COMMENTARIES

THE U.S. NATIONAL INTELLIGENCE COUNCIL'S *GLOBAL TRENDS 2015:* EXCERPTS, COMMENTARIES, AND RESPONSE

In January 2001, the U.S. National Intelligence Council (NIC), a center within the Central Intelligence Agency that provides the agency's director with mid- and long-term strategic thinking and direction, published Global Trends 2015: A Dialogue About the Future with Nongovernmental Experts*. This unclassified and public report, which expanded on the NIC's previous effort* Global Trends 2010*, takes a look at the world over the next 15 years from the perspective of the national security policymaker.*

Produced in consultation with experts outside the intelligence community from academia, think-tanks, and the corporate world, Global Trends 2015 *identifies worldwide seven dynamics or "drivers" (such as demographic trends, natural resources, globalization, and the role of the United States) and estimates their impact in an effort to produce a comprehensive picture of the world in 2015. In his introductory letter to the report, then-NIC Chairman John Gannon wrote that* Global Trends 2015 *"should be seen as a work-in-progress, a flexible framework for thinking about the future that we will update and revise as conditions evolve. As such, we are pleased to share it with the public, confident that the feedback we receive will improve our understanding of the issues we treat. We welcome comments on all aspects of this study."*

The Environmental Change and Security Project invited a wide range of scientists, government officials, nongovernmental activists, and defense analysts from across the globe to write commentaries on any aspect of Global Trends 2015 *that struck them. Fourteen responded, and their commentaries follow the below excerpts of the report itself. Finally, Ellen Laipson, acting chairman of the NIC, responds at length to the commentaries. We are pleased and proud to present this fertile exchange.*

The full text of Global Trends 2015 *is available in print form from the National Intelligence Council and on the Web at http://www.cia.gov/cia/publications/globaltrends2015*

Over the past 15 months, the National Intelligence Council (NIC), in close collaboration with U.S. Government specialists and a wide range of experts outside the government, has worked to identify major drivers and trends that will shape the world of 2015.

The key drivers identified are:

(l) Demographics.
(2) Natural resources and environment.
(3) Science and technology.
(4) The global economy and globalization.
(5) National and international governance.
(6) Future conflict.
(7) The role of the United States.

In examining these drivers, several points should be kept in mind:

• No single driver or trend will dominate the global future in 2015.

• Each driver will have varying impacts in different regions and countries.

• The drivers are not necessarily mutually reinforcing; in some cases, they will work at cross-purposes.

Taken together, these drivers and trends intersect to create an integrated picture of the world of 2015, about which we can make projections with varying degrees of confidence and identify some troubling uncertainties of strategic importance to the United States.

The Methodology

Global Trends 2015 provides a flexible framework to discuss and debate the future. The methodology is useful

for our purposes, although admittedly inexact for the social scientist. Our purpose is to rise above short-term, tactical considerations and provide a longer-term, strategic perspective. Judgments about demographic and natural resource trends are based primarily on informed extrapolation of existing trends. In contrast, many judgments about science and technology, economic growth, globalization, governance, and the nature of conflict represent a distillation of views of experts inside and outside the United States Government. The former are projections about natural phenomena, about which we can have fairly high confidence; the latter are more speculative because they are contingent upon the decisions that societies and governments will make.

The drivers we emphasize will have staying power. Some of the trends will persist; others will be less enduring and may change course over the time frame we consider. The major contribution of the National Intelligence Council (NIC), assisted by experts from the Intelligence Community, has been to harness US Government and nongovernmental specialists to identify drivers, to determine which ones matter most, to highlight key uncertainties, and to integrate analysis of these trends into a national security context. The result identifies issues for more rigorous analysis and quantification.

THE DRIVERS AND TRENDS

Demographics

World population in 2015 will be 7.2 billion, up from 6.1 billion in the year 2000, and in most countries, people will live longer. Ninety-five percent of the increase will be in developing countries, nearly all in rapidly expanding urban areas. Where political systems are brittle, the combination of population growth and urbanization will foster instability. Increasing lifespans will have significantly divergent impacts.

In the advanced economies—and a growing number of emerging market countries—declining birthrates and aging will combine to increase health care and pension costs while reducing the relative size of the working population, straining the social contract, and leaving significant shortfalls in the size and capacity of the work force.

In some developing countries, these same trends will combine to expand the size of the working population and reduce the youth bulge—increasing the potential for economic growth and political stability.

Natural Resources and Environment

Overall food production will be adequate to feed the world's growing population, but poor infrastructure and distribution, political instability, and chronic poverty will lead to malnourishment in parts of Sub-Saharan Africa. The potential for famine will persist in countries with repressive government policies or internal conflicts. Despite a 50 percent increase in global energy demand, energy resources will be sufficient to meet demand; the latest estimates suggest that 80 percent of the world's available oil and 95 percent of its gas remain underground.

In contrast to food and energy, water scarcities and allocation will pose significant challenges to governments in the Middle East, Sub-Saharan Africa, South Asia, and northern China. Regional tensions over water will be heightened by 2015.

Science and Technology

. . .[T]he world will encounter more quantum leaps in information technology (IT) and in other areas of science and technology. The continuing diffusion of information technology and new applications of biotechnology will be at the crest of the wave. IT will be the major building block for international commerce and for empowering nonstate actors. . . The integration—or fusion—of continuing revolutions in information technology, biotechnology, materials science, and nanotechnology will generate a dramatic increase in investment in technology, which will further stimulate innovation within the more advanced countries. Disaffected states, terrorists, proliferators, narcotraffickers, and organized criminals will take advantage of the new high-speed information environment and other advances in technology to integrate their illegal activities and compound their threat to stability and security around the world.

The Global Economy and Globalization

Th[e] globalized economy will be a net contributor to increased political stability in the world in 2015, although its reach and benefits will not be universal. In contrast to the Industrial Revolution, the process of globalization is more compressed. Its evolution will be rocky, marked by chronic financial volatility and a widening economic divide.

The global economy, overall, will return to the high levels of growth reached in the 1960s and early 1970s. Economic growth will be driven by political pressures for higher living standards, improved economic policies, rising foreign trade and investment, the diffusion of information technologies, and an increasingly dynamic private sector. Potential brakes on the global economy—such as a sustained financial crisis or prolonged disruption of energy supplies—could undo this optimistic

projection.

Regions, countries, and groups feeling left behind will face deepening economic stagnation, political instability, and cultural alienation. They will foster political, ethnic, ideological, and religious extremism, along with the violence that often accompanies it. They will force the United States and other developed countries to remain focused on "old-world" challenges while concentrating on the implications of "new-world" technologies at the same time.

National and International Governance

States will continue to be the dominant players on the world stage, but governments will have less and less control over flows of information, technology, diseases, migrants, arms, and financial transactions, whether licit or illicit, across their borders. Nonstate actors ranging from business firms to nonprofit organizations will play increasingly larger roles in both national and international affairs. The quality of governance, both nationally and internationally, will substantially determine how well states and societies cope with these global forces.
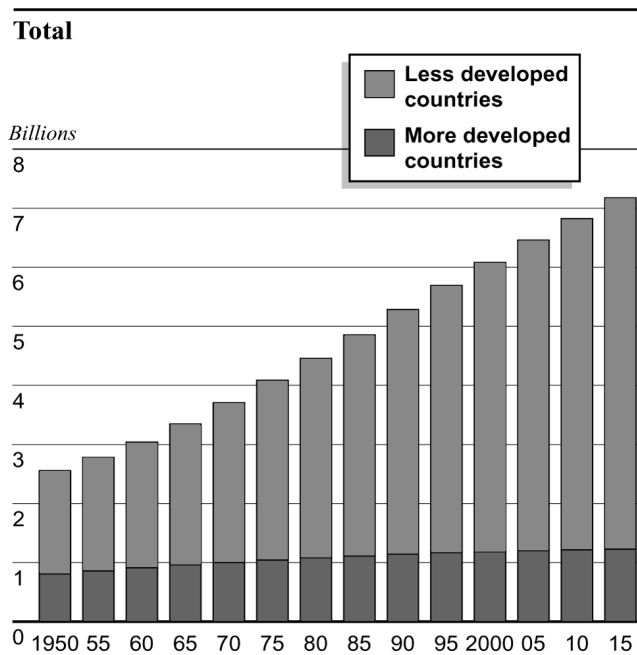
States with competent governance, including the United States, will adapt government structures to a dramatically changed global environment—making them better able to engage with a more interconnected world. The responsibilities of once "semiautonomous" government agencies increasingly will intersect because of the transnational nature of national security priorities and because of the clear requirement for interdisciplinary policy responses. Shaping the complex, fast-moving world of 2015 will require reshaping traditional government structures.

Effective governance will increasingly be determined by the ability and agility to form partnerships to exploit increased information flows, new technologies, migration, and the influence of nonstate actors. Most but not all countries that succeed will be representative democracies.
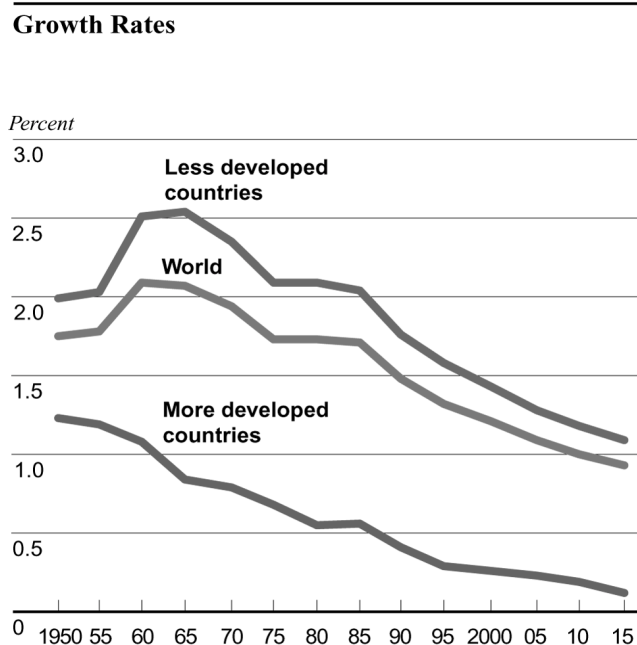
States with ineffective and incompetent governance not only will fail to benefit from globalization, but in some instances will spawn conflicts at home and abroad, ensuring an even wider gap between regional winners and losers than exists today.

Globalization will increase the transparency of government decision-making, complicating the ability of authoritarian regimes to maintain control, but also complicating the traditional deliberative processes of democracies. Increasing migration will create influential diasporas, affecting policies, politics and even national identity in many countries. Globalization also will create increasing demands for international cooperation on

Global Population: 1950-2015

Total

Billions

Less developed countries

More developed countries

Source: US Bureau of the Census.

Growth Rates

Percent

Less developed countries

World

More developed countries

Source: US Bureau of the Census.

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From NIC *Global Trends 2015*

transnational issues, but the response of both states and international organizations will fall short in 2015.

Future Conflict

. . .The risk of war among developed countries will be low. The international community will continue, however, to face conflicts around the world, ranging from relatively frequent small-scale internal upheavals to less frequent regional interstate wars. The potential for conflict will arise from rivalries in Asia, ranging from India-Pakistan to China-Taiwan, as well as among the antagonists in the Middle East. Their potential lethality will grow, driven by the availability of WMD, longer-range missile delivery systems and other technologies.

Internal conflicts stemming from religious, ethnic, economic or political disputes will remain at current levels or even increase in number. The United Nations and regional organizations will be called upon to manage such conflicts because major states—stressed by domestic concerns, perceived risk of failure, lack of political will, or tight resources—will minimize their direct involvement.

Role of the United States

The United States will continue to be a major force in the world community. U.S. global economic, technological, military, and diplomatic influence will be unparalleled among nations as well as regional and international organizations in 2015. This power not only will ensure America's preeminence, but also will cast the United States as a key driver of the international system.

Diplomacy will be more complicated. Washington will have greater difficulty harnessing its power to achieve specific foreign policy goals: the U.S. Government will exercise a smaller and less powerful part of the overall economic and cultural influence of the United States abroad. . . .

KEY UNCERTAINTIES: TECHNOLOGY WILL ALTER OUTCOMES

Examining the interaction of these drivers and trends points to some major uncertainties that will only be clarified as events occur and leaders make policy decisions that cannot be foreseen today. We cite eight transnational and regional issues for which the future, according to our trends analysis, is too tough to call with any confidence or precision.

Science and Technology

. . .Advances in science and technology will generate dramatic breakthroughs in agriculture and health and in leap-frog applications, such as universal wireless cellular communications, which already are networking developing countries that never had land-lines. What we do not know about the S&T revolution, however, is staggering. We do not know to what extent technology will benefit, or further disadvantage, disaffected national populations, alienated ethnic and religious groups, or the less developed countries. We do not know to what degree lateral or "side-wise" technology will increase the threat from low technology countries and groups. One certainty is that progression will not be linear. . . .

Asymmetric Warfare

IT-driven globalization will significantly increase interaction among terrorists, narcotraffickers, weapons proliferators, and organized criminals, who in a networked world will have greater access to information, to technology, to finance, to sophisticated deception-and-denial techniques and to each other. Such asymmetric approaches—whether undertaken by states or nonstate actors—will become the dominant characteristic of most threats to the U.S. homeland.

The Global Economy

Although the outlook for the global economy appears strong, achieving broad and sustained high levels of global growth will be contingent on avoiding several potential brakes to growth. These include:

- *The U.S. economy suffers a sustained downturn;*
- *Europe and Japan fail to manage their demographic challenges;*
- *China and/or India fail to sustain high growth;*
- *Emerging market countries fail to reform their financial institutions;*
- *Global energy supplies suffer a major disruption.*

The Middle East

Global trends from demography and natural resources to globalization and governance appear generally negative for the Middle East. . . Linear trend analysis shows little positive change in the region, raising the prospects for increased demographic pressures, social unrest, religious and ideological extremism, and terrorism directed both at the regimes and at their Western supporters. . .

China

Estimates of developments in China over the next

15 years are fraught with unknowables. Working against China's aspirations to sustain economic growth while preserving its political system is an array of political, social, and economic pressures that will increasingly challenge the regime's legitimacy, and perhaps its survival. . . . Two conditions, in the view of many specialists, would lead to a major security challenge for the United States and its allies in the region: a weak, disintegrating China, or an assertive China willing to use its growing economic wealth and military capabilities to pursue its strategic advantage in the region. These opposite extremes bound a more commonly held view among experts that China will continue to see peace as essential to its economic growth and internal stability. . . ᾫ

THE COSTS OF U.S. MILITARY POWER TO THE ENVIRONMENT AND HEALTH

By Eugene J. Carroll, Jr, U.S. Navy (Ret.)

Following 37 years active duty in the U.S. Navy, Rear Admiral Carroll joined the Center for Defense Information. He writes and speaks in the United States and abroad on a wide spectrum of national and international security issues. He is a graduate of the U.S. Navy and Army War Colleges and holds an MA in international relations from George Washington University.

United States= national security policies and programs during the next 15 years will have far more effect on international relationships and security conditions throughout the global community in the year 2015 than will any foreseeable technological developments during the same period. This statement is true for two reasons.

First, as the world=s leading economic power and only military superpower, the United States shapes the security policies and programs of every developed nation in the world. America is the only nation to divide the entire globe into military zones and maintain nearly 250,000 highly armed, combat ready forces on foreign soil and seas under the authority of U.S. regional commanders-in-chief. No nation can ignore the immediate presence and power of the United States. Some may be reassured by this power, while others feel threatened. But all are subject to the hegemonic influence of the U.S. military presence.

Second, the military-industrial complex about which President Dwight Eisenhower warned us, abetted by Congressional hawks, has a collective interest in promoting a huge and growing military budget which can be justified only by a continuation of U.S. superpower status around the globe.

These two factors coincide to drive half of all U.S. research and development (R&D) investment into military programs. In 2001 alone, military R&D totaled more than $42 billion (Budget of the United States Government, 2001, page 99). This expenditure exemplifies how America has for more than 50 years led the world in spending for newer and ever more destructive weapons systems. Such budget priorities have diluted the investment capital available to fund advances in such fields as renewable energy systems and other means to reduce global environmental pollution. Similarly, efforts to improve global agricultural production, water management, energy conservation and disease control have been compromised.

It is disappointing, even alarming, that *GT 2015* fails to emphasize the need for major increases in resources to address these growing problems. Instead, the report pays lip service to the existence of Adrivers@ such as food, water supply, energy, and environment without noting the need for major investments to improve conditions globally. Remarkably absent also is any recognition of pandemics such as AIDS. The future is at great risk unless such dangers are recognized as universal threats to humankind, not just pockets of disease in underdeveloped nations. The true costs of maintaining U.S. military dominion globally must be measured not only in the dollars devoted to the U.S. Department of Defense, but also in the consequent opportunity costs of constructive non-military programs that must be foregone because of lack of funding.

Now, based on the work of U.S. Secretary of Defense, Donald Rumsfeld, a bipartisan commission has declared: "...the U.S. must have the capabilities to defend its space assets against hostile acts and to negate hostile use of space against U.S. interests" (Report of the Commission, 2001, page xi). Since President Bush's determination to deploy "a robust" National Missile Defense (NMD) System necessarily requires at least two new constellations of military satellites, the United States

is now committed to space as a new battle zone. The effect of this will be to intensify U. S. military confrontation of the global community by flaunting our superpower status.

This effort is a particularly significant example of the opportunity costs of excessive investment in dubious military ventures. It also reflects the fact that worldwide expenditures on armaments and military forces still exceed $800 billion annually. *GT 2015* could and should have identified the potential benefits of reducing military spending in order to free funds to deal with the problems it projects.

Furthermore, since no military challenge goes unanswered indefinitely, the NMD initiative will ensure a spiral of counter-efforts, with anti-satellite systems and

then anti-anti-satellite systems to follow. In the process, the world=s efforts to deal constructively with the problem of rapid population growth, energy and water shortages, global warming, and environmental pollution will be blunted because the lion=s share of investment in R&D will be diverted from beneficial programs into destructive military measures.

The needs of an interdependent world community increasingly require cooperative approaches to solve mutual problems. U.S. insistence on maintaining and expanding its superpower status through military measures, particularly in space, substitutes confrontation for cooperation. Such a policy can only impoverish the world of 2015 and make it a poorer, more dangerous home for humankind. **W**

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GLOBAL TRENDS 2015—A DEMOGRAPHIC PERSPECTIVE

By Richard P. Cincotta

Richard P. Cincotta is a senior research associate at Population Action International (PAI) with research experience in North America, Asia and Africa. From 1992-96, he served as a policy fellow at USAID's Center for Population, Health and Nutrition. He is co-author (with Robert Engelman) of Nature's Place: Human Population and the Future of Biological Diversity *(PAI, 2000).*

In publishing *GT 2015*, high-ranking members of the U.S. intelligence community have relied on outside voices—"nongovernmental expertise," they call it—to draw attention to those global trends and regional relations that should shape the U.S. government's priorities. I wish them success. These are confusing, out-of-focus times for the makers of U.S. foreign policy. More than a decade after the breakup of the Soviet Union, international relations theorists have yet to find a better description for the era following the Cold War than "the post-Cold War era" (and I have no good suggestions, either).

GT 2015 cuts through some of the confusion. Its publication is evidence that senior U.S. intelligence analysts have accepted many of the conclusions of recent research into the underlying causes of intra-state conflict and state failure—research focused on demographic change, perceived scarcities in critical natural resources, and the state-sanctioned institutions that foster social, economic,

and technological adaptation and successful governance.

In the following comment, I focus on *GT 2015's* approach to demographic trends. On the whole, its approach is balanced. To their credit, the NIC's experts account for the economic and social significance of evolving age structure (the *new demography*—not new for demographers, but a new focus for demographic studies on economic development during the 1990s). And they do this without discounting the impact of (a) continued population growth (the *old demography*) in almost all developing countries as well as (b) projected population declines in Russia and several other industrialized countries during the next 15 years (a trend some refer to as the *birth dearth*). Each of these aspects of demographic change are worth comments.

Age Structure

As *GT 2015* suggests, no demographic structure appears potentially more politically volatile or more

economically fragile than the *youth bulge*—the high proportion of youths that is characteristic of the world's remaining high-fertility societies. For example, insurgency movements have been extremely successful recruiting warriors in societies (such as those in the Middle East and in West Africa) that are awash in young, unemployed, and discontented males (Collier & Hoeffler, 1997; Mesquida & Wiener, 2001).

And *GT 2015* also calls attention to *population aging*—the slow transformation of a bulge in the mid-adult range of the world's population into a bulge in the elderly range (65+ years old). This trend (and the challenges it represents for financing health care and retirement systems) confronts Japan and most of the industrialized world. Ultimately, all nations face this inevitable demographic challenge to some degree as they approach population stability (what demographers call a *stationary* population) or population decline. Wisely, *GT 2015* has avoided snap judgements about the economic impact of population aging. This is uncertain terrain. Some countries may be able to maintain somewhat lower ratios of retirees-to-workers by (a) accepting more immigrants, (b) setting retirement back to older ages, or (c) attracting more women into the workforce while making it easier for women to raise children while working. Although reluctant to accept large numbers of immigrants, Japan is currently experimenting with several of these options as well as with returning some of the responsibilities for old-age care back to families (Ogawa & Retherford, 1997; Tolbert, 2000).

But *GT 2015* does less well at identifying countries that by 2015 could benefit from the *demographic dividend*—economic opportunities that are created by quickly-declining fertility and the resultant shift in population age structure. The dividend comes in the form of a low ratio of children and elderly dependents to eligible-for-work adults (called "the dependency ratio"). A low dependency ratio (DR) occurs when fertility declines and the youth bulge (a characteristic of high-fertility societies) matures into a bulge composed of working-age adults. Unless the population structure is dramatically affected by migration or abrupt changes in birth or death rates, very low DRs can be expected to climb again in two to four decades as the worker bulge graduates into a bulge in the elderly population.

Several East Asian nations have already experienced very low DRs, including Japan (DR<0.5 since 1965), and South Korea, Taiwan and Singapore (DR<0.5 since the 1980s). Declines in DRs followed earlier investments in

Figure 1: Estimated and projected trends in the dependency ratio (DR) in China, Europe, Latin America, and Africa, 1985 to 2025
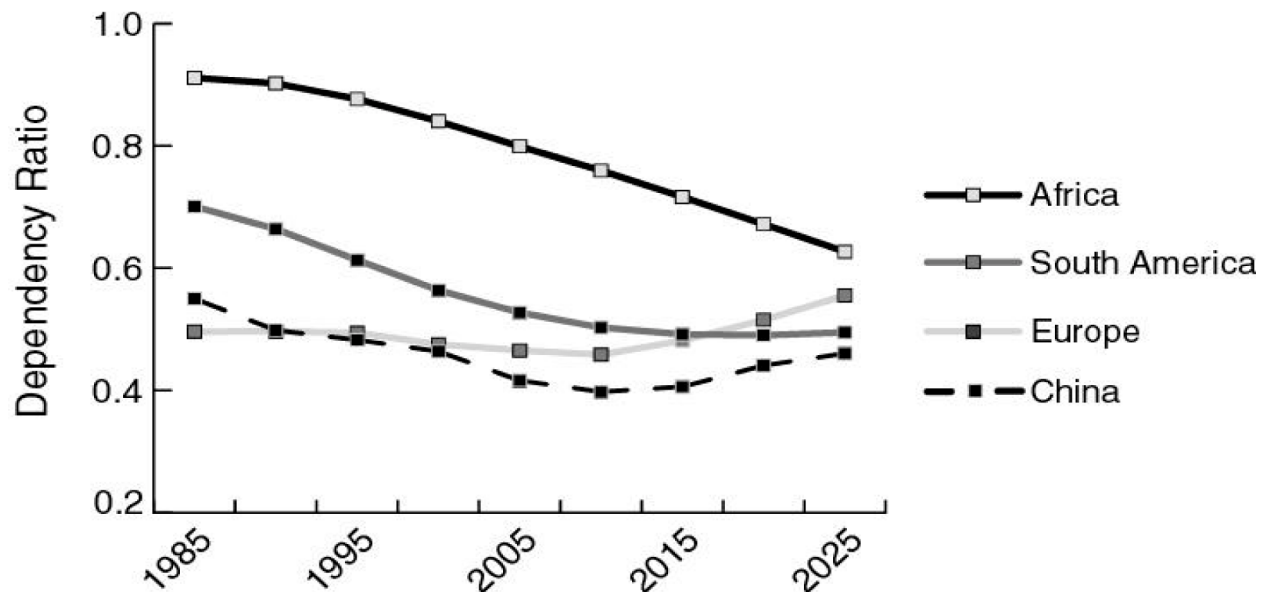
DR is the ratio of the summed populations of children (ages 0-14 yrs) and elderly dependents (ages 65+ yrs) to the population of working age adults (ages 15-64 yrs). The coming period of very low dependency is likely to provide an additional boost to China's growing economy.

Source: UN Population Division (1998).

family planning programs (1960-75) (Tsui, 1996) and efforts to increase girls' school enrollments. When the growth in numbers of school-age children began to slow in these nations, their governments responded by investing more in each student. Within two decades, poorly-trained workforces in these East Asian nations were partially replaced by larger, more educated workforces with smaller average family sizes. Soon after, labor force growth slowed. Wages rose. Workers saved. And governments encouraged financial institutions to invest in the export-oriented, capital intensive industries that could effectively employ a skilled workforce (ADB, 1997; World Bank, 1993).

Which countries are next in line for a demographic dividend? *GT 2015* does not tell us that China's DR should dip very low around 2015 (Fig. 1), or that China appears most likely to make economic gains from its worker bulge, having invested substantially in education—for both girls and boys—during its fertility decline. If current projections hold, China will by 2030 have more educated people of working age than Europe and North America combined (Lutz & Goujon, 2001). By 2015, Thailand, Poland, Tunisia, Costa Rica, Mexico, and Cuba may also be in line to capitalize on their low DRs.

But other countries may have lost or squandered the short-term opportunities created by their own fertility decline. For example, while Brazil and India are set to experience a huge worker bulge around 2015, both have fallen short in efforts to bring basic education to the broad spectrum of their populations (Birdsall, Bruns, & Sabot, 1996; Repetto, 1994). Civil war has crippled Sri Lanka's otherwise promising economy. And while total fertility rate (the expected lifetime childbirths per woman) in South Africa dropped from 6.5 in 1960-65 to about 2.9 today, that nation's demographic dividend will probably slip away because of the tragic decimation of that country's worker bulge by HIV/AIDS.

Population Growth and Decline

World population is now more than 6.1 billion people and is still increasing at roughly 77 million human beings annually (UN Population Division, 2001)—more than was added annually when Paul Ehrlich's *The Population Bomb* was published in 1968. With population actually near stability or dropping within a belt of industrialized countries stretching geographically from Western Europe eastward to Japan, it is apparent that the increases are now concentrated in fewer countries than it was three decades ago. Most of these countries are very poor. Many are politically unstable.

What the relatively slow decrease in numbers will mean in economic terms in some industrial countries—particularly in Russia, where there is high unemployment—is anybody's guess. Japan will be the place to watch. To deal with a shrinking labor force, Japanese industry has invested heavily in technology and automation, and moved labor-intensive manufacturing overseas. For its part, the government has stepped up investments in technical training, research, and development (Bauer, 1995). A recent dramatic downturn in the value of condominiums in Japan could be the first signs of an economy readjusting to perceptions of slowing demand for urban housing. While it is far too soon to tell how well Japan will handle its demographic challenges, it is a good bet that demographers and economists will find Japan's next 15 years worth studying in detail.

High Marks

Global Trends 2015 is excellent work. Those who are professionally concerned with global politics, national security, or military readiness and who have not yet read the NIC's report should do so. With *GT 2015*, the National Intelligence Council has demonstrated that intelligence can be an intelligent, publicly informative vocation[1] — and that taking a hard, educated look into our foreign policy future can be front-page news. W

ENDNOTE

[1] To gauge *GT 2015*'s impact, I phoned the U.S. Central Intelligence Agency (CIA) and inquired as to how many copies of the report were sold or downloaded from the NIC Web Site. A CIA public relations officer replied, and told me, "Unfortunately, the CIA does not divulge that information." Some things never seem to change.

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GOVERNANCE, CONFLICT, AND THE LIMITS OF GLOBALIZATION

By Johanna Mendelson Forman

Dr. Johanna Mendelson Forman is a senior fellow at the Association of the U.S. Army's Role of American Military Power. An expert on security sector reform, civil-military relations, and development, she helped establish USAID's Office of Transition Initiatives in 1994 and has served as a senior social scientist at the World Bank's Post-Conflict Unit.

One of the benefits of living in a globalized age is the new openness at the Central Intelligence Agency's analytical unit. *GT 2015* allows scholars and practitioners a window on the agency's thinking about the "drivers" that will shape our new millennium. The report serves as a valuable tool for those who seek a synthesis of contemporary thinking about how life after the Cold War has changed the way the United States perceives its place in the world.

At first glance, *GT 2015* appears to underscore the complexity of international relations and thus the necessity of a coherent foreign policy for the world's only superpower. It also maintains that the United States will remain central in the year 2015 to the economic and political development of other nations. Yet although the last decade of research on conflict, poverty prevention, and the linkages between good governance and economic stability may have improved our predictive abilities for some types of events, there are global dynamics that even a power like the United States will be unable to control. U.S. security in 2015 will be more compromised by a borderless world in which transnational crime, access to weapons of mass destruction, and the turmoil arising from weak governance will be factors.

Three areas of analysis in *GT 2015* reaffirm some of the important work of the last decade: (1) governance; (2) conflict (and its impact on both First and Third World security); and (3) the limits of globalization as a salve for reducing poverty. For example, *GT 2015* notes that "most of the world's 191 states are ethnically heterogeneous,

Countries With Youth Bulges in 2000 and 2015[a]

Legend:
- Youth bulge in 2000
- Youth bulge in 2000 and 2015

Latin America
Dominican Republic
Grenada
Haiti
Honduras
Nicaragua

Sub-Saharan Africa
Benin
Botswana
Burkina Faso
Burundi
Central African Republic
Chad
Comoros
Congo, Democratic
  Republic of the
Congo, Republic of
Cote d'Ivoire
Eritrea
Ethiopia
Kenya
Lesotho[c]
Malawi
Mali
Mozambique
Namibia
Niger
Nigeria
Rwanda
Sao Tome and
  Principe
Senegal
Sudan
Swaziland
Tanzania
Togo
Uganda
Zambia
Zimbabwe

Middle East
Gaza Strip
Jordan
Lebanon
Libya
Iran
Iraq
Saudi Arabia[b]
Syria
West Bank
Yemen

Asia/Pacific
Marshall Islands
Solomon Islands
Tonga

[a] A country is considered to have a youth bulge if the ratio of the population aged 15 to 29 to the population aged 30 to 54 exceeds 1.27.

[b] Saudi citizens only; does not include the large number of guest workers.

[c] Lesotho did not have a youth bulge in 2000.

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From NIC *Global Trends 2015*

and many contain ethnic populations with co-ethnics in neighboring states. By 2015, ethnic heterogeneity will increase in almost all states, as a result of international migration and divergent birthrates of migrant and native populations" (page 42). *GT 2015's* analysis only ratifies some of the recent economic modeling of the relationship between ethnicity and conflict, which maintains that it is less likely internal conflicts will increase in the future solely on the basis of ethnic differences (see Berdel & Malone, 2000).

The report also underscores the work that World Bank economist Paul Collier has done challenging the conventional wisdom that ethnic and religious diversity spell trouble. Indeed, as Collier notes, it is when a society is composed of only two ethnic groups that conflict is at its highest. The more ethnically diverse a state, the less

likely it is to experience a civil war. And religious diversity is even more crucial to national security: the greater the degree of religious diversity in a society, the safer it is (Collier, 1998). On this point, one need only look to the *GT 2015's* important graphic on "Worldwide Adherents of Selected Major Religions" to understand why Africa is more likely to suffer unabated conflict whereas East Asia (which has the most diverse religious mix globally) will be less explosive.

The issue of governance is one that *GT 2015* explores from several angles. Most significant is the report's emphasis on the impact that good leadership can have on a state's ability to (a) mobilize resources, (b) integrate new ideas into policy formation, and (c) allow the participation of non-state actors. As we struggle to understand more about the factors that determine

whether foreign assistance can promote economic and political development, *GT 2015* suggests that we more closely track both how recipient states are governed and what kind of leadership emerges within them. High levels of corruption or the free operation of drug cartels or terrorists will signal the inability of a state to manage its own future economic and political growth. The trends described will certainly provide a more predictive model for those seeking to support countries where a commitment already exists to put reform and institution building on the priority agenda (World Bank, 1998).[1] But the report still remains very nation-state oriented despite its predictions of increased international collaboration and the growing importance of non-state actors.

GT 2015 also notes how poverty reduction in some parts of the globe will be hampered by such factors as massive epidemic diseases (such as HIV/AIDS and tuberculosis) or ongoing conflict that inhibits basic economic growth. And the report properly highlights the ongoing exclusion of so many people in Africa and Asia from economic and political life, in part because of water shortages or a lack of infrastructure for the delivery of adequate medical or educational services. These types of obstacles demonstrate how much farther apart the First and Third world will be in fifteen years. It is precisely the paradox of exclusion from the global economy (based on physical, political, or health reasons) that suggests the

dark side of globalization for those people subjected to ongoing insecurity due to internal conflict, forced migration, or disease. It also puts the United States on notice of the need to address these tremendous gaps in the quality of life in a more collaborative fashion—through the support of international organizations whose missions address poverty alleviation, global health support, and peacebuilding.

It is reassuring to note that the U.S. government has assimilated so much learning into this trends analysis. *GT 2015* sounds a potential alarm in policymaking circles that preventing deadly conflict might be as central to our national security as the building of a missile defense or investment in other high technology weaponry to ward off the perverse terrorist activities of non-state actors (Carnegie Commission, 1997). But reading this report in the current environment of U.S. withdrawal from global concerns seems ironic. U.S. leadership demands not only greater understanding of the problems that lie ahead, but also a strategy for acting upon the major threats that could prevent another Bosnia, resolve a regional war in Central Africa, or address the growing instability in the Andean region. Will this report truly sound an alarm, or will policymakers turn off the buzzer and go back to sleep? Complacency seems to be the biggest risk the United States faces in a day and age when its power remains unchallenged. W

ENDNOTE

[1] See, for example, World Bank (1998), which discusses the impact of governance on the ability of economic development assistance to support development.

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The USA in an Interdependent World: New Leadership through International Cooperation?

By Michael Hanssler and Arno Weinmann

Michael Hanssler holds a Ph.D. in history from the University of Regensburg, Germany. He is Executive Director of the Bellagio Forum for Sustainable Development, a group of international donors from Europe, Japan, and the United States that is dedicated to advancing the goals of sustainable development.

Arno Weinmann holds a Ph.D. in history and political science from the Georg-August-University, Göttingen. Since 1991, he has been head of the Environment and Monuments unit of the German Federal Foundation for the Environment.

GT 2015 provides a comprehensive and carefully compiled scenario for our common future and will hopefully reach a broad international audience.

But the report's overall assumption that the United States will remain the preponderant power in the decades ahead could well be questioned. For example, will today's global power structures remain as they are once a majority of the Chinese population has access to the Internet and China further increases its wealth and expands its military influence? And might not the continuously increasing worldwide poverty gap as well as the digital divide cause at least a partial collapse of our present transnational systems, leading to the creation of fundamentally new models of global governance?

Other complicating factors abound. In the near future, developing nations may more aggressively question the traditional development model as promoted by the Bretton Woods Institutions, the WTO, and other international organizations—organizations that are already perceived by some to be acting under a regime dominated by industrialized countries. And what changes in the balance of economic and political power will we see once a well-educated and striving middle class population in India (which already today outnumbers the total population of the European Union) puts its full weight on the global scale? Such important questions are only partly covered in *GT 2015.* Again, the conclusions the authors of the NIC report take are hampered to a large extent by being based on the assumption that the United States will continue to be the major force in the world community.

By 2015, the globalization backlash may well have become a global phenomenon in our society—seriously questioning the traditional U.S. hegemony and resulting in a strong desire for new regional forms of cooperation along the principle of subsidiarity. A return to functional regionalism (as outlined in Alternative Scenario 3 of the report) seems a valid alternative and is already today being called for by many grass-roots organizations.

On specific issues: The report's assumption that the biotechnology revolution will be instrumental in feeding a growing world population appears slightly optimistic—given the present cultural and political concerns about genetic modification in Europe, India, and other regions of the world.

Regarding conflicts and natural resources: Both fields are thoroughly covered in *GT 2015,* and environmental issues also fortunately receive adequate recognition. But even more attention might have been drawn to the interdependencies and system linkages arising from a mounting regional, national, and international competition over natural resources, the access to land and water, and interrelated migration problems. What will happen if some of the Intergovernmental Panel on Climate Change (IPCC) scenarios come true and sea levels actually rise much faster than analysts had predicted but a few years ago? Will the people in Bangladesh not turn to India for refuge and shelter if their land is flooded? And what would such a crisis mean for the already precarious balance of power in South Asia? Surely the United States would be well advised to prepare for such potentially real catastrophes. Difficult as they might be to imagine, such dramatic scenarios would be a worthwhile addition to future NIC reports.

In addition, poor nations will be hit hardest by the effects of global warming, with further and considerable repercussions on the political and economic stability of large parts of Africa and Asia. Would such fundamental "socio-economic-ecologic" issues perhaps deserve even more attention in the work of the National Intelligence Council than *GT 2015* gives them?

In essence, we may well see in 2015 a world in which the United States will no longer dominate world society—regardless of whether we welcome such a development or not. It is therefore our hope that the

world's strongest economy will in the future be even more inclined to meet its international obligations—be it as a role model of democracy or as a strong and reliable advocate for the United Nations. W

INTERNATIONAL ENVIRONMENTAL GOVERNANCE: NEW ROLES FOR GOVERNMENTS AND NONGOVERNMENTAL ORGANIZATIONS

By Liliana Hisas

Liliana Hisas is president of Fundación Ecológica Universal (FEU), a nongovernmental environmental organization based in Buenos Aires. She has worked for FEU since 1992.

Globalization is posing certain changes in the way governance will be shaped in the coming years. The greater and freer flows of information, capital, goods, and services (among others) are having a profound impact on global economic development, international trade, communications, labor, environment, health, and human development. There is also an unprecedented tendency toward the increased interaction of peoples, governments, and businesses across international borders.

The environmental field in particular will be affected by these trends. Access to safe water, the impacts of climate change, and the continuation of population growth will pose some of the major global challenges over the next 15 years. To respond to these challenges, the world will have to face the importance of effective environmental governance. Governance will have a decisive impact on trade and health as well as environmental decision-making. Therefore, the nongovernmental environmental community welcomes the initiative of the United States National Intelligence Council to include environmental issues in its *GT 2015*

report.

The results of a recent United Nations Development Programme study suggest that many of the major environmental problems in the next century are problems that exist now but that are not receiving enough policy attention. But how can these problems be effectively addressed? The key is not to label governments as *them* and NGOs as *us.* Instead, both cultures should work together as *us,* towards a safer and more balanced environment. In some developing countries, both governments and NGOs see each other as competitors or adversaries instead of strategic allies. Only by working together as partners can the effective environmental governance that the global environment requires be achieved.

Here is a review of the actors essential for effective environmental governance:

· *Governments.* The design, implementation, and enforcement of environmental policies are the responsibilities of governments. But in today's world (where globalization is expanding so quickly and

national economies are a priority), most government environmental agencies do not or cannot act more strongly. Governments' priorities are limited, especially in the developing world, to defending the interest of their own economic situations, of their labor forces, and of their own natural resources.

· *Nongovernmental Organizations:* NGOs define a large and diverse number of entities, ranging from solidly-structured and organized international groups to smaller but effective self-financed groups, research academic entities, "government" non-governmental organizations, and single-person organizations. The effectiveness of the environmental NGO community is based on the following factors: expertise, knowledge, research, close contact with people at the local level, and capacity to network with other organizations. In most cases, NGOs have developed a more solid capacity than governments to deal with (for example) global environmental conventions, as these groups have been following up the international negotiations since their inception.

· *Private Sector:* The for-profit component represents the motor of most economies in both the developed and developing world. Compliance with environmental standards is perceived not to be an option for many developing-world companies, which fear losing their competitiveness.

New Roles for Effective Global Environmental Governance

Until there is an honest, open, and fruitful dialogue between these actors, most efforts towards effective global environmental governance are fated to fail. This tendency will be worsened by the quick pace of globalization.

By 2015, the new roles for effective global environmental governance will have several requirements:

· *Governments* will have to confront demands from NGOs and more organized and informed individuals for greater participation and the right to live under better conditions. However, the majority of governments will continue to resist engaging with nongovernmental actors. Some governments (especially in developing countries) will have to overcome certain misperceptions and prejudices regarding dialogue and engagement with civil society. Some of these misperceptions and prejudices include (a) the idea of NGOs having more financial resources than governments, or (b) that governments are unique sources of environmental knowledge and

actions. These are particularly clear in the government-NGO relationship in the developing world. Governments will also realize that *not* complying with global environmental commitments will bring major negative consequences at the national level. In the area of international trade, some of the consequences of this noncompliance are already visible, and in a globalized world are devastating for the environment. In Indonesia and Malaysia, to cite just one example, the price for entering the global market has been rapid deforestation.

· *The private sector's* commitment to environmental governance will depend on the demands that governments and civil society place on it as well as its compliance with trade agreements. One of the key questions, then, is if companies are ready to convert their production processes to much cleaner ones.

· *NGOs* could become the major driving force of this new equation. For that, NGOs will have to organize and articulate their pro-environment messages better, and the alliances among Northern and Southern NGO networks will have to increase in number and strength. Strategic alliances with the media will be crucial. Empowerment of people through information will certainly challenge the authority of most governments, as a more-informed and better-coordinated civil society will demand more from both governments and for-profit companies.

The critical point for changing these interrelationships will be marked by the World Summit on Sustainable Development (the Earth Summit II), to be held in Johannesburg, South Africa in September 2002. This Summit will review the ten-year period from the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil in 1992. Not much has happened since the first Rio conference regarding compliance with international environmental agreements. The Convention on Climate Change, for instance, is a clear example of how national interests are much more important to most governments than global commitments. The frustration most NGOs are accumulating by the lack of commitment, enforcement, and engagement with governments will be made clear at this Summit, where confrontations will be inevitable. The positive side of this critical period is that, after Earth Summit II, governments, NGOs and the private sector will have a chance to start the process of moving towards more effective governance in order to achieve reliable commitments and actions towards the environment.

NATURAL RESOURCES AND ENVIRONMENT: BLIND SPOTS IN *GT 2015*

By Leslie Johnston

Leslie Johnston is an environmental policy advisor for the U.S. Agency for International Development's (USAID) Bureau of Policy and Program Coordination. The opinions expressed herein are solely those of the author and do not represent the views, positions or policies of USAID or the U.S. government.

From a national security perspective, *GT 2015* identifies seven global drivers considered key in defining the international security environment in the coming years. It was very encouraging to see that one of the global drivers identified is "natural resources and environment." However, given the unique opportunity to highlight the relationship between the environment and security, this section of the report failed to develop this linkage in the following three aspects:

· Absence of criteria used for selecting the specific environment issues,
· Inadequate analysis presented for the conclusions reached, and
· Dissociation of the interdependency of the environmental issues discussed.

Due to space constraints, this commentary can only briefly address each of these three aspects and provide a suggested course of action for future NIC work in this area.

Some Blind Spots

First, with respect to the absence of selection criteria, it is not obvious why *GT 2015* primarily focused on: (a) food (grain production only); (b) energy (fossil fuel availability); and (c) water, in light of the overwhelming decline of the global environment and its potential impact on human livelihoods and security. A number of reports issued in 2000 and 2001 have painted a very different picture of the future environment than *GT 2015,* which states that "the pressures on the environment as a result of economic growth will decrease as a result of less energy-intensive economic development and technological advances" (page 31). But in contrast to this conclusion, the current global patterns of production, consumption, climate change, and agricultural expansion raise serious concerns about the present and future capacity of the Earth's natural resource base to sustain a growing population. For example, the World Wildlife Fund's *Living Planet Report* (2000) has estimated that the Earth's ecosystems and renewable natural resources have declined 33 percent over the past 30 years, while demands on these ecosystems have increased by 50 percent. The conclusions reached by *GT 2015* appear to depend heavily on technological advances—but the authors do not acknowledge that, even with such advances, many functions and services provided by ecosystems cannot be substituted with technological fixes.

The *GT 2015* treatment of natural resources and environment also does not provide its readers with enough information to evaluate the validity or the process by which its conclusions were obtained. For example, the section on food states that "world food grain production and stocks will be adequate to meet the needs of a growing world population" (page 26). This conclusion is presented without reference to the critical issues facing agriculture, such as (a) soil degradation, which is a concern for as much as 65 percent of the world's agricultural land (World Resources, 2000, page 62) or (b) that the food supply for 480 million people is currently being produced with the unsustainable use of water (Brown, 2000). Another recent study has highlighted the impact of expanding agricultural production to meet world demands as a major driver of global environmental change. Its authors argue that such an expansion would be accompanied by unprecedented "eutrophication of terrestrial, freshwater, and near-shore marine ecosystems"—subsequently compromising their productivity, contribution to food security, and associated ecosystem functions (Tilman et al., 2001).

The Omission of Fisheries

Another glaring omission in the "natural resources and environment" section of *GT 2015* is the lack of any discussion on the impact of declining fisheries as related to food security and general environmental trends. This omission is critical given that, as a food source, fish provided 16.5 percent of the total animal protein for human consumption in 1997 (World Resources 2000, page 79).

Approximately one billion people (predominately in Asia and coastal developing countries) rely on fish as their primary source of animal protein. The latest reports on

the status of the world's fisheries are that the annual global catch of wild fish is leveling off at just under 90 metric tons (Engelman et al., 2000). Eleven of the world's 15 major ocean fishing areas and more than two-thirds of ocean fish species are in decline. The FAO 1999 report states that the world's fishers are fully exploiting 44 percent of fish stocks and overfishing another 16 percent (FAO, 1999). This statistic is not surprising, since the number of fishers has more than doubled between 1970 and 1990 while the number of fish caught per fisher declined by an average of 30 percent (Engelman et al., 2000). Although commercial aquaculture is making up some of

livelihoods cannot compete with foreign-owned large-scale trawlers and developed-country markets. And as a greater share of fish is exported for foreign exchange and profits, the net supply of fish in developing countries for domestic consumption declines. For example, off Africa's Atlantic coast, increased fishing by commercial trawlers has caused fish resources to drop by more than half from 1985 to 1990 (World Resources, 1998, page 196). In developed countries, citizens have the luxury of either buying the types of fish they prefer to eat or switching to another protein source. But if fisheries collapse in countries in which people depend on fish as a

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The authors of *GT 2015* demonstrate a fundamental lack of understanding of the interdependency of natural resources within the environment.
ⒸLeslie Johnston, USAID

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the difference, these products are primarily destined for developed-country consumers and impose substantial environmental costs on developing countries. These costs include (a) loss of coastal ecosystems, (b) increased demand on wild fish harvests as food supply for farmed carnivorous fish species, and (c) exacerbating demands on available water resources for human consumption and agriculture (McGinn, 1998).

What is even more troubling is the fact that humans are now fishing down the food chain: the composition of caught fish is shifting from high trophic level, piscivorous fish toward low trophic level, planktivorous pelagic fish and invertebrates (Pauly et al., 1998). This shift in species composition, relative abundance, and predator-prey relationships is changing the marine community. Thus, we are altering the entire ecological balance of the ocean with unknown consequences.

Finally, continued deterioration of coastal ecosystems (such as coral reefs and mangroves) and the fish stocks they support could have serious implications for future access to protein resources and employment security in developing countries.

While potential conflicts over water resources merit extensive discussion, limited attention has been paid to the tensions surrounding fisheries activities. But the potential for heightened tensions and increased conflicts rise as stocks decline, demand increases, trawlers venture farther from home, and other economic industries (such as offshore oil and gas drilling) impact the resource. As an economic resource, fishing provides jobs for over 20 million people worldwide, with 95 percent of these jobs in developing countries. Small-scale fishers and local consumers dependent upon fishing for their food and

major part of their diet and income, the potential for conflict will be dramatically heightened.

Such conflicts between developed countries range from the 1970s "Cod Wars" between Britain and Iceland to the 1996 incident of a Canadian patrol boat commandeering and impounding a Spanish fishing vessel in pursuance of the Canadian Coastal Fisheries Protection Act. Increased tensions have also arisen between developed countries and developing countries over fisheries. In 1990, Namibian government officials boarded five Spanish supertrawlers that were illegally fishing in the Namibian Exclusive Economic Zone waters (Fairlie, 1999). The court case that ensued resulted in the confiscation of the Spanish vessels and an imposition of 1.65 million rand (U.S. $206,327) in fines upon the ships' captains. Less well-known but no less significant are those disputes that have occurred between commercial offshore trawling fleets and inshore fishers from developing countries (Fairlie, 1999). There have also been heightened tensions and conflicts reported among fishers within a country. Finally, it should be noted that these issues are not limited to marine fisheries. In India, for example, violence has erupted between the National Fisherworkers' Forum and the commercial prawn farms on the largest fresh water lake in Asia, Chilika Lake (Noronha, 1999).

Climate Change

It is also disturbing that, in light of the scientific evidence, climate change is only briefly mentioned in *GT 2015* and was not specifically tied to its potential impact on security issues. Research is increasingly linking climate change to shifts in distribution patterns of wild species as well as their reproductive success, population

abundance, and shifts in predator-prey relationships. All of these will ultimately impact ecosystem functions and services (Wuethrich, 2000).

For example, rising sea surface temperatures (driven by climate change) are accepted by the scientific community as the primary cause of the unprecedented global coral bleaching events. The mass coral bleaching and mortality events of 1998 were the most geographically widespread and severe that have ever been recorded. As the reef structure degrades with subsequent bleaching events, the coral reef ecosystem function and productivity will be impacted. Yet *GT 2015* fails to mention this important issue. And equally disconcerting is the report's lack of discussion on the environmental and political ramifications that increased oil and gas extraction will have in many developing countries. For example, *GT 2015* states that Latin America "has more than 117 billion barrels of proven oil reserves and potentially 114 billion barrels of undiscovered oil" (page 30). But one needs to analyze the *cost* of extraction in these environmentally and politically sensitive areas (Bowles et al., 1998). Offshore drilling for oil (and associated activities that threaten rich spawning grounds) can also present potential conflicts compounded by already declining fisheries (McGinn, 1999).

Natural Resources and the Environment

Finally, by dividing the report's environment section into two parts (natural resources and environment), the authors of *GT 2015* demonstrate a fundamental lack of understanding of the interdependency of natural resources within the environment. This type of treatment does a disservice to the importance environmental issues will play in the future. For example, although the report's water section discusses the issue of water usage and food production, the authors make no connection between the two sections (such as the implications of decreased water availability on grain production).

The loss of biodiversity via deforestation is another example of this environment/natural resource interdependence that is only briefly mentioned in the report—but without any reference to how this loss could potentially impact not only food security, but also water quality and quantity. A little-recognized fact about the interrelationship of biodiversity and food is that 72 percent of 1,330 crop species have one or more cultivars that require pollination by bees, while at least twenty genera of animals other than bees also provide pollination services to the world's most important crops. As managed bees are in decline in many parts of the world, these wild animal pollinators (which need intact habitat to survive) are assuming an increasingly critical role for the world's food supply (Nabhan and Buchmann, 1997).

Forests also regulate the volume and periodicity of water flows and serve as a water filtration system. However, deforestation disrupts the functioning of the ecosystem leading to destructive flood and drought cycles, degraded water quality, and loss of topsoil—all of which ultimately impact agricultural productivity and human livelihoods. Additionally, the effect of deforestation far inland indirectly impacts coastal resources. For example, coral reefs are among the most biologically rich and productive ecosystems, contributing about one-quarter of the total fish catch in developing countries. But sedimentation resulting from deforestation results in the smothering of corals and the reduction of filtered-light levels, ultimately impacting coral survival and production capacity of the reef ecosystem (Bryant et al., 1998).

Although *GT 2015* is a good first step towards putting these issues on the national security agenda, I would encourage the NIC to take the next step and revisit the issues and implications for international security through the lens of natural resource interdependency. As noted above, the mismanagement or overexploitation of one resource can produce cascading impacts throughout its associated resource system. **W**

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NO SUBSTITUE FOR REAL POLICYMAKING

By Michael A. Ledeen

Michael A. Ledeen holds the Freedom Chair at the American Enterprise Institute for Public Policy Research in Washington, D.C. Dr. Ledeen served as Special Adviser to the Secretary of State and was a consultant to the Departments of State and Defense as well as to the National Security Council during the Reagan Administration.

Policymakers do not want broad generalizations, hedged in weasel words. They want specific analyses of real countries with real leaders. Alas, *GT 2015* gives very little specificity and (amazingly) fails to mention a single leader. Instead, it almost always describes so many possibilities that it is virtually useless for policy purposes. When the report does take a firm stand, its claims are dubious. And it is dangerously overconfident on at least one of the major policy issues facing this country.

My heart goes out to the authors, who were asked to conduct an impossible exercise. No one this side of Nostradamus can accurately forecast 15 years ahead; anyone who can get it right for the next three to five years is a genius. No wonder they hedged almost all their bets. Moreover, it is hard enough for a single skilled thinker to produce a clear, incisive analysis; if an entire committee has to sign off on it, the final product will always be muddled and diluted. *GT 2015* is better than most

collective papers (it is very well written), but it is no substitute for the real thing.

Leaders and "Governance"

The greatest single weakness in the report is its vacuous abstractnessCstating on page 17, for example, that "[a]ll trends...will be influenced...by decisions of people." Having said this, the authors of *GT 2015* subsequently lapse into vague references about good and bad Agovernance," when the policymaker needs to hear about specific leaders, and how *they* are likely to react to the various scenarios spun out in the text. One needs to hear about Putin, Arafat, Mbeke, and Blair—not about "governance." One might argue that, since we are looking 15 years ahead, these leaders are unlikely to be in power. But the world of 2015 will depend in part on the decisions of these real people in the next few years, and the study would be much more useful if the authors had devoted some of their considerable brain power to the men and

women who compose contemporary "governance."

The report's failure to deal with real leaders leads the authors into some unfortunate euphemisms, which in turn obscure some global realities. Talking about Africa, for example, we hear that "the potential for famine will persist in countries with repressive government policies or internal conflicts" (page 9). In plain English, some leaders starve their opponents to death. Is it politically incorrect to say just that?

This is all part and parcel of *GT 2015's* pattern of downplaying politics at the expense of economics and "natural forces." I suppose it is still fashionable to pretend that there is a social "science," but the best we can do is to try to understand specific circumstances and leaders well enough to be able to do some "if...thens." This goes beyond the categories of leadership; some tyrants will do better than others in a given situation, as will some democratic leaders. Most of us thought Spain would face dramatic internal turmoil after Franco's death, but King Juan Carlos proved a brilliant democratic leader. And Singapore's great success is due to the enlightened despotism of Lee Kwan Yu. Again, the report states that Amost autocratic states in the Middle East and Africa will not have the institutions or cultural orientation to exploit the opportunities provided by nonstate actors..." (page 46). But the point is that good leaders make good institutions, not the other way around. A generation ago, Africa and Asia were at a similar level of development, but good Asian leaders—in and out of government—created the institutions, and reshaped the cultural orientation of their people. Some, like Singapore and Taiwan, did it from above. Others, like South Korea, did it from below. Policymakers need to know how this was accomplished—which models succeeded and which failed.

Tocqueville bemoaned Americans' tendency to embrace "big ideas" at the expense of the tough details and detailed thinking that is required to understand our real condition, and *GT 2015* suffers from this weakness in our national character. As Tocqueville commented, once you buy into a general theory, you are less inclined to work hard for an outcome that seems in conflict with the presumed general tendency. I fear that studies like *GT 2015* will make policymakers less inclined to get actively involved in supporting democratic leaders, which I believe should be a central part of our foreign policy. The report is rife with statements such as "The interplay of demographics and disease—as well as poor governance—will be the major determinants of Africa's increasing marginalization...Only a few countries will do better..." (page 71). Once again, one would like to know the specifics: which are the "few countries," and why will they do better? What can we do to increase the chances of other countries doing better? None of these themes are discussed.

Worse yet, there is a misguided assumption in *GT 2015* that problems are best solved by governmentsCan assumption that informs statements such as: "To prosper in the global economy of 2015, governments will have to invest more in technology, in public education, and in broader participation in government to include increasingly influential nonstate actors" (page 18). One might better argue that governments will have to do *less* so that free people can function better, education can improve, and private associations (from corporations to philanthropies) can function more effectively. The bulk of our experience in the past half-century suggests that government is both a major cause of the problems and a highly inefficient element in their solution.

Science

A lot of the science in *GT 2015* is dubious. Global warming, which is a questionable hypothesis based on computer modeling that leaves out several key elements in the environment, is accepted as fact in the report: "Global warming will challenge the international community as indications of a warming climate . . . occur" (page 32). This confidence is misplaced; there should have been some discussion of the weakness of the hypothesis and the counterevidence pointing to global cooling. And the report's generalizations about the greenhouse effect are also somewhat contradictory. On page 31, for example, we are first told that "greenhouse gas emissions will increase substantially," and then, later on the same page, we hear that environmental pressures will decrease because new technologies will "reduce the rate of increase in the amount of pollution..." And it seems to be assumed that nuclear energy—the cleanest energy form of all—will not be expanded.

Similarly, *GT 2015* generalizations on medical "science" are far beyond reasonable, such as its assertion that "[n]oninfectious diseases will pose greater challenges to health in developed countries than will infectious diseases" (page 24). This assertion seems suspectCwhat with the emergence of new drug-resistant strains of infectious diseases like TB, malaria and pneumonia, and the potential for new forms of AIDS. To take one example, if AIDS mutates into a form that can be carried by aerosol or insects—and there are some very good scientists who say this is quite possible—the entire picture would change.

China

Finally, there is China, perhaps the most important single foreign policy challenge to the United States. The direct threat to the United States is described by *GT 2015* in one of those euphemisms that make the document so much less useful than it should be:

> Estimates of China beyond five years are fraught with unknowables...Most assessments today argue that China will seek to avoid conflict in the region to promote stable economic growth and to ensure internal stability. A strong China, others assert, would seek to adjust regional power arrangements to its advantage, risking conflict with neighbors and some powers external to the region (page 50).

That last clause—"some powers external to the region"—means the United States. The basis for it is not some theoretical hypothesis, but the official military doctrine of the People's Republic of China, which brands the United States an enemy, and accordingly defines China's military mission as preparing to fight and win a war with the United States. Why is that doctrine not spelled out explicitly? The most likely answer is that the authors of the document do not believe it. They should have said so. They go on to say that "the majority of the (Chinese military) force will not be fully modernized by 2015" (page 53)—an incredible claim which in turn rests on the assumption that the current leaders "apparently agree that, for the foreseeable future, such priorities as agricultural and national infrastructure modernization must take precedence over military development" (page 54)—and that this policy will remain in place under the next generation.

These are assumptions that drive a certain American policy, whose tenets are: don't worry about China, don't try to limit the exports of Western military technology, and don't design American policy to deal with the very real possibility of armed conflict with China. The assumptions may be true—but there is lots of evidence that they are not, and policymakers are paid to protect the nation against worst-case scenarios. *GT 2015* embraces the most soothing scenario, even as it warns that the Chinese future cannot be predicted with any real confidence beyond five years at the most.

Thus, not only is the document generally of little use to policymakers; on occasion, indeed on what is arguably the most important foreign policy challenge we face, it is downright dangerous. **W**

ADVENTURES IN FUTUROLOGY

By Gavin Kitchingham, United Kingdom Ministry of Defence

Gavin Kitchingham works in the Policy Planning Directorate of the UK Ministry of Defence (MOD) and was the principal author of the Future Strategic Context for Defence *published in February 2001. His time in the MOD, which he joined in 1990, has included periods in the Central Resources and Programmes Organisation and in the Proliferation and Arms Control Secretariat. The* Future Strategic Context for Defence *can be found on the Ministry of Defence Internet Site at www.mod.uk under "About the MOD/Policy/Topics." Portions are also reprinted in the "Official Statements" section of this edition of the Report.*

Predicting the future is difficult. Winston Churchill, when asked to list the desirable qualities for an aspiring politician, answered: "It is the ability to foretell what is going to happen tomorrow, next week, next month, and next year. . .and to have the ability afterwards to explain why it didn't happen."

Having recently been through an exercise at the United Kingdom Ministry of Defence (MOD) similar to *GT 2015* (which culminated in publication of the paper *The Future Strategic Context for Defence*), I can empathize with all those involved in the production of the U.S. report. Perhaps the only predictions which they (and we) can make with absolute certainty is that some people will tell us that we have got it wrong, and that some of them will be right.

Notwithstanding the difficulties, the reason that we engage in such adventures in "futurology" is a recognition that the impact of policy decisions that we take today will be felt in ten, twenty, or thirty years and beyond—particularly given the length of equipment development and acquisition programs. There is a danger that key decisions taken on the basis of the world today (or worse still, the world yesterday) will prove inappropriate to the changing security environment of the future. But can you actually pin down those changes with any degree of confidence?

Given the inherent uncertainty involved in any exercise of this nature, it is perhaps gratifying that *GT 2015* and

Strategic Context reach broadly similar judgements and conclusions in a range of areas. Certainly there are differences between the reports (particularly differences in emphasis). But over a range of issues, both identify the same key trends. A common theme is the increasing significance of environmental and resource issues as a factor with the potential to lead to tension and conflict. On technology, both papers focus on developments in the same key areas of information technology, bio-technology and nano-technology. Similar concerns are expressed in both over asymmetry and the proliferation of sophisticated military equipment. And an overarching theme informing both papers is the recognition of the lack of a "clear and overriding" threat to national security as well as the implications of this for defense and security policies.

Then again, perhaps too much common ground is not entirely a good thing. It might indicate, for example, that both sets of authors have been insufficiently radical and that our projected world of tomorrow is too similar to the world of today. Both reports, of course, seek only to predict *trends* and not to predict *specific events* (which is a particularly fruitless exercise). Some trends, of course, are particularly amenable to extrapolation from existing data; but others require a significant input of "judgement" from the authors. Where those judgements are shared by *GT 2015* and *Strategic Context*, we might ask ourselves whether this commonality simply reflects common prejudices or assumptions on the part of the reports' authors.

GT 2015 does go on to identify a number of possible "discontinuities" which might upset its base case analysis. We also considered this approach for *Strategic Context* but decided against it for two main reasons. First, the range of potential discontinuities or "shocks" is so enormous that only a fraction could be included, and the report's audience might have sought to draw from any selection unwarranted conclusions about national insecurities or preoccupations.

The second reason was that *Strategic Context* constitutes a formal element in the MOD's strategic planning process, and that we generally do not propose to plan for specific low probability shocks (beyond certain contingency planning). This characteristic also explains another difference in approach between the papers. While *GT 2015* seeks to identify those trends that are "major drivers for the shape of the world," it does not consider the implications of this analysis for policymakers. *Strategic Context* goes on to identify (at least in broad terms) the key implications of its analysis for defense; it is thus one of the key elements driving the formulation of the UK's

defense and security strategy.

GT 2015, on the other hand, perhaps enjoys slightly greater freedom to be radical by virtue of what I might describe as its "semi-detached" status. Whilst the paper is clearly a National Intelligence Council product, the preamble also makes it clear that the paper synthesizes a range of views expressed by the various specialists who contributed to its production. At points in the paper, this freedom manifests itself in a refreshing willingness to be controversial.

Strategic Context also sought to make use of nongovernmental expertise. In our case, this input was fed in at a later stage of the process by means of external review of a draft which had been produced by MOD authors, who drew on a variety of internal and external sources of data and in consultation with other UK government departments. For future iterations of the paper (which we envisage producing perhaps every four years), we are very keen to involve external experts from the earliest stages of preparation.

Both papers reflect the need to take account of a wide range of issues—and not just traditional political and military factors—to inform defense and security policymaking. Grouping such diverse material can of course be difficult, and there is a danger that any sub-divisions used will mask interrelationships between subjects. The *Strategic Context* authors chose to divide its analysis between seven "dimensions" of the international security environment: (1) *physical* (e.g. environment/resources/demography); (2) *technological*; (3) *economic*; (4) *social and cultural*; (5) *legal, moral, and ethical*; (6) *political*; and (7) *military*. It is noticeable that, of these dimensions, *GT 2015* gives least prominence to the social and legal dimensions. Regarding these, *Strategic Context* addressed issues including: (a) developments in international law, (b) access to education, (c) social attitudes, (d) domestic and international public opinion and the impact of ethical considerations, and (e) the role of the media and nongovernmental organizations. There are also, as one would expect, issues on which *GT 2015* places much greater emphasis. These include (a) the impact of globalisation, (b) developments in information technology, and (c) analysis of the Asia-Pacific Region. The section on the role of the United States, addressing issues such as the ability to harness "power" to achieve foreign policy goals, is perhaps the most interesting product of the "freedom" to which I referred earlier.

Whilst I do not propose to indulge in a lengthy comparison between the details of the papers, I would like to offer two examples of the ways in which those fishing in the same pool of data can reach rather different

conclusions. (This is the "judgement" referred to earlier in action.) *Strategic Context* identifies the disproportionately large numbers of under-30s in developing countries as a continuing contributor to instability and violence. *GT 2015,* on the other hand, stresses the slowing in population growth, and suggests that a reducing "youth bulge" will improve chances of stability. On a different subject, *GT 2015* concludes that the individual's sense of nationality will weaken only in nations that are governed inefficiently. *Strategic Context* suggests that this "denationalizing" trend will be more noticeable amongst educated "elite" groups in society, particularly perhaps in Europe.

Strategic Context was published in February 2001, partly as an attempt to raise (domestically) the level of awareness and improve the level of debate on defense and security issues. It was the first time that the MOD had published this sort of wide-ranging strategic analysis, and the response, particularly in the news media and academic community, has been broadly positive. Initial press headlines tended to sensationalise and focus on the negative—"Bleak New World" and "Apocalypse Soon"—but the substance of media coverage has been more measured. The initial flurry of interest has been succeeded by further media debate on some of the issues raised. Requests for the paper have been such as to merit a second print run.

We recognise *GT 2015* as a major contribution to the sort of wider debate that we seek to encourage on the international security environment. Indeed, the value of any futurology work is increased by being able to draw on and compare a variety of analyses that have been informed by different perspectives—national and otherwise. By this, you may have guessed that we intend to crib the best ideas from *GT 2015* to inform the next iteration of *Strategic Context*. I hope that the authors of the next *Global Trends* paper will feel free to return the compliment. W

GOVERNANCE AND CHANGING AGE STRUCTURES

By Gayl D. Ness

Gayl D. Ness is Professor Emeritus of Sociology at the University of Michigan. His major recent publications include Five Cities: Modelling Asian Urban Population Environment Dynamics (2000); Population and Strategies for National Sustainable Development (1997); *and* Population Environment Dynamics: Ideas and Observations (1993)*.*

GT 2015 offers a comprehensive and intelligent view of major global trends and sources of both strength and instability for the next 15 years. While I do not disagree with the report's overall assessment, there are two issues which its authors might have given greater emphasis: (a) the growth of young male populations, and (b) centralized and ineffective governance in countries experiencing that growth. These dynamics seem to me to present a greater threat of violence and instability than the report envisages.

Changing Age Structures

Changing age structures will provide major sources of instability in both the more-developed and the less-developed regions of the world. For the more-developed regions, aging populations will require large immigrant streams to provide the required work force. These regions will also continue to be magnets for large waves of legal and illegal immigrants. In either case, the migrants will be coming primarily from much poorer countries with markedly different social, religious, and cultural systems.

It is doubtful that the wealthy regions will be able to accept large waves of culturally different immigrants without substantial tension (already visible in anti-immigrant right-wing movements in both Europe and North America). While these tensions may be manageable through the wealthy nations' effective governance structures, they will also severely tax these governments and their policymakers. There also remains the possibility of major *nationalistic* movements that will erode and perhaps destroy the democratic gains made in the past half-century.

LePen's movement in France and the neo-Nazi violence against Africans and Turks in Germany are troubling signs in what we would normally consider the more stable and democratic parts of Europe. The Yugoslav experience is one of the most troublesome and bloody, in part because of the long history of Balkan violence. At the same time, the more peaceful movements in Czechoslovakia and South Africa offer the prospect of another scenario. Contrasting these latter two examples with Yugoslavia suggests that leadership is a critical

variable. Václav Havel and Nelson Mandela were apparently able to chart a more peaceful and democratic course and to win followers to that cause. Slobodan Milosovic, on the other hand, had to use deep-seated Serb nationalist sentiments to hold onto power when his original ideological base collapsed. How many more Havels and Mandelas will we have in the coming decades? And how many more Milosovics?

For the less-developed regions, the problems associated with changing age structures will be more severe. In these areas, rising numbers of young people about 12 million. Already the Pakistani government is incapable of providing schools for the great majority of these young men. Its combined primary and secondary school enrollment ratio of 41 percent is even less than much-poorer Nepal (UNDP, 1998). Nor does the economy offer them much hope for jobs. There are no signs at this time that Pakistan's government or economy will improve in the near future. Militant Islamic groups now find easy recruitment among these "young without hope" populations.[2] As a result, the "jihad factories" of the Islamic militants appear now to be one of the country's

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Without schools and jobs, the rising numbers of young males in poor countries will provide demagogues with fodder for ethnic, religious, and political violence.
—Gayl D. Ness

(especially young males) will mean constantly rising demands that those countries are already incapable of meeting. Young male populations are growing in precisely those countries least capable of providing them with the education and employment that give them hope for the future. In 2000, there were an estimated 35 million young males (ages 15-19) in the world's least developed regions (mostly in sub-Saharan Africa and South Asia). By 2015, that number will be 51 million and still rising (UN, 1996).

There is a long history of scholarship noting that young males are a highly volatile population (Moller, 1966-67; Campbell, 1968; Daly & Wilson, 1988; Mesqueda & Wiener, 1999).[1] This has given rise to the notion of a "young male syndrome" that is closely associated with societal and individual violence. It is true that these youths are found at the centers of urban and ethnic riots. But it is also true that these are the same people that infantry sergeants want as recruits. Their high energy and lack of experience often gives them a sense of immortality and fearless energy. They can be mobilized for heroic, self-sacrificing and altruistic activity, but they can also be mobilized for extreme bloodletting. This implies that other conditions will affect or even determine whether or not this volatile population turns violent. Without schools and jobs, the rising numbers of young males in poor countries will provide demagogues with fodder for ethnic, religious, and political violence. Much of this will be local or regional (as in the ethnic wars of Africa), but there will also be dangerous international implications as well.

Pakistan will surely be one of the most important arenas of the resulting instability. In 2000, the estimated number of young males in Pakistan was just over 8 million (UN, 1996). By 2015, that number will rise to largest growth industries; and the future holds little hope for reductions in the resulting tensions. Given Pakistan's conflict with India over Kashmir and the increasingly central role Pakistan and Afghanistan are playing in the international Islamic terrorist movement, these tensions will not be easily contained within national or even regional boundaries.

The issue of leadership is also critical here. Young males can be mobilized to great acts of heroism and self-sacrifice *as well as* acts of brutality. The recent extreme Hutu-Tutsi violence in Rwanda, the lesser but still serious violence we see now in Kenya and Zimbabwe, and the more pervasive calm of Tanzania cannot be explained by age structures alone, since they are all very much the same in each case. Similarly, recent age structures in what were Yugoslavia and Czechoslovakia were very much the same, but the levels of violence were far different. In these cases, leadership has played a prominent role in determining whether the young male syndrome will lead to violence or more peaceful transitions.

There may also be policy lessons in these cases. Increasing economic opportunities can relieve some of the pressure on these young males and give them more hope; development may be something of a pacifier. Similarly, reducing fertility is a sure way to reduce the proportion and growth of this highly-volatile population, although it takes almost two decades for societies to feel these effects of this decline. Finally, external intervention (as in Bosnia) or the lack of it (as in Rwanda) may also play a critical role.

Governance

Four decades ago, Edward Shils (1961) pointed to a

critical issue of political development in the "new states."[3] He noted (a) that these new governments were highly centralized, (b) that this centralization produced debilitating inefficiencies and exacerbated inequalities, and (c) that centralization proved to be a self-reinforcing process. It produced a vicious cycle in which the central government kept power and resources for itself because it believed local governments lacked effective management capacities. But centralization itself deprived local governments of the experience to learn and deprived local populations of any possibility of making their governments responsible and responsive—which further reinforced the argument for centralization.

High degrees of government centralization also tend to weaken government efforts to promote social and economic development. Centralization deprives planners of important information about local conditions and obstructs the adaptation of plans to distinctive local situations. Unfortunately, those countries with the weakest and most centralized governments are also those with the high and growing numbers of young males. As they lack the capacity to provide hopeful futures for these young, the potential for violence in these countries increases.

In sum, age structures will be critical ingredients in social stability and violence over the near future. Aging in Europe will require even greater immigration than we see now, and with this migration will come pressures associated with right-wing politics. It is in the poorest countries, however, that age structures will be most problematic. There, growing numbers of young males will be living under governments incapable of providing them much hope for the future; and demagogues will be tempted to exploit this population for violent ends. Though much of that violence may be localized, it could also easily spill over national boundaries and become part of the global network of terrorism and violence. **W**

ENDNOTES

[1] I was first made aware of this issue by Howard Schuman, who conducted surveys of racial attitudes for the Kerner Comission in 1967-8 (Campbell, 1968). Mesqueda (1996) and Wiener (1999) use a ratio of males 15-29 to males over 30 as an index that shows a strong relationship with levels of societal violence. My use of 15-19 year olds examines what I feel to be the most volatile part of the age categories.

[2] This point is made poignantly in Burns (2001).

[3] This was a term that came into vogue in the late 1950s and early 1960s, especially after the demise of colonial systems and the rise of newly independent states in Asia and Africa at the end of World War II.

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Searching for Comets

By David Rejeski

David Rejeski is a Special Assistant to the Director and a Resident Scholar at the Woodrow Wilson Center, where he directs a project on foresight and governance. Most recently, he was a Visiting Fellow at Yale University's School of Forestry and Environmental Studies and an Environmental Protection Agency representative to the White House Council on Environmental Quality (CEQ). Before moving to CEQ, he worked at the White House Office of Science and Technology on a variety of technology and R&D issues.

I was not sure whether I should approach the content of the recent *GT 2015* report as a gourmet (eagerly sampling a multi-course meal) or as a weary-eyed astronomer (searching for dim comets and uncharted galaxies). I chose the latter approach, if only to try to find ways of building on the report and the dialogue I imagine it will stimulate.

I will take an unpopular stance, and also one that seemed underdeveloped in the report—namely, that institutions matter, especially institutions that can learn and adapt rapidly in highly-complex global systems. Recently, Peter Drucker raised the idea that the prime driver of future society will not be technology, information, or productivity, but what he terms the *managed institution* (Drucker, 1999). Institutions tend to receive little attention in the two-axis geopolitical debates that oscillate between state and non-state actors, good states and bad states, or the state versus the market. But, as Daniel Bell pointed out over a decade ago, scale is the key to maintaining political relevance in a global economy; and institutions are very scalable (Bell, 1988).

Transnational Corporations

Let us imagine for a moment the qualities that might characterize highly effective institutions over the next decades—institutions that will have to operate in not only a globally integrated economy but also in a highly fragmented polity. These qualities might include such things as global reach and intelligence gathering capability, organizational flexibility, good partnering abilities, high innovation capacity, a multicultural/cosmopolitan workforce, and the ability to attract and hold top talent. Let me suggest that the set of organizations that comes closest to this character set are neither government entities nor NGOs (who seemed to have emerged as heir apparent to state actors), but transnational corporations (TNCs).

In this regard, it is important to distinguish TNCs from the older concept of multinationals (in which companies had clear domestic and foreign units). TNCs are organized, managed, and evolve transnationally. Their management and economic boundaries have little or no relationship to national boundaries. From the perspective of most TNCs, countries are often reduced to the status of "cost centers."

Of the one hundred largest economic entities globally, about one-half are nation-states and one-half are TNCs (Cohen, 1998). That means that 130 of the 180 recognized states of the United Nations have economies smaller than the largest 50 TNCs (UNCTAD-DITE, 1996). The top 100 non-financial TNCs own over U.S. $2 trillion in assets outside their home countries, employ 40 million workers abroad, and have sales in their non-home countries of $14 trillion (over twice the volume of world trade). Many of the technology-focused TNCs have R&D budgets in excess of $1 billion dollars per year—funding that is spread through a global innovation system with interconnected research centers and labs. Collectively, these corporations control a large amount of the R&D spending—both in the United States and worldwide—on a range of potentially "game changing" technologies in the biological, information, and communication areas highlighted in the *GT 2015* report.

Ten transnational media conglomerates dominate most of the global media system, and their control will increase as communication technologies functionally merge. Even the Internet (that hacker's paradise of openness and empowerment) has been largely colonized by commercial interests. Of the one hundred most-visited Internet sites, over 90 are commercial. And access (or non-access) to large parts of the information highway is now cleverly controlled by commercial search engines (Introna & Nissenbaum, 1999).

In terms of reach and global presence, while the U.S. government has embassies and consulates in 176 countries, McDonalds has 15,000 restaurants in 171. In fact, McDonalds opens five new restaurants a day, four of them outside the borders of the United States. Hewlett-Packard (HP) has almost three times as many employees as the U.S. Department of Commerce, 54 percent of which operate outside the United States in

120 countries. HP has key research labs in the United Kingdom, France, Israel, and Japan; it has plans to open labs in China and India. And at the moment, over one-half of Dupont's sales as well as over one-third of its work force are outside of the United States.

Taken as a group, TNCs exercise enormous control over a variety of forces shaping our collective future. These include: (a) nutrition (in both developed and developing countries); (b) access to existing and evolving

capabilities and behaviors (for instance, reflexive/proactive behavior instead of reactive/prescriptive) that are rare in most government institutions but increasingly common in TNCs and NGOs. For certain tasks, networked organizations offer distinct competitive advantages. They provide the advantages of bigness while maintaining the flexibility of smallness. In many cases, networks will outperform hierarchies both at gathering and processing diffuse data in a global environment and

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Leaving transnational corporations off the map of the emerging geopolitical landscape is like leaving the superhighway system out of the Rand McNally atlas. —David Rejeski, Woodrow Wilson Center

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telecommunications infrastructure; (c) global transportation and logistics; (d) the availability of news; (e) the shaping of consumer preferences and tastes; (f) the flow of currency; and (g) the provision of pharmaceuticals and health care.

My purpose is neither to vindicate nor vilify large business. Rather, it is to make the point that leaving transnational corporations off the map of the emerging geopolitical landscape is like leaving the superhighway system out of the Rand McNally atlas.

The Importance of Flexibility and Learning

The final reasons TNCs matter may seem less obvious but are equally critical and have to do with what might be termed *organizational learning capacity*. Unlike many state actors, which can survive with outmoded mindsets, aging workforces, and crippled budgets, global corporations are under continual pressure to challenge and change their legacy systems and operating assumptions. They must connect to the outside world and use evolving and often uncertain knowledge of their operating environment "to do better" (Axelrod & Cohen, 1999). If Václav Havel is right that the "idol of state sovereignty must inevitably dissolve," it may be because statist institutions either fail to learn or learn at a slower rate than other entities vying for geopolitical power (Havel, 1999).

Successfully managed institutions in the future will be institutions that can (a) manage change and (b) recognize, shape, and operate in both networks as well as within traditional hierarchical structures and markets (Powell, 1990). That will require a set of organizational

at locating innovation and talent. Highly-networked organizations may be better at playing what Robert Putnam called the "two-level game" of international and domestic policy that is orchestrated above and below the level of the nation-state, in which operations on the international and domestic levels cannot be entirely separated and in fact impact one another (Putnam, 1988). Some TNCs such as Sony have adapted overt strategies of *global localization*—of building globalized, networked operations that are highly sensitive to local politics, culture, and economic constraints or opportunities.

GT 2015 maintains that governance matters, stating that "[s]haping the complex, fast moving world of 2015 will require reshaping traditional government structures" (page 11). It is hard to argue with the statement, but how often does this happen in reality? And are we really prepared to move in that direction? As former Commerce Secretary William Daley recently commented: "To achieve results, the federal government needs to be reorganized. What business in American hasn't reorganized itself in the past 50 years?" (Daley, 2001).

Luckily, 2015 is still a long way off. By 2015, we will have completed what some have termed the "second industrial revolution," based on new production technologies, business and organizational models, and logistics systems (Agrawal & Cohen, 2000). By then, we will have probably increased computing power by a factor of one thousand. And perhaps by then we will also have designed governance structures and institutions that can deal with the complex and dynamic world *GT 2015* describes in such great detail.

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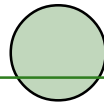
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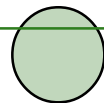
New Actors and the Dynamics of International Politics

By Ervin J. Rokke, U.S. Air Force (Ret.)

Ervin J. Rokke is President of Moravian College in Bethlehem, Pennsylvania and an Emeritus Professor of Political Science at the U.S. Air Force Academy. His 35-year military career included assignments to the Academy faculty as well as Air Force Assistant Chief of Staff/Intelligence; as Director of Intelligence at Headquarters, European Command; and as Defense Attache to the Soviet Union. He retired at the rank of lieutenant general in l997.

GT 2015 is an impressive effort (a) to identify major determinants in international politics, (b) to set forth the uncertain future that they portend, and (c) to uncover some corresponding propositions relevant to the policymaker. Its virtue stems not from confident prognosis but rather from the recognition that international politics lies in the hands of "drivers" which relate to one another in unpredictable fashion. Our basic predicament is complex; *GT 2015* teases from this complexity a series of propositions that are at once modest and useful.

Old and New Questions

In part, the authors of *GT 2015* approach their task with a traditional framework for analyzing international politics. The classic questions concerning the identity of the major actors, their capabilities, and their intentions regarding one another remain by implication. The report characterizes the post-1989 period in terms strikingly like those appropriate to the traumatic events following 1789, 1815, 1870, 1919, and 1945. As in previous periods of revolutionary change, the current world emerges as a period of turmoil for which a steady state remains elusive.

The more important question for *GT 2015*, however, has to do with the nature and intensity of interaction among a new assortment of actors on the world stage. By highlighting demographics, natural resources and environment, science and technology, globalization, and future conflict, the authors have substituted a series of dynamic variables for the conventional factors of form and substance (e.g., man, state, international system) (Waltz, 1959). The center of balance, if you will, has shifted from the actors themselves toward the dynamics of their interactions. For intelligence community analysts, this is a welcome (if overdue) transformation.

Non-linearity

By focusing on the dynamics of international politics, *GT 2015* concentrates on the current global tendency toward havoc instead of presenting conventional analyses of what are usually considered the historically predictable outcomes of nation-state interactions. *GT 2015* recognizes that not only have the types of global actors themselves expanded to include a whole assortment of non-state players, but that the interactions of these actors have exploded both in velocity and intensity, spilling across traditional geographic boundaries in ways that defy projection. Just as with modern Grand Prix accidents (which seldom involve only one racecar), the entire world stage is today victimized by seemingly localized entanglements and their resulting mayhem.

In all of this, *GT 2015* recognizes non-linearity as a key feature of our time. As science and technology along with other "drivers" complicate and dramatically accelerate the interactions among world players, they also drive nails into the coffin of international predictability. The authors are right both in steering clear of crisp, detailed projections and in presenting a synopsis of possible "significant discontinuities." Even so, readers looking for where *GT 2015* is most likely to err should look first for what the authors acknowledge to be an "informed extrapolation of existing trends" (page 5).

Imperatives for Security Policy

Can this report's modest but realistic projection for the next 15 years provide useful parameters for policy? Yes, indeed. One important example of this usefulness relates to the nature of our security structures, both national and international. *GT 2015* clearly supports political scientist Jim Rosenau's contention that the challenge of maintaining international security has bifurcated, with the two emerging masters being (a) traditional state interaction and (b) far more complex multicentricity (Rosenau, 1997). In recognizing that international and regional security organizations like the United Nations and NATO were designed to deal primarily with nation-states, *GT 2015* sets forth the very real challenge to stability associated with the likes of Kurds, Serbs, Hutus, and Shiites as well as other non-state actors like terrorists and organized crime. "Effective governance" is what the authors' demand, and properly so (pages 27-33).

GT 2015 sets forth even more demanding challenges

for American security policy and military force structure. Arguably, these challenges are the salient feature of the study. Among major players, it posits China, Russia, Japan, and India as worthy of particular attention; actions these countries take will be vital to traditional power relationships in key regions. Though *GT 2015* does not forecast the actions of these key players with precision, it does make clear that the United States will retain a major role in maintaining an acceptable balance of power in each of their associated regions. The components of this power are both conventional and nuclear; it therefore is unlikely that the United States can avoid responding with at least some level of force in kind. This, I would submit, is the "traditional" military imperative contained in the report.

However, traditional notions of military power do not enjoy center stage in *GT 2015*. Instead, it portrays the "drivers" behind the evolving relationships among the major powers in increasingly economic, demographic, and resource terms. Non-military drivers are particularly salient in traditional areas of regional concern such as South Asia, Sub-Saharan Africa, and Latin America. *GT 2015* authors also point out quite properly that a host of new non-state players are emerging—including transnational religious institutions, international nonprofit (and profit!) organizations, international crime syndicates and drug traffickers, foreign mercenaries, and international terrorists. These represent the "non-traditional" imperatives for American policy.

And so it is that *GT 2015* sets forth parameters for military force structure as well as security policy in a broader sense. The careful reader can only be concerned that the response of the American defense establishment to these challenges remains focused on the traditional dimensions of those challenges. The so-called "Revolution in Military Affairs" (which represents the central theme of ongoing dialogues about American security policy) largely relates to making our military establishment more efficient and effective on the battlefield by using information-age technology as well as associated organizational and procedural improvements (Owens, 2000). These are worthy enterprises that, if implemented, can improve the military's capacity for meeting traditional challenges and even expand, at the margin, its utility for such non-traditional tasks as peacekeeping and disaster relief.

But *GT 2015* makes clear that a wide variety of non-traditional challenges also are encompassed within our security predicament. No amount of improved technology applied to weapons systems in a linear fashion (or, for that matter, a "leapfrog" fashion) can resolve the complex issues emerging in the post-industrial age. Even Clausewitz saw war as a "remarkable trinity" revolving about people, the state, and the field of battle (Beyerchen, 1997). For him, the result was one of disproportionate effects and unpredictability. *GT 2015,* like Clausewitz, foresees a security situation increasingly sensitive to initial conditions. These include AIDS, natural resources, food, environment, science, and technology—all of which our security strategies have tended to overlook.

Conclusion

GT 2015 calls for a comprehensive approach to international stability and security that effectively integrates American policy across the spectrum of demographic, ecological, scientific, and economic as well as military drivers. Students of the "new sciences" would argue that such an integrated approach is the only proper response to a security predicament that has evolved into a complex adaptive system with worldwide tentacles. This truly is a new world in which the application of explosive force, however agile, is no longer sufficient to serve either American or broader security objectives. *GT 2015's* modest approach to predicting the future sets forth a very ambitious prescription for policy, indeed. **W**

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China, Climate Change, and Biases in *GT 2015*

By Judith Shapiro

Judith Shapiro teaches environmental politics at American University. Her new book, Mao̵s War Against Nature: Politics and the Environment in Revolutionary China, *is published by Cambridge University Press. Her other books on China, (written with Liang Heng), include* Son of the Revolution *(Knopf, 1983) and* After the Nightmare *(Knopf, 1987).*

On the whole, China-watchers' forecasting record has been poor—few anticipated the post-Mao economic reforms, and even fewer the Tiananmen massacre. Wisely, then, *GT 2015* underlines China's unpredictability. The report shies away from projections about a country whose rapid transformation is complicated by globalization, a values crisis, the fragility of the Communist Party's legitimacy, and an imperfect conversion from a command-driven economic system to a "market socialism" fraught with corruption.

China-watchers tend toward extremes—some fearing a strong China, others a weak one. Like Goldilocks, the China-watchers consulted for *GT 2015* seem to want a China that is "just right," neither aggressively expansionist nor collapsing into chaos. Had the report's space permitted, the authors might have expounded upon the relationship between China's domestic uncertainties and its international behavior. There is great potential for internal unrest in China due to displacements of workers and peasants, the increasing scarcity of fundamental resources like water, and ethnic tensions tied to human rights violations. Governance issues are paramount. As with globalization-influenced transformations elsewhere, the gap in China is widening between the "winners" (who include entrepreneurs, those able to learn new skills, and those able to profit by their connections to the old establishment) and the "losers" (who include former workers in money-losing state-run factories and farmers struggling under heavy tax burdens). If the World Trade Organization's (WTO) proposed agricultural import liberalizations come through, these farmers could be devastated. *GT 2015* assumes that China's entry into the WTO will proceed on schedule, although (as of this writing), China appears wisely to have reconsidered some of its commitments. These domestic issues will affect the choices China makes in the international arena.

Environmental Assumptions

The report's China sections seem to downplay the importance of environmental issues, as does *GT 2015* as a whole. While the study mentions northern China's falling water tables and the great South-North water transfer scheme (a megaproject with staggering ecological ramifications), its discussion of China's critical impact on the global environment is limited, perhaps for space reasons. It is worth noting, for example, that China has become one of the world's major traders in imperiled wildlife (as China's middle class develops its taste in bushmeat and coral reef fish); or that the country is now driving deforestation in Southeast Asia, as it seeks to curb the floods associated with logging on the upper reaches of its own rivers. And most importantly, China's will be the major carbon producer of the next decades, a fact that will have even more impact upon the world by 2015 than it does today.

Indeed, one of the most striking flaws in *GT 2015* is its head-in-the-sand approach toward climate change. Seemingly disregarding the implications of its own forecasts both that (a) energy demand will increase by 50 percent over the next 15 years (page 28) and (b) that energy supplies will be adequate to meet that demand, the report then asserts (without apparent foundation) that "pressures on the environment as a result of growth will decrease as a result of less energy-intensive development" (page 31). *GT 2015* fails adequately to take into account the high costs of fossil fuel dependence in terms of climate-change-induced "natural" disasters, coastal flooding, droughts, environmental refugees, spread of tropical disease spread, and heightened global tensions over resources. While the report foresees "meltbacks of polar ice, sea level rise, and increasing frequency of major storms," it appears to downplay the implications of these phenomena by predicting "incremental progress in reducing the growth of greenhouse gas emissions" (page 32). ("Progress in reducing growth" is a slippery phrase, often favored for putting positive spins on dire situations.)

And in a final box on possible "discontinuities," *GT 2015* mentions that, while global climate change may cause widespread natural disasters, its predicted scenario is of "an enduring global consensus on the need for concerted action on...the environment" (page 82). Unfortunately, while global climate change is real and such disasters are

Mao's War Against Nature: Politics and the Environment in Revolutionary China

By
Judith Shapiro
Cambridge: Cambridge University Press, 2001

" *In an illuminating and absorbing account, Judith Shapiro reveals how Mao's policies resulted in such massive environmental degradation that it clouds China's future despite current conservation efforts. Even today, countries often seem to subscribe to Mao's dictum, 'Man Must Conquer Nature.' China's mistakes offer important lessons for everyone, as this timely book so lucidly describes.*"

-George B. Schaller, Wildlife Conservation Society; author of *The Last Panda*
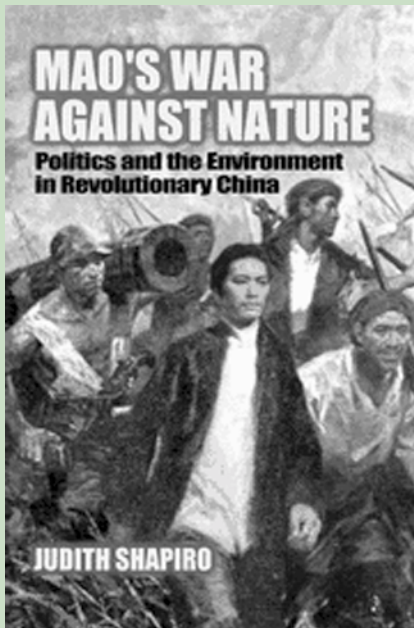
In clear and compelling prose, Judith Shapiro relates the great, untold story of the devastating impact of Chinese politics on China's environment during the Mao years. Maoist China provides an example of extreme human interference in the natural world in an era in which human relationships were also unusually distorted.

Under Mao, the traditional Chinese ideal of "harmony between heaven and humans" was abrogated in favor of Mao's insistence that "Man Must Conquer Nature." Mao and the Chinese Communist Party's "war" to bend the physical world to human will often had disastrous consequences both for human beings and the natural environment. *Mao's War Against Nature* argues that the abuse of people and the abuse of nature are often linked. Shapiro's account, told in part through the voices of average Chinese citizens and officials who lived through and participated in some of the most destructive campaigns, is both eye opening and heartbreaking.

Judith Shapiro teaches environmental politics at American University

already occurring, such consensus has eluded the world, with the United States as the major spoiler. Late as it is today for governments to curb human activity that is disrupting the planet's infrastructure, by 2015 it will be far more difficult to mitigate these negative impacts.

Other Concerns

Others will undoubtedly write about *GT 2015's* bias in favor of biotechnology, trade liberalization, and multinational corporations. (For example, on page 40, the report sanguinely describes the business sector as growing rapidly, "spearheading legal and judicial reform and challenging governments to become more transparent and predictable." Would that the link between corporate interests and good governance were so clear.) I will merely note that those concerned about the negative impacts of

trade liberalization are unfairly characterized as "special interest groups" (page 34).

Some of the report's other questionable assumptions are as follows:

• The introduction explains that the authors considered the drivers of demography and natural resources to be "natural phenomena" about which projections could be made with confidence, unlike other drivers which the authors understood as to be "contingent on decisions that societies and governments will make." (page 6). But population growth and resource use are not predetermined and are in fact highly political choices made by human beings. To imply otherwise minimizes human responsibility for variables that will greatly affect how

the world will look in 2015.

• It is also worth noting *GT 2015*'s unexamined assumption that economic growth is positive. The report represents potential brakes to growth as "challenges." But the key challenges the world may face by 2015 may instead lie in the *impacts* of such economic activity upon the earth's natural systems. Economic slowdowns can be positive opportunities to: (a) revisit values about the nature of human development; (b) redefine such development in terms less costly for the natural world and for future generations; and (c) reconfigure economies so that

prosperity is based less upon extractive manufacturing and more upon services, non-invasive activities, and clean-up.

• As a final note on the report's treatment of environmental issues, one might single out its curious but undeveloped prediction about the possibility that environmental values may fuel a new spiritual/ religious movement (page 42). While this scenario is certainly conceivable, this prediction may reflect a tendency upon the part of *GT 2015*'s authors to dismiss environmental concerns as based upon faith rather than as founded upon good science. **W**

MAKING THE MIGRATION TO 2015

By Michael J. White

Michael White is Professor of Sociology and Faculty Associate at the Population Studies and Training Center, Brown University. This spring, he was also a Fellow at the Woodrow Wilson Center. White's demographic interests span several aspects of population distribution. He is presently investigating the impact of urbanization for environmental quality in developing countries.

It is noteworthy that *GT 2015* lists "demographics" as the first of seven "key drivers" its authors and consultants believe will shape the world in 2015. This is a rather prominent position for demography, one that it has not always enjoyed in previous reflections on global security. Below, I offer a few thoughts about where this driver is taking us. I particularly want to react to the prediction that *GT 2015* makes on the redistribution of world population, both within and among nations.

The report notes the broad sweep regarding demographic changes: (a) most growth occurring in developing countries; (b) a substantial shift to urban areas; and (c) realignment in age structure. Demography is a pointillist canvass. From afar, one gets the image. As one gets closer to the canvas, it becomes harder to see the picture. The broad demographic trends that *GT 2015* predicts are quite likely to occur. But how they will emerge in specific countries or cities is more difficult to discern.

Accuracy of Projection

The NIC is to be commended for not projecting too far in the future. While predicting the state of the world economy or strategic alliances far into the future would be widely described as a fool's errand, projection of population trends of even more than a decade or two also has little to recommend it. Although the mathematics of such a "what if" exercise is fixed, the utility of these projections declines appreciably with time.

The report's authors and consultants have instead employed reasonable mid-range projections of population and its composition for the upcoming decade or so. So we can probably feel fairly confident in *GT 2015's* assessments about the relative growth and distribution of the population across the world's regions over the next few years. It is a safe bet that (current) developing countries will hold a larger share of world population, that urbanization will continue, and that there will be some continued international migration toward the highly industrialized countries.

Megacities and Urbanization

The world is about half urban now, and urbanization will be a continuing feature of the new century. *GT 2015* writes of the "explosive growth of cities in developing countries" (page 20), but it is important to keep this manifestation of urbanization in perspective. While it is easy to cast the city as the villain or alternatively the savior (White, 1996), it is also worth recalling that the seminal book *The Exploding Metropolis* (Fortune, 1976) was written about New York City in the 1950s! In fact, issues of rates of growth, expansion into the hinterland, and governability all appear in the discussion of New York urbanization of a half-century ago. Today, of course, New York survives as a world city—a status dozens of other cities are coming to share. Natural increase and urbanization have combined to make cities grow,

especially in the developing world. We live at a greater urban scale than 50 or 100 years ago.

Whereas in 1950 the world counted only one urban agglomeration over 10 million, the most recent UN count puts that number at 19. What do we know about this urbanization? Yes, it is true that megacities are big—and very visible on the world stage. But it is important not to let the very scale and notoriety of megacities sway the urban perception out of balance altogether. The UN also estimates that these 19 cities of 10 million plus inhabitants contain 9.2 percent of the world's urban population—thus only about 5 percent of the world's total population.

environmental problems that accompany development and urbanization. The report mentions air and water quality problems in Mexico City, Sao Paulo, Lagos, and Beijing. The pressure to convert land to agricultural, industrial, and residential use is seen in Brazil's Amazon forest, in Thailand, and in Malaysia, and in cities along the West African Coast. Tianjin, China's third largest city, has developed a Special Economic Zone reaching out from the city into the lowlands near the sea.

But urbanization can also help sow the seeds of environmental improvement—an urban greening, if you will. Urbanization will bring more people into proximity,

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The broad demographic trends that *GT 2015* predicts are quite likely to occur. But how they will emerge in specific countries or cities is more difficult to discern.
—Michael J. White, Brown University

Ninety-five percent of the world's inhabitants live in more modest cities or in the countryside. It is worth remembering that large and medium size cities will most likely still be players in global economic development over the next several decades. They, too, will face (albeit on a smaller scale) the same issues as megacities: age structure, environmental quality, job generation, and public service provision.

The notion of exploding cities often carries with it the idea that something is amiss. The growth of urban squatter settlements, apparently populated with migrants from the countryside, reinforces this perception. In most cases of urban in-migration, however, migrants (whether historical or contemporary) are generally acting in their own interest. Most move to cities to better their lives. And in the early phases of their life histories, cities grow quickly from such migration as well as natural increase. Los Angeles, for instance, grew at about 8 percent annually between 1900 and 1930. New York City about doubled during this time. In some high fertility countries today, urban growth is being fed predominantly by natural increase. We will continue to hear reports from around the world (particularly from sub-Saharan Africa) of "rapid" urban growth. But as birth rates fall and the urban transformation sets in, these rapid city growth rates will themselves decline.

Environmental Impact

The environmental challenges of increased urbanization are real, and *GT 2015* rightly notes that developing countries will face some of the intensified

and since local urban residents do care about the quality of the local environment, pressure will build to clean up. Improvements in living standards will also increase the appetite for cleaner environments, since these living standards may translate into pressure on the public sector to act. Efficacy, however, rests on the capacity of responsive city, provincial, and national governments to allocate resources among the many good causes that come calling.

Urbanization can also aid in the development of another favorable path for the environment. Much anxiety about worldwide environmental deterioration—particularly prospective damage in developing countries—is linked to fertility. Urbanization is closely linked to reductions in fertility. Throughout the developing world, urban fertility is generally proceeding at about two to three children per woman below that for rural fertility (Macro International, 2001). For instance, women in urban Senegal are bearing an average of 4.3 children, whereas rural Senegalese women are bearing 6.7. Over the last five years, urban fertility in Senegal has declined nearly one child per woman, while rural fertility has remained unchanged. While the urban-rural gap is attributable to a number of factors, dynamics such as (a) increased levels of living in urban areas, (b) education and labor force shifts, and (c) the transmission of information about health and family planning are likely to be playing a role. Again, *GT 2015* is on target when it sees a salutary side to urbanization: "Urbanization will provide many countries the opportunity to tap the information revolution. . ." (page 20).

International Migration

The world's population will continue to shift across national boundaries in the early 21st century. As *GT 2015* argues, high-income countries will receive the largest portion of this labor flow. Despite the controversy such migration will undoubtedly engender, these population shifts are likely to be a net economic benefit to the receiving countries—as they most likely have been for the United States (Smith and Edmonston, 1997). Again, this dynamic should be seen in historical context: while the absolute numbers of international migrants are large and increasing, the relative numbers are not necessarily out of historical scale.

So what will differ demographically in 2015? And what will be the challenge? Certainly, the international redistribution of persons will take place under tighter geo-political scrutiny than before. A simple indicator is the very fact that we now classify some long-distance migrants as "illegal" or "unauthorized." One needs a highly developed state apparatus to be able to identify, count, and expel (or welcome) such individuals. The problem of refugees and internally displaced persons—which the UN now numbers over 20 million—will only continue to grow (UNHCR, 1999).

International labor migration will severely challenge some receiving states. Despite compelling arguments that such migrants help promote economic growth (and in some countries offset outright population decline), international migration presents difficult social policy terrain. In almost all receiving states there is significant resistence to immigration. Some of this resistance is ethnocentric; some of it is based on fears of social stress arising from absorbing diverse populations; and some of it is conflict over the eligibility of newcomers for policy benefits from the social welfare state. The big debates will not only be over "who gets in," but also over "what happens to those who are here."

There is a standard witticism (often attributed to physicist Niels Böhr) that "prediction is difficult, especially about the future." It is a pretty safe bet that *GT 2015* has made the right predictions about the broad demographic features of the next couple of decades. But how exactly these features will manifest themselves and what nations choose to do about them remain the bigger questions.

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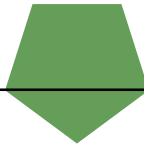
Regional Population: 1950-2015
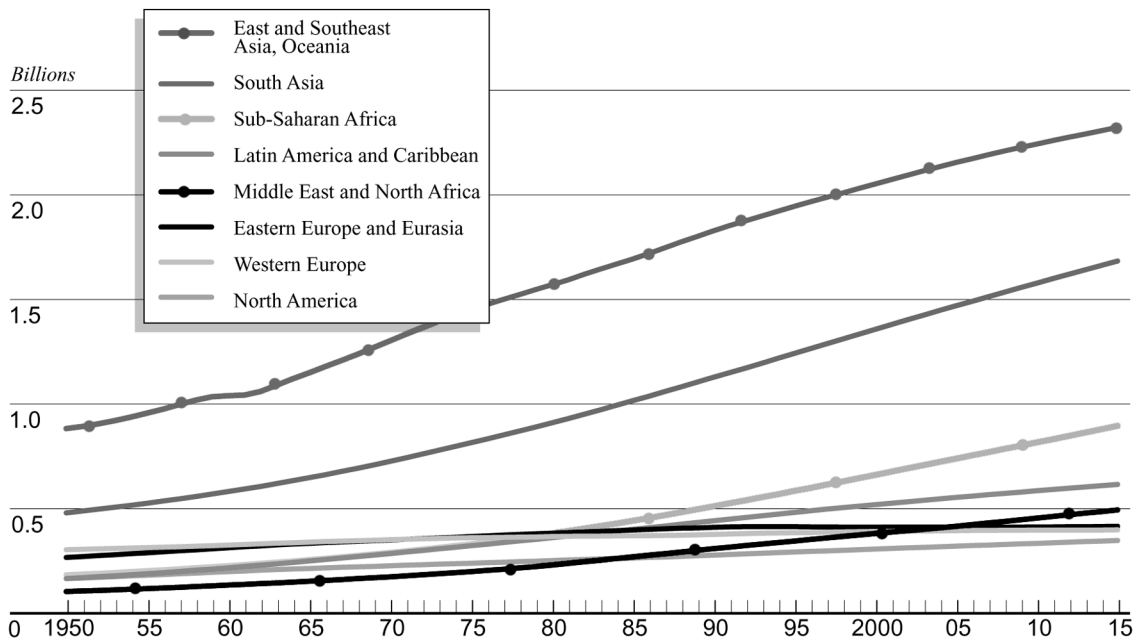
Source: US Bureau of the Census.

From NIC *Global Trends 2015*

A View from Russia

By Aleksei V. Yablokov

Aleksei Vladimirovich Yablokov is vice-president of the World Union for the Protection of Nature—IUCN. He served as the first environment adviser to Russian President Boris Yeltsin from 1991 to 1993. He is also the author of more than 20 books about population and evolutionary biology, ecology, radioecology, and environmental policy.

Forecasting is an important activity for working out a picture of the world's future that is not only acceptable but also desirable to at least most of society. The creation of such a collectively approved model of the future would render an enormously positive influence on national and global policy as well as on public opinion. To achieve this, the development of some field of metascience might be necessary. It could arbitrarily be called "*constructive futurology.*"

Below is a brief attempt to highlight global trends that will shape our world in 2015 but that are underemphasized by *GT 2015*. An attempt is also made to evaluate the place and the problems of Russia by 2015.

Global Problems of 2015

In the field of *environment quality and natural resources*:

·   Worsening global chemical pollution, causing in particular: (a) not only illnesses, but endocrine disruption and chaotic consequences for individual development (ontogenetic); and (b) global climate change (specifically global warming).

- Worsening global radioactive contamination, causing in particular a sharp increase in the number of stillbirths and perinatal mortality as well as mutations in nature, with unclear effects.
- A shortage of fresh water.
- Widespread deforestation.

In the area of *national security:*

- A weakening of national security for even the largest states because of the development of terrorism, including state terrorism.
- Greater access to weapons of mass destruction by both state and non-state actors. Before 2015, Germany, Japan, Israel, Taiwan, North Korea, Libya, Iraq, and Iran will likely be recognized as nuclear states. Nuclear weapons will lose their current function of deterrence.
- A growth in the simultaneous contradictions between: (a) economic globalization, transparency of borders, and the quick spread of technical achievements; and (b) the increased vulnerability of peaceful, prosperous communities (such as the European Union) to primitive forms of weapons of mass destruction (chemical or biological).
- An expansion of the possibilities of creating an ethnic weapon based on the decoding of the human genome and an intensification of the danger of genocide (e.g., from easily-developed specific ethnic illnesses, immune system damage, or the lowering of fertilization in certain ethnic groups).

Russia by 2015

Analysis of contemporary trends of Russia's social-economic development strongly suggests that Russia is now turning into a secondary world power (comparable to Brazil, Canada, or Australia). But the Russian situation (and predictions of its future) are much more complicated than for those countries or, indeed, than the analysis presented in *GT 2015*. Among the factors at play:

- Russia does not have the money available to destroy its nuclear arsenal; at the same time, many forces within the country want to develop new nuclear weapons.
- Russia is arguably the globe's worst national ecological disaster. Yet it abolished its federal environmental protection agency in 2000.
- Under President Putin's leadership over the last two years, Russian military spending has doubled. Former Russian military leaders have also recently

been elected as regional leaders.
- The mass media's freedom in Russia has visibly declined during the last several years.
- Russia is one of the most corrupt and criminalized countries: no less than 40 percent of the Russian economy today is a shadow one.
- Russia is the only developed country whose people have a declining life expectancy.

Based on these tendencies, I see two different scenarios for Russia by 2015. First, however, I present some general conditions that will hold under either scenario:

- The high intellectual achievements of Russia (such as its development of theoretical and applied science in the 20th century) will continue to decline and begin to wane after 2015.
- Insufficient attention to infrastructure renovation and reconstruction during the last 15 years in Russia will mean a period of industrial and infrastructure catastrophes (in areas such as chemical industry, dams, railways, and nuclear power plants) beginning after 2003-2005.
- The Russian population will decline from a recent level of 147 million to 138-140 million.
- There will be a growing threat of Chinese expansion into Far Eastern Russia.
- The Chechen problem in Russia's North Caucasus will continue beyond year 2015.
- There will be growing tensions with Kazakstan for water resources in the Irtysh and Ural rivers basins.

Pessimistic Scenario

Russia in 2015 will repeat the German experience of the late 1930s—which ended in a totalitarian, auto-cratic, and aggressive society. An alternative outcome would be a Pinochet-type dictatorship.

Optimistic Scenario

President Putin becomes more and more educated, moving from a mostly public relations-style of politics toward construction of a democratic open society. After deep tax reform, a substantial portion of the huge revenue from Russian natural resources will be invested in social needs, science, culture, and education.

Prescription for the West

A reorientation of the West's policy to meaningfully support Russia's weak civil society can stop Russia's development along a totalitarian path, and help us to

move towards the optimistic scenario outlined above. The main objectives of such support should be to:

- Foster an independent mass media in Russia.
- Create an independent and powerful judicial (court) system for the country.
- Activate Russia's nongovernmental organizations (environmental, human rights, women's, youth), municipal activities, and small and medium-sized businesses.
- Internationally ostracize those Russian officials who have known personal connection with illegal activities. W

THE NATIONAL INTELLIGENCE COUNCIL RESPONDS

By Ellen Laipson

Ellen Laipson is the acting chairman of the National Intelligence Council.

Editor's Note: Admiral Carroll's, Lilian Hisas's, and Aleksei Yablokov's commentaries were received too late to be included for consideration in the National Intelligence Council's response.

We are grateful for the opportunity to respond to this colloquy on our study *Global Trends 2015*. It embodies the spirit of our exercise: to engage in a continual dialogue with experts around the country and the world who think about transnational issues and their consequences for U.S. national security. We have been agreeably startled and pleased by the conversation that *GT 2015* has stimulated, and the comments from this distinguished group introduce some new ideas and issues into the debate.

From the many issues the authors raised, we have selected a few key themes, with an emphasis on issues that were raised more than once.

Demography

The idea of the demographic dividend presented by Richard Cincotta is a useful addition to our story. We tended to focus on two endpoints of the demographic story—too high or too low birth rates—and less on this productive middle ground. The examples from East Asia are valuable in pointing out the interaction between changing demographic patterns and public policy with increased educational investment per student as overall numbers of students declined. The cases of South Korea and Taiwan, as Cincotta points out, need to be compared to Brazil and India, which did not fully take advantage of the demographic dividend.

Gayl Ness' observations on changing age structure, in particular the youth bulge as a major stimulant of nationalism, instability, and violence, add much to our analysis. His observation that the countries "with the weakest and most centralized governments are also those with the high and growing number of young males" deserves careful exploration.

Michael White points out that the migration patterns we identify—movement of workers from low-income countries to higher income countries—are of net benefit to the receiving country. We agree, and we explored this theme in greater detail in our first follow-on study to *GT 2015*, entitled *Growing Global Migration and Its Implications for the United States*, now available on the NIC Web site (www.odci.gov/nic).

Natural Resources and the Environment

Both Leslie Johnston and Judith Shapiro take us to task for underplaying resource scarcities and the interdependence of natural resources and the environment. Methodologically, Shapiro is right to emphasize that these issues are a highly complex interplay of natural phenomena and decisions that societies and governments will take. We attempted to make this point by exploring a number of "human interventions" which affect the availability of food and water resources or the quality of the environment. Making the point more explicit is a helpful clarification.

On natural resources, both authors specifically challenge our initial assertion that world food grain production and stocks would in principle be adequate to meet global needs by 2015, but they fail to note our subsequent concentration on the maldistribution of food, growing water scarcities, the negative impact of water scarcities on food supplies, and the numerous environmental problems which will worsen with increasingly intensive land use (page 31). We share

Johnston's excellent points on the depletion of fisheries but, having made a macro judgment about aggregate food supplies and their maldistribution, we were reluctant, for reasons of space and level of detail, to elaborate on one subset of that judgment. We did note, however, that there is likely to be effective international cooperation on high-seas fisheries (page 48).

On the environment, particularly climate change, both Johnston and Shapiro see *GT 2015* as flawed by its limited attention to global climate change. We note at several points that the global economic outlook and continued (albeit more efficient) reliance on fossil fuels will substantially increase greenhouse gas emissions. We also project that global climate change will challenge the international community as indicators of a warming climate occur, such as meltbacks of polar ice, sea level rise, and more frequent major storms. Our emphasis on "progress in reducing growth" of greenhouse gas emissions, even in the absence of a global agreement on climate change, was not intended, as Shapiro appears to imply, to put a "positive spin" on what many see as a dire long-term development. Rather, it was intended to suggest that changes such as the adoption of less carbon-intensive development strategies by major developing countries and transnational firms are also underway and are making some incremental progress.

Finally, in response to Shapiro, our highly speculative idea that "a wider religious or spiritual movement, *possibly linked to environmental values*," might emerge was not intended to "dismiss" environmental concerns and the current level of public policy activism. To the contrary, we were arguing that attention to the environment is growing as a preoccupation of many societies, rich and poor. And we were looking for a way to suggest that this concern might also manifest itself in a more personal, less political way.

Governance and Identity

We welcome David Rejeski's and Johanna Forman's insistence on the centrality of governance and institutional capacity. Indeed, we debated whether governance was in fact the transcendent driver in our analysis, the factor that mattered more than any other. We studied and debated as well whether the nation-state would be a major or a much diminished actor in governance—given the enlarged roles that we anticipate for networked national and global non-state actors, both for-profit and non-profit. Our conclusion was that the nation-state would remain key to policy decisions—but successful governance would depend on harnessing the prowess of legitimate non-state actors.

Rejeski's focus on transnational corporations as unusually "effective institutions" for the global age is an apt example. His points about organizational learning capability have broad relevance for thinking about states and organizations that will or won't thrive in a world of transnational transactions. Forman's reflections on the relationship between stability and governance and the efficacy of foreign aid are interesting and worthy of further work. Our study stopped short of drawing direct ties between our judgments and their policy relevance; however, as in this example, *GT 2015* can be linked to an almost endless set of policy issues.

On identity, we welcome the distinction Gavin Kitchingham made between: (a) the UK's *Strategic Context's* treatment of "denationalizing" as a phenomenon among elite, Western groups; and (b) *Global Trends 2015's* discussion that national identity will weaken particularly in nations that are governed inefficiently. Both aspects of the question of "belonging" are important, and we need to do more work on this fascinating issue. We are intrigued by the subtle significance of people having dual (or more) nationalities and being able to participate in more than one culture, economy, and social sphere. While *GT 2015* concluded that the nation state is still strong in many parts of the world, we all need to think more about whether "national identity" is being transformed into a more flexible and agile idea for the globally mobile.

Role of the United States in the International System

Many participants in the colloquy welcomed the broad notion of national security that *GT 2015* adopted and commented on the complexity of the challenges the international system and globalization will pose for U.S. national security. Ervin Rokke's rejection of "linearity" in the international system and his remarks on the challenges facing the United States in this "new world" catches the overall thrust of our study particularly well: "*GT 2015* calls for a comprehensive approach to international stability and security that effectively integrates American policy across the spectrum of demographic, ecological, scientific, and economic as well as military drivers."

Michael Hanssler and Arno Weinmann took issue with our characterization of American power as "preeminent" over the next 15 years. They argued that China could well leap ahead, India could become an assertive major player, the poverty gap and digital divide could further discredit the Bretton Woods institutions, new economic and political power balances could develop, and a new system of global governance could well emerge. We are intrigued with this scenario and

argued among ourselves long and hard about these issues, as well as about the prospects for a sustained, networked anti-globalization—and by association, anti-U.S.—political movement. We concluded that there would be intermittent, ad hoc coalitions expressing resistance to specific U.S. policies or to perceived U.S. predominance, but that none would be sufficiently strong or enduring to bring about major changes to the international system. We anticipate that such systemic change would take longer than 15 years and would entail protracted bargaining among states with widely divergent views, independent of whether they might be united in opposition to the United States and its policies.

China

Contributors took us to task for a range of things we said or failed to say about China, its problems, and its potential to threaten U.S. interests. Judith Shapiro thought we understated the severity of China's environmental problems and their consequences for Chinese internal stability; Michael Ledeen found us complacent about China's ability to challenge American interests militarily. In treating the complexities and controversies involved in assessing China's future, we thought our greatest value was laying out the multiple factors and then setting the range of uncertainties. We declined to forecast whether China will succeed in its ambitions or stumble under the magnitude of the challenges facing it and realize we are disappointing many by not drawing stronger conclusions. How China develops, however, is understood by us and by nearly all who contributed to *GT 2015* to be among the greatest potential challenges to our national security interests.

We have commented on only a modest portion of the ideas presented in the essays. We do so, however, with thanks to all the contributors and to the Wilson Center for this stimulating initiative. We have already planned follow-on studies on some *GT 2015* themes. An analysis of migration was released in March 2001, and analyses of democratization, energy, science, and technology developments, military power, and terrorism will follow in the year ahead. We welcome further collaboration with these experts as we proceed to make *GT 2015* a continuing analytic exchange. **W**
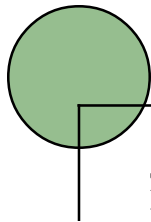
Regional Population by Age Group: 2000 and 2015

Billions
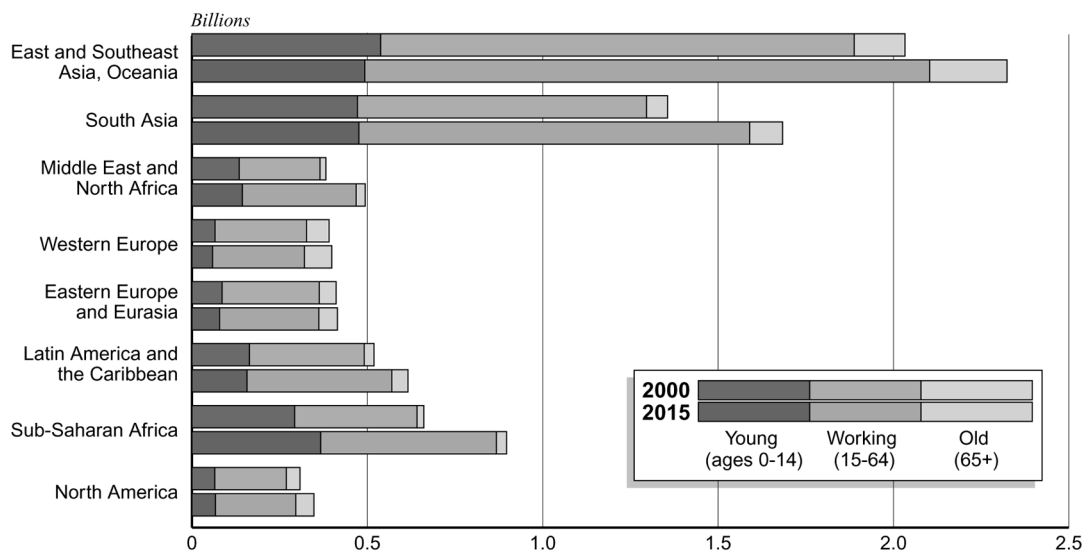
Source: US Bureau of the Census.

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From NIC *Global Trends 2015*

Driver Behavior in the Global Futures Scenarios

	Scenario: Inclusive Globalization	**Scenario: Pernicious Globalization**
Population	Global population increases by 1 billion people. Pressures from population growth mitigated by high average annual economic growth. Urbanization manageable in many countries, but some cities with rapid population growth become politically unstable. High migration beneficial for sending and receiving countries, although controversial in Europe and Japan.	Additional 1 billion people prove burdensome, since economic stagnation and high unemployment prevent absorption of new job market entrants or migrants. Inadequate urban infrastructure and social services in most cities create conditions ripe for instability and insurgency. South–North migration becomes major source of tension, spurring US and Europe to disengage from developing countries.
Resources	Population increases and robust economic growth will stress ecosystems, resulting in soil degradation, CO_2 pollution, deforestation and loss of species, especially in areas of rapid urbanization. Advanced developing countries largely resolve resource problems, although the poorest developing countries will suffer resource scarcities. In particular, water scarcities will worsen in South Asia, northern China, Middle East, and Africa.	Population growth will contribute to scarcities of arable land and fresh water, exacerbated by inappropriate policies of subsidy and protectionism. Resource scarcities, particularly that of fresh water, will be major problems in both emerging market and developing countries, reducing agricultural production and spurring migration to cities.
Technology	Conditions will be auspicious for rapid innovation, diffusion and implementation of IT, biotechnology, and smart materials. IT will promote productivity gains and higher levels of non-inflationary growth for many countries. Some countries will fall further behind because they lack sufficient education levels, infrastructure, and regulatory systems.	Innovation and diffusion will be slow, due to economic stagnation and political uncertainties. The destabilizing effects of technology will predominate: WMD proliferates; IT empowers terrorists and criminals. Benefits of technology will be realized by only a few rich countries, while most countries will fall further behind.
Economy	US global leadership and economic power, further liberalization of trade, broad acceptance of market reforms, rapid diffusion of IT, and absence of great-power conflict will generate on average 4% annual global economic growth. Emerging markets—China, India, Brazil—and many developing countries will benefit. Some states in Africa, the Middle East, Andean region, Central Asia, and the Caucasus will lag.	A US downturn leads to economic stagnation. Global consensus supporting market reforms will erode, undermining the "American economic model," making US especially vulnerable and leading US to disengage from global involvement. Emerging markets, as well as most developing countries, are hard hit by economic stagnation.
Identity and Governance	Ethnic heterogeneity challenges cohesion of some states, migrant workers create chronic tensions in ethnically homogeneous Europe and East Asia, and communal tensions and violence increase in developing countries with poor governance. In many states benefiting from rapid economic growth and spread of IT, functions of governance will diffuse widely from national governments to local governments and partnerships with business firms, non-profits. Some states' capacity to govern will weaken, and especially in the Andean region, Sub-Saharan Africa, and Central and South Asia.	Ethnic/religious identities sharpen in many heterogeneous states. Communal tensions and violence increase in Africa, Central and South Asia, and parts of Middle East. Political Islam grows. Likelihood of terrorism against targets linked to globalization and the US will increase, hastening Northern disengagement. Weakening of governing capacity at all levels among both developed and developing countries; China and Russia face territorial fragmentation.
Conflict	Absence of great power conflict. Conflict is minimal between and within developed and emerging market countries, due to economic prosperity and growing acceptance of democratic norms. Internal and cross-border conflicts persist in Sub-Saharan Africa, parts of Central, South, and Southeast Asia, and the Andean region due to lack of effective governance and countries' inability to handle population growth, resources scarcities, ethnic tensions, and urbanization. Developed countries will allow many strategically remote conflicts to proceed without attempting to intervene.	Risk of regional conflict in Asia rises substantially. Serious questions arise concerning: • China's territorial integrity. • India's ability to govern. • Future of democracy in Russia. Frequency of internal and interstate conflicts increases, triggered by rising tensions in emerging and developing countries and reduced cooperation among developed countries. WMD restraints will erode, increasing risks of terrorism and regional aggression.

	Scenario: Regional Competition	**Scenario: Post-Polar World**
Population	Additional 1 billion people prove burdensome for many developing countries, due to slow economic growth and regional protectionism. Cities in many developing countries become unstable, due to growing economic disparities, inadequate infrastructure and services, and weak governance: increasing cross-border migration.	Additional 1 billion people destabilizing some countries, such as Indonesia, and make some rapidly growing cities ungovernable. Population dynamics create opportunities for China and emerging market countries of Latin America and contribute to reordering of great-power relationships in Asia.
Resources	Population growth, economic pressures, and policy failures create resource scarcities, especially in poor countries and highly populated emerging markets. International environmental collaboration weakens, and local conflicts over water spur cross-border migration.	Resource trends similar to those in regional competition scenario.
Technology	Technology advances and commercializes rapidly, but regional protectionism reduces economies of scale and promotes trade barriers. Conflicts over market openings for high technology sectors break out. Developing countries unable to compete in global economy fall into technological backwardness.	Widespread regional protectionism and conflicts over access to high technology develop. Regional and great-power relations in Asia become more contentious. Demand for militarily-relevant technologies in Asia increases.
Economy	Growth is robust, but diminished by effects of regionalism and protectionism. US maintains advantage over Europe and Japan through ability to absorb foreign workers. Emerging markets are targets of developed country mercantilist competition. Other developing countries are neglected by rich countries and atrophied global institutions.	Economic trends similar to those in regional competition scenario.
Identity and Governance	Globalization, assertions of US "hegemony," and cultural changes challenge national identities, contributing to US-European and US-Asian estrangement and increasing US engagement in Latin America. Labor mobility sharpens ethnic/religious identities in countries where immigrants cannot be absorbed. Communal pressures in developing countries increase, in some cases leading to internal communal conflicts. Mercantilist competition strengthens the state. A number of regional organizations are strengthened while global institutions weaken, due to inattention, preoccupation with domestic/regional issues, and EU/Japan resentment of US preeminence.	Globalization and cultural changes contribute to US–European estrangement and increase US engagement in Latin America. Traditional national identities and rivalries stoke intensified nationalism in Asia. Labor mobility sharpens ethnic/religious identities in countries where immigrants cannot be absorbed. Communal pressures increase in many developing countries, and conflicts persist in the Andean region, Indonesia, and elsewhere. Both mercantilist competition and a growing prospect of interstate conflict in Asia strengthen developed and emerging market states' ability to command resources, invest in militarily-relevant technology, and control borders. Both global and regional intergovernmental institutions weaken.
Conflict	Increased regionalism results in conflict over markets, investment flows, and resources, further reducing international collaboration on terrorism, crime, cross-border conflicts, and WMD proliferation. WMD proliferates rapidly and dangerously. High levels of internal and cross-border conflicts persist in developing countries.	As US concentrates on Western Hemisphere and downgrades its presence in Europe and Asia, China drives towards regional dominance, Japan rearms and the risk of great-power conflict increases as US contemplates reasserting influence in Asia. WMD proliferates rapidly and dangerously, particularly in Asia. High levels of internal and cross-border conflicts persist in developing countries.

From NIC *Global Trends 2015*

CHINA ENVIRONMENT SERIES
Issue 4

The Working Group on Environment in U.S.-China Relations, a project within the Woodrow Wilson Center's Environmental Change and Security Project, and funded by the W. Alton Jones Foundation, the David and Lucile Packard Foundation, and the Energy Foundation, has published its fourth issue of the *China Environment Series*. A tool for researchers, policymakers, and educators, *CES* examines environmental and energy challenges facing China and explores creative ideas and opportunities for governmental and nongovernmental (NGO) cooperation.

The four feature articles in the current issue of *CES* are connected by a common theme of transition and change—specifically, how political and economic changes in China have affected the implementation of environmental and energy policies. Taken together, these articles also paint a clearer picture of the changing role local governments and NGOs (both Chinese and foreign) are playing in shaping the priorities and effectiveness of environmental protection and energy initiatives in China.

New to *CES* in this issue is a "Commentaries/Notes From the Field" section, including submissions from new China scholars and energy researchers.

Feature Articles
Hot Air and Cold Water: The Unexpected Fall in China's Energy Use
Jonathan Sinton and David Fridley

Local Environmental Management in China
Marilyn Beach

Paying for the Environment in China: The Growing Role of the Market
Sun Changjin

Total Emission Control of Major Pollutants in China
Dan Dudek, Ma Zhong, Jianyu Zhang, Guojun Song, and Shuqin Liu

Commentaries/Notes From the Field
Charge to the Bush Administration: U.S. Interests in Energy Cooperation with China—Kelly Sims
China's Changing Carbon Dioxide Emissions—Jeffrey Logan
"Seeking Contradictions" in the Field: Environmental Economics, Public Disclosure, and Cautious Optimism about China's Environmental Future—Eric Zusman
Environmental Disputes and Public Service: Past and Present—Anna Brettell
Clues and Cues—Humphrey Wou
The Changing Context for Taiwanese Environmental NGOs—Sean Gilbert
Let A Thousand Muckrakers Bloom—Ray Cheung

CES 4 also contains an updated and expanded "Inventory of Environmental Projects in China," which describes projects conducted by U.S. government agencies as well as nongovernmental and multilateral organizations.

To obtain a copy of *China Environment Series* 4, please contact Jennifer Turner at 202-691-4233 or by email at chinaenv@erols.com. You may also download a copy from the ECSP web site at http://ecsp.si.edu.