train coming down the tracks” but cannot get out of its way. We must ensure that our new organizational models and intelligence concepts adhere to these design principles.

Strategic Roadmap

The Community needs a detailed plan to enact this vision and become an Intelligence Enterprise. The Director of National Intelligence will establish a senior-level design team to develop the specific actions and milestones comprising a roadmap to accomplish our vision. The roadmap will detail actions that will ensure our strategic adaptability, enhance alignment, and improve our organizational agility.

Adaptability actions:

- Develop the means to **forecast** the future environment, anticipate future threats and missions, and consider and deploy innovative alternate intelligence capabilities.
- Develop and experiment with new operational concepts and tactics in support of the integrated operating model.
- Align **innovation** and **experimentation** efforts (e.g., Galileo) in support of this effort.
- Implement and examine multiple models of **mission management** to determine how to best use them operationally.
- Build the organic capability to conduct **exercises** and modeling and simulations throughout our processes (e.g., analytics, collection, mission management, etc.) to innovate and test new concepts and technologies.
- Integrate lessons learned, history, and education and training activities (as appropriate) to establish the basis for **learning from our successes and failures**.
- Exploit best practices in customer engagement to establish Enterprise-wide **channel managers** who actively engage with our developing partner-customers and evolve our engagement model.
- Establish an intellectual “home” for intelligence professionalism, linked to the **National Intelligence University**, to serve as the thought leader for the Enterprise.

Alignment actions:

- Re-image the Community to acknowledge that member relationships to the Office of the Director of National Intelligence differ. Formalize these different relationships in **policy**.
- Develop an Intelligence Enterprise strategy that **aligns ends, ways, and means**.

- Deploy a unitary, transparent, and disciplined **strategic management process** to drive integrated strategy-to-capabilities-to-plans and budgets across the enterprise.
- Build an annual strategy-to-plans structure that focuses agency and element performance on specific goals and objectives, with tangible **metrics**, to ensure that we progress toward accomplishing our missions and achieving our vision.
- Integrate our **counterintelligence** capabilities through increasingly rigorous policy, doctrine, standards and technology, and align counterintelligence with our broader National Intelligence Strategy goals and objectives.
- Develop the policies, procedures and infrastructure to permit the creation of new, temporary, **mission-focused** elements to serve as the operational arms of the Intelligence Enterprise.
- Embrace a **culture of performance** that encompasses the individual, the agency and the Enterprise.

Agility actions:

- Re-image the Intelligence Enterprise to find ways to flatten the hierarchy and reduce to the “tooth-to-tail” ratio.
- Create an Intelligence Enterprise concept of operations to detail the components of the integrated operating model.
- Clarify roles, missions, functions and decision rights through policies and procedures and streamlined processes.
- **Dramatically improve the access and flow of critical information** — both operational and management — across the Enterprise.
- Shift from large, expensive collection platforms towards smaller, netted collection systems.
- **Identify and consolidate services of common concern** (e.g., human resources, finance, public affairs, general counsel, legislative affairs) to streamline and simplify Enterprise support activities.
- Seek new means to enhance enterprise culture through integrated operations (multi-agency), practices (doctrine, tradecraft, etc.) and support services (alternate work locations, hoteling). Deploy such capabilities in parallel with existing ones and rigorously pursue the better performing options.
- Foster a risk-tolerant culture by rewarding agencies, leaders, or other intelligence professionals who seek to adopt new practices to improve performance or efficiency.

Leading Change

The first and most significant impediment to implementation is internal and **cultural**: we are challenging an operating model of this Vision that worked, and proponents of that model will resist change on the basis that it is unnecessary, risky, or faddish. These opponents will posit that incremental change is working, the environment is not really that different, and the new methods are unproven.

A second impediment is existing institutional barriers, which create **friction**. Few things sap the determination for change as effectively as the friction induced by layers of bureaucratic inefficiency working to frustrate any endeavor. Stove-piped "back-office" functions that make even simple personnel or operational activities difficult will complicate nearly every aspect of transformation.

A third impediment is **budgetary**. Dramatic transformation of the Intelligence Community will require stable and somewhat predictable budgets. While some efficiency gains will be realized through rationalization and consolidation, change cannot happen on the cheap. This challenge must first be addressed by responsible internal management practices at all levels, guided by a detailed strategic roadmap and better communications and engagement with the appropriators and authorizers.

A fourth impediment is environmental: the **tyranny of the immediate**. For nearly four decades, intelligence reform has remained largely stymied by the inability of the Community to emphasize sustained implementation. Senior leaders across the Intelligence Community face constant pressure to depart from carefully considered approaches to deal with pressing day-to-day challenges.

Translating our Vision into reality will take more than desire and good intentions. First, we will need effective outreach and aligned communications to energize the organizations that comprise the Intelligence Enterprise. We will need strong leadership, unyielding commitment, and empowered change agents to mobilize the workforce. Second, we must align the Enterprise through a new National Intelligence Strategy, a strategic roadmap that establishes key capability milestones over the FY11-16 planning and programming horizon, and the development and management of annual implementation plans to ensure accountability and progress. Third, we will need to assign

responsibility for accomplishing this Vision to key areas throughout the Enterprise: missions (e.g., counterterrorism, counterproliferation, counterintelligence, etc.), agencies, program managers, and functional leads (e.g., Chief Information Officer, Chief Human Capital Officer, Science and Technology). Fourth, we need to institutionalize change by ensuring short-term wins, measuring and rewarding performance against the vision, and ensuring continuous improvement through quarterly reporting and evaluation sessions with senior leadership throughout the Intelligence Enterprise. Perhaps most importantly, senior leadership must commit to building a culture that will take risk to make this Vision real.

The transformation of the Intelligence Community into an Intelligence Enterprise will not come easily; if it were an easy process, our dedicated intelligence professionals would have completed it long ago. Although change is disconcerting by its very nature, the changes elaborated in this Vision are necessary for our continued success and for the defense of our nation. We will encounter halting progress and occasional setbacks, but we will succeed in remaking today's best Intelligence Community into the best Intelligence Enterprise the world has ever seen.



Figure 14: Leadership Driving Transformation

VISION *2015* At-A-Glance

Decision Advantage

The employment of all facets of intelligence to acquire and provide information to gain an edge or competitive advantage that is crucial to winning while denying competitors that same information

Customer-Driven Intelligence

The ability to broaden the customer set while deepening relationships to drive the development and delivery of objective, relevant, timely, and accurate intelligence through a range of tailored products and services

Global Awareness and Strategic Foresight

The ability to anticipate, and alert decision-makers to strategic surprises by sensing and evaluating weak signals and developing alternative hypotheses and a range of scenarios to better understand a complex, rapidly evolving and unpredictable global environment

Mission-Focused Operations

A concept of operations that transcends the current agency-centric model towards a more mission-based configuration that is agile, synchronizes collection, and connects dispersed and divergent expertise to collaborate on hard problems

- **Integrated Mission Management** - Integrates and orchestrates resources and expertise around mission, not agency or discipline
- **Adaptive Collection** - The dynamic reallocation of distributed and networked sensors that can work autonomously and cooperatively to improve situational awareness, reduce collection times, enhance coverage, and improve accuracy through cross-cueing and correlation
- **Collaborative Analytics** - The capability to manage and exploit unprecedented information overload and free analysts to work in distributed information networks focused on a common mission
- **Strategic Partnerships** - The ability to extend the Intelligence Community beyond the traditional network to increase global coverage, deepen local expertise, and capture mission synergies by expanding our partnership model to include allies, opportunistic partners, academe, and industry

Net-Centric Information Enterprise

A common information infrastructure that provides seamless access to all intelligence information, services, and tools across multiple agencies and databases

- Develop a common "cloud" based on a single backbone network and clusters of servers in scalable, distributed centers where data is stored, processed and managed
- Discover, access, and exploit data quickly and completely
- User-defined analytic environment through "drag and drop" composite applications
- Protects information from those who should not have it

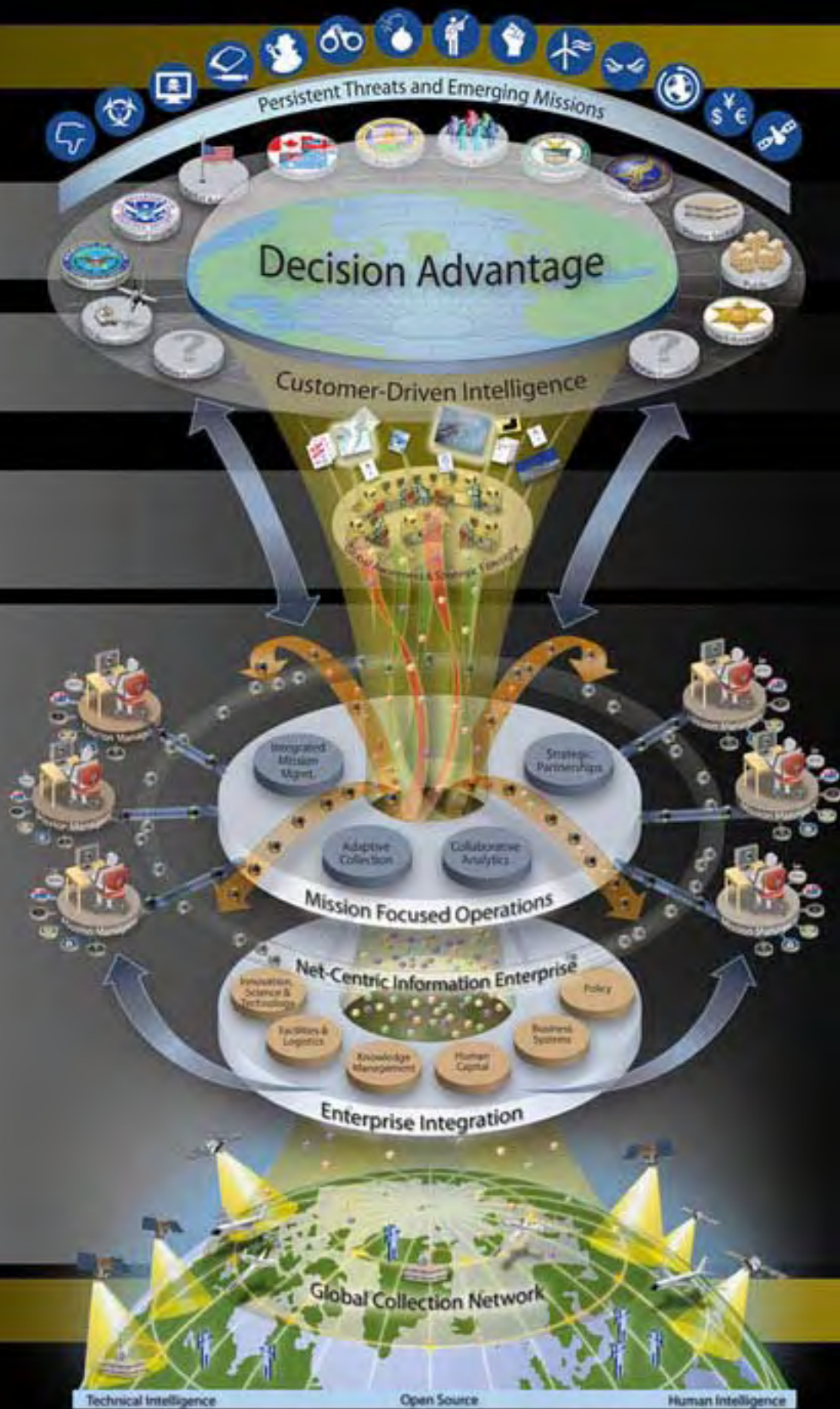
Enterprise Integration

Creation of a strong institutional foundation that integrates the vital components of the Intelligence Enterprise – policy, people, processes, infrastructure, and technology – to remove the barriers to collaboration and reduce the "tooth-to-tail" ratio through greater economies of scale

A Globally Networked and Integrated Intelligence Enterprise



Director of National Intelligence
Washington DC, 20511



Mapping the Global Future

**Report of the National Intelligence Council's 2020 Project
Based on Consultations With Nongovernmental Experts Around the World**



NIC 2004-13



Mapping the Global Future

**Report of the National Intelligence Council's
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experts around the world*

December 2004

To obtain a copy of this publication, please contact:

Government Printing Office (GPO), Superintendent of Documents, PO Box 391954,
Pittsburgh, PA 15250-7954; Phone: (202) 512-1800; Fax: (202) 512-2250; <http://bookstore.gpo.gov>;
GPO Stock 041-015-0024-6; ISBN 0-16-073-218-2.



NATIONAL INTELLIGENCE COUNCIL
Washington, D.C. 20505

From the Chairman of the National Intelligence Council

Mapping the Global Future: Report of the National Intelligence Council's 2020 Project is the third unclassified report prepared by the National Intelligence Council (NIC) in recent years that takes a long-term view of the future. It offers a fresh look at how key global trends might develop over the next decade and a half to influence world events. Mindful that there are many possible "futures," our report offers a range of possibilities and potential discontinuities, as a way of opening our minds to developments we might otherwise miss.

As I used to say to my students at Princeton, linear analysis will get you a much-changed caterpillar, but it won't get you a butterfly. For that you need a leap of imagination. We hope this project, and the dialogue it stimulates, will help us make that leap—not to *predict* the world of 2020, which is clearly beyond our capacity—but to better *prepare* for the kinds of challenges that may lie ahead.

Mapping the Global Future builds upon methods used to develop our two earlier studies by employing a variety of innovative methodologies and approaches, including extensive consultations with a wide range of governmental and nongovernmental experts.

- The ***Global Trends 2010*** paper was derived from a series of conferences held in the Washington, DC area, attended by academic and business leaders who conferred with Intelligence Community experts. Produced in 1997, it was the centerpiece of numerous briefings to policymakers.
- ***Global Trends 2015***, an ambitious and ground-breaking effort, identified seven key drivers of global change: demographics, natural resources and the environment, science and technology, the global economy and globalization, national and international governance, future conflict, and the role of the United States. Produced in December 2000, it was based upon discussions between the National Intelligence Council and a broad array of nongovernmental specialists in the United States. ***GT 2015*** received international attention and prompted a lively debate about the forces that will shape our world. We billed it as "a work in progress, a flexible framework for thinking about the future that we will update and revise as conditions evolve."

Mapping the Global Future picks up where ***Global Trends 2015*** left off but differs from our earlier efforts in three principal respects:

- ***We have consulted experts from around the world in a series of regional conferences to offer a truly global perspective.*** We organized conferences on five continents to solicit the views of foreign experts on the prospects for their regions over the next 15 years.
- ***We have relied more on scenarios to try to capture how key trends might play out.*** Our earlier efforts focused on key trends that would impact regions and key countries of interest.

NATIONAL INTELLIGENCE COUNCIL

The trends we highlight in this paper provide a point of departure for developing imaginative global scenarios that represent several plausible alternative futures.

- ***We have developed an interactive Web site to facilitate an ongoing, global dialogue.*** The Web site also contains links to a wealth of data of interest to scholars and the general public.

The entire process, from start to finish, lasted about a year and involved more than a thousand people. We appreciate the time and effort that each contributed to ***Mapping the Global Future***. The Methodology section of this report acknowledges the special contributions of individual scholars and organizations and the many conferences and symposia held in conjunction with the project. Within the NIC, Craig Gralley, Director of Strategic Plans and Outreach, deserves special mention for his management of the many dozens of conferences, workshops, and planning sessions associated with the project. Let me also extend special recognition to Mathew Burrows, Director of the NIC's Analysis and Production Staff, who with creativity and clarity brought together the disparate parts of the project into an elegant final draft. Elizabeth Arens and Russell Sniady, members of his staff, also made significant contributions.

I encourage readers to review the complete set of 2020 Project documents found on the National Intelligence Council's Web site, www.cia.gov/nic, and to explore the scenario simulations. We continue to see this project as a work in progress—a way of catalyzing an ongoing dialogue about the future at a time of great flux in world affairs.



Robert L. Hutchings

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The 2020 Global Landscape

Relative Certainties	Key Uncertainties
Globalization largely irreversible, likely to become less Westernized.	Whether globalization will pull in lagging economies; degree to which Asian countries set new “rules of the game.”
World economy substantially larger.	Extent of gaps between “haves” and “have-nots”; backsliding by fragile democracies; managing or containing financial crises.
Increasing number of global firms facilitate spread of new technologies.	Extent to which connectivity challenges governments.
Rise of Asia and advent of possible new economic middle-weights.	Whether rise of China/India occurs smoothly.
Aging populations in established powers.	Ability of EU and Japan to adapt work forces, welfare systems, and integrate migrant populations; whether EU becomes a superpower.
Energy supplies “in the ground” sufficient to meet global demand.	Political instability in producer countries; supply disruptions.
Growing power of nonstate actors.	Willingness and ability of states and international institutions to accommodate these actors.
Political Islam remains a potent force.	Impact of religiosity on unity of states and potential for conflict; growth of jihadist ideology.
Improved WMD capabilities of some states.	More or fewer nuclear powers; ability of terrorists to acquire biological, chemical, radiological, or nuclear weapons.
Arc of instability spanning Middle East, Asia, Africa.	Precipitating events leading to overthrow of regimes.
Great power conflict escalating into total war unlikely.	Ability to manage flashpoints and competition for resources.
Environmental and ethical issues even more to the fore.	Extent to which new technologies create or resolve ethical dilemmas.
US will remain single most powerful actor economically, technologically, militarily.	Whether other countries will more openly challenge Washington; whether US loses S&T edge.

Executive Summary

At no time since the formation of the Western alliance system in 1949 have the shape and nature of international alignments been in such a state of flux. The end of the Cold War shifted the tectonic plates, but the repercussions from these momentous events are still unfolding. Emerging powers in Asia, retrenchment in Eurasia, a roiling Middle East, and transatlantic divisions are among the issues that have only come to a head in recent years. The very magnitude and speed of change resulting from a globalizing world—apart from its precise character—will be a defining feature of the world out to 2020. Other significant characteristics include: the rise of new powers, new challenges to governance, and a more pervasive sense of insecurity, including terrorism. As we map the future, the prospects for increasing global prosperity and the limited likelihood of great power conflict provide an overall favorable environment for coping with what are otherwise daunting challenges. **The role of the United States will be an important variable in how the world is shaped, influencing the path that states and nonstate actors choose to follow.**

New Global Players

The likely emergence of China and India, as well as others, as new major global players—similar to the advent of a united Germany in the 19th century and a powerful United States in the early 20th century—will transform the geopolitical landscape, with impacts potentially as dramatic as those in the previous two centuries. In the same way that commentators refer to the 1900s as the “American Century,” the 21st century may be seen as the time when Asia, led by China and India, comes into its own. A combination of sustained high economic growth, expanding military capabilities, and large populations will be at the root of the expected rapid rise in economic and political power for both countries.

- Most forecasts indicate that by 2020 China’s gross national product (GNP) will exceed that of individual Western economic powers except for the United States. India’s GNP will have overtaken or be on the threshold of overtaking European economies.
- Because of the sheer size of China’s and India’s populations—projected by the US Census Bureau to be 1.4 billion and almost 1.3 billion respectively by 2020—their standard of living need not approach Western levels for these countries to become important economic powers.

Barring an abrupt reversal of the process of globalization or any major upheavals in these countries, the rise of these new powers is a virtual certainty. Yet how China and India exercise their growing power and whether they relate cooperatively or competitively to other powers in the international system are key uncertainties. The economies of other developing countries, such as Brazil, could surpass all but the largest European countries by 2020; Indonesia’s economy could also approach the economies of individual European countries by 2020.

By most measures—market size, single currency, highly skilled work force, stable democratic governments, and unified trade bloc—an enlarged Europe will be able to increase its weight on the international scene. Europe’s strength could be in providing a model of global and regional governance to the rising powers. But aging populations and shrinking work forces in most countries will have an important impact on the continent. Either European countries adapt their work forces, reform their social welfare, education, and tax systems, and accommodate growing immigrant populations (chiefly from Muslim countries), or they face a period of protracted economic stasis.

Japan faces a similar aging crisis that could crimp its longer run economic recovery, but it also will be challenged to evaluate its regional status and role. Tokyo may have to choose between “balancing” against or “bandwagoning” with China. Meanwhile, the crisis over North Korea is likely to come to a head sometime over the next 15 years. Asians’ lingering resentments and concerns over Korean unification and cross-Taiwan Strait tensions point to a complicated process for achieving regional equilibrium.

Russia has the potential to enhance its international role with others due to its position as a major oil and gas exporter. However, Russia faces a severe demographic crisis resulting from low birth rates, poor medical care, and a potentially explosive AIDS situation. To the south, it borders an unstable region in the Caucasus and Central Asia, the effects of which—Muslim extremism, terrorism, and endemic conflict—are likely to continue spilling over into Russia. While these social and political factors limit the extent to which Russia can be a major global player, Moscow is likely to be an important partner both for the established powers, the United States and Europe, and for the rising powers of China and India.

With these and other new global actors, **how we mentally map the world in 2020 will change radically.** The “arriviste” powers—China, India, and perhaps others such as Brazil and Indonesia—have the potential to render obsolete the old categories of East and West, North and South, aligned and nonaligned, developed and developing. Traditional geographic groupings will increasingly lose salience in international relations. A state-bound world and a world of mega-cities, linked by flows of telecommunications, trade and finance, will co-exist. Competition for allegiances will be more open, less fixed than in the past.

Impact of Globalization

We see globalization—growing interconnectedness reflected in the expanded flows of information, technology, capital, goods, services, and people throughout the world—**as an overarching “mega-trend,” a force so ubiquitous that it will substantially shape all the other major trends in the world of 2020.** But the future of globalization is not fixed; states and nonstate actors—including both private companies and NGOs—will struggle to shape its contours. Some aspects of globalization—such as the growing global interconnectedness stemming from the information technology (IT) revolution—almost certainly will be irreversible. Yet it is also possible, although unlikely, that the process of globalization could be slowed or even stopped, just as the era of globalization

in the late 19th and early 20th centuries was reversed by catastrophic war and global depression.

Barring such a turn of events, **the world economy is likely to continue growing impressively: by 2020, it is projected to be about 80 percent larger than it was in 2000, and average per capita income will be roughly 50 percent higher.** Of course, there will be cyclical ups and downs and periodic financial or other crises, but this basic growth trajectory has powerful momentum behind it. Most countries around the world, both developed and developing, will benefit from gains in the world economy. By having the fastest-growing consumer markets, more firms becoming world-class multinationals, and greater S&T stature, Asia looks set to displace Western countries as the focus for international economic dynamism—provided Asia’s rapid economic growth continues.

Yet the benefits of globalization won’t be global. Rising powers will see exploiting the opportunities afforded by the emerging global marketplace as the best way to assert their great power status on the world stage. In contrast, some now in the “First World” may see the closing gap with China, India, and others as evidence of a relative decline, even though the older powers are likely to remain global leaders out to 2020. The United States, too, will see its relative power position eroded, though it will remain in 2020 the most important single country across all the dimensions of power. Those left behind in the developing world may resent China and India’s rise, especially if they feel squeezed by their growing dominance in key sectors of the global marketplace. And large pockets of poverty will persist even in “winner” countries.

The greatest benefits of globalization will accrue to countries and groups that can access and adopt new technologies. Indeed, a nation’s level of technological achievement generally will be defined in terms of its investment in *integrating and applying* the new, globally available technologies—whether the technologies are acquired through a country’s own basic research or from technology leaders. The growing two-way flow of high-tech brain power between the developing world and the West, the increasing size of the information computer-literate work force in some developing countries, and efforts by global corporations to diversify their high-tech operations will foster the spread of new technologies. High-tech breakthroughs—such as in genetically modified organisms and increased food production—could provide a safety net eliminating the threat of starvation and ameliorating basic quality of life issues for poor countries. But the gap between the “haves” and “have-nots” will widen unless the “have-not” countries pursue policies that support application of new technologies—such as good governance, universal education, and market reforms.

Those countries that pursue such policies could leapfrog stages of development, skipping over phases that other high-tech leaders such as the United States and Europe had to traverse in order to advance. **China and India are well positioned to become technology leaders, and even the poorest countries will be able to leverage prolific, cheap technologies to fuel—although at a slower rate—their own development.**

- The expected next revolution in high technology involving the convergence of nano-, bio-, information and materials technology could further bolster China and India's prospects. Both countries are investing in basic research in these fields and are well placed to be leaders in a number of key fields. Europe risks slipping behind Asia in some of these technologies. The United States is still in a position to retain its overall lead, although it must increasingly compete with Asia to retain its edge and may lose significant ground in some sectors.

More firms will become global, and those operating in the global arena will be more diverse, both in size and origin, more Asian and less Western in orientation. Such corporations, encompassing the current, large multinationals, will be increasingly outside the control of any one state and will be key agents of change in dispersing technology widely, further integrating the world economy, and promoting economic progress in the developing world. Their ranks will include a growing number based in such countries as China, India, or Brazil. While North America, Japan, and Europe might collectively continue to dominate international political and financial institutions, globalization will take on an increasingly non-Western character. By 2020, globalization could be equated in the popular mind with a rising Asia, replacing its current association with Americanization.

An expanding global economy will increase demand for many raw materials, such as oil. Total energy consumed probably will rise by about 50 percent in the next two decades compared to a 34 percent expansion from 1980-2000, with a greater share provided by petroleum. Most experts assess that with substantial investment in new capacity, overall energy supplies will be sufficient to meet global demands. But on the supply side, many of the areas—the Caspian Sea, Venezuela, and West Africa—that are being counted on to provide increased output involve substantial political or economic risk. Traditional suppliers in the Middle East are also increasingly unstable. **Thus sharper demand-driven competition for resources, perhaps accompanied by a major disruption of oil supplies, is among the key uncertainties.**

- China, India, and other developing countries' growing energy needs suggest a growing preoccupation with energy, shaping their foreign policies.
- For Europe, an increasing preference for natural gas may reinforce regional relationships—such as with Russia or North Africa—given the interdependence of pipeline delivery.

New Challenges to Governance

The nation-state will continue to be the dominant unit of the global order, but economic globalization and the dispersion of technologies, especially information technologies, will place enormous new strains on governments.

Growing connectivity will be accompanied by the proliferation of virtual communities of interest, complicating the ability of states to govern. The Internet in particular will spur

the creation of even more global movements, which may emerge as a robust force in international affairs.

Part of the pressure on governance will come from new forms of identity politics centered on religious convictions. In a rapidly globalizing world experiencing population shifts, religious identities provide followers with a ready-made community that serves as a “social safety net” in times of need—particularly important to migrants. In particular, **political Islam will have a significant global impact leading to 2020, rallying disparate ethnic and national groups and perhaps even creating an authority that transcends national boundaries.** A combination of factors—youth bulges in many Arab states, poor economic prospects, the influence of religious education, and the Islamization of such institutions as trade unions, nongovernmental organizations, and political parties—will ensure that political Islam remains a major force.

- Outside the Middle East, political Islam will continue to appeal to Muslim migrants who are attracted to the more prosperous West for employment opportunities but do not feel at home in what they perceive as an alien and hostile culture.

Regimes that were able to manage the challenges of the 1990s could be overwhelmed by those of 2020. Contradictory forces will be at work: authoritarian regimes will face new pressures to democratize, but fragile new democracies may lack the adaptive capacity to survive and develop.

The so-called “third wave” of democratization may be partially reversed by 2020—particularly among the states of the former Soviet Union and in Southeast Asia, some of which never really embraced democracy. Yet democratization and greater pluralism could gain ground in key Middle Eastern countries which thus far have been excluded from the process by repressive regimes.

With migration on the increase in several places around the world—from North Africa and the Middle East into Europe, Latin America and the Caribbean into the United States, and increasingly from Southeast Asia into the northern regions—more countries will be multi-ethnic and will face the challenge of integrating migrants into their societies while respecting their ethnic and religious identities.

Chinese leaders will face a dilemma over how much to accommodate pluralistic pressures to relax political controls or risk a popular backlash if they do not. Beijing may pursue an “Asian way of democracy,” which could involve elections at the local level and a consultative mechanism on the national level, perhaps with the Communist Party retaining control over the central government.

With the international system itself undergoing profound flux, some of the institutions that are charged with managing global problems may be overwhelmed by them. Regionally based institutions will be particularly challenged to meet the complex transnational threats posed by terrorism, organized crime, and WMD proliferation. Such post-World War II creations as the United Nations and the

international financial institutions risk sliding into obsolescence unless they adjust to the profound changes taking place in the global system, including the rise of new powers.

Pervasive Insecurity

We foresee a more pervasive sense of insecurity—which may be as much based on psychological perceptions as physical threats—by 2020. **Even as most of the world gets richer, globalization will profoundly shake up the status quo—generating enormous economic, cultural, and consequently political convulsions.** With the gradual integration of China, India, and other emerging countries into the global economy, hundreds of millions of working-age adults will become available for employment in what is evolving into a more integrated world labor market.

- This enormous work force—a growing portion of which will be well educated—will be an attractive, competitive source of low-cost labor at the same time that technological innovation is expanding the range of globally mobile occupations.
- **The transition will not be painless and will hit the middle classes of the developed world in particular,** bringing more rapid job turnover and requiring professional retooling. Outsourcing on a large scale would strengthen the anti-globalization movement. Where these pressures lead will depend on how political leaders respond, how flexible labor markets become, and whether overall economic growth is sufficiently robust to absorb a growing number of displaced workers.

Weak governments, lagging economies, religious extremism, and youth bulges will align to create a perfect storm for internal conflict in certain regions. The number of internal conflicts is down significantly since the late 1980s and early 1990s when the breakup of the Soviet Union and Communist regimes in Central Europe allowed suppressed ethnic and nationalistic strife to flare. Although a leveling off point has been reached where we can expect fewer such conflicts than during the last decade, the continued prevalence of troubled and institutionally weak states means that such conflicts will continue to occur.

Some internal conflicts, particularly those that involve ethnic groups straddling national boundaries, risk escalating into regional conflicts. At their most extreme, internal conflicts can result in failing or failed states, with expanses of territory and populations devoid of effective governmental control. Such territories can become sanctuaries for transnational terrorists (such as al-Qa'ida in Afghanistan) or for criminals and drug cartels (such as in Colombia).

The likelihood of great power conflict escalating into total war in the next 15 years is lower than at any time in the past century, unlike during previous centuries when local conflicts sparked world wars. The rigidities of alliance systems before World War I and during the interwar period, as well as the two-bloc standoff during the Cold War, virtually assured that small conflicts would be quickly generalized. The growing dependence on global financial and trade networks will help deter interstate

conflict but does not eliminate the possibility. Should conflict occur that involved one or more of the great powers, the consequences would be significant. The absence of effective conflict resolution mechanisms in some regions, the rise of nationalism in some states, and the raw emotions and tensions on both sides of some issues—for example, the Taiwan Strait or India/Pakistan issues—could lead to miscalculation. Moreover, advances in modern weaponry—longer ranges, precision delivery, and more destructive conventional munitions—create circumstances encouraging the preemptive use of military force.

Current nuclear weapons states will continue to improve the survivability of their deterrent forces and almost certainly will improve the reliability, accuracy, and lethality of their delivery systems as well as develop capabilities to penetrate missile defenses. The open demonstration of nuclear capabilities by any state would further discredit the current nonproliferation regime, cause a possible shift in the balance of power, and increase the risk of conflicts escalating into nuclear ones. **Countries without nuclear weapons—especially in the Middle East and Northeast Asia—might decide to seek them as it becomes clear that their neighbors and regional rivals are doing so.** Moreover, the assistance of proliferators will reduce the time required for additional countries to develop nuclear weapons.

Transmuting International Terrorism

The key factors that spawned international terrorism show no signs of abating over the next 15 years. Facilitated by global communications, the revival of Muslim identity will create a framework for the spread of radical Islamic ideology inside and outside the Middle East, including Southeast Asia, Central Asia and Western Europe, where religious identity has traditionally not been as strong. This revival has been accompanied by a deepening solidarity among Muslims caught up in national or regional separatist struggles, such as Palestine, Chechnya, Iraq, Kashmir, Mindanao, and southern Thailand, and has emerged in response to government repression, corruption, and ineffectiveness. Informal networks of charitable foundations, *madrassas*, *hawalas*¹, and other mechanisms will continue to proliferate and be exploited by radical elements; alienation among unemployed youths will swell the ranks of those vulnerable to terrorist recruitment.

We expect that by 2020 al-Qa'ida will be superceded by similarly inspired Islamic extremist groups, and there is a substantial risk that broad Islamic movements akin to al-Qa'ida will merge with local separatist movements. Information technology, allowing for instant connectivity, communication, and learning, will enable the terrorist threat to become increasingly decentralized, evolving into an eclectic array of groups, cells, and individuals that do not need a stationary headquarters to plan and carry out operations. Training materials, targeting guidance, weapons know-how, and fund-raising will become virtual (i.e., online).

¹ *Hawalas* constitute an informal banking system.

Terrorist attacks will continue to primarily employ conventional weapons, incorporating new twists and constantly adapting to counterterrorist efforts. Terrorists probably will be most original not in the technologies or weapons they use but rather in their operational concepts—i.e., the scope, design, or support arrangements for attacks.

Strong terrorist interest in acquiring chemical, biological, radiological and nuclear weapons increases the risk of a major terrorist attack involving WMD. **Our greatest concern is that terrorists might acquire biological agents or, less likely, a nuclear device, either of which could cause mass casualties.** Bioterrorism appears particularly suited to the smaller, better-informed groups. We also expect that terrorists will attempt cyber attacks to disrupt critical information networks and, even more likely, to cause physical damage to information systems.

Possible Futures

In this era of great flux, we see several ways in which major global changes could take shape in the next 15 years, from seriously challenging the nation-state system to establishing a more robust and inclusive globalization. In the body of this paper we develop these concepts in four fictional scenarios which were extrapolated from the key trends we discuss in this report. **These scenarios are not meant as actual forecasts,** but they describe possible worlds upon whose threshold we may be entering, depending on how trends interweave and play out:

- ***Davos World*** provides an illustration of how robust economic growth, led by China and India, over the next 15 years could reshape the globalization process—giving it a more non-Western face and transforming the political playing field as well.
- ***Pax Americana*** takes a look at how US predominance may survive the radical changes to the global political landscape and serve to fashion a new and inclusive global order.
- ***A New Caliphate*** provides an example of how a global movement fueled by radical religious identity politics could constitute a challenge to Western norms and values as the foundation of the global system.
- ***Cycle of Fear*** provides an example of how concerns about proliferation might increase to the point that large-scale intrusive security measures are taken to prevent outbreaks of deadly attacks, possibly introducing an Orwellian world.

Of course, these scenarios illustrate just a few of the possible futures that may develop over the next 15 years, but the wide range of possibilities we can imagine suggests that this period will be characterized by increased flux, particularly in contrast to the relative stasis of the Cold War era. The scenarios are not mutually exclusive: we may see two or three of these scenarios unfold in some combination or a wide range of other scenarios.

Policy Implications

The role of the United States will be an important shaper of the international order in 2020. Washington may be increasingly confronted with the challenge of managing—at an acceptable cost to itself—relations with Europe, Asia, the Middle East, and others absent a single overarching threat on which to build consensus. **Although the challenges ahead will be daunting, the United States will retain enormous advantages, playing a pivotal role across the broad range of issues—economic, technological, political, and military—that no other state will match by 2020.**

Some trends we probably can bank on include dramatically altered alliances and relationships with Europe and Asia, both of which formed the bedrock of US power in the post-World War II period. The EU, rather than NATO, will increasingly become the primary institution for Europe, and the role which Europeans shape for themselves on the world stage is most likely to be projected through it. Dealing with the US-Asia relationship may arguably be more challenging for Washington because of the greater flux resulting from the rise of two world-class economic and political giants yet to be fully integrated into the international order. Where US-Asia relations lead will result as much or more from what the Asians work out among themselves as any action by Washington. One could envisage a range of possibilities from the US enhancing its role as balancer between contending forces to Washington being seen as increasingly irrelevant.

The US economy will become more vulnerable to fluctuations in the fortunes of others as global commercial networking deepens. US dependence on foreign oil supplies also makes it more vulnerable as the competition for secure access grows and the risks of supply side disruptions increase.

While no single country looks within striking distance of rivaling US military power by 2020, more countries will be in a position to make the United States pay a heavy price for any military action they oppose. The possession of chemical, biological, and/or nuclear weapons by Iran and North Korea and the possible acquisition of such weapons by others by 2020 also increase the potential cost of any military action by the US against them or their allies.

The success of the US-led counterterrorism campaign will hinge on the capabilities and resolve of individual countries to fight terrorism on their own soil. Counterterrorism efforts in the years ahead—against a more diverse set of terrorists who are connected more by ideology than by geography—will be a more elusive challenge than focusing on a centralized organization such as al-Qa'ida. **A counterterrorism strategy that approaches the problem on multiple fronts offers the greatest chance of containing—and ultimately reducing—the terrorist threat.** The development of more open political systems and representation, broader economic opportunities, and empowerment of Muslim reformers would be viewed positively by the broad Muslim communities who do not support the radical agenda of Islamic extremists.

Even if the numbers of extremists dwindle, however, the terrorist threat is likely to remain. The rapid dispersion of biological and other lethal forms of technology increases the potential for an individual not affiliated with any terrorist group to be able to wreak widespread loss of life. Despite likely high-tech breakthroughs that will make it easier to track and detect terrorists at work, the attacker will have an easier job than the defender because the defender must prepare against a large array of possibilities. The United States probably will continue to be called on to help manage such conflicts as Palestine, North Korea, Taiwan, and Kashmir to ensure they do not get out of hand if a peace settlement cannot be reached. However, the scenarios and trends we analyze in the paper suggest the possibility of harnessing the power of the new players in contributing to global security and relieving the US of some of the burden.

Over the next 15 years the increasing centrality of ethical issues, old and new, have the potential to divide worldwide publics and challenge US leadership.

These issues include the environment and climate change, privacy, cloning and biotechnology, human rights, international law regulating conflict, and the role of multilateral institutions. The United States increasingly will have to battle world public opinion, which has dramatically shifted since the end of the Cold War. Some of the current anti-Americanism is likely to lessen as globalization takes on more of a non-Western face. At the same time, the younger generation of leaders—unlike during the post-World War II period—has no personal recollection of the United States as its “liberator” and is more likely to diverge with Washington’s thinking on a range of issues.

In helping to map out the global future, the United States will have many opportunities to extend its advantages, particularly in shaping a new international order that integrates disparate regions and reconciles divergent interests.

Methodology

To launch the **NIC 2020 Project**, in November 2003 we brought together some 25 leading outside experts from a wide variety of disciplines and backgrounds to engage in a broad-gauged discussion with Intelligence Community analysts. We invited three leading “futurists”—Ted Gordon of the UN’s Millennium Project; Jim Dewar, Director of the RAND Corporation’s Center for Longer Range Global Policy and the Future of the Human Condition; and Ged Davis, former head of Shell International’s scenarios project²—to discuss their most recent work and the methodologies they employed to think about the future. Princeton University historian Harold James gave the keynote address, offering lessons from prior periods of “globalization.”

We surveyed and studied various methodologies (see box on page 22) and reviewed a number of recent “futures” studies. Besides convening a meeting of counterparts in the UK, Canada, Australia, and New Zealand to learn their thinking, we organized six regional conferences in countries on four continents—one in the United Kingdom, South Africa, Singapore, and Chile, two in Hungary—to solicit the views of foreign experts from a variety of backgrounds—academics, business people, government officials, members of nongovernmental organizations and other institutions—who could speak authoritatively on the key drivers of change and conceptualize broad regional themes. Our regional experts also contributed valuable insights on how the rest of the world views the United States. In addition to the conferences held overseas, which included hundreds of foreign participants, we held a conference in the Washington, DC area on India.

We augmented these discussions with conferences and workshops that took a more in-depth view of specific issues of interest, including new technologies, the changing nature of warfare, identity politics, gender issues, climate change and many others (see box on page 20 for a complete list of the conferences). Participants explored key trends that were presented by experts and then developed alternative scenarios for how the trends might play out over the next 15 years. And we consulted numerous organizations and individuals on the substantive aspects of this study, as well as on methodologies and approaches for thinking about the future.

- The UN Millennium Project—an independent body that advises the UN on strategies for achieving the Millennium development goals—provided invaluable data on cross-cutting issues. We also consulted the *Eurasia Group*, *Oxford Analytica*, *CENTRA Technologies*, and the *Stimson Center*.
- Other individual scholars we consulted included Michael F. Oppenheimer, President, Global Scenarios, who facilitated several of our sessions and informed our thinking on methodologies; Georgetown and now Princeton Professor John Ikenberry, who organized several seminars of academic experts over the course of more than a

² Shell International Limited has for decades used scenarios to identify business risks and opportunities. Ged Davis led this effort for many years.

year to examine various aspects of US preeminence and critique preliminary drafts of the report; Enid Schoettle, who was one of the architects of **Global Trends 2015**; Professor Barry B. Hughes, Graduate School of International Studies, University of Denver, whose related statistical and scenario work is featured on our Web site; Anne Solomon, Senior Adviser on Technology Policy and Director of the Biotechnology and Public Policy Program at the Center for Strategic and International Studies in Washington, DC, who organized several stimulating conferences on S&T topics; Elke Matthews, an independent contractor who conducted substantial open-source research; Philip Jenkins, Distinguished Professor of History and Religious Studies, Pennsylvania State University, who provided invaluable insights on global trends pertaining to religion; Nicholas Eberstadt, Henry Wendt Chair in Political Economy, American Enterprise Institute, who provided us with important perspectives on demographic issues; and Jeffrey Herbst, Chair, Department of Politics, Princeton University, who was instrumental in our analysis of issues pertaining to Africa.

NIC 2020 Project Conferences and Workshops

Presentation by Joint Doctrine and Concepts Center (MoD/UK)—CIA Headquarters (September 2003)
Conference on Anti-Americanism—Wye Plantation (October 2003)
Inaugural NIC 2020 Project Conference—Washington, DC (November 2003)
Professor Ikenberry's series of International Relations Roundtables—Georgetown University (November 2003–November 2004)
Joint US-Commonwealth Intelligence Officials' Conference —Washington, DC (December 2003)
African Experts' Roundtable—Washington, DC (January 2004)
Middle East NIC 2020 Workshop—Wilton Park, UK (March 2004)
Africa NIC 2020 Workshop—Johannesburg, South Africa (March 2004)
Global Evolution of Dual-Use Biotechnology—Washington, DC (March 2004)
Russia and Eurasia NIC 2020 Workshop—Budapest, Hungary (April 2004)
Europe NIC 2020 Workshop—Budapest, Hungary (April 2004)
Global Identity Roundtable Discussion—CIA Headquarters (May 2004)
Asia NIC 2020 Workshop—Singapore (May 2004)
Conference on The Changing Nature of Warfare—Center for Naval Analysis (May 2004)
Latin America NIC 2020 Workshop—Santiago, Chile (June 2004)
Technological Frontiers, Global Power, Wealth, and Conflict—Center for Strategic and International Studies (CSIS) (June 2004)
Climate Change—University of Maryland (June 2004)
NSA Tech 2020—Baltimore, Maryland (June 2004)
Conference on Muslims in Europe—Oxford, England (July 2004)
Women in 2020—Washington, DC (August 2004)
Business Leader Roundtable Discussion—CIA Headquarters (September 2004)
India and Geopolitics in 2020—Rosslyn, Virginia (September 2004)
Stimson Center-sponsored roundtables on Scenarios—Washington, DC (Spring-Summer, 2004)
Information and Communications, Technological and Social Cohesion and the Nation-State—Washington, DC (September 2004)
Wrap-Up NIC 2020 Project Workshop—Virginia (October 2004)
Consultation on Preliminary NIC 2020 Draft with UK experts and the International Institute of Strategic Studies—London, England (October 2004)

- The following organizations arranged the regional conferences for the project: Wilton Park, Central European University, Bard College, the South African Institute for International Affairs, Adolfo Ibañez University, Nueva Mayoria, and the Asia Society. Timothy Sharp and Professor Ewan Anderson of Sharp Global Solutions Ltd arranged a conference in London of UK experts to critique a preliminary draft of the report.
- We also want to thank our colleagues in the US Intelligence Community, who provided us with useful data and shared their ideas about global trends.

Scenario Development Process

While straight-line projections are useful in establishing a baseline and positing a mainline scenario, they typically present a one-dimensional view of how the future might unfold and tend to focus attention exclusively on the “prediction.” Scenarios offer a more dynamic view of possible futures and focus attention on the underlying interactions that may have particular policy significance. They are especially useful in thinking about the future during times of great uncertainty, which we believe is the case for the next 15 years. Scenarios help decisionmakers to break through conventional thinking and basic assumptions so that a broader range of possibilities can be considered—including new risks and opportunities.

The six international workshops generated an enormous amount of data and analysis on the key drivers that are likely to lead to regional change in the 2020 timeframe. The NIC 2020 Project staff conducted additional research, drafted papers, and initiated follow-up roundtable discussions and conferences. We analyzed the findings from the regional workshops, highlighted key regional trends that had global implications, and looked at the regional product in its totality to identify salient cross-regional trends. These key findings were set aside as the raw material for development of the global scenarios.

To jumpstart the global scenario development process, the NIC 2020 Project staff created a Scenario Steering Group (SSG)—a small aggregation of respected members of the policy community, think tanks, and analysts from within the Intelligence Community—to examine summaries of the data collected and consider scenario concepts that take into account the interaction between key drivers of global change. SSG examined the product of the international workshops and explored fledgling scenarios for plausibility and policy relevance.

We studied extensively key futures work developed in the public and private sectors that employed scenario techniques, identified the “best practices,” and then developed our own unique approach, combining trend analysis and scenarios. Papers that influenced our work include those produced by Goldman Sachs, the UK Ministry of Defense, and Shell International, Ltd. (see box on page 22).

Scenario and Futures Work That Influenced Our Thinking

Our consultations with Ged Davis, formerly the leader of **Shell International's** scenario-building effort, affirmed our intent to develop scenarios for policymakers. **Shell builds global scenarios every three years to help its leaders make better decisions. Following initial research, Shell's team spends about a year conducting interviews and holding workshops to develop and finalize the scenarios, seeking throughout the process to ensure a balance between unconventional thinking and plausibility. We used a similar approach. We also benefited from consultations with other organizations that do futures work:**

The Joint Doctrine and Concepts Centre, an integral part of the UK Ministry of Defense, undertook an ambitious attempt to develop a coherent view of how the world might develop over the next 30 years in ways that could alter the UK's security. The project—Strategic Trends—was designed to assist the MOD in gaining a strategic understanding of future threats, risks, challenges, and opportunities.

Meta-Analysis of Published Material on Drivers and Trends, produced by the **UK Defense Evaluation and Research Agency**, reviewed over 50 futures studies.

The RAND Corporation—as part of a parallel, NIC-sponsored effort to update its 2001 monograph *The Global Revolution: Bio/Nano/Materials Trends and Their Synergies with IT by 2015*—provided substantive guidance by delineating technology trends and their interaction; identifying applications that will transform the future; commenting extensively on drafts; and providing thought-provoking, technology-driven scenario concepts.

Peter Schwartz, Chairman, Global Business Network and author of *Inevitable Surprises*, provided us with invaluable insights on the nature of surprise, including the use of drivers, the interpretation of insights across disciplines, and the application of scenario work to the private sector.

Toffler Associates contributed ideas at several points, including in association with the NSA Tech 2020 project (see below). In addition, Drs. Alvin and Heidi Toffler participated in our capstone conference, sharing their insights on understanding the future based on their vast experience in the field.

The **National Security Agency's** project—**Tech 2020**—also helped identify key technology convergences expected to impact society between now and 2020. We have incorporated valuable insights from this project and are grateful to NSA for stimulating a rewarding Intelligence Community dialogue on future trends.

After scenario concepts were explored, critiqued, and debated within the SSG and with other groups that the NIC engaged, eight global scenarios that held particular promise were developed. The NIC then held a wrap-up workshop with a broader group of experts to examine the eight scenarios, discuss the merits and weaknesses of each, and ultimately narrow the number of scenarios included in the final publication to four. The scenarios depicted in this publication were selected for their relevance to policymakers and because they cause us to question key assumptions about the future—but they do not attempt to predict it. Nor are they mutually exclusive.

Interactive Tools

Significantly, the NIC 2020 Project also employs information technology and analytic tools unavailable in earlier NIC efforts. Its global sweep and scope required that we engage in a continuing, worldwide dialogue about the future. With the help of CENTRA Technologies, we created an interactive, password-protected Web site to serve as a repository for discussion papers and workshop summaries. The site also provided a link to massive quantities of basic data for reference and analysis. It contained interactive tools to keep our foreign and domestic experts engaged and created “hands-on” computer simulations that allowed novice and expert alike to develop their own scenarios.³ Much of this supporting material involving the Empirical Web-boxes Scenario capability has now been transferred to the open, unclassified NIC Web site with publication of this report.

³ To access these new innovations log on to the NIC website: www.cia.gov/nic.

Introduction

The international order is in the midst of profound change: at no time since the formation of the Western alliance system in 1949 have the shape and nature of international alignments been in such a state of flux as they have during the past decade. As a result, the world of 2020 will differ markedly from the world of 2004, and in the intervening years the United States will face major international challenges that differ significantly from those we face today. The very magnitude and speed of change resulting from a globalizing world—regardless of its precise character—will be a defining feature of the world out to 2020. Other significant characteristics include:

- The contradictions of globalization.
- Rising powers: the changing geopolitical landscape.
- New challenges to governance.
- A more pervasive sense of insecurity.

As with previous upheavals, the seeds of major change have been laid in the trends apparent today. Underlying the broad characteristics listed above are a number of specific trends that overlap and play off each other:

- The expanding global economy.

- The accelerating pace of scientific change and the dispersion of dual-use technologies.
- Lingering social inequalities.
- Emerging powers.
- The global aging phenomenon.
- Halting democratization.
- A spreading radical Islamic ideology.
- The potential for catastrophic terrorism.
- The proliferation of weapons of mass destruction.
- Increased pressures on international institutions.

As we survey the next 15 years, the role of the United States will be an important variable in how the world is shaped, influencing the path that states and nonstate actors choose to follow. In addition to the pivotal role of the United States, international bodies including international organizations, multinational corporations, nongovernmental organizations (NGOs) and others can mitigate distinctly negative trends, such as greater insecurity, and advance positive trends.

Mapping the Global Future

How we mentally map the world will be different in 2020. Traditional geographic groupings will increasingly lose salience in international relations. Since the end of the Cold War, scholars have questioned the utility of the East vs. West concept that emerged in the late 1940s as an intellectual justification for American engagement in Europe. Eurasia as a concept supplanting the former Soviet Union seems irrelevant as many former Soviet members go their own way and the prospect of Moscow reasserting control seems improbable. The usefulness of the West as a concept has been questioned by the growing philosophic divisions between the US and Western Europe over sovereignty and multilateralism and the increasing power on the world scene of traditionally non-Western powers.

As with the East-West divide, the traditional North-South faultline may not be a meaningful concept for the world in 2020 owing to globalization and the expected rise of China and India, which have been considered part of the "South" because of their level of development. Traditional issues of North-South inequalities, trade, and assistance will certainly keep coming to the fore, but some high-growth developing countries, especially China and India, probably will be among the economic heavy-weights or "haves." They will not be "Western" in the traditional sense but also may not be seen as representative of the underdeveloped or still developing countries. China, in particular, may see itself as having been restored as a great power after several centuries of decline.

Divisions other than economic may also shape how we view the world. We anticipate that religion will play an increasing role in how many people define their identity. For many societies, divisions between and within religious groups may become boundaries as significant as national borders. We particularly see Christian-Muslim divides in Southeast Asia, splits within the Muslim world between Shia and Sunni communities, and islands of potential religious or ethnic disaffection in Europe, Russia, and China as figuring prominently in the 2020 geographic outlook.

One current concept that may still hold true in 2020 is that of an increasing arc of instability ranging from Southeast Asia, where the possibility exists of growing radical Islam and terrorism, to Central Asia, where we see the possibility of "failed," non-democratic states. The arc includes many Middle Eastern and African countries, some of whom may have fallen further behind or have only just begun to connect with the global economy. Globalization above all will have replaced the former divide among the industrialized West; Communist East; and the developing, non-aligned, or Third World. New alignments instead will be between those countries, or even parts of countries or hubs, that are integrating into a global community and those that are not integrating for economic, political or social reasons. For those mega-cities or hubs that are the engine behind globalization, the financial and telecommunications links they forge with each other may matter as much or more than national boundaries.



The Contradictions of Globalization

Whereas in *Global Trends 2015* we viewed globalization—growing interconnectedness reflected in the expanded flows of information, technology, capital, goods, services, and people throughout the world—as among an array of key drivers, we now view it more as a “mega-trend”—a force so ubiquitous that it will substantially shape all of the other major trends in the world of 2020.

“[By 2020] globalization is likely to take on much more of a ‘non-Western’ face...”

The reach of globalization was substantially broadened during the last 20 years by Chinese and Indian economic liberalization, the collapse of the Soviet Union, and the worldwide information technology revolution. Through the next 15 years, it will sustain world economic growth, raise world living standards, and substantially deepen global interdependence. At the same time, it will profoundly shake up the status quo almost everywhere—generating enormous economic, cultural, and consequently political convulsions.

Certain aspects of globalization, such as the growing global inter-connectedness stemming from the information technology revolution, are likely to be irreversible. Real-time communication, which has transformed politics almost everywhere, is a phenomenon that even repressive

governments would find difficult to expunge.

- It will be difficult, too, to turn off the phenomenon of entrenched economic interdependence, although the pace of global economic expansion may ebb and flow. Interdependence has widened the effective reach of multinational business, enabling smaller firms as well as large multinationals to market across borders and bringing heretofore non-traded services into the international arena.

Yet the process of globalization, powerful as it is, could be substantially slowed or even reversed, just as the era of globalization in the late 19th and early 20th centuries was reversed by catastrophic war and global depression. Some features that we associate with the globalization of the 1990s—such as economic and political liberalization—are prone to “fits and starts” and probably will depend on progress in multilateral negotiations, improvements in national governance, and the reduction of conflicts. The freer flow of people across national borders will continue to face social and political obstacles even when there is a pressing need for migrant workers.

“India and China probably will be among the economic heavyweights or ‘haves.’”

What Would An Asian Face on Globalization Look Like?

Rising Asia will continue to reshape globalization, giving it less of a “Made in the USA” character and more of an Asian look and feel. At the same time, Asia will alter the rules of the globalizing process. By having the fastest-growing consumer markets, more firms becoming world-class multinationals, and greater S&T stature, Asia looks set to displace Western countries as the focus for international economic dynamism—provided Asia’s rapid economic growth continues.

Asian finance ministers have considered establishing an Asian monetary fund that would operate along different lines from IMF, attaching fewer strings on currency swaps and giving Asian decision-makers more leeway from the “Washington macro-economic consensus.”

- In terms of capital flows, rising Asia may still accumulate large currency reserves—currently \$850 billion in Japan, \$500 billion in China, \$190 billion in Korea, and \$120 billion in India, or collectively three-quarters of global reserves—but the percentage held in dollars will fall. A basket of reserve currencies including the yen, renminbi, and possibly rupee probably will become standard practice.
- Interest-rate decisions taken by Asian central bankers will impact other global financial markets, including New York and London, and the returns from Asian stock markets are likely to become an increasing global benchmark for portfolio managers.

As governments devote more resources to basic research and development, rising Asia will continue to attract applied technology from around the world, including cutting-edge technology, which should boost their high performance sectors. We already anticipate (as stated in the text) that the Asian giants may use the power of their markets to set industry standards, rather than adopting those promoted by Western nations or international standards bodies. The international intellectual property rights regime will be profoundly molded by IPR regulatory and law enforcement practices in East and South Asia.

Increased labor force participation in the global economy, especially by China, India, and Indonesia, will have enormous effects, possibly spurring internal and regional migrations. Either way it will have a large impact, determining the relative size of the world’s greatest new “mega-cities” and, perhaps, act as a key variable for political stability/instability for decades to come. To the degree that these vast internal migrations spill over national borders—currently, only a miniscule fraction of China’s 100 million internal migrants end up abroad—they could have major repercussions for other regions, including Europe and North America.

An expanded Asian-centric cultural identity may be the most profound effect of a rising Asia. Asians have already begun to reduce the percentage of students who travel to Europe and North America with Japan and—most striking—China becoming educational magnets. A new, more Asian cultural identity is likely to be rapidly packaged and distributed as incomes rise and communications networks spread. Korean pop singers are already the rage in Japan, Japanese *anime* have many fans in China, and Chinese kung-fu movies and Bollywood song-and-dance epics are viewed throughout Asia. Even Hollywood has begun to reflect these Asian influences—an effect that is likely to accelerate through 2020.

Moreover, the character of globalization probably will change just as capitalism changed over the course of the 19th and 20th centuries. While today's most advanced nations—especially the United States—will remain important forces driving capital, technology and goods, globalization is likely to take on much more of a “non-Western face” over the next 15 years.

- Most of the increase in world population and consumer demand through 2020 will take place in today's developing nations—especially China, India, and Indonesia—and multinational companies from today's advanced nations will adapt their “profiles” and business practices to the demands of these cultures.
- Able to disperse technology widely and promote economic progress in the developing world, corporations already are seeking to be “good citizens” by allowing the retention of non-Western practices in the workplaces in which they operate. Corporations are in the position to make globalization more palatable to people concerned about preserving unique cultures.
- New or expanding corporations from countries lifted up by globalization will make their presence felt globally through trade and investments abroad.
- Countries that have benefited and are now in position to weigh in will seek more power in international bodies and greater influence on the “rules of the game.”
- In our interactions, many foreign experts have noted that while popular opinion in their countries favors the

material benefits of globalization, citizens are opposed to its perceived “Americanization,” which they see as threatening to their cultural and religious values. The conflation of globalization with US values has in turn fueled anti-Americanism in some parts of the world.

“...the world economy is projected to be about 80 percent larger in 2020 than it was in 2000, and average per capita income to be roughly 50 percent higher.”

Currently, about two-thirds of the world's population live in countries that are connected to the global economy. Even by 2020, however, the benefits of globalization won't be global. Over the next 15 years, gaps will widen between those countries benefiting from globalization—economically, technologically, and socially—and those underdeveloped nations or pockets within nations that are left behind. Indeed, we see the next 15 years as a period in which the perceptions of the contradictions and uncertainties of a globalized world come even more to the fore than is the case today.

An Expanding and Integrating Global Economy

The world economy is projected to be about 80 percent larger in 2020 than it was in 2000 and average per capita income to be roughly 50 percent higher. Large parts of the world will enjoy unprecedented prosperity, and a *numerically* large middle class will be created for the first time in some formerly poor countries. The social structures in

What Could Derail Globalization?

The process of globalization, powerful as it is, could be substantially slowed or even stopped. Short of a major global conflict, which we regard as improbable, another large-scale development that we believe could **stop** globalization would be a pandemic. However, other catastrophic developments, such as terrorist attacks, could **slow** its speed.

Some experts believe it is only a matter of time before a new **pandemic** appears, such as the 1918–1919 influenza virus that killed an estimated 20 million worldwide. Such a pandemic in megacities of the developing world with poor health-care systems—in Sub-Saharan Africa, China, India, Bangladesh or Pakistan—would be devastating and could spread rapidly throughout the world. Globalization would be endangered if the death toll rose into the millions in several major countries and the spread of the disease put a halt to global travel and trade during an extended period, prompting governments to expend enormous resources on overwhelmed health sectors. On the positive side of the ledger, the response to SARS showed that international surveillance and control mechanisms are becoming more adept at containing diseases, and new developments in biotechnologies hold the promise of continued improvement.

A slow-down could result from **a pervasive sense of economic and physical insecurity** that led governments to put controls on the flow of capital, goods, people, and technology that stalled economic growth. Such a situation could come about in response to terrorist attacks killing tens or even hundreds of thousands in several US cities or in Europe or to widespread cyber attacks on information technology. Border controls and restrictions on technology exchanges would increase economic transaction costs and hinder innovation and economic growth. Other developments that could stimulate similar restrictive policies include a popular backlash against globalization prompted, perhaps, by white collar rejection of outsourcing in the wealthy countries and/or resistance in poor countries whose peoples saw themselves as victims of globalization.

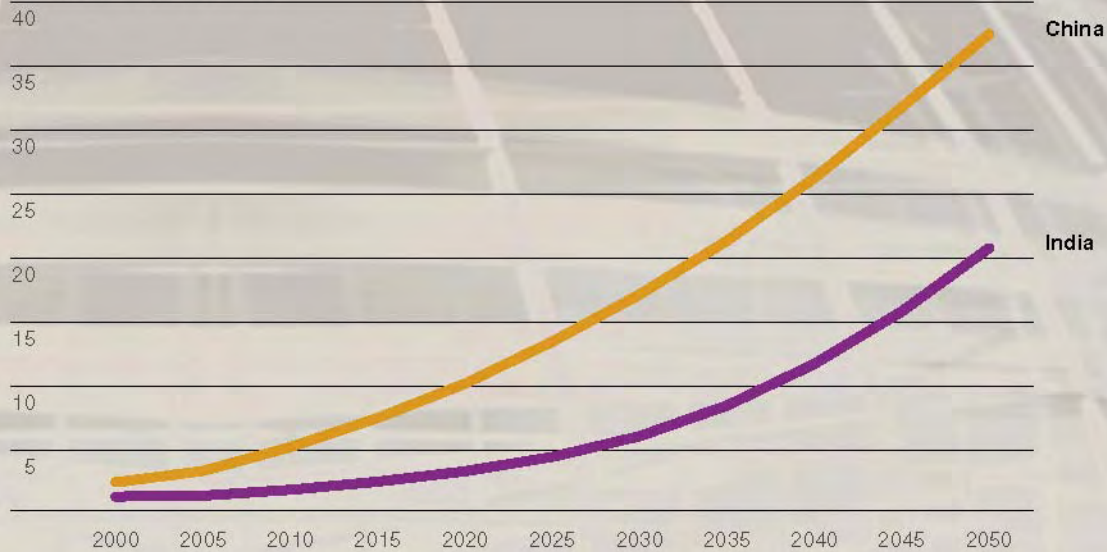
those developing countries will be transformed as growth creates a greater middle class. Over a long time frame, there is the potential, so long as the expansion continues, for more traditionally poor countries to be pulled closer into the globalization circle.

Most forecasts to 2020 and beyond continue to show higher annual growth for developing countries than for high-income ones. Countries such as China and India

will be in a position to achieve higher economic growth than Europe and Japan, whose aging work forces may inhibit their growth. Given its enormous population—and assuming a reasonable degree of real currency appreciation—the dollar value of China's gross national product (GNP) may be the second largest in the world by 2020. For similar reasons, the value of India's output could match that of a large European country. The economies of other developing countries,

China's and India's Per Capita GDPs Rising Against US

Percent of US per capita GDP



Source: Goldman Sachs.

such as Brazil and Indonesia, could surpass all but the largest European economies by 2020.⁴

- Even with all their dynamic growth, Asia's "giants" and others are not likely to compare qualitatively to the economies of the US or even some of the other rich countries. They will have some dynamic, world-class sectors, but more of their populations will work on farms, their capital stocks will be less sophisticated, and their financial systems are likely to be less efficient than those of other wealthy countries.

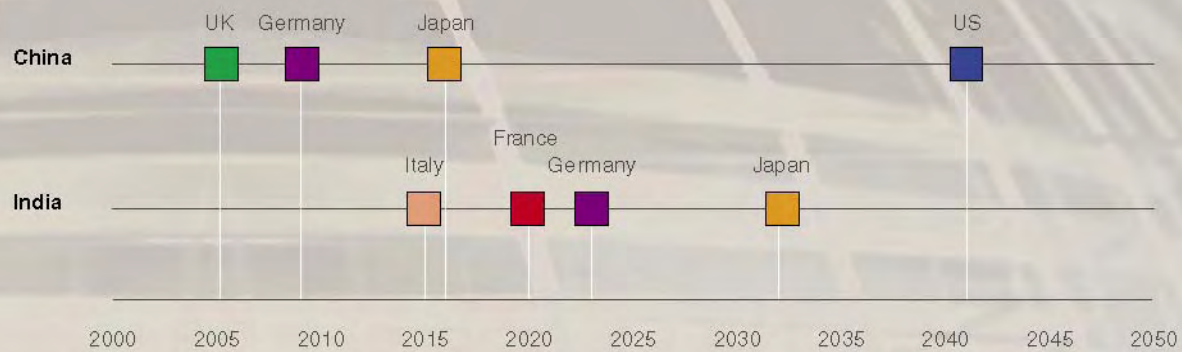
⁴ *Dreaming with the BRICS*, Goldman Sachs study, October 2003.

Continued Economic Turbulence.

Sustained high-growth rates have historical precedents. China already has had about two decades of 7 percent and higher growth rates, and Japan, South Korea, and Taiwan have managed in the past to achieve annual rates averaging around 10 percent for a long period.

Fast-developing countries have historically suffered sudden setbacks, however, and economic turbulence is increasingly likely to spill over and upset broader international relations. Many emerging markets—such as Mexico in the mid-1990s and Asian countries in the late 1990s—suffered negative effects from the abrupt reversals of capital movements, and China and India may

When China's and India's GDPs Would Exceed Today's Rich Countries



Source: Goldman Sachs, *Global Economics Paper No. 99*, October 2003.

encounter similar problems. The scale of the potential reversals would be unprecedented, and it is unclear whether current international financial mechanisms would be in a position to forestall wider economic disruption.

“Competitive pressures will force companies based in the advanced economies to ‘outsource’ many blue- and white-collar jobs.”

With the gradual integration of China, India, and other developing countries into the global economy, hundreds of millions of working-age adults will join what is becoming, through trade and investment flows, a more interrelated world labor

market. World patterns of production, trade, employment, and wages will be transformed.

- This enormous work force—a growing portion of which will be well educated—will be an attractive, competitive source of low-cost labor at the same time that technological innovation is expanding the range of globally mobile occupations.
- Competition from these workers will increase job “churning,” necessitate professional retooling, and restrain wage growth in some occupations.

Where these labor market pressures lead will depend on how political leaders and

policymakers respond. Against the backdrop of a global economic recession, such resources could unleash widespread protectionist sentiments. As long as sufficiently robust economic growth and labor market flexibility are sustained, however, intense international competition is unlikely to cause *net* job “loss” in the advanced economies.

- The large number of new service sector jobs that will be created in India and elsewhere in the developing world, for example, will likely exceed the supply of workers with those specific skills in the advanced economies.
- Job turnover in advanced economies will continue to be driven more by technological change and the vicissitudes of domestic rather than international competition.

Mobility and Laggards. Although the living standards of many people in developing and underdeveloped countries will rise over the next 15 years, per capita incomes in most countries will not compare to those of Western nations by 2020. There will continue to be large numbers of poor even in the rapidly emerging economies, and the proportion of those in the middle stratum is likely to be significantly less than is the case for today’s developed nations. Experts estimate it could take China another 30 years beyond 2020 for per capita incomes to reach *current* rates in developed economies.

- Even if, as one study estimates, China’s middle class could make up as much as 40 percent of its population by 2020—double what it is

now—it would be still well below the 60 percent level for the US. And per capita income for China’s middle class would be substantially less than equivalents in the West.

- In India, there are now estimated to be some 300 million middle-income earners making \$2,000-\$4,000 a year. Both the number of middle earners and their income levels are likely to rise rapidly, but their incomes will continue to be substantially below averages in the US and other rich countries even by 2020.
- However, a \$3,000 annual income is considered sufficient to spur car purchases in Asia; thus rapidly rising income levels for a ***growing middle class*** will combine to mean a huge consumption explosion, which is already evident.

Widening income and regional disparities will not be incompatible with a growing middle class and increasing overall wealth. In India, although much of the west and south may have a large middle class by 2020, a number of regions such as Bihar, Uttar Pradesh, and Orissa will remain underdeveloped.

Moreover, countries not connected to the world economy will continue to suffer. Even the most optimistic forecasts admit that economic growth fueled by globalization will leave many countries in poverty over the next 15 years.

- Scenarios developed by the World Bank indicate, for example, that Sub-Saharan Africa will be far behind even under the most optimistic scenario. The region currently has the largest

share of people living on less than \$1 per day.

If the growing problem of abject poverty and bad governance in troubled states in Sub-Saharan Africa, Eurasia, the Middle East, and Latin America persists, these areas will become more fertile grounds for terrorism, organized crime, and pandemic disease. Forced migration also is likely to be an important dimension of any downward spiral. The international community is likely to face choices about whether, how, and at what cost to intervene.

“...the greatest benefits of globalization will accrue to countries and groups that can access and adopt new technologies.”

The Technology Revolution

The trend toward rapid, global diffusion of technology will continue, although the stepped-up technology revolution will not benefit everyone equally.

- Among the drivers of the growing availability of technology will be the growing two-way flow of high-tech brain power between developing countries and Western countries, the increasing size of the technologically literate workforce in some developing countries, and efforts by multinational corporations to diversify their high-tech operations.

New technology applications will foster dramatic improvements in human knowledge and individual well-being. Such benefits include medical breakthroughs that begin to cure or

mitigate some common diseases and stretch lifespans, applications that improve food and potable water production, and expansion of wireless communications and language translation technologies that will facilitate transnational business, commercial, and even social and political relationships.

Moreover, future technology trends will be marked not only by accelerating advancements in individual technologies but also by a force-multiplying convergence of the technologies—information, biological, materials, and nanotechnologies—that have the potential to revolutionize all dimensions of life. Materials enabled with nanotechnology’s sensors and facilitated by information technology will produce myriad devices that will enhance health and alter business practices and models. Such materials will provide new knowledge about environment, improve security, and reduce privacy. Such interactions of these technology trends—coupled with agile manufacturing methods and equipment as well as energy, water, and transportation technologies—will help China’s and India’s prospects for joining the “First World.” Both countries are investing in basic research in these fields and are well placed to be leaders in a number of key fields. Europe risks slipping behind Asia in creating some of these technologies. The United States is still in a position to retain its overall lead, although it must increasingly compete with Asia and may lose significant ground in some sectors.

To Adaptive Nations Go Technology ‘s Spoils. The gulf between “haves” and “have-nots” may widen as the greatest benefits of globalization accrue to countries and groups that can access and

adopt new technologies. Indeed, a nation's level of technological achievement generally will be defined in terms of its investment in **integrating and applying** the new, globally available technologies—whether the technologies are acquired through a country's own basic research or from technology leaders. Nations that remain behind in adopting technologies are likely to be those that have failed to pursue policies that support application of new technologies—such as good governance, universal education, and market reforms—and not solely because they are poor.

Those that employ such policies can leapfrog stages of development, skipping over phases that other high-tech leaders such as the United States and Europe had to traverse in order to advance. China and India are well positioned to achieve such breakthroughs. Yet, even the poorest countries will be able to leverage prolific, cheap technologies to fuel—although at a slower rate—their own development.

- As nations like China and India surge forward in funding critical science and engineering education, research, and other infrastructure investments, they will make considerable strides in manufacturing and marketing a full range of technology applications—from software and pharmaceuticals to wireless sensors and smart-materials products.

Rapid technological advances outside the United States could enable other countries to set the rules for design, standards, and implementation, and for molding privacy, information security, and intellectual property rights (IPR).

- Indeed, international IPR enforcement is on course for dramatic change. Countries like China and India will, because of the purchasing power of their huge markets, be able to shape the implementation of some technologies and step on the intellectual property rights of others. The attractiveness of these large markets will tempt multinational firms to overlook IPR indiscretions that only minimally affect their bottom lines. Additionally, as many of the expected advancements in technology are anticipated to be in medicine, there will be increasing pressure from a humanitarian and moral perspective to “release” the property rights “for the good of mankind.”

Nations also will face serious challenges in oversight, control, and prohibition of sensitive technologies. With the same technology, such as sensors, computing, communication, and materials, increasingly being developed for a range of applications in both everyday, commercial settings and in critical military applications the monitoring and control of the export of technological components will become more difficult. Moreover, joint ventures, globalized markets and the growing proportion of private sector capital in basic R&D will undermine nation-state efforts to keep tabs on sensitive technologies.

- Questions concerning a country's ethical practices in the technology realm—such as with genetically modified foods, data privacy, biological material research, concealable sensors, and biometric devices—may become an increasingly important factor in international trade policy and foreign relations.

Biotechnology: Panacea and Weapon

The biotechnological revolution is at a relatively early stage, and major advances in the biological sciences coupled with information technology will continue to punctuate the 21st century. Research will continue to foster important discoveries in innovative medical and public health technologies, environmental remediation, agriculture, biodefense, and related fields.

On the positive side, biotechnology could be a “leveling” agent between developed and developing nations, spreading dramatic economic and healthcare enhancements to the neediest areas of the world.

- Possible breakthroughs in biomedicine such as an antiviral barrier will reduce the spread of HIV/AIDS, helping to resolve the ongoing humanitarian crisis in Sub-Saharan Africa and diminishing the potentially serious drag on economic growth in developing countries like India and China. Biotechnology research and innovations derived from continued US investments in Homeland Security—such as new therapies that might block a pathogen’s ability to enter the body—may eventually have revolutionary healthcare applications that extend beyond protecting the US from a terrorist attack.
- More developing countries probably will invest in indigenous biotechnology developments, while competitive market pressures increasingly will induce firms and research institutions to seek technically capable partners in developing countries.

However, even as the dispersion of biotechnology promises a means of improving the quality of life, it also poses a major security concern. As biotechnology information becomes more widely available, the number of people who can potentially misuse such information and wreak widespread loss of life will increase. An attacker would appear to have an easier job—because of the large array of possibilities available—than the defender, who must prepare against them all. Moreover, as biotechnology advances become more ubiquitous, stopping the progress of offensive BW programs will become increasingly difficult. Over the next 10 to 20 years there is a risk that advances in biotechnology will augment not only defensive measures but also offensive biological warfare (BW) agent development and allow the creation of advanced biological agents designed to target specific systems—human, animal, or crop.

Lastly, some biotechnology techniques that may facilitate major improvements in health also will spur serious ethical and privacy concerns over such matters as comprehensive genetic profiling; stem cell research; and the possibility of discovering DNA signatures that indicate predisposition for disease, certain cognitive abilities, or anti-social behavior.

At the same time, technology will be a source of tension in 2020: from competition over creating and attracting the most critical component of technological advancement—people—to resistance among some cultural or political groups to the perceived privacy-robbing or homogenizing effects of pervasive technology.

Lingering Social Inequalities

Even with the potential for technological breakthroughs and the dispersion of new technologies, which could help reduce inequalities, significant social welfare disparities within the developing and between developing and OECD countries will remain until 2020.

Over the next 15 years, illiteracy rates of people 15 years and older will fall, according to UNESCO, but they will still be 17 times higher in poor and developing countries than those in OECD⁵ countries. Moreover, illiteracy rates among women will be almost twice as high as those among men. Between 1950 and 1980 life expectancy between the more- and less-developed nations began to converge markedly; this probably will continue to be the case for many developing countries, including the most populous. However, by US Census Bureau projections, over 40 countries—including many African countries, Central Asian states, and Russia—are projected

to have a lower life expectancy in 2010 than they did in 1990.

Even if effective HIV/AIDS prevention measures are adopted in various countries, the social and economic impact of the millions already infected with the disease will play out over the next 15 years.

- The rapid rise in adult deaths caused by AIDS has left an unprecedented number of orphans in Africa. Today in some African countries one in ten children is an orphan, and the situation is certain to worsen.

The debilitation and death of millions of people resulting from the AIDS pandemic will have a growing impact on the economies of the hardest-hit countries, particularly those in Sub-Saharan Africa, where more than 20 million are believed to have died from HIV/AIDS since the early 1980s. Studies show that household incomes drop by 50 to 80 percent when key earners become infected. In “second wave” HIV/AIDS countries—Nigeria, Ethiopia, Russia, India, China, Brazil, Ukraine, and the Central Asian states—the disease will continue to spread beyond traditional high-risk groups into the general population. As HIV/AIDS spreads, it has the potential to derail the economic prospects of many up-and-coming economic powers.

⁵ The OECD, Organization for Economic Cooperation and Development, an outgrowth of the Marshall Plan-era Organization for European Economic Cooperation, boasts 30 members from among developed and emerging-market nations and active relationships with 70 others around the world.

The Status of Women in 2020

By 2020, women will have gained more rights and freedoms—in terms of education, political participation, and work force equality—in most parts of the world, but UN and World Health Organization data suggest that the gender gap will not have been closed even in the developed countries and still will be wide in developing regions. Although women's share in the global work force will continue to rise, wage gaps and regional disparities will persist.

- Although the difference between women's and men's earnings narrowed during the past 10 years, women continue to receive less pay than men. For example, a UN study in 2002 showed that in 27 of 39 countries surveyed—both in OECD and developing countries—women's wages were 20 to 50 percent less than men's for work in manufacturing.

Certain factors will tend to work against gender equality while others will have a positive impact.

Factors Impeding Equality

In regions where high **youth bulges** intersect with historical patterns of patriarchal bias, the added pressure on infrastructure will mean intensified competition for limited public resources and an increased probability that females will not receive equal treatment. For instance, if schools cannot educate all, boys are likely to be given first priority. Yet views are changing among the younger generation. In the Middle East, for example, many younger Muslims recognize the importance of educated wives as potential contributors to family income.

In countries such as China and India, where there is a pervasive "son preference" reinforced by government **population control policies**, women face increased risk not only of female infanticide but also of kidnapping and smuggling from surrounding regions for the disproportionately greater number of unattached males. Thus far, the preference for male children in China has led to an estimated shortfall of 30 million women.

Such statistics suggest that the global **female trafficking industry**, which already earns an estimated \$4 billion every year, is likely to expand, making it the second most profitable criminal activity behind global drug trafficking.

The feminization of **HIV/AIDS** is another worrisome trend. Findings from the July 2004 Global AIDS conference held in Bangkok reveal that the percentage of HIV-infected women is rising on every continent and in every major region in the world except Western Europe and Australia. Young women comprise 75 percent of those between the ages of 15 to 24 who are infected with HIV globally.

(Continued on next page...)

(continued...) **The Status of Women in 2020**

Factors Contributing to Equality

A broader reform agenda that includes **good governance** and **low unemployment** levels is essential to raising the status of women in many countries. International development experts emphasize that while good governance need not fit a Western democratic mold, it must deliver stability through inclusiveness and accountability. Reducing unemployment levels is crucial because countries already unable to provide employment for male job-seekers are not likely to improve employment opportunities for women.

The spread of information and communication technologies (ICT) offers great promise. According to World Bank analysis, increases in the level of ICT infrastructure tend to improve gender equality in education and employment. ICT also will enable women to form social and political networks. For regions suffering political oppression, particularly in the Middle East, these networks could become a 21st century counterpart to the 1980s' Solidarity Movement against the Communist regime in Poland.

Women in developing regions often turn to **nongovernmental organizations** (NGOs) to provide basic services. NGOs could become even more important to the status of women by 2020 as women in developing countries face increased threats and acquire IT networking capabilities.

The current trend toward decentralization and devolution of power in most states will afford women **increased opportunities for political participation**. Despite only modest gains in the number of female officeholders at the national level—women currently are heads of state in only eight countries—female participation in local and provincial politics is steadily rising and will especially benefit rural women removed from the political center of a country.

Other Benefits

The stakes for achieving gender parity are high and not just for women. A growing body of empirical literature suggests that gender equality in education promotes economic growth and reduces child mortality and malnutrition. At the Millennium Summit, UN leaders pledged to achieve gender equity in primary and secondary education by the year 2005 in every country of the world.

- By 2005, the 45 countries that are not on course to meet the UN targets are likely to suffer 1 to 3 percent lower GDP per capita growth as a result.

Fictional Scenario: Davos World

This scenario provides an illustration of how robust economic growth over the next 15 years could reshape the globalization process—giving it a more non-Western face. It is depicted in the form of a hypothetical letter from the head of the World Economic Forum to a former US Federal Reserve chairman on the eve of the annual Davos meeting in 2020. Under this scenario, the Asian giants as well as other developing states continue to outpace most “Western” economies, and their huge, consumer-driven domestic markets become a major focus for global business and technology. Many boats are lifted, but some founder. Africa does better than one might think, while some medium-sized emerging countries are squeezed. Western powers, including the United States, have to contend with job insecurity despite the many benefits to be derived from an expanding global economy. Although benefiting from energy price increases, the Middle East lags behind and threatens the future of globalization. In addition, growing tensions over Taiwan may be on the verge of triggering an economic meltdown. At the end of the scenario, we identify some lessons to be drawn from our fictional account, including the need for more management by leaders lest globalization slip off the rails.

Letter from Head of World Economic Forum to a Former US Federal Reserve Chairman On the Eve of the Annual Meeting



January 12, 2020

Dear Mr. Chairman:

As you know, the last few years have been rough. I finally persuaded the Asians to drop their boycott, and this year we're meeting in China instead of Davos. From now on it will be Switzerland every other year and Asia in the alternate years. I thought at first that I could get the Asians to back down, but they are united. Even the Japanese were not willing to bend. I'm not convinced this was all one big Chinese plot as some are charging. I'm not even sure whether the Chinese were fully in favor of it. Once it caught hold, they had to show some leadership and support Asian claims, but I think they are so confident of their current status that meeting every year in Davos did not bother them. Hosting the sessions actually puts pressure on them to make concessions and deal with some of the complaints about how they do business.

This reminds me of a particular theme I've been developing in my mind as I reflect on how globalization has now evolved. At the turn of the century, we equated globalization with Americanization. America was the model. Now globalization has more of an Asian face and, to be frank, America is no longer quite the engine it used to be. Instead the markets are now oriented eastwards.



That's not to say that the system runs on its own. Only after learning a couple of tough lessons did we see how much management was involved or how easily globalization could come off the rails. We business leaders have had to learn to step in more aggressively.

The 9/11 tragedy was a wake-up call. Terrorism still poses a physical and strategic challenge. In order to protect ourselves, we had to put up barriers, but there was a danger that we would do so much that we would undermine the very basis of globalization—the free flow of capital, goods, people, etc. We tried to strike a delicate balance between security and openness. There's been a lot of criticism about US visa restrictions cutting back on the number of foreign students, and American scientists worried about the US's science and technology leadership slipping away to Asia.

This gets me to my second point. Ten or 15 years ago we did not realize the extent to which the Asian giants were ready to take up the slack. The Chinese and Indians have really maintained the momentum behind globalization. It started out as a US-China dynamic, but now the Asian market is self-generating and not so dependent on trade with the US. Moreover, the competition between China and India over energy supplies and markets has spurred further growth and innovation.

But we had a few sleepless nights over the years, particularly when China ran into financial problems. The fact that the recovery was quick was probably crucial. I think Beijing would have had trouble coping with a full-blown political crisis. Such turmoil could have stymied its economic rise for a decade or more. Fortunately that did not happen. Although the US helped, the really interesting thing was that China dug itself out without the kind of US or international help we thought it would need. Again we underestimated the extent to which China had created a domestic market that could jumpstart its economy.

What the downturn unfortunately did was ignite the latent nationalism that had been lurking below the surface, again increasing tensions over Taiwan. China has been "feeling its oats" and the risk of miscalculation is growing. I'm getting more and more worried as no one—government or private sector—is stepping into the breach to head off what could be a major security and business crisis.

Tensions were also on the rise between China and India and the other emerging states. The success of the Asian giants made it harder for the smaller guys to catch up. The huge pull from China and India on jobs was not just felt in the West. Now we see higher pay for China's workers finally leading to jobs being exported again to lower-wage economies. In part, this can be attributed to demographics—China is a country that is suddenly looking older, its one-child policy coming back to haunt it.

Early on, the outcry in the West over outsourcing and migration could have stalled globalization, but what can we really do—hold back the "tides" of progress in some rerun of Luddite madness? I detected below the surface a strong temptation in Washington and European capitals to play off the emerging countries against China and India by giving preference to non-Chinese products.

On the positive side, it was high-tech breakthroughs that put some countries on the road to sustainable economic growth. Expanded food production from biotechnology innovations and clean water from better filtration systems were boons that helped eliminate the direst poverty and start an export-driven agricultural sector. China and the US finally ganged up on Europe about GMOs.

Higher commodity prices also have been a godsend—much more so than any debt forgiveness scheme. A couple of the Asian-backed energy consortiums practically run two or three of the smaller states. They're popular because they provide not only their workers but all the surrounding communities with full health-care. Malaria and TB—not

to mention AIDS—are being tackled. I'm reminded that businesses—if one thinks back to the East India Company's total rule over the subcontinent in the eighteenth century—were at the forefront when globalization first got going. Have we come full circle with business taking over again from government?

We've seen some progress in the Middle East with a couple countries actually undertaking market liberalization reforms, but others are still stuck in a rut. Palestine yearns for a George Soros figure who can inject a lot of capital and develop an export outlet, but I don't see anyone willing to make the investment.

Elsewhere, revenues generated by high oil prices have enabled the Saudis and others to stem what has been a plunging standard of living for most of them. That's not good in the long run. I fear there's more to this story that we may not like.

Davos has done a lot, I think, in opening up the old exclusive Western club. I admit at first I did not really see it coming—the fact that China and India with their burgeoning middle classes had begun to create such large markets. In the last few years, the whole balance—as I now realize—has been shifting. Asian consumers are setting the trends, and Western businesses have to respond if they want to grow. Fifteen years ago, few of us knew anything about Asian firms. Now we have Wumart. China also got Washington's attention when it started diversifying its foreign currency holdings and the US public awakened to the fact that it had been living way beyond its means.

By itself, Europe probably would have felt threatened by Asia's rapid rise, but—funny thing—a rising Asia was seen as a counterbalance to a dominant US. Asia's growth also helped Europe get out of its slump. The EU thinks it and China have a lot in common—reverence for regional institutions. China with its Shanghai Cooperation Organization, for example. I'm not so sure.

By the way, I heard that your granddaughter is also spending a semester in China, learning the language. Did you know that one of my grandsons is also there? Perhaps we can get the two of them together at the Davos-in-China meeting.

"Lessons Learned"

This scenario illustrates the vast changes that would be likely to result from continued robust economic growth and the stresses and strains that could derail it.

- Growth in Asian markets would force domestic adjustments on the US and other Western countries that would need to be managed.
- If the global trading system became more integrated and complicated, it would be important to bring China, India and other emerging states more inside the tent, but this would require patience and potential trade-offs.
- It is unlikely that the system would be self-regulating. A strong global economy, for example, would not lead automatically to a resolution of crises like Taiwan.

Rising Powers: The Changing Geopolitical Landscape

The likely emergence of China and India as new major global players—similar to the rise of Germany in the 19th century and the United States in the early 20th century—will transform the geopolitical landscape, with impacts potentially as dramatic as those of the previous two centuries. In the same way that commentators refer to the 1900s as the “American Century,” the early 21st century may be seen as the time when some in the developing world, led by China and India, come into their own.

- The population of the region that served as the locus for most 20th-century history—Europe and Russia—will decline dramatically in relative terms; almost all population growth will occur in developing nations that until recently have occupied places on the fringes of the global economy (see graphic on page 48).⁶
- The “arriviste” powers—China, India, and perhaps others such as Brazil and Indonesia—could usher in a new set of international alignments, potentially marking a definitive break with some of the post-World War II institutions and practices.
- Only an abrupt reversal of the process of globalization or a major upheaval in these countries would prevent their rise. Yet how China and India

exercise their growing power and whether they relate cooperatively or competitively to other powers in the international system are key uncertainties.







A combination of sustained high economic growth, expanding military capabilities, active promotion of high technologies, and large populations will be at the root of the expected rapid rise in economic and political power for both countries.

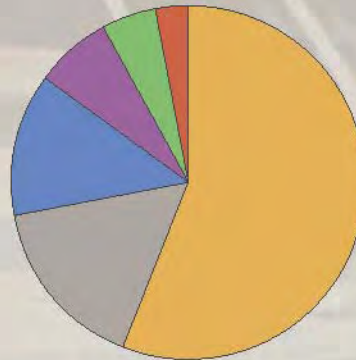
- Because of the sheer size of China’s and India’s populations—projected by the US Census Bureau to be 1.4 billion and almost 1.3 billion respectively by 2020—their standard of living need not approach Western levels for these countries to become important economic powers.
- China, for example, is now the third largest producer of manufactured goods, its share having risen from four to 12 percent in the past decade. It should easily surpass Japan in a few years, not only in share of manufacturing but also of the world’s exports. Competition from “the China price” already powerfully restrains manufactures prices worldwide.
- India currently lags behind China (see box on page 53) on most economic measures, but most economists believe it also will sustain high levels of economic growth.

⁶ CIA, *Long-Term Global Demographic Trends: Reshaping the Geopolitical Landscape*, July 2001.

Telescoping the Population of the World to 2020

To appreciate the projected population mix of the world's more than 7.8 billion people in 2020, we projected this breakdown of a representative group of 100 people:

-  Fifty-six of them would be from Asia, including 19 Chinese and 17 Indians.
-  Sixteen would be from Africa, including 13 from Sub-Saharan Africa.
-  Thirteen would be from our hemisphere, with only four from the United States.
-  Seven would be from Eastern Europe and the former Soviet Union.
-  Five would be from Western Europe.
-  Three would be from the Middle East.



Source: Drawn from CIA's publication, *Long-Term Global Demographic Trends: Reshaping the Geopolitical Landscape*, July 2001.

At the same time, other changes are likely to shape the new landscape. These include the possible economic rise of other states—such as Brazil, South Africa, Indonesia, and even Russia—which may reinforce the growing role of China and India even though by themselves these other countries would have more limited geopolitical impact. Finally, we do not discount the possibility of a stronger, more united Europe and a more internationally activist Japan, although Europe, Japan, and Russia will be hard pressed to deal with aging populations.

The growing demand for energy will drive many of these likely changes on the geopolitical landscape. China's and India's perceived need to secure access to energy supplies will propel these countries to become more global rather than just regional powers, while Europe and Russia's co-dependency is likely to be strengthened.

Rising Asia

China's desire to gain "great power" status on the world stage will be reflected in its greater economic leverage over

countries in the region and elsewhere as well as its steps to strengthen its military. East Asian states are adapting to the advent of a more powerful China by forging closer economic and political ties with Beijing, potentially accommodating themselves to its preferences, particularly on sensitive issues like Taiwan.

- Japan, Taiwan, and various Southeast Asian nations, however, also may try to appeal to each other and the United States to counterbalance China's growing influence.

China will continue to strengthen its military through developing and acquiring modern weapons, including advanced fighter aircraft, sophisticated submarines, and increasing numbers of ballistic missiles. China will overtake Russia and others as the second largest defense spender after the United States over the next two decades and will be, by any measure, a first-rate military power.

Economic setbacks and crises of confidence could slow China's emergence as a full-scale great power, however. Beijing's failure to maintain its economic growth would itself have a global impact.

- Chinese Government failure to satisfy popular needs for job creation could trigger political unrest.

- Faced with a rapidly aging society beginning in the 2020s, China may be hard pressed to deal with all the issues linked to such serious demographic problems. It is unlikely to have developed by then the same coping mechanisms—such as sophisticated pension and health-care systems—characteristic of Western societies.
- If China's economy takes a downward turn, regional security would weaken, resulting in heightened prospects for political instability, crime, narcotics trafficking, and illegal migration.

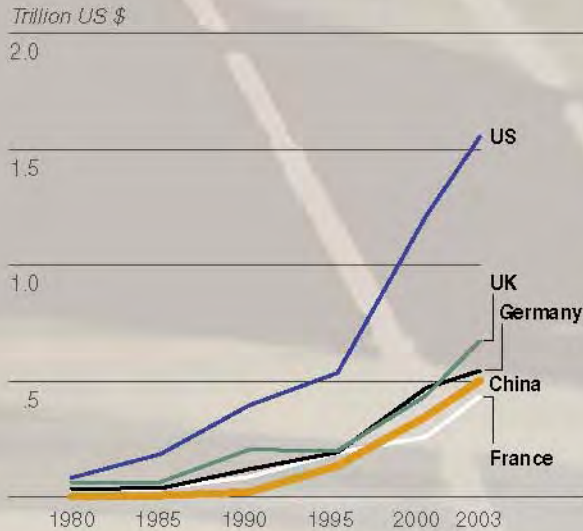
“Economic setbacks and crises of confidence could slow China's emergence as a full-scale great power.... ”

The rise of **India** also will present strategic complications for the region. Like China, India will be an economic magnet for the region, and its rise will have an impact not only in Asia but also to the north—Central Asia, Iran, and other countries of the Middle East. India seeks to bolster regional cooperation both for strategic reasons and because of its desire to increase its leverage with the West, including in such organizations as the World Trade Organization (WTO).

China's Rise

Stock of Inward Foreign Direct Investment, 1980-2003

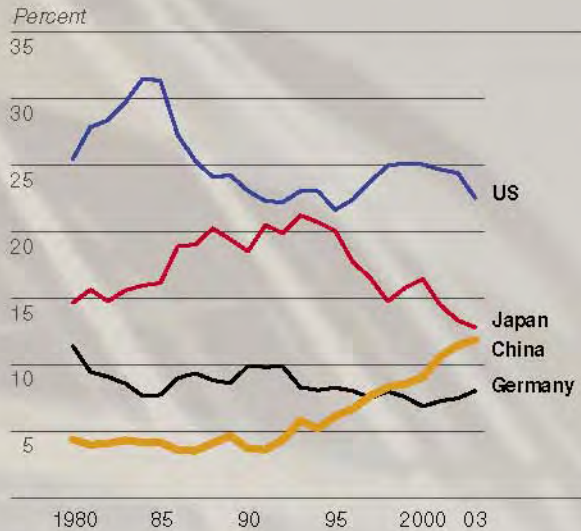
China has risen from negligible in 1980 to a 6-percent share... could be in second place by 2020.



Source: UN, World Investment Report 2004.

Share of World Manufacturing, 1980-2003

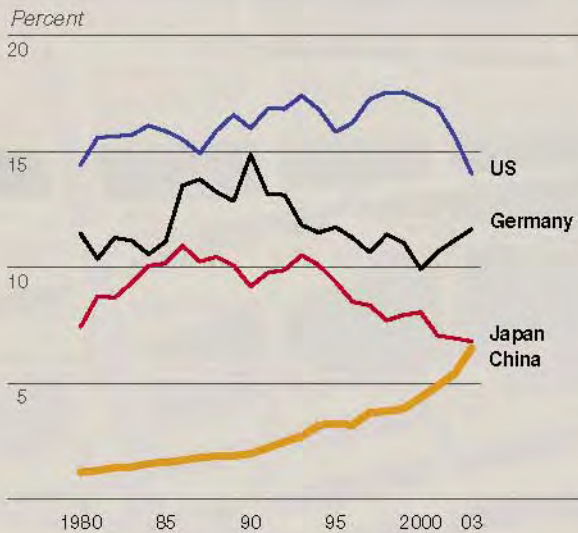
It could easily surpass Japan in a few years.



Source: Global Insight.

Share of World's Exports, 1980-2003

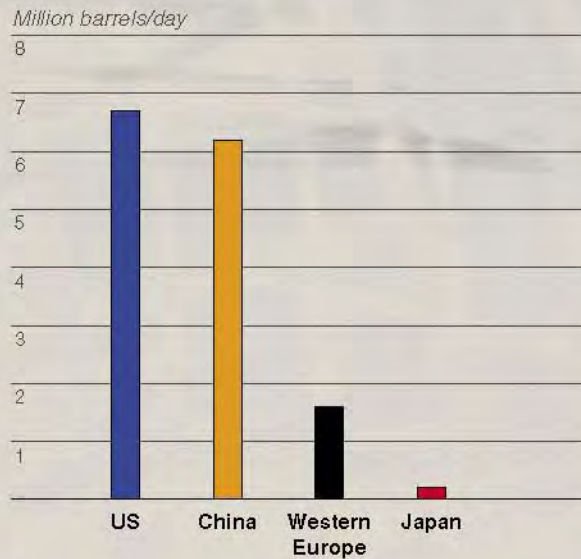
It should also overtake Japan in trade...



Source: Global Insight.

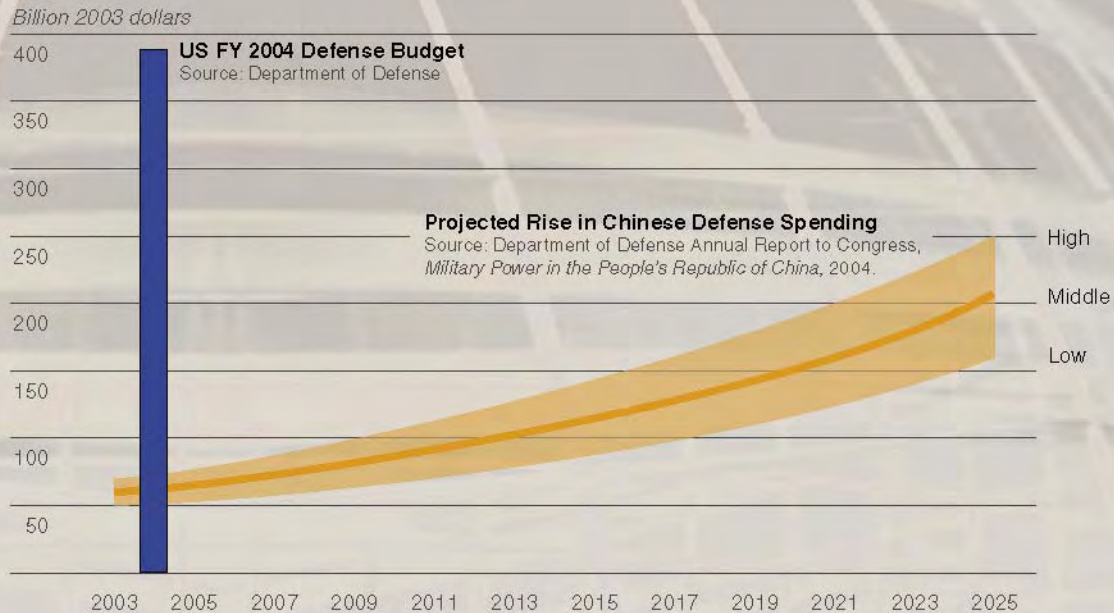
Growth in Demand for Oil, 2000-2020

... and nearly match the US as a dominant driver of additional oil demand.



Source: US Energy Information Administration.

Projected Rise in Chinese Defense Spending, 2003-2025



As India's economy grows, governments in Southeast Asia—Malaysia, Singapore, Thailand, and other countries—may move closer to India to help build a potential geopolitical counterweight to China. At the same time, India will seek to strengthen its ties with countries in the region without excluding China.

- Chinese-Indian bilateral trade is expected to rise rapidly from its current small base of \$7.6 billion, according to Goldman Sachs and other experts.

Just like China, India may stumble and experience political and economic volatility with pressure on resources—

land, water, and energy supplies—intensifying as it modernizes. For example, India will face stark choices as its population increases and its surface and ground water become even more polluted.

Other Rising States?

Brazil, Indonesia, Russia, and South Africa also are poised to achieve economic growth, although they are unlikely to exercise the same political clout as China or India. Their growth undoubtedly will benefit their neighbors, but they appear unlikely to become such economic engines that they will be able to alter the flow of economic power within and through their

Risks to Chinese Economic Growth

Whether China's rise occurs smoothly is a key uncertainty. In 2003, the RAND Corporation identified and assessed eight major risks to the continued rapid growth of China's economy over the next decade. Its "Fault Lines in China's Economic Terrain" highlighted:

- Fragility of the financial system and state-owned enterprises
- Economic effects of corruption
- Water resources and pollution
- Possible shrinkage of foreign direct investment
- HIV/AIDS and epidemic diseases
- Unemployment, poverty, and social unrest
- Energy consumption and prices
- Taiwan and other potential conflicts

RAND's estimates of the negative growth impact of these adverse developments occurring separately on a one-at-a-time basis range from a low of between 0.3 and 0.8 percentage points for the effects of poverty, social unrest, and unemployment to a high of between 1.8 and 2.2 percentage points for epidemic disease.

- The study assessed the probability that *none* of these developments would occur before 2015 as low and noted that they would be more likely to occur in clusters rather than individually – financial distress, for example, would also worsen corruption, compound unemployment, poverty, and social unrest, and reduce foreign direct investment.
- RAND assessed the probability of *all* of these adverse developments occurring before 2015 as very low but estimated that should they all occur their cumulative effect would be to reduce Chinese economic growth by between 7.4 and 10.7 percentage points—effectively wiping out growth during that time frame.

India vs. China: Long-Term Prospects

India lags economically behind China, according to most measures such as overall GDP, amount of foreign investment (today a small fraction of China's), and per capita income. In recent years, India's growth rate has lagged China's by about 20 percent. Nevertheless, some experts believe that India might overtake China as the fastest growing economy in the world. India has several factors working for it:

- Its working-age population will continue to increase well into the 2020s, whereas, due to the one-child policy, China's will diminish and age quite rapidly.
- India has well-entrenched democratic institutions, making it somewhat less vulnerable to political instability, whereas China faces the continuous challenge of reconciling an increasingly urban and middle-class population with an essentially authoritarian political system.
- India possesses working capital markets and world-class firms in some important high-tech sectors, which China has yet to achieve.

On the other hand, while India has clearly evolved beyond what the Indians themselves referred to as the 2-3 percent "Hindu growth rate," the legacy of a stifling bureaucracy still remains. The country is not yet attractive for foreign investment and faces strong political challenges as it continues down the path of economic reform. India is also faced with the burden of having a much larger proportion of its population in desperate poverty. In addition, some observers see communal tensions just below the surface, citing the overall decline of secularism, growth of regional and caste-based political parties, and the 2002 "pogrom" against the Muslim minority in Gujarat as evidence of a worsening trend.

Several factors could weaken China's prospects for economic growth, especially the risks to political stability and the challenges facing China's financial sector as it moves toward a fuller market orientation. China might find its own path toward an "Asian democracy" that may not involve major instability or disruption to its economic growth—but there are a large number of unknowns.

In many other respects, both China and India still resemble other developing states in the problems each must overcome, including the large numbers, particularly in rural areas, who have not enjoyed major benefits from economic growth. Both also face a potentially serious HIV/AIDS epidemic that could seriously affect economic prospects if not brought under control. According to recent UN data, India has overtaken South Africa as the country with the largest number of HIV-infected people.

The bottom line: India would be hard-pressed to accelerate economic growth rates to levels above those reached by China in the past decade. But China's ability to sustain its current pace is probably more at risk than is India's; should China's growth slow by several percentage points, India could emerge as the world's fastest-growing economy as we head towards 2020.

regions—a key element in Beijing and New Delhi’s political and economic rise.

Experts acknowledge that **Brazil** is a pivotal state with a vibrant democracy, a diversified economy and an entrepreneurial population, a large national patrimony, and solid economic institutions. Brazil’s success or failure in balancing pro-growth economic measures with an ambitious social agenda that reduces poverty and income inequality will have a profound impact on region-wide economic performance and governance during the next 15 years. Luring foreign direct investment and advancing regional stability and equitable integration—including trade and economic infrastructure—probably will remain axioms of Brazilian foreign policy. Brazil is a natural partner both for the United States and Europe and for rising powers China and India and has the potential to enhance its leverage as a net exporter of oil.

Experts assess that over the course of the next decade and a half **Indonesia** may revert to high growth of 6 to 7 percent, which along with its expected increase in its relatively large population from 226 to around 250 million would make it one of the largest developing economies. Such high growth would presume an improved investment environment, including intellectual property rights protection and openness to foreign investment. With slower growth its economy would be unable to absorb the unemployed or under-employed labor force, thus heightening the risk of greater

political instability. Indonesia is an amalgam of divergent ethnic and religious groups. Although an Indonesian national identity has been forged in the five decades since independence, the government is still beset by stubborn secessionist movements.

Russia’s energy resources will give a boost to economic growth, but Russia faces a severe demographic challenge resulting from low birth rates, poor medical care, and a potentially explosive AIDS situation. US Census Bureau projections show the working-age population likely to shrink dramatically by 2020. Russia’s present trajectory away from pluralism toward bureaucratic authoritarianism also decreases the chances it will be able to attract foreign investment outside the energy sector, limiting prospects for diversifying its economy. The problems along its southern borders—including Islamic extremism, terrorism, weak states with poor governance, and conflict—are likely to get worse over the next 15 years. Inside Russia, the autonomous republics in North Caucasus risk failure and will remain a source of endemic tension and conflict. While these social and political factors limit the extent to which Russia can be a major global player, in the complex world of 2020 Russia could be an important, if troubled, partner both for the established powers, such as the United States and Europe, and the rising powers of China and India. The potential also exists for Russia to enhance its leverage with others as a result of its position as a major oil and gas exporter.

Asia: The Cockpit for Global Change?

According to the regional experts we consulted, Asia will exemplify most of the trends that we see as shaping the world over the next 15 years. Northeast and Southeast Asia will progress along divergent paths—the countries of the North will become wealthier and more powerful, while at least some states in the South may lag economically and will continue to face deep ethnic and religious cleavages. As Northeast Asia acts as a political and economic center of gravity for the countries of the South, parts of Southeast Asia will be a source of transnational threats—terrorism and organized crime—to the countries of the North. The North/South divisions are likely to be reflected in a cultural split between non-Muslim Northeast Asia, which will adapt to the continuing spread of globalization, and Southeast Asia, where Islamic fundamentalism may increasingly make inroads in such states as Indonesia, Malaysia, and parts of The Philippines. The diversion of investment towards China and India also could spur Southeast Asia to implement plans for a single economic community and investment area by 2020.

The experts also felt that demographic factors will play a key role in shaping regional developments. China and other countries in Northeast Asia, including South Korea, will experience a slowing of population growth and a “graying” of their peoples over the next 15 years. China also will have to face the consequences of a gender imbalance caused by its one-child policy. In Southeast Asian countries such as The Philippines and Indonesia, rising populations will challenge the capacity of governments to provide basic services. Population and poverty pressures will spur migration within the region and to Northeast Asia. High population concentrations and increasing ease of travel will facilitate the spread of infectious diseases, risking the outbreak of pandemics.

The regional experts felt that the possibility of major inter-state conflict remains higher in Asia than in other regions. In their view, the Korean Peninsula and Taiwan Strait crises are likely to come to a head by 2020, risking conflict with global repercussions. At the same time, violence within Southeast Asian states—in the form of separatist insurgencies and terrorism—could intensify. China also could face sustained armed unrest from separatist movements along its western borders.

Finally, the roles of and interaction between the region’s major powers—China, Japan, and the US—will undergo significant change by 2020. The United States and China have strong incentives to avoid confrontation, but rising nationalism in China and fears in the US of China as an emerging strategic competitor could fuel an increasingly antagonistic relationship. Japan’s relationship with the US and China will be shaped by China’s rise and the nature of any settlement on the Korean Peninsula and over Taiwan.

“Russia’s energy resources will give a boost to economic growth, but Russia faces a severe demographic challenge...[with its] working-age population likely to shrink dramatically.”

South Africa will continue to be challenged by AIDS and widespread crime and poverty, but prospects for its economy—the largest in the region—look promising. According to some forecasts, South Africa’s economy is projected to grow over the next decade in the 4- to 5-percent range if reformist policies are implemented. Experts disagree over whether South Africa can be an engine for more than southern Africa or will instead forge closer relationships with middling or up-and-coming powers on other continents. South African experts adept at scenario-building and gaming see the country’s future as lying with partnerships formed outside the region.

The “Aging” Powers

Japan’s economic interests in Asia have shifted from Southeast Asia toward Northeast Asia—especially China and the China-Japan-Korea triangle—over the past two decades and experts believe the aging of Japan’s work force will reinforce dependence on outbound investment and greater economic integration with Northeast Asia, especially China⁷. At the same time, Japanese concerns regarding regional stability are likely to grow owing to the ongoing crisis over North Korea, continuing tensions between China and

Taiwan and the challenge of integrating rising China and India without major disruption. If anything, growing Chinese economic power is likely to spur increased activism by Japan on the world stage.

Opinion polls indicate growing public support for Japan becoming a more “normal” country with a proactive foreign policy. Experts see various trajectories that Japan could follow depending on such factors as the extent of China’s growing strength, a resurgence or lack of continued vitality in Japan’s economy, the level of US influence in the region and how developments in Korea and Taiwan play out. At some point, for example, Japan may have to choose between “balancing” against or “bandwagoning” with China.

“...Europe’s strength may be in providing... a model of global and regional governance to the rising powers...”

By most measures—market size, single currency, highly skilled work force, stable democratic governments, unified trade bloc, and GDP—**an enlarged Europe** will have the ability to increase its weight on the international scene. Its crossroads location and the growing diversity of its population—particularly in pulling in new members—provides it with a unique ability to forge strong bonds both to the south with the Muslim world and Africa and to the east with Russia and Eurasia.

⁷ *Asia’s Shifting Strategic Landscape*, Foreign Policy Research Institute, 26 November 2003.

The extent to which Europe enhances its clout on the world stage depends on its ability to achieve greater political cohesion. In the short term, taking in ten new east European members probably will be a “drag” on the deepening of European Union (EU) institutions necessary for the development of a cohesive and shared “strategic vision” for the EU’s foreign and security policy.

- Unlike the expansion when Ireland, Spain, Portugal and Greece joined the Common Market in the 1970s and early 1980s, Brussels has a fraction of the structural funds available for quickly bringing up the Central Europeans to the economic levels of the rest of the EU.
- Possible Turkish membership presents both challenges—because of Turkey’s size and religious and cultural differences—as well as opportunities, provided that mutual acceptance and agreement can be achieved. In working through the problems, a path might be found that can help Europe to accommodate and integrate its growing Muslim population.

Defense spending by individual European countries, including the UK, France, and Germany is likely to fall further behind China and other countries over the next 15 years. Collectively these countries will outspend all others except the US and possibly China⁸. EU member states

historically have had difficulties in coordinating and rationalizing defense spending in such a way as to boost capabilities despite progress on a greater EU security and defense role. Whether the EU will develop an army is an open question, in part because its creation could duplicate or displace NATO forces.

While its military forces have little capacity for power projection, Europe’s strength may be in providing, through its commitment to multilateralism, a model of global and regional governance to the rising powers, particularly if they are searching for a “Western” alternative to strong reliance on the United States. For example, an EU-China alliance, though still unlikely, is no longer unthinkable.

Aging populations and shrinking work forces in most countries will have an important impact on the continent, creating a serious but not insurmountable economic and political challenge. Europe’s total fertility rate is about 1.4—well below the 2.1 replacement level. Over the next 15 years, West European economies will need to find several million workers to fill positions vacated by retiring workers. Either European countries adapt their work forces, reform their social welfare, education, and tax systems, and accommodate growing immigrant populations (chiefly from Muslim countries) or they face a period of protracted economic stasis that could threaten the huge successes made in creating a more United Europe.

⁸ *Strategic Trends*, Joint Doctrine and Concepts Centre, March 2003.

Global Aging and Migration

According to US Census Bureau projections, about half of the world's population lives in countries or territories whose fertility rates are not sufficient to replace their current populations. This includes not only Europe, Russia, and Japan, where the problem is particularly severe, but also most parts of developed regions such as Australia, New Zealand, North America, and East Asian countries like Singapore, Hong Kong, Taiwan, and South Korea. Certain countries in the developing world, including Arab and Muslim states such as Turkey, Algeria, Tunisia, and Lebanon, also are dropping below the level of 2.1 children per woman necessary to maintain long-term population stability.⁹

China is a special case where the transition to an aging population—nearly 400 million Chinese will be over 65 by 2020—is particularly abrupt and the emergence of a serious gender imbalance could have increasing political, social, and even international repercussions. An unfunded nationwide pension arrangement means many Chinese may have to continue to work into old age.

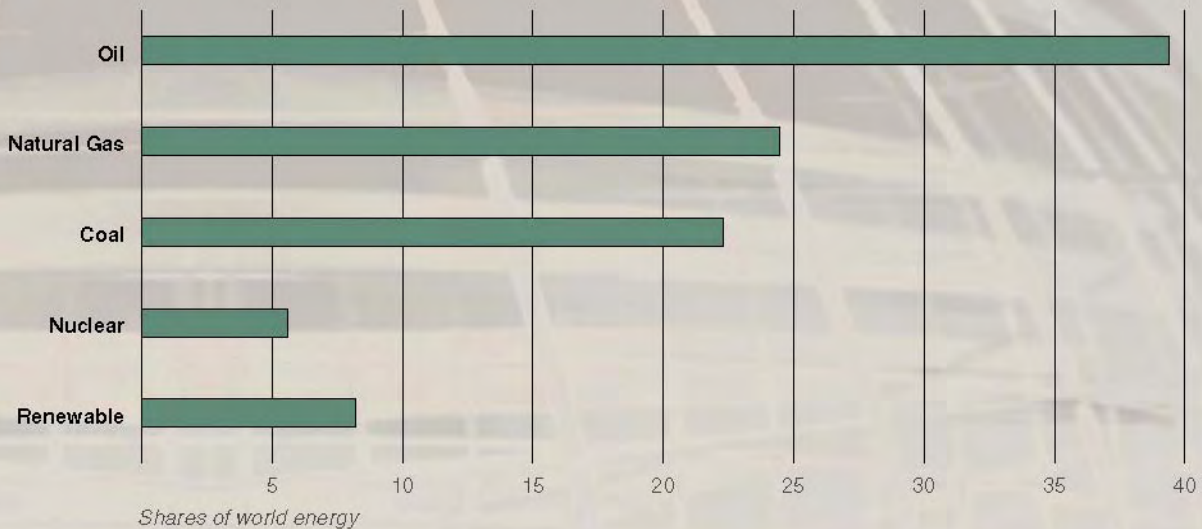
Migration has the potential to help solve the problem of a declining work force in Europe and, to a lesser degree, Russia and Japan and probably will become a more important feature of the world of 2020, even if many of the migrants do not have legal status. Recipient countries face the challenge of integrating new immigrants so as to minimize potential social conflict.

- Remittances from migrant workers are increasingly important to developing economies. Some economists believe remittances are greater than foreign direct investment in most poor countries and in some cases are more valuable than exports.

However, today one-half of Nigerian-born medical doctors and PhDs reside in the United States. Most experts do not expect the current, pronounced trend of “brain drain” from the Middle East and Africa to diminish. Indeed, it could increase with the expected growth of employment opportunities, particularly in Europe.

⁹ Nicholas Eberstadt, “Four Surprises in Global Demography,” Foreign Policy Research Institute’s *Watch on the West*, Vol 5, Number 5, July 2004.

Fossil Fuels Will Continue to Dominate in 2020



Source: Energy Information Administration, *Annual Energy Outlook, 2004*.

Growing Demands for Energy

Growing demands for energy—especially by the rising powers—through 2020 will have substantial impacts on geopolitical relations. The single most important factor affecting the demand for energy will be global economic growth, particularly that of China and India.

- Despite the trend toward more efficient energy use, total energy consumed probably will rise by about 50 percent in the next two decades compared to a 34 percent expansion from 1980–2000, with an increasing share provided by petroleum.

- Renewable energy sources such as hydrogen, solar, and wind energy probably will account for only about 8 percent of the energy supply in 2020. While Russia, China, and India all plan expansions of their nuclear power sector, nuclear power probably will decline globally in absolute terms in the next decade.

The International Energy Agency assesses that with substantial investment in new capacity, overall energy supplies will be sufficient to meet growing global demand. Continued

An Expanding European Union



Current	European Union (EU) 15	EU 26	EU 30	China	Russia	US
Population (million)	380	458	527	1,299	144	293
GDP (billion USD)	11,000	11,637	12,091	6,449	1,287	10,980
Area (1,000 mi ²)	1,212	1,493	1,789	3,646	6,488	3,659

Source: CIA.

Could Europe Become A Superpower?

According to the regional experts we consulted, Europe's future international role depends greatly on whether it undertakes major structural economic and social reforms to deal with its aging work-force problem. The demographic picture will require a concerted, multidimensional approach including:

- **More legal immigration and better integration of workers likely to be coming mainly from North Africa and the Middle East.** Even if more guest workers are not allowed in, Western Europe will have to integrate a growing Muslim population. Barring increased legal entry may only lead to more illegal migrants who will be harder to integrate, posing a long-term problem. It is possible to imagine European nations successfully adapting their work forces and social welfare systems to these new realities; it is harder to see a country—Germany, for example—successfully assimilating millions of new Muslim migrant workers in a short period of time.
- **Increased flexibility in the workplace, such as encouraging young women to take a few years off to start families in return for guarantees of reentry.** Encouraging the “younger elderly” (50-65 year olds) to work longer or return to the work force also would help ease labor shortages.

The experts felt that the current welfare state is unsustainable and the lack of any economic revitalization could lead to the splintering or, at worst, disintegration of the European Union, undermining its ambitions to play a heavyweight international role.

The experts believe that the EU's economic growth rate is dragged down by Germany and its restrictive labor laws. Structural reforms there—and in France and Italy to lesser extents—remain key to whether the EU as a whole can break out of its slow-growth pattern. A total break from the post-World War II welfare state model may not be necessary, as shown in Sweden's successful example of providing more flexibility for businesses while conserving many worker rights. Experts are dubious that the present political leadership is prepared to make even this partial break, believing a looming budgetary crisis in the next five years would be the more likely trigger for reform.

If no changes were implemented Europe could experience a further overall slowdown, and individual countries might go their own way, particularly on foreign policy, even if they remained nominal members. In such a scenario, enlargement is likely to stop with current members, making accession unlikely for Turkey and the Balkan countries, not to mention long-term possibilities such as Russia or Ukraine. Doing just enough to keep growth rates at one or two percent may result in some expansion, but Europe probably would not be able to play a major international role commensurate with its size.

In addition to the need for increased economic growth and social and welfare reform, many experts believe the EU has to continue streamlining the complicated decision-making process that hinders collective action. A *federal* Europe—unlikely in the 2020 timeframe—is not necessary to enable it to play a weightier international role so long as it can begin to mobilize resources and fuse divergent views into collective policy goals. Experts believe an economic “leap forward”—stirring renewed confidence and enthusiasm in the European project—could trigger such enhanced international action.

limited access of the international oil companies to major fields could restrain this investment, however, and many of the areas—the Caspian Sea, Venezuela, West Africa and South China Sea—that are being counted on to provide increased output involve substantial political or economic risk. Traditional suppliers in the Middle East are also increasingly unstable. Thus sharper demand-driven competition for resources, perhaps accompanied by a major disruption of oil supplies, is among the key uncertainties.

China and **India**, which lack adequate domestic energy resources, will have to ensure continued access to outside suppliers; thus, the need for energy will be a major factor in shaping their foreign and defense policies, including expanding naval power.

- Experts believe China will need to boost its energy consumption by about 150 percent and India will need to nearly double its consumption by 2020 to maintain a steady rate of economic growth.
- Beijing's growing energy requirements are likely to prompt China to increase its activist role in the world—in the Middle East, Africa, Latin America, and Eurasia. In trying to maximize and diversify its energy supplies, China worries about being vulnerable to pressure from the United States which Chinese officials see as having an aggressive energy policy that can be used against Beijing.
- For more than ten years Chinese officials have openly asserted that production from Chinese firms

The Geopolitics of Gas. Both oil and gas suppliers will have greater leverage than today, but the relationship between gas suppliers and consumers is likely to be particularly strong because of the restrictions on delivery mechanisms. Gas, unlike oil, is not yet a fungible source of energy, and the interdependency of pipeline delivery—producers must be connected to consumers, and typically neither group has many alternatives—reinforces regional alliances.

- More than 95 percent of gas produced and three quarters of gas traded is distributed via pipelines directly from supplier to consumer, and gas-to-liquids technology is unlikely to change these ratios substantially by 2020.
- Europe will have access to supplies in Russia and North Africa while China will be able to draw from eastern Russia, Indonesia, and potentially huge deposits in Australia. The United States will look almost exclusively to Canada and other western hemisphere suppliers.

investing overseas is more secure than imports purchased on the international market. Chinese firms are being directed to invest in projects in the Caspian region, Russia, the Middle East, and South America in order to secure more reliable access.

Europe's energy needs are unlikely to grow to the same extent as those of the developing world, in part because of Europe's expected lower economic growth and more efficient use of energy.

Europe's increasing preference for natural gas, combined with depleting reserves in the North Sea, will give an added boost to political efforts already under way to strengthen ties with Russia and North Africa, as gas requires a higher level of political commitment by both sides in designing and constructing the necessary infrastructure. According to a study by the European Commission, the Union's share of energy from foreign sources will rise from about half in 2000 to two-thirds by 2020. Gas use will increase most rapidly due to environmental concerns and the phasing out of much of the EU's nuclear energy capacity.

“...many of the areas... being counted on to provide increased [energy] output involve substantial political or economic risk.... Thus sharper demand-driven competition... perhaps accompanied by a major disruption of oil supplies, is among the key uncertainties.”

Deliveries from the Yamal-Europe pipeline and the Blue Stream pipeline will help **Russia** increase its gas sales to the EU and Turkey by more than 40 percent over 2000 levels in the first decade of the 21st century; as a result, Russia's share of total European demand will rise from 27 percent in 2000 to 31 percent in 2010. Russia, moreover, as the largest energy supplier outside of OPEC, will be well positioned to marshal its oil and gas reserves to support domestic and foreign policy objectives. **Algeria** has the world's eighth largest gas reserves and also is seeking to increase its exports to Europe by 50 percent by the end of the decade.

US Unipolarity—How Long Can It Last?

A world with a single superpower is unique in modern times. Despite the rise in anti-Americanism, most major powers today believe countermeasures such as balancing are not likely to work in a situation in which the US controls so many of the levers of power. Moreover, US policies are not perceived as sufficiently threatening to warrant such a step.

- Growing numbers of people around the world, especially in the Middle East and the broader Muslim world, believe the US is bent on regional domination—or direct political and economic domination of other states and their resources. In the future, growing distrust could prompt governments to take a more hostile approach, including resistance to support for US interests in multinational forums and development of asymmetric military capabilities as a hedge against the US.

“There are few policy-relevant theories to indicate how states are likely to deal with a situation in which the US continues to be the single most powerful actor economically, militarily, and technologically.”

Most countries are likely to experiment with a variety of different tactics from various degrees of resistance to engagement in an effort to influence how US power is exercised. We expect that countries will pursue strategies designed to exclude or isolate the US—perhaps

temporarily—in order to force or cajole the US into playing by others’ rules. Many countries increasingly believe that the surest way to gain leverage over Washington is by threatening to withhold cooperation. In other forms of bargaining, foreign governments will try to find ways to “bandwagon” or connect their policy agendas to those of the US—for example on the war on terrorism—and thereby fend off US opposition to other policies.

Fictional Scenario: Pax Americana

The scenario portrayed below looks at how US predominance may survive radical changes to the global political landscape, with Washington remaining the central pivot for international politics. It is depicted as the diary entry by a fictitious UN Secretary-General in 2020. Under this scenario, key alliances and relationships with Europe and Asia undergo change. US-European cooperation is renewed, including on the Middle East. There are new security arrangements in Asia, but the United States still does the heavy lifting. The scenario also suggests that Washington has to struggle to assert leadership in an increasingly diverse, complex, and fast-paced world. At the end of the scenario, we identify lessons learned from how the scenario played out.

September 11, 2020

It has been exactly nineteen years today since the view from the 38th floor changed with the destruction of the Twin Towers. I was remarking when the President of the United States phoned that more than the skyline has been altered since. Not only has a new structure been built, partially obscuring the devastation of 9/11, but the US has risen like a phoenix—albeit a beleaguered one—and it again seems to be the bedrock of the international order.



I would say it started when Europe and America began to get together again. It turns out Venus and Mars cross each other's orbits from time to time. The 2010 terrorist attacks in Europe had a lot to do with it. They changed attitudes, and suddenly the Europeans had a better appreciation of catastrophic terrorism—a whole different kettle of fish from what they had known. Publics quickly became energized, particularly as the attacks were seen as totally unjustified. The seriousness of the attacks was such that Europe and America got beyond the name-calling and, in fact, Europeans began imploring America to get tough on terrorism.

The closing of transatlantic ranks was prompted by more than this. One thing that became clear is that Europe was more unified than some of our American friends imagined. New Europe turned out to be not that much different from Old Europe, once it joined the EU club and began hanging out in Brussels. NATO went through some rough times but is now working better with the EU. There is grudging acceptance on both sides that NATO has the necessary military tools while the EU can bring to the table a capacity for nation-building.

On the European side, a lot had to do with Turkish accession—something I never expected to see. With the prospect of Turkey coming in, the Europeans realized that their border was now squarely in the Middle East and that meant they had to be more prepared to deal with all the problems of terrorism, fundamentalism, youth bulges, etc.

Coming together as they did, Europe helped to persuade the US that something had to be done to stop the spiraling violence in Palestine. For the Europeans, that had always been the root of the

problem, but divisions and a lack of will always got in the way of any concerted action.

Energy and climate change are also playing an increasing role in the US-European dynamics, but not the way one would have expected. For a while, the Europeans looked like they were trying to isolate the US and insist on Washington playing by EU rules. But that was never really going to happen, and European leaders did not factor in their own publics' increasing resentment of China's and other developing countries' flaunting of environmental standards. Kyoto was suddenly out and a new framework had to be thought up with the Americans inside.

The US role changed even more dramatically in Asia. China was rising and, while not directly challenging the US, was certainly displacing it in the region, particularly economically. America's preoccupation with Iraq and terrorism looked set to diminish the US role even more. Japan stood close to the US on Iraq but was conflicted too because of its economic dependence on China. In South Korea, the younger generation blamed the US

for the division and problems with the North. It seemed only a matter of time before the US would be pushed to the sidelines.

Then a series of events occurred which changed the dynamic. Frightened by the continuing impasse in North Korea, rumors leaked of the Japanese seriously thinking about their own bomb. About this time China also suffered an economic relapse, which exacerbated the confrontational tone over Taiwan, also heightening worries in Japan and Southeast Asia. The US initially wanted to heighten its profile but found that many worried about a US-China conflict. Washington ended up scaling back its military presence in Korea and Japan. Most do not want the US to leave; even China, I think, secretly sees some virtue in having the US around inasmuch as it makes the others more accepting of Beijing's growing political and economic influence.

This is hardly a marriage made in Heaven and both the US and China have to work hard to keep from going off the rails. I see more storm clouds over Taiwan on the horizon. Nationalism appears

to afflict everybody. The rising Chinese middle class turns out to be less interested in democracy and more in nationalism.

Worries about energy supplies have also rebounded in America's favor. A stable Middle East is a must for China on energy grounds just as it is for Europe. The US also is increasingly a balancer between the Shia and the Sunnis. Washington may not have been prepared for how a free and Shia-dominated Iraq began to swing the balance and raise tensions right in the region where most of the world's oil comes from. Not an enviable position to be in for the Americans.

I get the feeling at times that a lot of Americans are getting tired of playing the world's policeman. The security burden is still on their shoulders; this is the source of their frustration with the Europeans, who just want to focus on the EU. The Americans thought they had a deal- Washington would do the heavy lifting with Israel, but the Europeans would be prepared to pony up money and troops for a Middle East peacekeeping force. But that looks to be in tatters.

How long will Pax Americana last? I'm not sure. It hasn't meant much institution-building. Sure, the UN works a little better because there is more cooperation among the members, but we've done little on reform. India is getting more frustrated. The Africans, Latin Americans and poor Asians still feel underappreciated and some even are resentful of China and India's rise, which has squeezed out opportunities for them. The Human Rights Commission, which morphed a few years back into the Human Rights and Ethics Commission, is stymied over human cloning, GMOs and whether energy consumption should be globally regulated. For all the practical cooperation there has been on terrorism, we still don't have an agreed-upon definition which could unite countries around a counterterrorism strategy. To top it off, I am in a vicious fight on two fronts in order to stay here in New York, both against the "America first" groups calling for the UN's removal and large numbers of Europeans and Asians who think the UN is too much under the thumb of Washington.

I often wonder just how much real progress there has been. I must talk to the US President about this the next time we "girls" get together...

"Lessons Learned"

A geopolitical environment in which US power dominates would become more complex.

- A rising China might put the US in a different position, having to act as the balancer between China on the one hand and Japan and other Asian countries on the other.

Competing coalitions would be likely to fight over moral and ethical issues. The US would be looked to for leadership, but the scenario suggests it would take dexterity to achieve consensus.

And the Pax Americana would not necessarily be a "sweet" deal for the United States.

- Deeply entrenched expectations about the US providing the heavy lifting on security would likely to be hard to change, particularly given the underlying reality that only the US has the military capacity.
- The scenario suggests that international architecture is not designed for security burdensharing. Other than the US-dominated NATO, no other regional security organizations appear to be operational in the scenario.

New Challenges to Governance

The nation-state will continue to be the dominant unit of the global order, but economic globalization and the dispersion of technologies, especially information technologies, will place enormous strains on governments. Regimes that were able to manage the challenges of the 1990s could be overwhelmed by those of 2020. Contradictory forces will be at work: authoritarian regimes will face new pressures to democratize, but fragile new democracies may lack the adaptive capacity to survive and develop.

- With migration on the increase in several places around the world—from North Africa and the Middle East into Europe, Latin America and the Caribbean into the United States, and increasingly from Southeast Asia into the northern regions—more countries will be multi-ethnic and multi-religious and will face the challenge of integrating migrants into their societies while respecting their ethnic and religious identities.

Halting Progress on Democratization

Global economic growth has the potential to spur democratization, but backsliding by many countries that were considered part of the “third wave” of democratization is a distinct possibility. In particular, by 2020 democratization may be partially reversed among the states of the former Soviet Union and in Southeast Asia, some of which never really embraced democracy. **Russia** and most of the **Central Asian** regimes appear to be

slipping back toward authoritarianism, and global economic growth probably will not on its own reverse such a trend. The development of more diversified economies in these countries—by no means inevitable—would be crucial in fostering the growth of a middle class, which in turn would spur democratization.

- Beset already by severe economic inequalities, aging Central Asian rulers must contend with unruly and large youth populations lacking broad economic opportunities. Central Asian governments are likely to suppress dissent and revert to authoritarianism to maintain order, risking growing insurgencies.

“...backsliding by many countries that were considered part of the ‘third wave’ of democratization is a distinct possibility.”

Chinese leaders will face a dilemma over how much to accommodate pluralistic pressure and relax political controls or risk a popular backlash if they do not. Beijing also has to weigh in the balance its ambition to be a major global player, which would be enhanced if its rulers moved towards political reform.

China may pursue an “Asian way” of democracy that might involve elections at the local level and a consultative mechanism on the national level, perhaps

Eurasian Countries: Going Their Separate Ways?

The regional experts who attended our conference felt that Russia's political development since the fall of Communism has been complicated by the continuing search for a post-Soviet national identity. Putin has increasingly appealed to Russian nationalism—and, occasionally, xenophobia—to define Russian identity. His successors may well define Russian identity by highlighting Russia's imperial past and its domination over its neighbors even as they reject communist ideology.

In the view of the experts, Central Asian states are weak, with considerable potential for religious and ethnic conflict over the next 15 years. Religious and ethnic movements could have a destabilizing impact across the region. Eurasia is likely to become more differentiated despite the fact that demographic counterforces—such as a dearth of manpower in Russia and western Eurasia and an oversupply in Central Asia—could help pull the region together. Moreover, Russia and the Central Asians are likely to cooperate in developing transportation corridors for energy supplies.

The participants assessed that among the resource-rich countries, Russia has the best prospects for expanding its economy beyond resource extraction and becoming more integrated into the world economy. To diversify its economy, Russia would need to undertake structural changes and institute the rule of law, which could in turn encourage foreign direct investment outside of the energy sector. Knowing that Europe probably would want to forge a “special relationship” with a Russia that is stronger economically, Moscow probably would be more tolerant of former Soviet states moving closer to Europe. If Russia fails to diversify its economy, it could well experience the petro-state phenomenon of unbalanced economic development, huge income inequality, capital flight, and increased social problems.

Regional experts were less confident about the potential for significant economic diversification in the other resource-rich countries in Central Asia and the South Caucasus over the next 15 years—in particular, Kazakhstan, Turkmenistan, and Azerbaijan. For countries with more limited natural resources, such as Ukraine, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan, the challenge will be to develop effective project and service industries, requiring better governance.

Central Asian countries—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan—face the stiff challenge of keeping the social peace in a context of high population growth, a relatively young population, limited economic prospects, and growing radical Islamic influence. Allowing more emigration could help alleviate these pressures in Central Asian countries. Russia would benefit from migration as a means of compensating for its loss of approximately one million people a year through 2020. Russia, however, has little experience in integrating migrants from other cultures; Russian nationalism is on the increase as a result of growing ethnic unrest domestically, and our experts believe any efforts to expand immigration policies would be exploited by nationalist politicians.

Ironically, the experts foresaw more unity if economic conditions worsen globally and Eurasia is isolated. In that case, a stagnant Russia would be looked to by the others to maintain order along the southern rim as some Central Asian countries—Turkmenistan, Tajikistan, and Kyrgyzstan—faced potential collapse.

with the Communist Party retaining control over the central government.

- Younger Chinese leaders who are already exerting influence as mayors and regional officials have been trained in Western-style universities and have a good understanding of international standards of governance.
- Most of the experts at our regional conference, however, believe present and future leaders are agnostic on the issue of democracy and are more interested in developing what they perceive to be the most effective model of governance.

Democratic progress could gain ground in key **Middle Eastern** countries, which thus far have been excluded from the process by repressive regimes. Success in establishing a working democracy in Iraq and Afghanistan—and democratic consolidation in Indonesia—would set an example for other Muslim and Arab states, creating pressures for change.

However, a 2001 Freedom House study showed a dramatic and expanding gap in the levels of freedom and democracy between Islamic countries and the rest of the world. The lack of economic growth in the Middle East outside the energy sector is one of the primary underlying factors for the slow pace. Many regional experts are not hopeful that the generational turnover in several of the regimes will by itself spur democratic reform.

- The extent to which radical Islam grows and how regimes respond to its pressures will also have long-term repercussions for democratization and

the growth of civil society institutions, although radicals may use the ballot box to gain power.

- An extended period of high oil prices would allow regimes to put off economic and fiscal reform.

High-Tech Pressures on Governance.

Today individual PC users have more capacity at their fingertips than NASA had with the computers used in its first moon launches. The trend toward even more capacity, speed, affordability, and mobility will have enormous political implications: myriad individuals and small groups—many of whom had not been previously so empowered—will not only connect with one another but will plan, mobilize, and accomplish tasks with potentially more satisfying and efficient results than their governments can deliver. This almost certainly will affect individuals' relationships with and views of their governments and will put pressure on some governments for more responsiveness.

- China is experiencing among the fastest rates of increase of Internet and mobile phone users in the world, according to the International Telecommunications Union, and is the leading market for broadband communication.
- Reports of growing investment by many Middle Eastern governments in developing high-speed information infrastructures, although they are not yet widely available to the population nor well-connected to the larger world, show obvious potential for the spread of democratic—and undemocratic—ideas.

Climate Change and Its Implications Through 2020

Policies regarding climate change are likely to feature significantly in multilateral relations, and the United States, in particular, is likely to face significant bilateral pressure to change its domestic environmental policies and to be a leader in global environmental efforts. There is a strong consensus in the scientific community that the greenhouse effect is real and that average surface temperatures have risen over the last century, but uncertainty exists about causation and possible remedies. Experts in a NIC-sponsored conference judged that concerns about greenhouse gases, of which China and India are large producers, will increase steadily through 2020. There are likely to be numerous weather-related events that, correctly or not, will be linked to global warming. Any of these events could lead to widespread calls for the United States, as the largest producer of greenhouse gases, to take dramatic steps to reduce its consumption of fossil fuels.

Policymakers will face a dilemma: an environmental regime based solely on economic incentives will probably not produce needed technological advances because firms will be hesitant to invest in research when there is great uncertainty about potential profits. On the other hand, a regime based on government regulation will tend to be costly and inflexible. The numerous obstacles to multilateral action include resistance from OPEC countries that depend on fossil fuel revenues, the developing world's view that climate change is a problem created by the industrial world and one they cannot address given their economic constraints, and the need for significant technological innovation to maximize energy efficiency.

Among reasons for optimism, participants noted that the world is ready and eager for US leadership and that new multilateral institutions are not needed to address this issue. Indeed, crafting a policy to limit carbon emissions would be simplified by the fact that three political entities—the United States, the European Union, and China—account for over half of all CO₂ emitted into the atmosphere. An agreement that included these three plus the Russian Federation, Japan, and India would cover two-thirds of all carbon emissions.

- Some states will seek to control the Internet and its contents, but they will face increasing challenges as new networks offer multiple means of communicating.

Growing connectivity also will be accompanied by the proliferation of transnational virtual communities of interest, a trend which may complicate the ability of state and global institutions to generate internal consensus and enforce decisions and could even challenge their authority and legitimacy. Groups based on common religious, cultural, ethnic or other affiliations may be torn between their national loyalties and other identities. The potential is considerable for such groups to drive national and even global political decisionmaking on a wide range of issues normally the purview of governments.

The Internet in particular will spur the creation of global movements, which may emerge even more as a robust force in international affairs. For example, technology-enabled diaspora communications in native languages could lead to the preservation of language and culture in the face of widespread emigration and cultural change as well as the generation of political and economic power.

Populist themes are likely to emerge as a potent political and social force, especially as globalization risks

aggravating social divisions along economic and ethnic lines. In parts of Latin America particularly, the failure of elites to adapt to the evolving demands of free markets and democracy probably will fuel a revival in populism and drive indigenous movements, which so far have sought change through democratic means, to consider more drastic means for seeking what they consider their “fair share” of political power and wealth.

- However, as with religion, populism will not necessarily be inimical to political development and can serve to broaden participation in the political process. Few experts fear a general backsliding to the rule of military juntas in Latin America.

The Latin American countries that are adapting to challenges most effectively are building sturdier and more capable democratic institutions to implement more inclusive and responsive policies and enhance citizen and investor confidence. A sense of economic progress and hope for its continuance appears essential to the long-term credibility of democratic systems.

Rising nationalism and a trend toward populism also will present a challenge to governments in Asia. Many, such as Laos, Cambodia, and Burma, are unable to deliver on expanding popular demands and risk becoming state failures.

Latin America in 2020: Will Globalization Cause the Region to Split?

The experts we consulted in Latin America contended that global changes over the next 15 years could deepen divisions and serve to split Latin America apart in economic, investment, and trade policy terms. As the Southern Cone, particularly Brazil and Chile, reach out to new partners in Asia and Europe, Central America and Mexico, along with Andean countries, could lag behind and remain dependent on the US and Canada as their preferred trade partners and aid providers.

For Latin Americans, government ineffectiveness, in part, prevented many countries from realizing the full measure of economic and social benefits from greater integration into the global economy in the past decade. Instead, the gap between rich and the poor, the represented and the excluded, has grown. Over the next 15 years, the effects of continued economic growth and global integration are likely to be uneven and fragmentary. Indeed, regional experts foresee an increasing risk of the rise of charismatic, self-styled populist leaders, historically common in the region, who would play on popular concerns over inequities between “haves” and “have-nots” in the weakest states in Central America and Andean countries, along with parts of Mexico. In the most profoundly weak of these governments, particularly where the criminalization of the society, and even the state, is most apparent, the leaders could have an autocratic bent and be more stridently anti-American.

The experts made the following observations on regional prospects in other areas:

- **Identity politics.** Increasing portions of the population are identifying themselves as indigenous peoples and will demand not only a voice but, potentially, a new social contract. Many reject globalization as it has played out in the region, viewing it as an homogenizing force that undermines their unique cultures and as a US-imposed, neo-liberal economic model whose inequitably distributed fruits are rooted in the exploitation of labor and the environment.
- **Information technology.** The universalization of the Internet, both as a mass media and means of inter-personal communication, will help educate, connect, mobilize, and empower those traditionally excluded.

- Experts note that a new generation of leaders is emerging in Africa from the private sector; these leaders are much more comfortable with democracy than their predecessors and might provide a strong internal dynamic for democracy in the future.
- For example, Christianity, Buddhism, and other religions and practices are spreading in such countries as China as Marxism declines, and the proportion of evangelical converts in traditionally heavily Catholic Latin America is rising.

Identity Politics

Part of the pressure on governance will come from new forms of identity politics centered on religious convictions and ethnic affiliation. Over the next 15 years, religious identity is likely to become an increasingly important factor in how people define themselves. The trend toward identity politics is linked to increased mobility, growing diversity of hostile groups within states, and the diffusion of modern communications technologies.

- The primacy of ethnic and religious identities will provide followers with a ready-made community that serves as a “social safety net” in times of need—particularly important to migrants. Such communities also provide networks that can lead to job opportunities.

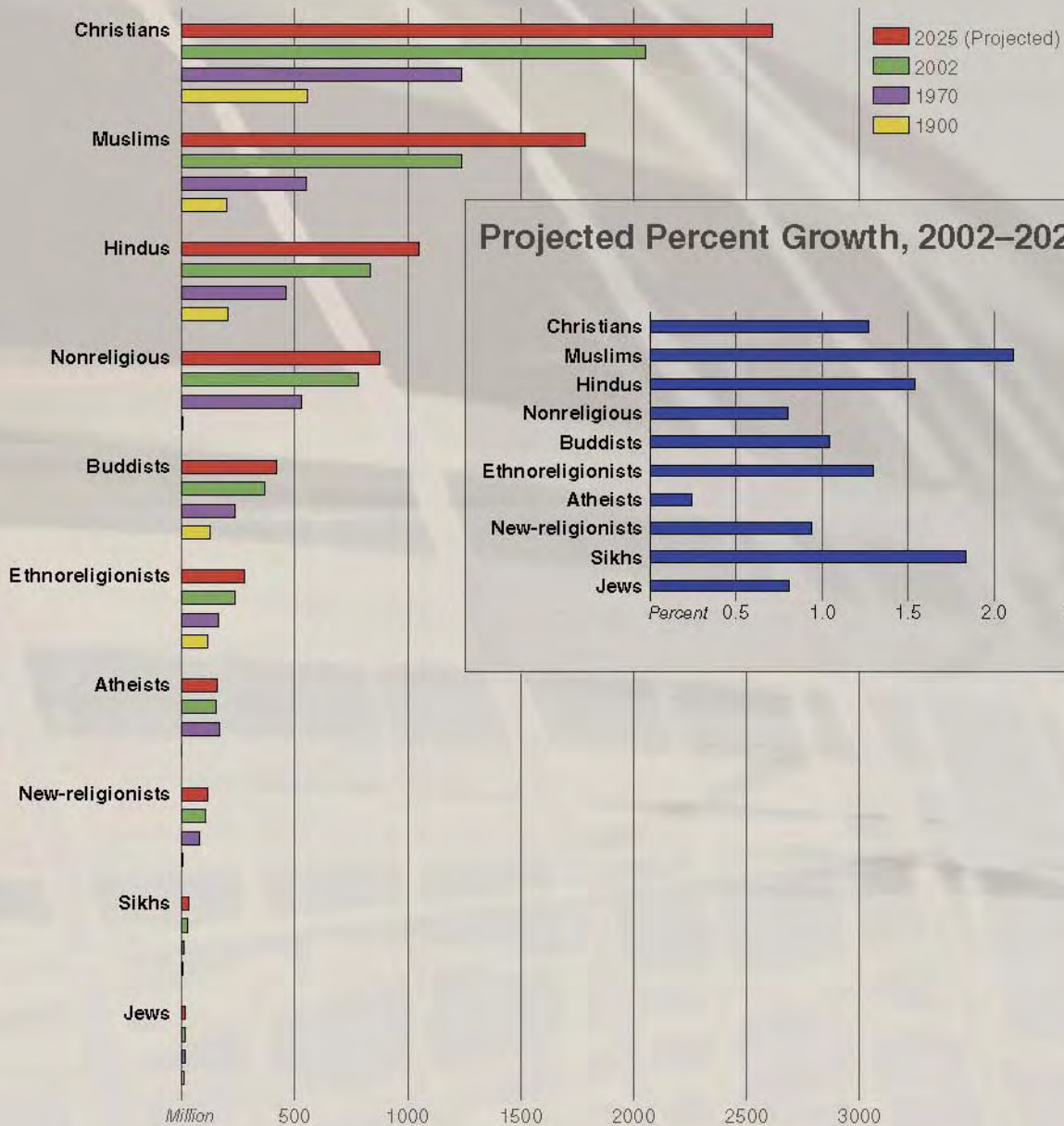
“Over the next 15 years, religious identity is likely to become an increasingly important factor in how people define themselves.”

While we do not have comprehensive data on the number of people who have joined a religious faith or converted from one faith to another in recent years, trends seem to point toward growing numbers of converts and a **deepening religious commitment** by many religious adherents.

- By 2020, China and Nigeria will have some of the largest Christian communities in the world, a shift that will reshape the traditionally Western-based Christian institutions, giving them more of an African or Asian or, more broadly, a developing world face.
- Western Europe stands apart from this growing global “religiosity” except for the migrant communities from Africa and the Middle East. Many of the churches’ traditional functions—education, social services, etc.—are now performed by the state. A more pervasive, insistent secularism, however, might not foster the cultural acceptance of new Muslim immigrants who view as discriminatory the ban in some West European countries against displays of religious adherence.

Many religious adherents—whether Hindu nationalists, Christian evangelicals in Latin America, Jewish fundamentalists in Israel, or Muslim radicals—are becoming “**activists**.” They have a worldview that advocates change of society, a tendency toward making sharp Manichaeian distinctions between good and evil, and a religious belief system that connects local conflicts to a larger struggle.

Number of Religious Adherents, 1900–2025



Source: *Status and Trends in Global Mission as Revealed by the Annual Christian Megacensus, AD 1800–AD 2025*, World Evangelization Research Center.

Such religious-based movements have been common in times of social and political turmoil in the past and have oftentimes been a force for positive change. For example, scholars see the growth of evangelism in Latin America as providing the uprooted, racially disadvantaged and often poorest groups, including women, “with a social network that would otherwise be lacking... providing members with skills they need to survive in a rapidly developing society...(and helping) to promote the development of civil society in the region.”¹⁰

At the same time, the desire by activist groups to change society often leads to more social and political turmoil, some of it violent. In particular, there are likely to be frictions in mixed communities as the activists attempt to gain converts among other religious groups or older established religious institutions. In keeping with the intense religious convictions of many of these movements, activists define their identities in opposition to “outsiders,” which can foster strife.

Radical Islam. Most of the regions that will experience gains in religious “activists” also have youth bulges, which experts have correlated with high numbers of **radical** adherents, including Muslim extremists.¹¹

- Youth bulges are expected to be especially acute in most Middle

Eastern and West African countries until at least 2005-2010, and the effects will linger long after.

- In the Middle East, radical Islam’s increasing hold reflects the political and economic alienation of many young Muslims from their unresponsive and unrepresentative governments and related failure of many predominantly Muslim states to reap significant economic gains from globalization.

The spread of radical Islam will have a significant global impact leading to 2020, rallying disparate ethnic and national groups and perhaps even creating an authority that transcends national boundaries. Part of the appeal of radical Islam involves its call for a return by Muslims to earlier roots when Islamic civilization was at the forefront of global change. The collective feelings of alienation and estrangement which radical Islam draws upon are unlikely to dissipate until the Muslim world again appears to be more fully integrated into the world economy.

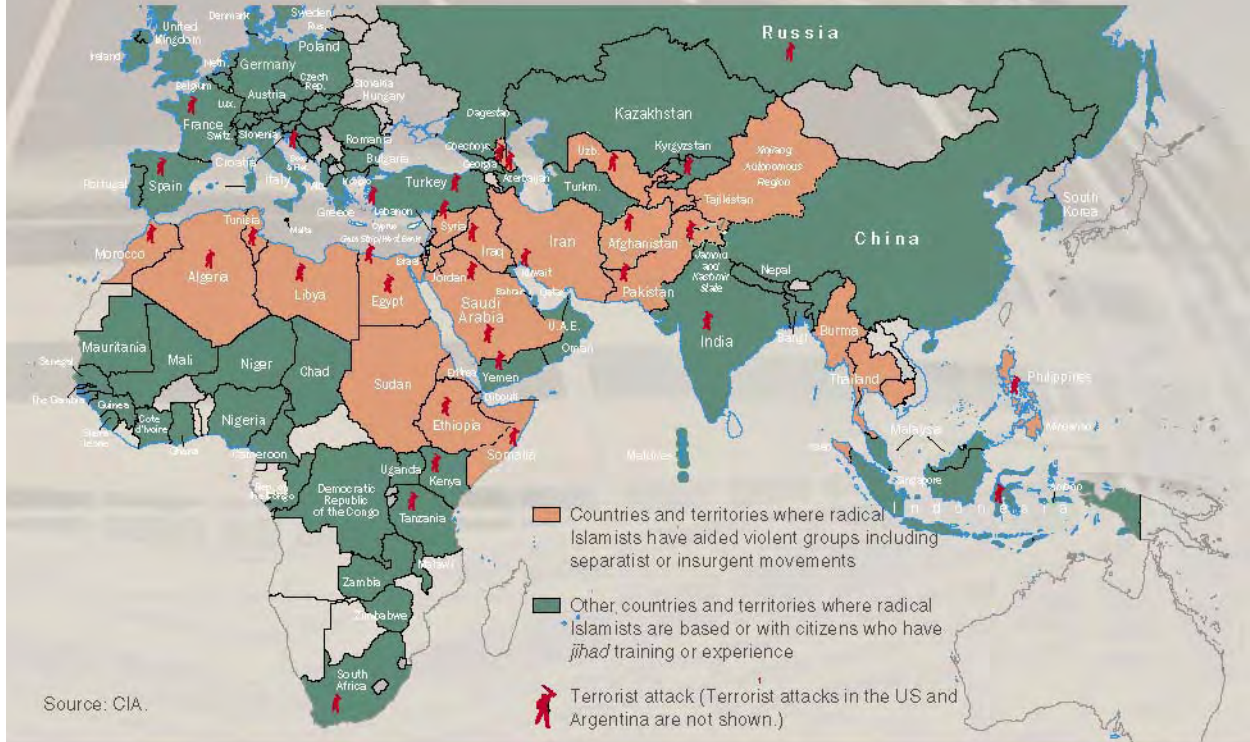
“Radical Islam will have a significant global impact... rallying disparate ethnic and national groups and perhaps even creating an authority that transcends national boundaries.”

Radical Islam will continue to appeal to many Muslim migrants who are attracted to the more prosperous West for employment opportunities but do not feel at home in what they perceive as an alien culture.

¹⁰ Philip Jenkins, consultations with the National Intelligence Council, August 4, 2004.

¹¹ We define *Muslim extremists* as a subset of Islamic activists. They are committed to restructuring political society in accordance with their vision of Islamic law and are willing to use violence.

Key Areas of Radical Islamic Activities Since 1992



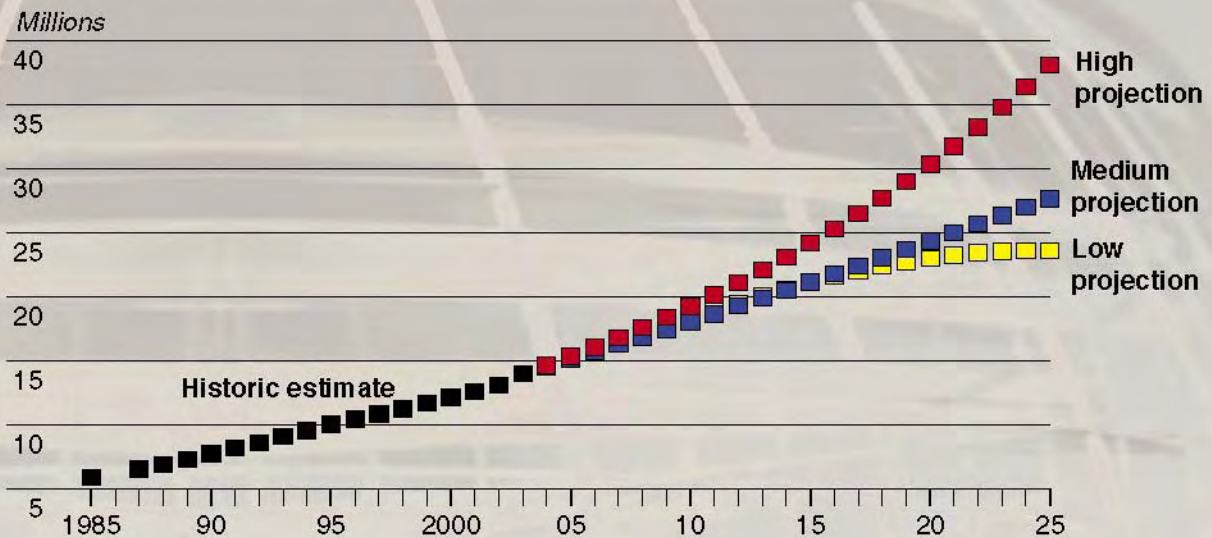
Studies show that Muslim immigrants are being integrated as West European countries become more inclusive, but many second- and third-generation immigrants are drawn to radical Islam as they encounter obstacles to full integration and barriers to what they consider to be normal religious practices.

Differences over religion and ethnicity also will contribute to future conflict, and, if unchecked, will be a cause of regional strife. Regions where frictions risk developing into wider civil conflict include

Southeast Asia, where the historic Christian-Muslim faultlines cut across several countries, including West Africa, The Philippines, and Indonesia.

- Schisms within religions, however historic and longlasting, also could lead to conflict in this era of increased religious identity. A Shia-dominated Iraq is likely to encourage greater activism by Shia minorities in other Middle Eastern nations, such as Saudi Arabia and Pakistan.

EU: Estimated and Projected Muslim Population, 1985 - 2025



Source: Based on a variety of diplomatic and media reporting as well as government, academic, and other sources.

Fictional Scenario: A New Caliphate

The fictional scenario portrayed below provides an example of how a global movement fueled by radical religious identity could emerge. Under this scenario, a new Caliphate is proclaimed and manages to advance a powerful counter ideology that has widespread appeal. It is depicted in the form of a hypothetical letter from a fictional grandson of Bin Ladin to a family relative in 2020. He recounts the struggles of the Caliph in trying to wrest control from traditional regimes and the conflict and confusion which

ensue both within the Muslim world and outside between Muslims and the United States, Europe, Russia and China. While the Caliph's success in mobilizing support varies, places far outside the Muslim core in the Middle East—in Africa and Asia—are convulsed as a result of his appeals. The scenario ends before the Caliph is able to establish both spiritual and temporal authority over a territory—which historically has been the case for previous Caliphates. At the end of the scenario, we identify lessons to be drawn.

Sa'id Muhammad Bin Ladin

In the name of God, The Beneficent, The Merciful

June 3, 2020

Grandfather would have been frustrated. The proclamation of the Caliphate has not yet turned out to be our Deliverance. As you know, dear brother, Grandfather believed in the return to the period of the Rightly Guided Caliphs when the leaders of Islam ruled over an empire as true Defenders of the Faith. He envisaged the Caliphate holding sway again over the Muslim world, reconquering lost lands in Palestine and Asia, and rooting out the infidel Western influences or "globalization" as the Crusaders so euphemistically call it. The spiritual and temporal world would once again be in single obedience to the will of Allah, refuting the West's division of Church and State. In the end, as we've seen, the proclamation has not yet overcome these divisions even if the emergence of the Caliphate has put the fear of Allah in the Crusader powers (and Grandfather would have been pleased at this). Westernization has certainly lost its luster with many Muslims, and the Caliphate has rent asunder a number of contrived nation-states that were figments of the colonizers' imagination.

When I think back on it, I don't know how we missed seeing the

emergence of the young Khalifah—but then we were all surprised, believer and infidel. The young preacher suddenly had a worldwide following. Even before he was proclaimed Khalifah, successor to the Prophet peace be upon Him, he was revered everywhere among the faithful. Maybe it was because he was not al-Qa'ida and had not led a political movement like Grandfather. He appeared all the more spiritual. He wasn't tainted with the unfortunate killings of innocents which, whether Grandfather admitted it or not, deterred some from supporting al-Qa'ida. From Muslim lands halfway around the world in The Philippines, Indonesia, Malaysia, Uzbekistan, Afghanistan and Pakistan, the expressions of allegiance and money came pouring in. Some in the ruling elites also embraced him, hoping to bolster their shaky grip on power. In Europe and America, non-practicing Muslims were awakened to their true identity and faith and, in some cases, left their bewildered Westernized parents to return to their homelands. Even some infidels were impressed with his spirituality; the Pope, for example, tried to initiate an interfaith dialogue with him. And anti-globalizers in the West idolized him. Within a short period, it became clear there was no alternative but to proclaim what so many had yearned for—a new Caliphate.

Oh, what confusion did we sow with the Crusaders. An almost forgotten word reentered the Western lexicon and histories of early Caliphs suddenly rose to be bestsellers on Amazon.com. They had been so smug

Sa'id Muhammad Zin Ladin
In the name of God, The Beneficent, The Merciful

thinking we had to trudge the same well-worn path behind them toward secularism if not outright conversion to the so-called Judeo-Christian value system. Can you imagine the look on their faces as Muslim athletes at the Olympics eschewed their national loyalties and instead proclaimed their allegiance to the Caliphate? All was being brought down: the very structures that the West had wrought to imprison us in their worldview—democracy, nation-states, and an international system run by them—appeared to be in tatters.

Oil was also on their minds and we had them over a barrel like never before. As uncertainty raged in the marketplace, rumors circulated about the US or NATO seizing the oil fields to secure them against a takeover by the Caliphate. We heard later that the US could not get its allies to go along with military intervention and Washington was itself worried about creating a worldwide Muslim backlash.

At this point, violence with the Shia started—somewhat suspiciously, increasing the confusion. The Caliph suspected Iran was stirring up trouble. Iran had been upset ever since the Caliphate was proclaimed. Saudi's Eastern Province with its large Shia population where the oil fields are located was particularly vulnerable. The Gulf state rulers also played their part.

Sa'id Muhammad Bin Ladin

In the name of God, The Beneficent, The Merciful

And then we suspected Shia-dominated Iraq and behind Iraq the US and the CIA of fomenting the trouble. But if the American infidels were behind it—which I believe was the case—they suffered the consequences. The tenuous peace inside Iraq that America had stitched together so laboriously came undone with the sudden re-igniting of the Sunni insurgency; the insurgents proclaimed themselves the true Caliphate and battled anew both Shia and the American garrisons.

This has been a difficult challenge for the Caliph. The Caliphate represents wholeness and we risk seeing the unraveling of the Caliphate if the age-old Sunni-Shia division cannot be overcome. As a Sunni Arab, I should not show any compassion for a division the partisans of Ali brought upon the Dar al-Islam centuries ago, but, as then, not dealing with the breach has turned out to be a mistake. Some of their new thinkers are joining the likeminded reformers among Sunnis and winning the praise and support of the infidels. The reestablishment of cooperative—even if not warm—relations between the Persians and the Americans would be dangerous for us.

Our people are also too tempted and seduced by Western materialism. Oh the internet—both salvation and a trap set by the devil. It is what is bringing the Caliph so near to total power, spreading his appeal widely.

Sa'id Muhammad Bin Ladin
In the name of God, The Merciful, The Most Gracious

But it is also a weapon wielded by our enemies. More and more of the faithful see how others in the West live and they want those same things, not understanding the vice that accompanies it.

That along with the Sunni-Shia violence flusters the middle class. They have begun to try to leave our sacred lands. This has had the ironic result of distressing the Crusader powers in Europe and America. They do not mind seeing the Caliphate in trouble, but accepting a million or more refugees—most of them accustomed to a high standard of living—has been another thing. They are on the horns of a dilemma—more Muslims in their midst could stir up resentment; not accepting them could once again underline their hypocrisy.

Confusion reigns elsewhere. When the Caliphate was proclaimed, the expectation was that regimes would topple immediately. But that has not happened yet. Instead there are pockets of followers, undermining many states but not yet succeeding in toppling regimes. We are very close in Central Asia and in parts of Pakistan and Afghanistan where a civil war rages. Russia is bogged down in fighting insurgencies and propping up Central Asian autocracies. In a paradoxical twist the United States is Russia's ally this time: instead of supplying money and arms for the *mujahidin* to fight the Soviets, they are helping the Russians to

Sa'id Muhammad Bin Ladin

In the name of God, The Beneficent, The Merciful

fight the *mujahidin*. In some countries two sets of authorities rule, neither of which has full control. Pashtunistan is declared but has not yet fully established its power. All of this has begun to deter the Crusaders from exploiting our resources. No pipelines are now being built and some were put out of business. Rising Asia has been hurt because construction of new pipelines has come to a halt. China eschewed any help from the US but has become increasingly concerned about Muslim bourgeois "irredentism" in its midst.

Southeast Asia and parts of East and West Africa are going almost the same way. The proclamation of the Caliphate emboldened the insurgents but has so far had its most powerful effect in driving a wedge into states and creating pockets where the Caliphate and Sharia rule. The Asians are difficult, though. They think they have discovered an Asian way.

The struggle continues in Palestine too, despite the creation of a Palestinian state. The Zionists still occupy Muslim lands and share control of Jerusalem. The Europeans thought they could dodge a clash of civilizations, but they now see that growing numbers of Muslims in their midst are turning to the Caliph. The US also has infidel followers of the Caliph, including a senator's daughter. The US is caught in the middle, trying to buy off those supporting the Caliphate in order to

Sa'id Muhammad Bin Ladin

In the name of God, The Beneficent, The Merciful

pacify the Iraqi Sunnis, but not wanting to alienate Israel. Europe is piling the pressure on the Zionists for the first time, talking of sanctions against Israel.

So much confusion and turmoil, but this is great for us. At first with the new Caliphate our numbers dwindled and the core al-Qa'ida went out of business, but then began so many new struggles. We can fight to regain Muslim lands, even if the Caliph has turned its back on some struggles and is in danger of becoming soft. We cut deals with the local warlords, exploiting their hospitality or paying tribute and are largely left free to operate as we see fit. I'm hopeful...

"Lessons Learned"

A Caliphate would not have to be entirely successful for it to present a serious challenge to the international order. This scenario underlines the saliency of the cross-cultural ideological debate that would intensify with growing religious identities.

- The IT revolution is likely to amplify the clash between Western and Muslim worlds.
- The appeal of a Caliphate among Muslims would vary from region to region, which argues for Western countries adopting a differentiated approach to counter it. Muslims in regions benefiting from globalization, such as parts of Asia and Europe, may be torn between the idea of a spiritual Caliphate and the material advantages of a globalized world.
- The proclamation of a Caliphate would not lessen the likelihood of terrorism and, in fomenting more conflict, could fuel a new generation of terrorists intent on attacking those opposed to the Caliphate, whether inside or outside the Muslim world.

Pervasive Insecurity

We foresee a more pervasive sense of insecurity, which may be as much based on psychological perceptions as physical threats, by 2020. The psychological aspects, which we have addressed earlier in this paper, include concerns over job security as well as fears revolving around migration among both host populations and migrants.

Terrorism and internal conflicts could interrupt the process of globalization by significantly increasing the security costs associated with international commerce, encouraging restrictive border control policies, and adversely affecting trade patterns and financial markets. Although far less likely than internal conflicts, conflict among great powers would create risks to world security. The potential for the proliferation of weapons of mass destruction (WMD) will add to the pervasive sense of insecurity.

Transmuting International Terrorism

The key factors that spawned international terrorism show no signs of abating over the next 15 years. Experts assess that the majority of international terrorist groups will continue to identify with radical Islam. The revival of Muslim identity will create a framework for the spread of radical Islamic ideology both inside and outside the Middle East, including Western Europe, Southeast Asia and Central Asia.

- This revival has been accompanied by a deepening solidarity among

Muslims caught up in national or regional separatist struggles, such as Palestine, Chechnya, Iraq, Kashmir, Mindanao, or southern Thailand and has emerged in response to government repression, corruption, and ineffectiveness.

- A radical takeover in a Muslim country in the Middle East could spur the spread of terrorism in the region and give confidence to others that a new Caliphate is not just a dream.
- Informal networks of charitable foundations, *madrasas*, *hawalas*,¹² and other mechanisms will continue to proliferate and be exploited by radical elements.
- Alienation among unemployed youths will swell the ranks of those vulnerable to terrorist recruitment.

“Our greatest concern is that [terrorist groups] might acquire biological agents, or less likely, a nuclear device, either of which could cause mass casualties.”

There are indications that the Islamic radicals’ professed desire to create a transnational insurgency, that is, a drive by Muslim extremists to overthrow a number of allegedly apostate secular

¹² *Hawalas* constitute an informal banking system.

governments with predominately Muslim subjects, will have an appeal to many Muslims.

- Anti-globalization and opposition to US policies could cement a greater body of terrorist sympathizers, financiers, and collaborators.

“... We expect that by 2020 al-Qa’ida will have been superceded by similarly inspired but more diffuse Islamic extremist groups.”

A Dispersed Set of Actors. Pressure from the global counterterrorism effort, together with the impact of advances in information technology, will cause the terrorist threat to become increasingly decentralized, evolving into an eclectic array of groups, cells, and individuals. While taking advantage of sanctuaries around the world to train, terrorists will not need a stationary headquarters to plan and carry out operations. Training materials, targeting guidance, weapons know-how, and fund-raising will increasingly become virtual (i.e., online).

The core al-Qa’ida membership probably will continue to dwindle, but other groups inspired by al-Qa’ida, regionally based groups, and individuals labeled simply as jihadists—united by a common hatred of moderate regimes and the West—are likely to conduct terrorist attacks. The al-Qa’ida membership that was distinguished by having trained in Afghanistan will gradually dissipate, to be replaced in part by the dispersion of the experienced survivors of the conflict in Iraq. We expect that by 2020 al-Qa’ida will have been superceded by similarly

inspired but more diffuse Islamic extremist groups, all of which will oppose the spread of many aspects of globalization into traditional Islamic societies.

- Iraq and other possible conflicts in the future could provide recruitment, training grounds, technical skills and language proficiency for a new class of terrorists who are “profession-alized” and for whom political violence becomes an end in itself.
- Foreign jihadists—individuals ready to fight anywhere they believe Muslim lands are under attack by what they see as “infidel invaders”—enjoy a growing sense of support from Muslims who are not necessarily supporters of terrorism.

Even if the number of extremists dwindles, however, the terrorist threat is likely to remain. Through the Internet and other wireless communications technologies, individuals with ill intent will be able to rally adherents quickly on a broader, even global, scale and do so obscurely. The rapid dispersion of bio- and other lethal forms of technology increases the potential for an individual not affiliated with any terrorist group to be able to inflict widespread loss of life.

Weapons, Tactics, and Targets.

In the past, terrorist organizations relied on state sponsors for training, weapons, logistical support, travel documents, and money in support of their operations. In a globalized world, groups such as Hizballah are increasingly self-sufficient in meeting these needs and may act in a state-like manner to preserve “plausible deniability” by supplying other groups, working through third parties to meet

their objectives, and even engaging governments diplomatically.

Most terrorist attacks will continue to employ primarily conventional weapons, incorporating new twists to keep counterterrorist planners off balance. Terrorists probably will be most original not in the technologies or weapons they employ but rather in their operational concepts—i.e., the scope, design, or support arrangements for attacks.

- One such concept that is likely to continue is a large number of simultaneous attacks, possibly in widely separated locations.

While vehicle-borne improvised explosive devices will remain popular as asymmetric weapons, terrorists are likely to move up the technology ladder to employ advanced explosives and unmanned aerial vehicles.

“Terrorist use of biological agents is therefore likely, and the range of options will grow.”

The religious zeal of extremist Muslim terrorists increases their desire to perpetrate attacks resulting in high casualties. Historically, religiously inspired terrorism has been most destructive because such groups are bound by few constraints.

The most worrisome trend has been an intensified search by some terrorist groups to obtain weapons of mass destruction. Our greatest concern is that these groups might acquire biological agents or less likely, a nuclear device, either of which could cause mass casualties.

- Bioterrorism appears particularly suited to the smaller, better-informed groups. Indeed, the bioterrorist’s laboratory could well be the size of a household kitchen, and the weapon built there could be smaller than a toaster. Terrorist use of biological agents is therefore likely, and the range of options will grow. Because the recognition of anthrax, smallpox or other diseases is typically delayed, under a “nightmare scenario” an attack could be well under way before authorities would be cognizant of it.
- The use of radiological dispersal devices can be effective in creating panic because of the public’s misconception of the capacity of such attacks to kill large numbers of people.

With advances in the design of simplified nuclear weapons, terrorists will continue to seek to acquire fissile material in order to construct a nuclear weapon. Concurrently, they can be expected to continue attempting to purchase or steal a weapon, particularly in Russia or Pakistan. Given the possibility that terrorists could acquire nuclear weapons, the use of such weapons by extremists before 2020 cannot be ruled out.

We expect that terrorists also will try to acquire and develop the capabilities to conduct cyber attacks to cause physical damage to computer systems and to disrupt critical information networks.

The United States and its interests abroad will remain prime terrorist targets, but more terrorist attacks might

Organized Crime

Changing geostrategic patterns will shape global organized criminal activity over the next 15 years. Organized crime is likely to thrive in resource-rich states undergoing significant political and economic transformation, such as India, China, Russia, Nigeria, and Brazil as well as Cuba, if it sees the end of its one-party system. Some of the former states of the Soviet Union and the Warsaw Pact also will remain vulnerable to high levels of organized crime.

- States that transition to one-party systems—such as any new Islamic-run state—will be vulnerable to corruption and attendant organized crime, particularly if their ideology calls for substantial government involvement in the economy.
- Changing patterns of migration may introduce some types of organized crime into countries that have not previously experienced it. Ethnic-based organized crime groups typically prey on members of their own diasporas and use them to gain footholds in new regions.

Some organized crime syndicates will form loose alliances with one another. They will attempt to corrupt leaders of unstable, economically fragile, or failing states, insinuate themselves into troubled banks and businesses, exploit information technologies, and cooperate with insurgent movements to control substantial geographic areas.

Organized crime groups usually do not want to see governments toppled but thrive in countries where governments are weak, vulnerable to corruption, and unable or unwilling to consistently enforce the rule of law.

- Criminal syndicates, particularly drug trafficking syndicates, may take virtual control of regions within failing states to which the central government cannot extend its writ.

If governments in countries with WMD capabilities lose control of their inventories, the risk of organized crime trafficking in nuclear, biological, or chemical weapons will increase between now and 2020.

We expect that the relationship between terrorists and organized criminals will remain primarily a matter of business, i.e., that terrorists will turn to criminals who can provide forged documents, smuggled weapons, or clandestine travel assistance when the terrorists cannot procure these goods and services on their own. Organized criminal groups, however, are unlikely to form long-term strategic alliances with terrorists. Organized crime is motivated by the desire to make money and tends to regard any activity beyond that required to effect profit as bad for business. For their part, terrorist leaders are concerned that ties to non-ideological partners will increase the chance of successful police penetration or that profits will seduce the faithful.

Cyber Warfare?

Over the next 15 years, a growing range of actors, including terrorists, may acquire and develop capabilities to conduct both physical and cyber attacks against nodes of the world's information infrastructure, including the Internet, telecommunications networks, and computer systems that control critical industrial processes such as electricity grids, refineries, and flood control mechanisms. Terrorists already have specified the US information infrastructure as a target and currently are capable of physical attacks that would cause at least brief, isolated disruptions. The ability to respond to such attacks will require critical technology to close the gap between attacker and defender.

A key cyber battlefield of the future will be the information on computer systems themselves, which is far more valuable and vulnerable than physical systems. New technologies on the horizon provide capabilities for accessing data, either through wireless intercept, intrusion into Internet-connected systems, or through direct access by insiders.

be aimed at Middle Eastern regimes and at Western Europe.

Intensifying Internal Conflicts

Lagging economies, ethnic affiliations, intense religious convictions, and youth bulges will align to create a "perfect storm," creating conditions likely to spawn internal conflict. The governing capacity of states, however, will determine whether and to what extent conflicts actually occur. Those states unable both to satisfy the expectations of their peoples and to resolve or quell conflicting demands among them are likely to

encounter the most severe and most frequent outbreaks of violence. For the most part, those states most susceptible to violence are in a great arc of instability from Sub-Saharan Africa, through North Africa, into the Middle East, the Balkans, the Caucasus and South and Central Asia and through parts of Southeast Asia. Countries in these regions are generally those "behind" the globalization curve.

- The number of internal conflicts is down significantly since the late 1980s and early 1990s, when the breakup of the Soviet Union and Communist regimes in Central Europe allowed suppressed ethnic and nationalist strife to flare. Although a leveling off point has been reached, the continued prevalence of troubled and institutionally weak states creates conditions for such conflicts to occur in the future.

“Lagging economies, ethnic affiliations, intense religious convictions, and youth bulges will align to create a ‘perfect storm’ [for] internal conflict.”

Internal conflicts are often particularly vicious, long-lasting, and difficult to terminate. Many of these conflicts generate internal displacements and external refugee flows, destabilizing neighboring countries.

- Sub-Saharan Africa will continue to be particularly at risk for major new or worsening humanitarian emergencies stemming from conflict. Genocidal conflicts aimed at annihilating all or part of a racial, religious, or ethnic group, and conflicts caused by other crimes against humanity—such as

forced, large-scale expulsions of populations—are particularly likely to generate migration and massive, intractable humanitarian needs.

“Africa in 2020 ... will increasingly resemble a patchwork quilt with significant differences in economic and political performance.”

Some internal conflicts, particularly those that involve ethnic groups straddling national boundaries, risk escalating into regional conflicts. At their most extreme, internal conflicts can produce a failing or failed state, with expanses of territory and populations devoid of effective governmental control. In such instances, those territories can become sanctuaries for transnational terrorists (like al-Qa’ida in Afghanistan) or for criminals and drug cartels (such as in Colombia).

Rising Powers: Tinder for Conflict?

The likelihood of great power conflict escalating into total war in the next 15 years is lower than at any time in the past century, unlike during previous centuries when local conflicts sparked world wars. The rigidities of alliance systems before World War I and during the interwar period, as well as the two-bloc standoff during the Cold War, virtually assured that small conflicts would be quickly generalized. Now, however, even if conflict would break out over Taiwan or between India and Pakistan, outside powers as well as the primary actors would want to limit its extent.

Additionally, the growing dependence on global financial and trade networks increasingly will act as a deterrent to conflict among the great powers—the US, Europe, China, India, Japan and Russia.

This does not eliminate the possibility of great power conflict, however. The absence of effective conflict resolution mechanisms in some regions, the rise of nationalism in some states, and the raw emotions on both sides of key issues increase the chances for miscalculation.

- Although a military confrontation between China and Taiwan would derail Beijing’s efforts to gain acceptance as a regional and global power, we cannot discount such a possibility. Events such as Taiwan’s proclamation of independence could lead Beijing to take steps it otherwise might want to avoid, just as China’s military buildup enabling it to bring overwhelming force against Taiwan increases the risk of military conflict.
- India and Pakistan appear to understand the likely prices to be paid by triggering a conflict. But nationalistic feelings run high and are not likely to abate. Under plausible scenarios Pakistan might use nuclear weapons to counter success by the larger Indian conventional forces, particularly given Pakistan’s lack of strategic depth.

“Advances in modern weaponry—longer ranges, precision delivery, and more destructive conventional munitions—create circumstances encouraging the preemptive use of military force.”

Should conflict occur that involved one or more of the great powers, the consequences would be significant. Advances in modern weaponry—longer

How Can Sub-Saharan Africa Move Forward?

Most of the regional experts we consulted believe the most likely scenario for Africa in 2020 is that it will increasingly resemble a patchwork quilt with significant differences in economic and political performance.

Africa's capacity to benefit from the positive elements of globalization will depend on the extent to which individual countries can bring an end to conflict, improve governance, rein in corruption, and establish the rule of law. If progress is achieved in these areas, an expansion of foreign investment, which currently is mostly confined to the oil sector, is possible. Our regional experts felt that if African leaders used such investment to help their economies grow—opening avenues to wealth other than through the power of the state—they might be able to mitigate the myriad other problems facing their countries, with the prospect of prosperity decreasing the level of conflict.

Expanded development of existing or new sources of wealth will remain key. Although mineral and natural resources are not evenly distributed among its countries, Sub-Saharan Africa is well endowed with them and has the potential not only to be self-sufficient in food, but to become a major exporter of agricultural, animal, and fish products. The lowering or elimination of tariff barriers and agricultural subsidies in the European Union and the United States, combined with the demand for raw materials from the burgeoning Chinese and Indian economies, could provide major stimulus to African economies and overcome decades of depressed commodity prices.

African experts have agreed that economic reform and good governance are essential for high economic growth and also have concluded that African countries must take the initiative in negotiating new aid and trade relationships that heretofore were essentially dictated by the international financial institutions and the developed world. The New Partnership for Africa's Development (NEPAD), with its peer review mechanism, provides one mechanism for bringing about this economic transformation, if its members individually and collectively honor their commitments.

Over the next 15 years, democratic reform will remain slow and imperfect in many countries due to a host of social and economic problems, but it is highly unlikely that democracy will be challenged as the norm in Africa. African leaders face alliances of international and domestic nongovernmental organizations that sometimes want to supplant certain state services, criminal networks that operate freely across borders, and Islamic groups bent on establishing safehavens. Some states may fail but in others the overall quality of democracy probably will increase. An emerging generation of leaders includes many from the private sector, who are more comfortable with democracy than their predecessors and who could provide a strong political dynamic for democracy in the future.

Leadership will remain the ultimate wild card, which, even in the least promising circumstances, could make a huge, positive difference. Although countries with poor leadership will find it harder not to fail, those with good leadership that promotes order, institutions, and conflict resolution will at least have a chance of progressing.

ranges, precision delivery, and more destructive conventional munitions—create circumstances encouraging the preemptive use of military force. The increased range of new missile and aircraft delivery systems provides sanctuary to their possessors.

Until strategic defenses become as strong as strategic offenses, there will be great premiums associated with the ability to expand conflicts geographically in order to deny an attacker sanctuary. Moreover, a number of recent high-technology conflicts have demonstrated that the outcomes of early battles of major conflicts most often determine the success of entire campaigns. Under these circumstances, military experts believe preemption is likely to appear necessary for strategic success.

The WMD Factor

Nuclear Weapons. Over the next 15 years, a number of countries will continue to pursue their nuclear, chemical, and biological weapons programs and in some cases will enhance their capabilities. Current nuclear weapons states will continue to improve the survivability of their deterrent forces and almost certainly will improve the reliability, accuracy, and lethality of their delivery systems as well as develop capabilities to penetrate missile defenses. The open demonstration of nuclear capabilities by any state would further *discredit the current nonproliferation regime*, cause a possible shift in the balance of power, and increase the risk of conflicts escalating into nuclear ones.

- Countries without nuclear weapons, especially in the Middle East and Northeast Asia, may decide to seek them as it becomes clear that their

neighbors and regional rivals already are doing so.

- The assistance of proliferators, including former private entrepreneurs such as the A.Q. Khan network, will reduce the time required for additional countries to develop nuclear weapons.

“Countries without nuclear weapons ... may decide to seek them as it becomes clear that their neighbors and regional rivals are already doing so.”

Chemical and Biological Weapons.

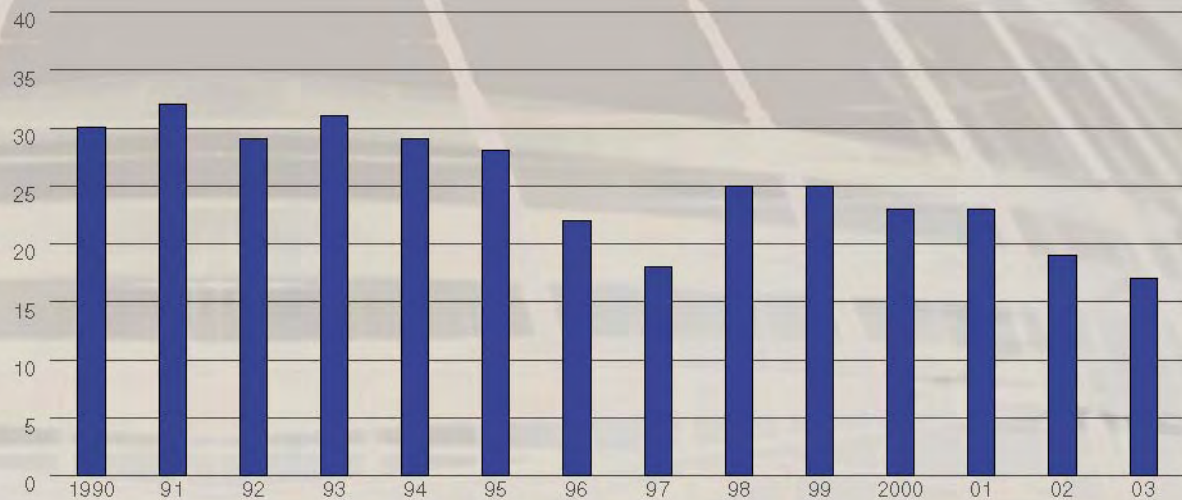
Developments in CW and BW agents and the proliferation of related expertise will pose a substantial threat, particularly from terrorists, as we have noted.

- Given the goal of some terrorist groups to use weapons that can be employed surreptitiously and generate dramatic impact, we expect to see terrorist use of some readily available biological and chemical weapons.

Countries will continue to integrate both CW and BW production capabilities into apparently legitimate commercial infrastructures, further concealing them from scrutiny, and BW/CW programs will be less reliant on foreign suppliers.

- Major advances in the biological sciences and information technology probably will accelerate the pace of BW agent development, increasing the potential for agents that are more difficult to detect or to defend against. Through 2020 some countries will continue to try to develop chemical agents designed to circumvent the

Global Trends in Internal Conflict, 1990–2003



Source: Data drawn from the Uppsala Conflict Data Project, published by the Stockholm International Peace Research Institute (SIPRI) in the SIPRI yearbooks.

Chemical Weapons Convention verification regime.

“Developments in CW and BW agents and the proliferation of related expertise will pose a substantial threat, particularly from terrorists...”

Delivery Systems. Security will remain at risk from increasingly advanced and lethal ballistic and cruise missiles and unmanned aerial vehicles (UAVs). States almost certainly will continue to increase the range, reliability, and accuracy of the missile systems in their inventories. By

2020 several countries of concern probably will have acquired Land-Attack Cruise Missiles (LACMs) capable of threatening the US Homeland if brought closer to US shores. Both North Korea and Iran probably will have an ICBM capability well before 2020 and will be working on improvements to enhance such capabilities, although new regimes in either country could rethink these objectives. Several other countries are likely to develop space launch vehicles (SLVs) by 2020 to put domestic satellites in orbit and to enhance national prestige. An SLV is a key stepping-stone toward an ICBM: it could be used as a booster in an ICBM development.

International Institutions in Crisis

Increased pressures on international institutions will incapacitate many, unless and until they can be radically adapted to accommodate new actors and new priorities.

Regionally based institutions will be particularly challenged to meet the complex transnational threats posed by economic upheavals, terrorism, organized crime, and WMD proliferation. Such post-World War II creations as the United Nations and international financial institutions risk sliding into obsolescence unless they take into consideration the growing power of the rising powers.

- Both supporters and opponents of multilateralism agree that Rwanda, Bosnia, and Somalia demonstrated the ineffectiveness, lack of preparation, and weaknesses of global and regional institutions to deal with what are likely to be the more common types of conflict in the future.

The problem of state failure—which is a source or incubator for a number of transnational threats—argues for better coordination between institutions, including the international financial ones and regional security bodies.

Building a global consensus on how and when to intervene is likely to be the biggest hurdle to greater effectiveness but essential in many experts' eyes if multilateral institutions are to live up to their potential and promise. Many states, especially the emerging powers, continue to worry about setting precedents for outside intervention that can be used against them. Nevertheless, most problems, such as failing states, can only be effectively dealt with through early recognition and preventive measures.

Other issues that are likely to emerge on the international agenda will add to the pressures on the collective international order as well as on individual countries. These “new” issues could become the staples of international diplomacy much as human rights did in the 1970s and 1980s. Ethical issues linked to biotechnological discoveries such as cloning, GMOs, and access to biomedicines could become the source of hot debates among countries and regions. As technology increases the capabilities of states to track terrorists, concerns about privacy and extraterritoriality may increasingly surface among publics worldwide. Similarly, debates over environmental issues connected with tempering climate change risk scrambling the international order, pitting the US against its traditional European allies, as well as developed countries against the developing world, unless more global cooperation is achieved. Rising powers may see in the ethical and environmental debates an attempt by the rich countries to slow down their progress by imposing “Western” standards or values. Institutional reform might increasingly surface as an issue. Many in the developing world believe power in international bodies is too much a snapshot of the post-World War II world rather than the current one.

The Rules of War: Entering “No Man’s Land”

With most armed conflict taking *unconventional* or *irregular* forms—such as humanitarian interventions and operations designed to root out terrorist home bases—rather than conventional state-to-state warfare, the principles covering resort to, and use of, military force will increasingly be called into question. Both the international law enshrining territorial sovereignty and the Geneva Conventions governing the conduct of war were developed before transnational security threats like those of the twenty-first century were envisioned.

In the late 1990s, the outcry over former Serbian President Milosevic’s treatment of Kosovars spurred greater acceptance of the principle of international humanitarian interventions, providing support to those in the “just war” tradition who have argued since the founding of the UN and before that the international community has a “duty to intervene” in order to prevent human rights atrocities. This principle, however, continues to be vigorously contested by countries worried about harm to the principle of national sovereignty.

The legal status and rights of prisoners taken during military operations and suspected of involvement in terrorism will be a subject of controversy—as with many captured during Operation ENDURING FREEDOM in Afghanistan. A debate over the degree to which religious leaders and others who are perceived as abetting or inciting violence should be considered international terrorists is also likely to come to the fore.

The Iraq war has raised questions about what kind of status, if any, to accord to the increasing number of contractors used by the US military to provide security, man POW detention centers, and interrogate POWs or detainees.

Protection for nongovernmental organizations (NGOs) in conflict situations is another issue that has become more complicated as some charitable work—such as Wahabi missionaries funding terrorist causes—has received criticism and enforcement action at the same time that Western and other NGOs have become “soft targets” in conflict situations.

The role of the United States in trying to set norms is itself an issue and probably will complicate efforts by the global community to come to an agreement on a new set of rules. Containing and limiting the scale and savagery of conflicts will be aggravated by the absence of clear rules.

“Such post-World War II creations as the UN and international financial institutions risk sliding into obsolescence unless they take into consideration the growing power of the developing world.”

Post-Combat Environments Pose the Biggest Challenge

For the United States particularly, if the past decades are any guide waging and winning a conventional war is unlikely to be much of a challenge over the next 15 years in light of our overarching capabilities to conduct such a war. However, the international community's efforts to prevent outbreaks and ensure that conflicts are not a prelude to new ones could remain elusive.

- Nation-building is at best an imperfect concept, but more so with the growing importance of cultural, ethnic, and religious identities.
- Africa's effort to build a regional peacekeeping force shows some promise, but Sub-Saharan Africa will struggle with attracting sufficient resources and political will.
- The enormous costs in resources and time for meaningful nation-building or post-conflict/failed state stability operations are likely to be a serious constraint on such coalition or international commitments.

Fictional Scenario: Cycle of Fear

This scenario explores what might happen if proliferation concerns increased to the point that large-scale intrusive security measures were taken. In such a world, proliferators—such as illegal arms merchants—might find it increasingly hard to operate, but at the same time, with the spread of WMD, more countries might want to arm themselves for their own protection. This scenario is depicted in a series of text-message exchanges between two arms dealers. One is ideologically committed to leveling the playing field and ensuring the Muslim world has its share of WMD, while the other is strictly for hire. Neither knows for sure who is at the end of his chain—a government client or terrorist front. As the scenario progresses, the cycle of fear originating with WMD-laden terrorist attacks has gotten out of hand—to the benefit of the arms dealers, who appear to be engaged in lucrative deals. However, fear begets fear. The draconian measures increasingly implemented by governments to stem proliferation and guard against terrorism also have the arms dealers beginning to run scared. In all of this, globalization may be the real victim.

Two arms dealers engage in unspecified illegal activity. . .

are u there?

Marco contacted me already. It's going to be difficult.

How? In procuring it?

No. Moving it. Too many eyes on me.

. . . and are finding conducting business increasingly difficult.

You're kidding. U're in one of the poorest countries

You'r telling me. Dubai was so civilized, but now it's impossible to operate there.

Those terrorists are ruining our business. That series of attacks spooked everybody, not just the Americans.

How do you know you didn't help the terrorists?

Can't know for certain, but I think my ultimate client's different.

Dealer A (green phone) seems to think he is working for a country. The material he is interested in could be nuclear technology. However, he intimates that terrorists are also interested in doing business with him.

Yeah I know you're committed. I'm in it for the money. Doesn't matter too much who pays just so long as they do.

I want my people and faith to be respected. The bomb's important.

And to get back at the Crusaders?

That too. But the yanks are doing us a favor. Their military threats got my client's attention. He can't wait now for things to happen. The more talk of military action, the better, I say. And I have other buyers who are interested. Let's say more shady types.

Dealer B (gold phone) warns that the tide of international public opinion may be turning in favor of stronger counter-proliferation because of the terrorist attacks.

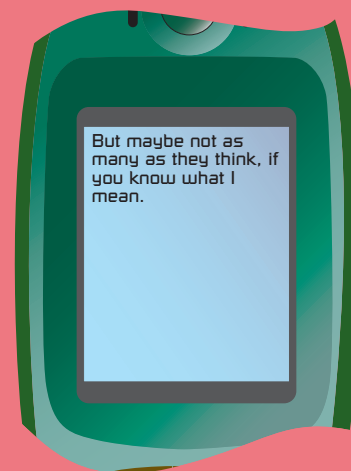
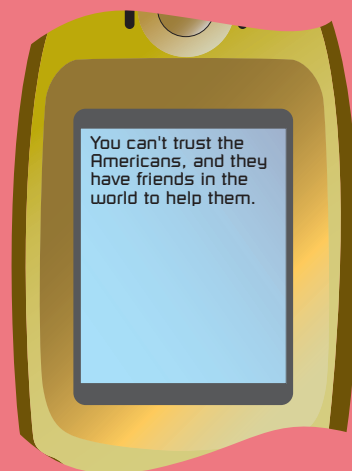
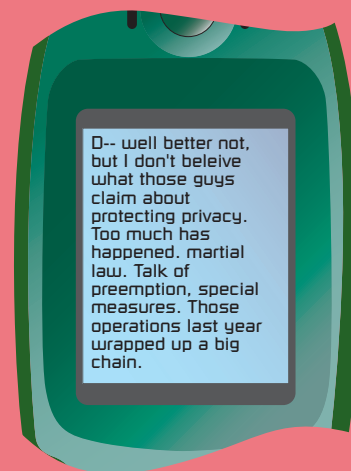
Don't be so sure. America's got a lot of support 'cause of the terrorists. People also leery of attacks, especially bw.

Yeah they really got the superpower on the run. Even when it isn't WMD, they think it is. Regular hoof and mouth, I heard. Hard to tell the difference at first.

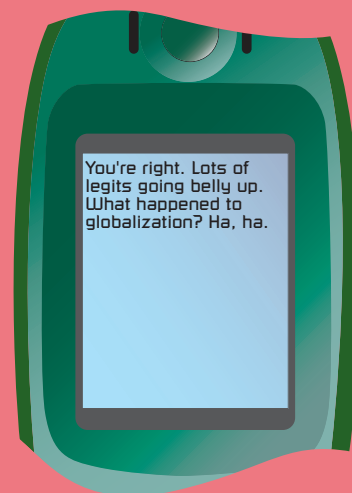
Yeah, went overboard. Still I worry. Lots of people sympathize, worry even in Muslim world. America also had its share of the real thing. A big hit happened before hoof and mouth. That new Patriot Act went way beyond anything imagined after 9/11.

Both dealers indicate they are increasingly worried about new devices that can track them.

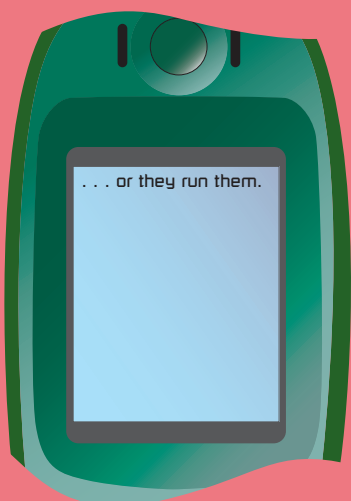
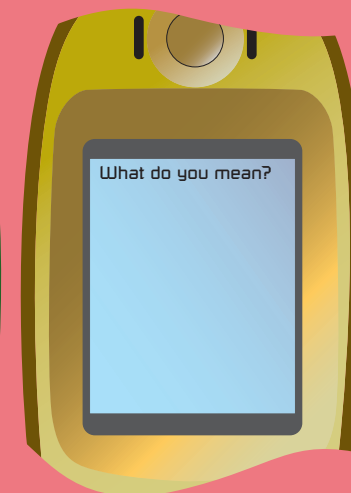
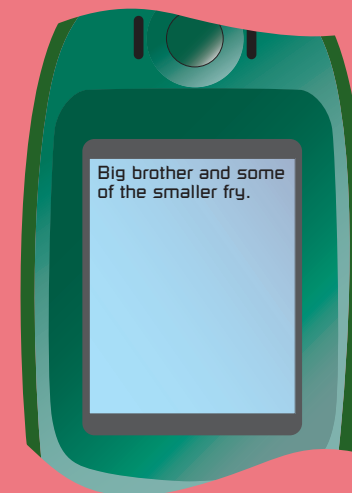
I worry about the chip.



Dealer A (in green) looks on the bright side. With the world slipping into a recession because of the terrorist attacks and the severe clampdown, he thinks he can get legitimate businesses to look the other way.

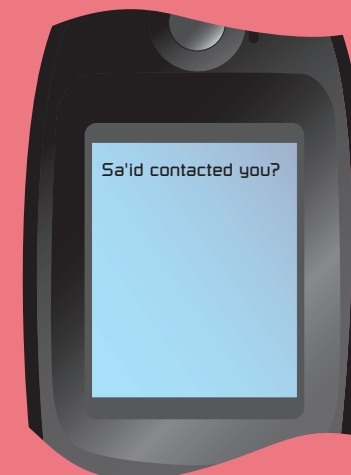


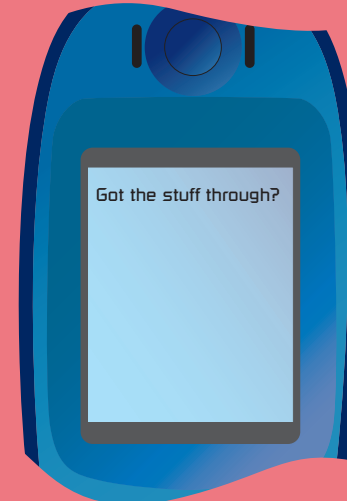
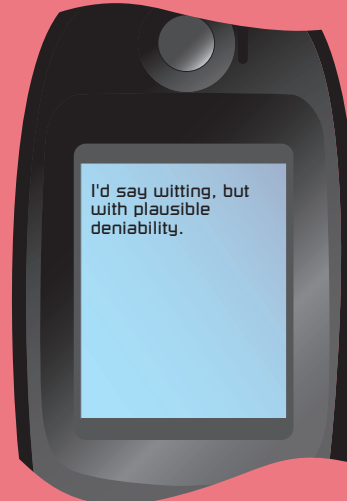
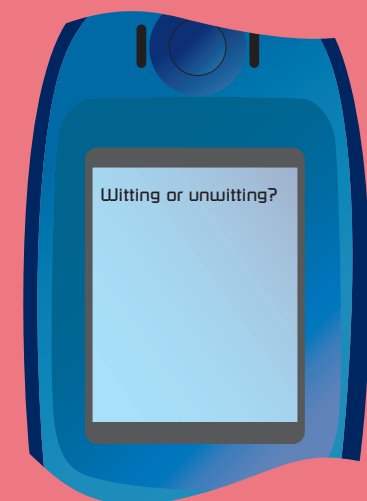
Dealer A (in green) goes back to explaining why the increased terrorist attacks have also increased government interest in WMD programs.



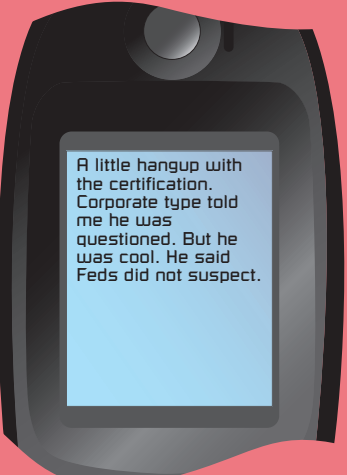
Conversation breaks off at this point.

A month later. Dealer A (in black) again talks to Dealer B (in blue). Marco, the in-between mentioned in last month's conversation, has changed aliases and is now known as Sa'id, which may or may not be his real name. The dealer's quip about there being no relation is an obvious inside joke. The first dealer also reverts to his theme that the downturn in the world economy has been a boon to the illegal business. Legitimate businesses are now turning a blind eye and selling dual-use technology even when they have doubts about the end user. Dealers have also changed devices, which are shown in new colors.

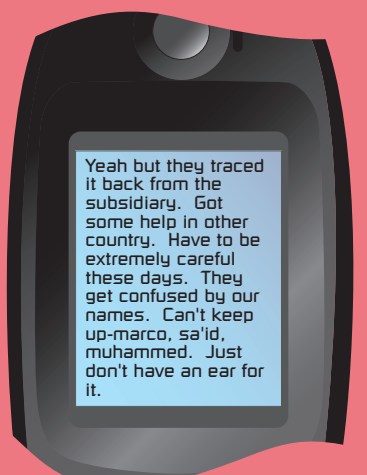




Dealer A (in black) is no doubt being intentionally cryptic about the material for fear of interception. It may have something to do with nuclear technology or possibly other illicit goods.



This would indicate that authorities inside some countries remain helpful despite the clampdown or outward cooperation with the United States.



One month later



It is not clear if text messaging has failed to go through, Dealer B has gone underground or been swept up by a security roundup. One would hope Dealer A is now getting nervous.

"Lessons Learned"

- The fear cycle generated by an increasing spread of WMD and terrorist attacks, once under way, would be one of the hardest to break. The greater sense of insecurity might prompt more countries to acquire WMD for protection or deterrence.
- A complication in combating the spread of WMD would be the ideological factor, as exemplified by one of the dealers in the scenario story. Some dealers would not be in it for the money but to level the playing field between the Muslim world and the West.
- Achieving a balance so that international commerce was not obstructed by excessive security would be important since any economic meltdown could spur legitimate businesses and scientists to engage in a highly lucrative, albeit illegal activity.
- Developing and sustaining international cooperation when the fear cycle might drive some to go it alone would be a challenge.

Policy Implications

The international order will be in greater flux in the period out to 2020 than at any point since the end of the Second World War. As we map the future, the prospects for global prosperity and the limited likelihood of great power conflict provide an overall favorable environment for coping with the challenges ahead. Despite daunting challenges, the United States, in particular, will be better positioned than most countries to adapt to the changing global environment.

As our scenarios illustrate, we see several ways in which major global changes could begin to take shape and be buffeted or bolstered by the forces of change over the next 15 years. In a sense, the scenarios provide us with four different *lenses* on future developments, underlining the wide range of factors, discontinuities, and uncertainties shaping a new global order. One lens is the globalized economy, another is the security role played by the US, a third is the role of social and religious identity, and a fourth is the breakdown of the international order because of growing insecurity. They highlight various “switching points” that could shift developments onto one path or the other. The most important tipping points include the impact of robust economic growth and the spread of technology; the nature and extent of terrorism; the resiliency or weakness of states, particularly in the Middle East, Central Asia, and Africa; and the potential spread of conflict, including between states.

- On balance, for example, as the hypothetical ***Davos World*** scenario

shows, robust economic growth probably will help to overcome divisions and pull more regions and countries into a new global order. However, the rapid changes might also produce disorder at times; one of the lessons of that and the other scenarios is the need for management to ensure globalization does not go off the rails.

The evolving framework of international politics in all the scenarios suggests that ***nonstate actors*** will continue to assume a more prominent role even though they will not displace the nation-state. Such actors range from terrorists, who will remain a threat to global security, to NGOs and global firms, which exemplify largely positive forces by spreading technology, promoting social and economic progress, and providing humanitarian assistance.

The United States and other countries throughout the world will continue to be vulnerable to ***international terrorism***. As we have noted in the ***Cycle of Fear*** scenario, terrorist campaigns that escalate to unprecedented heights, particularly if they involve WMD, are one of the few developments that could threaten globalization.

Counterterrorism efforts in the years ahead—against a more diverse set of terrorists who are connected more by ideology and technology than by geography—will be a more elusive challenge than focusing on a relatively centralized organization such as al-Qa’ida. The looser the connections

Is the United States' Technological Prowess at Risk?

US investment in basic research and the innovative application of technology has directly contributed to US leadership in economic and military power during the post-World War II era. Americans, for example, invented and commercialized the semiconductor, the personal computer, and the Internet with other countries following the US lead.^a While the United States is still the present leader, there are signs this leadership is at risk.

The number of US engineering graduates peaked in 1985 and is presently down 20 percent from that level; the percentage of US undergraduates taking engineering is the second lowest of all developed countries. China graduates approximately three times as many engineering students as the United States. However, post-9/11 security concerns have made it harder to attract incoming foreign students and, in some cases, foreign nationals available to work for US firms.^b Non-US universities—for which a US visa is not required—are attempting to exploit the situation and bolster their strength.

Privately funded industrial research and development—which accounts for 60 percent of the US total—while up this year, suffered three previous years of decline.^c Further, major multinational corporations are establishing corporate “research centers” outside of the United States.

While these signs are ominous, the integrating character of globalization and the inherent strengths of the US economic system preclude a quick judgment of an impending US technological demise. By recent assessments, the United States is still the most competitive society in the world among major economies.^d In a globalized world where information is rapidly shared—including cross-border sharing done internally by multinational corporations—the creator of new science or technology may not necessarily be the beneficiary in the marketplace.

^a “Is America Losing Its Edge? Innovation in a Globalized World.” Adam Segal, *Foreign Affairs*, November December 2004; New York, NY p.2.

^b “Observations on S&T Trends and Their Potential Impact on Our Future.” William Wulf (President, National Academy of Engineering). Paper submitted to the Center for Strategic and International Studies (CSIS) in support of the National Intelligence Council 2020 Study, Summer 2004.

^c “Is America Losing Its Edge?,” p.3.

^d *Global Competitiveness Report 2004-2005*, World Economic Forum, <http://www.weforum.org>. October 2004.

among individual terrorists and various cells, the more difficult it will be to uncover and disrupt terrorist plotting.

- One of our scenarios—***Pax Americana***—envisages a case in which US and European consensus on fighting terrorism would grow much stronger but, under other scenarios, including the hypothetical ***New Caliphate***, US, Russian, Chinese and European interests diverge, possibly limiting cooperation on counterterrorism.

“The US will have to battle world public opinion, which has dramatically shifted since the end of the Cold War.”

The success of the US-led global counterterrorism campaign will hinge on the capabilities and resolve of individual countries to fight terrorism on their own soil. Efforts by Washington to bolster the capabilities of local security forces in other countries and to work with them on their priority issues (such as soaring crime) would be likely to increase cooperation.

- Defense of the US Homeland will begin overseas. As it becomes more difficult for terrorists to enter the United States, they are likely to try to attack the Homeland from neighboring countries.

A counterterrorism strategy that approaches the problem on multiple fronts offers the greatest chance of containing—and ultimately reducing—the terrorist threat. The development of more open political systems, broader economic

opportunities, and empowerment of Muslim reformers would be viewed positively by the broad Muslim communities who do not support the radical agenda of Islamic extremists. A ***New Caliphate*** scenario dramatizes the challenge of addressing the underlying causes of extremist violence, not just its manifest actions.

- The Middle East is unlikely to be the only battleground in which this struggle between extremists and reformers occurs. European and other Muslims outside the Middle East have played an important role in the internal ideological conflicts, and the degree to which Muslim minorities feel integrated in European societies is likely to have a bearing on whether they see a clash of civilizations as inevitable or not. Southeast Asia also has been increasingly a theater for terrorism.

Related to the terrorist threat is the problem of the ***proliferation of WMD*** and the potential for countries to have increased motivation to acquire nuclear weapons if their neighbors and regional rivals are doing so. As illustrated in the ***Cycle of Fear*** scenario, global efforts to erect greater barriers to the spread of WMD and to dissuade any other countries from seeking nuclear arms or other WMD as protection will continue to be a challenge. As various of our scenarios underline, the communications revolution gives proliferators a certain advantage in striking deals with each other and eluding the authorities, and the “assistance” they provide can cut years off the time it would take for countries to develop nuclear weapons.

How the World Sees the United States

In the six regional conferences that we hosted we asked participants about their views of the role of the United States as a driver in shaping developments in their regions and globally.

Asia

Participants felt that US preoccupation with the war on terrorism is largely irrelevant to the security concerns of most Asians. The key question that the United States needs to ask itself is whether it can offer Asian states an appealing vision of regional security and order that will rival and perhaps exceed that offered by China.

US disengagement from what matters to US Asian allies would increase the likelihood that they would climb on Beijing's bandwagon and allow China to create its own regional security order that excludes the United States.

Participants felt that the rise of China need not be incompatible with a US-led international order. The critical question is whether or not the order is flexible enough to adjust to a changing distribution of power on a global level. An inflexible order would increase the likelihood of political conflict between emerging powers and the United States. If the order is flexible, it may be possible to forge an accommodation with rising powers and strengthen the order in the process.

Sub-Saharan Africa

Sub-Saharan African leaders worry that the United States and other advantaged countries will "pull up the drawbridge" and abandon the region.

Participants opined that the United States and other Western countries may not continue to accept Africa's most successful "export," its people. The new African diaspora is composed overwhelmingly of economic migrants rather than political migrants as in previous eras.

Some participants felt that Africans worry that Western countries will see some African countries as "hopeless" over the next 15 years because of prevailing economic conditions, ecological problems, and political circumstances.

Participants feared that the United States will focus only on those African countries that are successful.

Latin America

Conference participants acknowledged that the United States is the key economic, political, and military player in the hemisphere. At the same time, Washington was viewed as traditionally not paying sustained attention to the region and, instead of responding to systemic problems, as reacting primarily to crises. Participants saw a fundamentalist trend in Washington that would lead to isolation and unilateralism and undercut cooperation. Most shared the view that the US "war on terrorism" had little to do with Latin America's security concerns.

Latin American migrants are a stabilizing force in relations with the United States. An important part of the US labor pool, migrants also remit home needed dollars along with new views on democratic governance and individual initiative that will have a positive impact on the region.

(Continued on next page...)

(Continued...) **How the World Sees the United States**

US policies also can have a positive impact. Some participants said the region would benefit from US application of regional mechanisms to resolve problems rather than punitive measures against regimes not to its liking, such as that of Fidel Castro.

Middle East

Participants felt that the role of US foreign policy in the region will continue to be crucial. The perceived propping up of corrupt regimes by the United States in exchange for secure oil sources has in itself helped to promote continued stagnation. Disengagement is highly unlikely but would in itself have an incalculable effect.

Regarding the prospects for democracy in the region, participants felt that the West placed too much emphasis on the holding of elections, which, while important, is only one element of the democratization process. There was general agreement that if the United States and Europe can engage with and encourage reformers rather than confront and hector, genuine democracy would be achieved sooner.

Some Middle East experts argued that Washington has reinforced zero-sum politics in the region by focusing on top Arab rulers and not cultivating ties with emerging leaders in and outside the government.

Although the Middle East has a lot to gain economically from globalization, it was agreed that Arabs/Muslims are nervous that certain aspects of globalization, especially the pervasive influence of Western, particularly American, values and morality are a threat to traditional cultural and religious values.

Europe and Eurasia

Participants engaged in a lively debate over whether a rift between the US and Europe is likely to occur over the next 15 years with some contending that a collapse of the US-EU partnership would occur as part of the collapse of the international system. Several participants contended that if the United States shifts its focus to Asia, the EU-US relationship could be strained to the breaking point.

- They were divided over whether China's rise would draw the United States and Europe closer or not.
- They also differed over the importance of common economic, environmental, and energy problems to the alliance.

In our Eurasia workshop, participants agreed that the United States has only limited influence on the domestic policies of the Central Asian states, although US success or failure in Iraq would have spillover effects in Central Asia. Countries in western Eurasia, they believed, will continue to seek a balance between Russia and the West. In their view, Ukraine almost certainly will continue to seek admission to NATO and the European Union while Georgia and Moldova probably will maintain their orientation in the same direction.

“A counterterrorism strategy that approaches the problem on multiple fronts offers the greatest chance of containing—and ultimately reducing—the terrorist threat.”

On the more positive side, one of the likely features of the next 15 years is the greater availability of **high technology**, not only to those who invent it. As we try to make clear in our **Davos World** scenario, the high-tech leaders are not the only ones that can expect to make gains, but also those societies that integrate and apply the new technologies. For example, our scenario points up the beneficial effects of possible new technologies in Africa in helping to eradicate poverty. As we have noted elsewhere in this paper, global firms will play a key role in promoting more widespread prosperity and more technological innovation.

The dramatically altered **geopolitical landscape** also presents a huge challenge for the international system as well as for the United States, which has been the security guarantor of the post-World War II order. The possible contours as several trends develop—including rising powers in Asia, retrenchment in Eurasia, a roiling Middle East, and greater divisions in the transatlantic partnership—remain uncertain and variable.

- With the lessening in ties formed during the Cold War, nontraditional ad hoc alliances are likely to develop. For example, shared interest in multilateralism as a cornerstone of international relations has been viewed by some scholars as the basis

for a budding relationship between Europe and China.

As the **Pax Americana scenario** suggests, the transatlantic partnership would be a key factor in Washington’s ability to remain the central pivot in international politics. The degree to which Europe is ready to shoulder more international responsibilities is unclear and depends on its ability to surmount its economic and demographic problems as well as forge a strategic vision for its role in the world. In other respects—GDP, crossroads location, stable governments, and collective military expenditures—it has the ability to increase its weight on the international stage.

“For Washington, dealing with a rising Asia may be the most challenging of all its regional relationships.”

Asia is particularly important as an engine for change over the next 15 years. A key uncertainty is whether the rise of China and India will occur smoothly. A number of issues will be in play, including the future of the world trading system, advances in technology, and the shape and scope of globalization. For Washington, dealing with a rising Asia may be the most challenging of all its regional relationships. One could envisage a range of possibilities from the US enhancing its role as regional balancer between contending forces to Washington being seen as increasingly irrelevant. Both the Korea and Taiwan issues are likely to come to a head, and how they are dealt with will be important factors shaping future US-Asia ties as well as the US role in the region. Japan’s

position in the region is also likely to be transformed as it faces the challenge of a more independent security role.

“A key uncertainty is whether the rise of China and India will occur smoothly.”

With the rise of the Asian giants, US **economic and technological advantages** may be vulnerable to erosion.

- While interdependencies will grow, increased Asian investment in high-tech research coupled with the rapid growth of Asian markets will increase the region's competitiveness across a wide range of economic and technical activity.
- US dependence on foreign oil supplies also makes it more vulnerable as the competition for secure access grows and the risks of supply-side disruptions increase.

In the **Middle East**, market reforms, greater democracy, and progress toward an Arab-Israeli peace would stem the shift towards more radical politics in the region and foster greater accord in the transatlantic partnership. Some of our scenarios highlight the extent to which the Middle East could remain at the center of an arc of instability extending from Africa through Central and Southeast Asia, providing fertile ground for terrorism and the proliferation of WMD.

Realization of a **Caliphate-like scenario** would pose the biggest challenge because it would reject the foundations on which the current international system has been built. Such a possibility points up the need to find ways to engage and

integrate those societies and regions that feel themselves left behind or reject elements of the globalization process. Providing economic opportunities alone may not be sufficient to enable the “have-nots” to benefit from globalization; rather, the widespread trend toward religious and cultural identification suggests that various identities apart from the nation-state will need to be accommodated in a globalized world.

The interdependence that results from globalization places increasing importance not only on **maintaining stability** in the areas of the world that drive the global economy, where about two thirds of the world's population resides, but also on helping the poor or failing states scattered across a large portion of the world's surface which have yet to modernize and connect with the larger, globalizing community. Two of our scenarios—**Pax Americana** and **Davos World**—point up the different roles that the United States is expected to play as security provider and as a financial stabilizer.

Eurasia, especially Central Asia and the Caucasus, probably will be an area of growing concern, with its large number of potentially failing states, radicalism in the form of Islamic extremism, and importance as a supplier or conveyor belt for energy supplies to both West and East. The trajectories of these Eurasian states will be affected by external powers such as Russia, Europe, China, India and the United States, which may be able to act as stabilizers. Russia is likely to be particularly active in trying to prevent spillover, even though it has enormous internal problems on its own plate. Farther to the West, Ukraine, Belarus, and Moldova could offset their

vulnerabilities as relatively new states by closer association with Europe and the EU.

Parts of **Africa** share a similar profile with the weak states of Eurasia and will continue to form part of an extended arc of instability. As the hypothetical **Davos World** scenario suggests, globalization in terms of rising commodity prices and expanded economic growth may be a godsend where good governance is also put in place. North Africa may benefit particularly from growing ties with Europe.

Latin America is likely to become a more diverse set of countries: those that manage to exploit the opportunities provided by globalization will prosper, while those—such as the Andean nations currently—that do not or cannot will be left behind. Governance and leadership—often a wild card—will distinguish societies that prosper from those that remain ill-equipped to adapt. Both regions may have success stories—countries like Brazil or South Africa—which can provide a model for others to follow. The United States is uniquely positioned to facilitate Latin America growth and integration stemming the potential for fragmentation.

In that vein, the number of **interstate and internal conflicts** has been ebbing, but their lethality and potential to grow in impact once they start is a trend we have noted.

- While no single country looks within striking distance of rivaling US military power by 2020, more countries will be in a position to contest the United States in their regions. The possession of chemical, biological, and/or nuclear weapons by more

countries by 2020 would increase the potential cost of any military action by the United States and its coalition partners.

- Most US adversaries, be they states or nonstate actors, will recognize the military superiority of the United States. Rather than acquiesce to US force, they will try to circumvent or minimize US strengths and exploit perceived weaknesses, using asymmetric strategies, including terrorism and illicit acquisition of WMD, as illustrated in the **Cycle of Fear** scenario.

“...no single country looks within striking distance of rivaling US military power by 2020.”

As our **Pax Americana** scenario dramatizes, the United States probably will continue to be called on to help manage such **conflicts** as Palestine, North Korea, Taiwan, and Kashmir to ensure they do not get out of hand if a peace settlement cannot be reached. However, the scenarios and trends we analyze in the paper suggest the challenge will be to harness the power of new players to contribute to global security, potentially relieving the United States of some of the burden. Such a shift could usher in a new phase in international politics.

- China's and, to a lesser extent, India's increasing military spending and investment plans suggest they might be more able to undertake a larger security burden.
- International and regional institutions also would need to be reformed to

meet the challenges and shoulder more of the burden.

Adapting the international order may also be increasingly challenging because of the growing number of other **ethical issues** that have the potential to divide worldwide publics. These issues include the environment and climate change, cloning and stem cell research, **potential biotechnology and IT intrusions into privacy**, human rights, international law regarding conflict, and the role of multilateral institutions.

Many ethical issues, which will become more salient, cut across traditional alliances or groupings that were established to deal mainly with security issues. Such divergent interests underline the challenge for the international community, including the United States, in having to deal with multiple, competing coalitions to achieve resolution of some of these issues.

- Whatever its eventual impact or success, the Kyoto climate change treaty exemplifies how formerly nontraditional policy issues can come to the fore and form the core of budding new networks or partnerships.
- The media explosion cuts both ways: on the one hand, it makes it potentially harder to build a consensus because

the media tends to magnify differences; on the other hand, the media can also facilitate discussions and consensus-building.

The United States will have to battle world public opinion, which has dramatically shifted since the end of the Cold War. Although some of the current **anti-Americanism**¹³ is likely to lessen as globalization takes on more of a non-Western face, the younger generation of leaders—unlike during the post-World War II period—has no personal recollection of the United States as its “liberator.” Thus, younger leaders are more likely than their predecessors to diverge with Washington’s thinking on a range of issues.

Finally, as the **Pax Americana** scenario suggests, the United States may be increasingly confronted with the challenge of managing—at an acceptable cost to itself—relations with Europe, Asia, the Middle East and others, absent a single overarching threat on which to build consensus. For all the challenges ahead, the United States will nevertheless retain enormous advantages, playing a pivotal role across the broad range of issues—economic, technological, political, and military—that no other state can or will match by 2020. Even as the existing order is threatened, the United States will have many opportunities to fashion a new one.

¹³ The Pew Research survey of attitudes around the world revealed sharply rising anti-Americanism, especially in the Muslim world, but it also found that people in Muslim countries place a high value on such democratic values as freedom of expression, freedom of the press, multiparty political systems, and equal treatment under the law. Large majorities in almost every Muslim country favor free market economic systems and believe that Western-style democracy can work in their own country.

Speaker Sponsor: **William C. Ostendorff**



William C. Ostendorff
Principal Deputy Administrator

Mr. William (Bill) C. Ostendorff was nominated by the President to be NNSA's principal deputy administrator on February 26, 2007, and confirmed by the U.S. Senate on March 29, 2007. He joined NNSA on April 9, 2007, and was sworn in by Secretary of Energy Samuel W. Bodman.

Previously, he served as Counsel and Staff Director for the Strategic Forces Subcommittee of the House Armed Services Committee. This subcommittee has oversight responsibilities for the Department of Energy's Atomic Energy Defense Activities, as well as the Department of Defense's space, missile defense and intelligence programs.

In 2002, Ostendorff retired from the Navy and joined the Institute for Defense Analyses. From 1999-2002, he served as Director of the Division of Mathematics and Science at the United States Naval Academy. From 1998-1999, he commanded Submarine Squadron Six in Norfolk, Virginia. From 1996-1998, he was Director of the Submarine Force Atlantic Prospective Commanding Officer School. He served on six submarines, including command of the USS NORFOLK (SSN 714) from 1992-1995.

A native of Shreveport, Louisiana, Ostendorff graduated from the United States Naval Academy with Merit in 1976, with a B.S. in Systems Engineering. He received a J.D. from the University of Texas (Order of the Coif) and an LLM with Distinction in International and Comparative Law from the Georgetown University Law Center. He is a member of the State Bar of Texas.



**Erik R. Peterson**

Senior Vice President; William A. Schreyer Chair in Global Analysis; Director, Global Strategy Institute

Erik Peterson is senior vice president at CSIS and holds the William A. Schreyer Chair in Global Analysis, an endowed position named in honor of the Merrill Lynch chairman emeritus and CSIS Executive Committee member. He is also director of the Center's Global Strategy Institute, the mandate of which is to assess long-range policy challenges and opportunities. In addition, he leads the Seven Revolutions Initiative, a broad-based effort to forecast key trends out to the year 2025.

From 1993 to 2003, Mr. Peterson served as director of studies at CSIS. In that capacity, he was responsible for the planning and development of the wide range of research projects at the Center. Mr. Peterson came to the Center from Kissinger Associates, where he was director of research. He holds an M.B.A. in international finance from the Wharton School at the University of Pennsylvania, an M.A. in international law and economics from the School of Advanced International Studies at the Johns Hopkins University, and a B.A. from Colby College. He holds the Certificate of Eastern European Studies from the University of Fribourg in Switzerland and the Certificate in International Legal Studies from The Hague Academy of International Law in the Netherlands. For the past seven years, Mr. Peterson has co-taught a course on global trends at the Schreyer Honors College at Pennsylvania State University. He has also lectured on international economics and finance and geopolitical risk at many colleges and universities, including Chapman and George Mason Universities, Georgia Tech, and the Wharton School. Currently, he is a member of the Global Risk Network of the World Economic Forum, a board member of the Center for Global Business Studies at the Pennsylvania State University, and a member of the Advisory Board of the Center for the Study of the Presidency. In September 2006, in recognition of his achievements at the Center, Mr. Peterson was named by the CSIS Board of Trustees as its 2006-2007 Trustees Fellow.



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