

Educating Globally Competent Citizens

A Tool Kit for Teaching Seven Revolutions

EDITORS

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Susan Moss
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FOREWORD

George L. Mehaffy

INTRODUCTION

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FOREWORD

George L. Mehaffy

The Seven Revolutions (7 Revs) initiative is one of six activities in the Civic Engagement in Action Series, a set of national programs designed to support and reinforce the work of the American Democracy Project (ADP). ADP, started in 2003 as a joint effort of the American Association of State Colleges and Universities (AASCU) and the *New York Times*, seeks to emphasize the role of public colleges and universities in preparing the next generation of informed, engaged citizens for our democracy. Now involving more than 220 colleges and universities throughout the United States, the ADP has spawned hundreds of campus activities, projects, and programs.

To support the work of the participating campuses, AASCU, and the *New York Times*, the Civic Engagement in Action Series initiatives serve as laboratories for developing new models, new approaches, and new materials for fostering civic engagement. The national projects include a variety of topics and approaches—for example, programs as diverse as the Stewardship of Public Lands, a study of political conflict at Yellowstone National Park; Deliberative Polling, a set of deliberative polls involving campus and community members; and America's Future, addressing the fiscal crisis of deficit and national debt. Each of these programs includes an external partner, a set of selected AASCU member campuses, and a special focus. The goal of each program is to create new approaches and materials that can be used by all participating ADP schools, serving as research and development centers for the larger project.

The 7 Revs program is a partnership between the Center for Strategic and International Studies (CSIS), an international policy center in Washington, D.C., the *New York Times*, AASCU, and eight AASCU member institutions. The goal of the 7 Revs program is to produce strategies, materials, and programs to develop globally competent citizens. Much of the rest of the ADP is focused inwardly, on our democracy or on uniquely American political and public policy issues. The 7 Revs initiative is the only one of the national programs to be focused internationally, on preparing American citizens to be informed about world issues and capable of making judgments as American citizens about global issues.

Several features make the 7 Revs program unique. First, the partnership of a major policy center and a major national newspaper provides an unusual collection of materials: policy papers and other products of the think tank, newspaper archives that extend back to 1851, and the current streaming news that is gathered from all over the globe. Second, a selected group of scholars takes this large collection of resources and converts it into teaching materials and pedagogical approaches, utilizing their experience and knowledge of students to create lively, engaging resources and approaches that maximize student involvement and participation. Finally, these partners are

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all very intentional about collecting, sharing, and collaboratively reviewing materials and resources to create a substantive archive of teaching and curriculum objects for use in any college or university classroom.

In the current sets of debates about the international order, many argue that the nation-state is no longer a viable concept, swept away by the forces of a global economy and transnational corporations, facilitated by the rapid rise of the nongovernmental organization sector. In this new world, those critics would argue, citizenship itself may be an outdated notion. Clearly we all need to become more global in our perspective. Pandemics, global warming, and terrorism recognize no nation-state boundaries. Yet citizens still must act, in the main, from their own circumstances as members of a particular government. We cannot carry out citizenship duties as global citizens; we cannot vote for the head of the United Nations or elect members of the World Court. We still must act as citizens of a particular country, in our case, the United States.

But our inability to act as citizens, in the real sense of that word, beyond our borders does not mean that we must not be globally competent citizens. As never before in the history of humankind, we must now act as citizens of the United States in a rapidly changing global context. We must understand ourselves in relationship to the other six-plus billion people on this planet. We must understand the forces at work that imperil us all. We must understand the hopes and aspirations of others, the physical forces at work that threaten our lives and livelihoods, the social and political forces that hold the potential to disrupt our economic and political systems. Although we must act locally as American citizens, we must think globally to prepare ourselves for a future that we can only barely imagine. Acting locally but thinking globally will be the very best strategy to protect our country and our planet.



PREFACE

This *Tool Kit* represents the work of many individuals from organizations and institutions across the United States. Each person who contributed to it recognizes the importance of preparing college and university students to be informed and engaged members of a globally interdependent society. We hope this *Tool Kit* will provide faculty members and others with resources that will enable them to provide students with the knowledge, skills, and predispositions to become globally competent citizens.

We also recognize that each faculty member will use the information provided in the *Tool Kit* in distinctive ways and will develop her or his own methods of teaching these very broad topics. Some faculty members will adapt existing introductory or upper division courses that address global issues to incorporate the Seven Revolutions framework and related resources, as several faculty in partner institutions have done; others may create new courses using elements of this *Tool Kit* as a foundation. Some faculty may infuse material from the *Tool Kit* into existing courses that would benefit from a global perspective, just as faculty from disciplines as diverse as theater, business, and history have done previously.

We hope this *Tool Kit* will be constantly expanded, updated, and improved. As the contributors to this *Tool Kit* identify or create new resources or materials to teach 7 Revs, we will add them to the web site at <http://gsi.csis.org/toolkit>. We will also incorporate new items into the “Teaching Seven Revolutions Sample Course” and the “Teaching Seven Revolutions” group at Epsilen.com. We further hope that you and others interested in teaching global content will contribute your ideas about teaching 7 Revs to us at toolkit@csis.org. We will then select and post the best of these submissions to make the online *Tool Kit* at CSIS a dynamic and enhanced resource to educate students in becoming globally competent citizens.

Completion of this *Tool Kit* would not have been possible without contributions of time and effort from other members of the 7 Revs working group—Scott Aughenbaugh, Curt Brungardt, Marcus Ford, Karie Hollerbach, Catherine Mason, Cecilia Orphan, Nathan Phelps, and Steve Roderick. The editors are also grateful to the leadership provided by individuals from the three partner organizations: George Mehaffy, vice president for academic leadership and change at the American Association of State Colleges and Universities, who provided vision and wise counsel for the 7 Revs project; Felice Nudelman, executive director for education at the *New York Times*, who directed vital resources from the *Times* to the project; and Erik Peterson, former senior vice president and director of the Global Strategies Institute at the Center for Strategic and International Studies, who created the Seven Revolutions framework and content and has continued to support the project and the development of this *Tool Kit*. Thanks as well to the staff at the Global Strategies Institute for their work, including Christian Hall, Kartik Akileswaran, Ian Gross, Rachel Posner, and Owen Sanderson.



INTRODUCTION

Erik R. Peterson

For more than a decade, I crisscrossed the world to meet with groups interested in identifying the longer-range trends at work in our world and exploring what they imply. Over this period, I addressed more than 750 major audiences consisting of some 105,000 people in 24 countries and in 48 American states. The audiences included royalty, senior government officials in various countries, boards of business titans, leaders of prominent nongovernmental organizations (NGOs), and senior members of various research groups. Speaking venues ran the gamut—the World Economic Forum annual meeting in Davos, the TED conference, the Risk Assessment and Horizon Scanning event in Singapore, the “tank” in the heart of the Pentagon, the Business Council, the Economic Club of Chicago, a meeting of a government group called “Proteus” at the Carlisle Barracks of the Army War College, the World Chambers Congress meeting in Kuala Lumpur, the board of the American Cancer Society, a exceptionally talented and committed group of teenagers from Arlington, Virginia’s Thomas Jefferson High School for Science and Technology, and the presidents, provosts, and faculty of the member institutions of the American Association of State Colleges and Universities (AASCU).

The subject matter at these meetings was the “Seven Revolutions” model—an exercise we developed years ago to identify the most significant long-term forces shaping developments across the world; to pinpoint key inflection points or policy “intersections” corresponding to these “revolutions” that will be important to leaders for their decision-making; to promote more systematic thinking about the spectrum of longer-range issues we face; and to contemplate the complex linkages that exist between these drivers of transformation. This effort is constantly updated and refined so that it is as applicable as possible to the evolving circumstances we face. The goal is to project the kinds of opportunities and challenges that leaders will experience in the year 2025 or even beyond.

The seven “revolutionary” areas of change are

Population—shifts in the nature of the human family, including overall population level, rate of demographic growth, distribution of growth, age distribution, level of urbanization, and the profound asymmetries implicit in many of these demographic trends;

Strategic resource management—in the face of increasing population pressures and environmental sustainability limits, the challenge of meeting demand in food, water, and energy;

Technology innovation and diffusion—exploring which technologies will have the greatest influence on changing our lives, with a view to innovations in computation, robotics, biotech and nanotech, and a focus on convergence points between them;

Erik R. Peterson is a senior advisor at CSIS and the founder and director of the Global Strategy Institute at CSIS from 2003 to 2010. He is currently director of A.T. Kearney's Global Business Policy Council.

Information and knowledge creation and dissemination—the remarkable opportunities and challenges associated with the exponential rise in the movement of data, information, and knowledge across the planet;

Economic integration—implications of the continuation of the massive cross-border movements of goods, services, labor, capital, and technology, and the volatility such integration engenders;

Conflict—the tremendous new complexities associated with addressing the erosion of the nuclear non-proliferation regime, traditional nuclear and radiological threats, the onset of new threats involving bioterrorism, the rising specter of cyber-warfare, and the challenge of post-conflict reconstruction; and

Governance—in government, the private sector, and civil society, or in the research and education fields, our capacity to organize ourselves to seize opportunities and mitigate risks in the longer run.

Why these particular trends? First, the number seven is arbitrarily chosen, and so too is the projection period out to the year 2025. I settled on the number seven because it was manageable but not so small that it created concerns about overgeneralizing. In other words, the approach was far from scientific. The practical explanation for the time frame we have chosen is simply that many data sets extend to that year. When we reach the point that those data sets are pushed out to the year 2030 and even further, we will adjust the model accordingly.

Second, in choosing the various “revolutionary” forces, I sought to identify those areas of change that would likely have the greatest impact on transforming the world. It should be emphasized that a number of areas not encapsulated in the current “Seven Revolutions” framework are tremendously important, but I have concluded that the level of change—the delta—will not be as significant as in the Seven Revolutions. Still other areas—religion, ideology, and nationalism, for example—transcend all seven of the revolutionary forces identified but defy easy description or quantification. They are an essential part of the future, of course, and apply (either constructively or negatively) to all seven of the revolutions.

The conceptual point of departure is that each of these revolutions embodies both promise and peril and that to succeed (by mitigating risk and exploiting opportunities), future leaders in all domains must determine the broad trajectory that these revolutionary forces will follow. Leaders across disciplines are excessively focused on the short term, and therefore attempts to help them understand and pre-position for the more distant future are especially critical. To this end, “Seven Revolutions” examines the structural forces of change in a time frame well outside the normal planning parameters of 3 or 5 or even 10 years. By assessing how the world might change in the more distant future—out to the 2025 time frame and even beyond—the effort was—and is—deliberately outside the comfort zone of many planners and analysts.

Reaction to the Seven Revolutions initiative has been very encouraging. The presentation has engaged a highly diverse set of audiences—big and small; general and specialized; government, private-sector, NGO, and academic; U.S. and foreign; young and old; politically liberal and conservative.

The evaluations suggest that the positive response is attributable to three things in particular. The first is the sweeping nature of the Seven Revolutions model. All told, it offers a comprehensive view on what is happening in our world and how it might change in the future. Especially in light

of the culture of segmentation and specialization in which we live, audiences seem to appreciate a more holistic look at the constellation of issues we face. It also shatters our ADHD tendencies when it comes to thinking about longer-range trends. Second, the initiative and the presentation draw heavily on empirical evidence, whenever it is possible, and seek to be as nonpartisan as possible. The underlying rationale is that we all need to be focused on identifying the most salient trends at work before we can begin to shape a response. Finally, the Seven Revolutions initiative offers a framework against which to test ideas and notions about how to prepare for the future. Time and time again, individuals have stressed how interesting it is for them to think in more general terms about the events around them.

The need for globally competent students...

A friend recently sent me an email with a YouTube link. On the video was a charismatic young Indian boy whose father was quizzing him on the names of the capitals of American states.¹ In each case, the boy is able to recount the names: Carson City for Nevada, Montgomery for Alabama, Columbia for South Carolina, Helena for Montana, and so on. I wondered: How many young children in the United States can rattle off the names of the capital cities in India's various states? How many American children even know how many states there are in India? Or the name of the country's capital city? Here is a country that contains 1.2 billion people, more than 17 percent of the human family, and how many young children in the United States have any understanding of the various dynamics at work there?

My friend's email arrived a day after I had heard an interesting American Public Media *Marketplace* radio segment on the class system in India.² The piece focused on the Dalits—the so-called backward caste—and among other things highlighted the effort by Dalits to get ahead in life both politically and economically. What caught my ear was a description of “study street,” a street in Mumbai where young Dalits living in small, highly crowded and noisy spaces can study undisturbed at night—some all night—by streetlight. The students hope, the *Marketplace* segment noted, that the local government will install a few benches and leave the lights on longer so that they can sit down as they study their way through the night, a powerful reminder of the commitment to education constantly on display elsewhere in the world.

In reading an airline magazine a year ago I saw an image of a classroom in China—from Sichuan Province—with a teacher, a chalkboard, and a number of sharply focused students. What made the picture so spellbinding to me was the location of the classroom. It was in a cave—on a rudimentary concrete slab, illuminated by a single, unprotected light bulb, with a large water container in the background.

Not one of these recent reflections of the rest of the world is particularly novel. That students from countries big and small across the planet have sharpened their skills in geography (on the United States and elsewhere) does not represent much by way breaking news. At an early age, many students outside the United States master multiple languages and develop keen understandings of cultures, geographies, and societies in countries and regions far beyond their capacity to visit firsthand. Neither is the commitment on display at “study streets” every night or in “cave

1. See <http://www.youtube.com/watchv=RIH1I1doUI4>.

2. Rico Gagliano, “India's Dalits Seek Economic Equality,” *Marketplace*, America Public Media, April 15, 2009.

classrooms” each day at all unusual. In societies across the world, communities regard education as a critical pathway to security, stability, and prosperity. These stories are emblematic of the importance attached to learning in rising societies elsewhere in the world.

There is, however, something very striking associated with these snapshots of humanity. What is remarkable is the contrast with what we see day-to-day in the United States. In the country with the highest student per-capita investment in K-12 on the planet, in the country that is home to the lion’s share of the finest and most respected institutions of higher learning, and in the country that in recent years has been recognized across the world as the unchallenged superpower, the “hyperpower,” a large percentage of students do not display the capacity to understand the fundamental dynamics of the world around them. Some are merely disconnected; others are apathetic, indifferent, disinterested, or even unapologetically ignorant when it comes to developments outside their country. How many of our children are prepared to work as hard as their counterparts in the “study streets” and “cave classrooms?”

Survey data reinforce the notion that the next generation of Americans is disconnected. According to a 2006 National Geographic Society survey, for example, only 20 percent of respondents (young persons in the United States between the ages of 17 and 24) could identify Iraq on a map; only 10 percent could identify where Afghanistan is situated.³ The same survey indicated that only 20 percent of young Americans held a passport; only 30 percent had traveled abroad in the last three years; and only 38 percent had studied a second language. The results of this study and many others like it reveal the symptoms of a greater problem: As the world becomes increasingly globalized and as societies become all the more interconnected, many American students will lack the tools they require to assign a context to the political, social, economic, and scientific developments affecting their lives.

To address this problem, the National Geographic Society has responded with a project it calls “My Wonderful World,” to raise understanding of geography.⁴ Other efforts are being implemented through the American Forum for Global Education, the National Endowment for the Humanities, the National Peace Corps Association, and the World Bank Institute.⁵

3. See GfK Roper Public Affairs and National Geographic Education Foundation, Final Report, National Geographic-Roper Public Affairs 2006 Geographic Literacy Study, May 2006, pp. 8–9, <http://www.nationalgeographic.com/roper2006/pdf/FINALReport2006GeogLitsurvey.pdf>.

4. See <http://www.mywonderfulworld.org/>. The effort seeks to improve the understanding of students on a range of geography-related issues. The National Geographic Society has mobilized a coalition of organizational partners, including 4-H, American Federation of Teachers, Anheuser-Busch Adventure Parks, Asia Society, Association of American Geographers, Budget Rent A Car, Committee for Economic Development, Council on Competitiveness, ESRI, Geological Society of America, The GLOBE Program, iEARN-USA, International Reading Association, Lindblad Expeditions, NBA Cares, The National Council for Geographic Education, National Council of La Raza, National Council for the Social Studies, National PTA, Sesame Workshop, Smithsonian Institution, United Nations Foundation, and the World Affairs Councils of America.

5. See Carol M. Barker, “Education for International Understanding and Global Competence: Report of a Meeting Convened by the Carnegie Corporation of New York,” January 21, 2000. Barker reported: “Meeting participants pointed out that the availability of such resources is not enough. The impact of isolated innovations and interventions soon dissipates. Teachers must be prepared to integrate resources such as new content and technology into the classroom, and they need incentives and support to do so on a continuing basis.” *Ibid.*, p. 5.

However, the challenge goes well beyond the scope of these important efforts. American students need a sharper understanding of where global trends are taking them, what those future trends imply, and what kinds of leadership and policy challenges they suggest. This is the basis for the partnership between CSIS and both AASCU and the *New York Times*. We aim to create an innovative electronic information-pipeline to hone the analytical skills that American undergraduate students need for building a forward-looking, broad-based worldview.



EXPERT RESOURCES

As with many teaching and learning endeavors, some of the best resources are the people who have taught similar courses previously. The faculty members below have taught courses related to 7 Revs and invite you to contact them if you would like them to share their experience with you. Institutional affiliation and contact information are included for each person.

- Curt Brungardt, Voss Endowed Professor of Leadership, Fort Hays State University
785-628-5592, cbrungar@fhsu.edu
- Dennis R. Falk, Professor in the Department of Social Work, University of Minnesota Duluth
218-726-8862, dfalk@d.umn.edu
- Marcus Ford, Professor of Humanities, Northern Arizona University
928-523-9617, Marcus.Ford@nau.edu
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- Martin Shapiro, Associate Professor of Psychology, California State University, Fresno
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- Brett Whitaker, Instructor of Leadership Studies, Fort Hays State University
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1

UNDERSTANDING THE SEVEN REVOLUTIONS INITIATIVE

Dennis R. Falk and Cecilia M. Orphan

This *Tool Kit*, a part of the Seven Revolutions (7 Revs) initiative to educate globally competent citizens, is the product of a collaboration among the American Association of State Colleges and Universities (AASCU), the Center for Strategic and International Studies (CSIS), and the *New York Times* (*Times*). The *Tool Kit* provides background and content on the 7 Revs from CSIS, case studies on how seven AASCU campuses have used 7 Revs in their curricula, and teaching materials and resources that can be used to educate globally competent citizens using the 7 Revs framework. This introductory chapter includes background on the project partners and their activities, clarification of the project's goals and objectives, an explanation of the context of the project, and an introduction to the 7 Revs framework.

Partners and Their Activities

AASCU, the *Times*, and CSIS joined with seven AASCU campuses and one university system to develop a comprehensive Internet-based repository of curricular materials and set of activities that will aid faculty members in facilitating the education of globally competent citizens on college and university campuses. The goal of this project is to increase the number of undergraduates who possess knowledge, skills, and attitudes related to global issues that will enable them to act as responsible, engaged citizens.

AASCU represents more than 430 public colleges, universities, and systems of higher education throughout the United States and its territories. AASCU schools enroll more than three million students, or 55 percent of the enrollment at all public four-year institutions. The American Democracy Project (ADP) began in 2003 as a collaboration between AASCU and the *New York Times*. Alarmed by the declining levels of civic engagement on the part of young people in the United States, AASCU and the *Times* launched this national initiative. Believing that the purpose of higher education is to serve the public good and to prepare the next generation of active, engaged citizens for American democracy, they sought the participation of AASCU institutions in the work of citizen preparation. Today, ADP has grown to 224 participating with hundreds of events, programs, and classroom activities.

7 Revs was originally conceived of by Erik Peterson, director of the Global Strategy Institute (GSI) at CSIS, a policy think tank in Washington, D.C. He developed a comprehensive program to identify and analyze the key policy challenges and trends that policymakers, business figures, and other leaders will face out to the year 2025. He entitled the project "The Seven Revolutions." It is

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an effort to promote strategic thinking on the long-term trends that too few leaders take the time to consider. In exploring the world of 2025, seven areas of change expected to be most “revolutionary” were identified: (1) population; (2) resource management and environmental stewardship; (3) technological innovation and diffusion; (4) the development and dissemination of information and knowledge; (5) economic integration; (6) the nature and mode of conflict; and (7) the challenge of governance.

Peterson and his staff at CSIS joined with AASCU and the *Times* to translate the rich content of the 7 Revs analysis, coupled with both current and archival content from the *Times*, into curriculum materials and instructional strategies for universities to use to prepare globally competent citizens.

The work of the 7 Revs initiative began in September 2006 with a two-day seminar at CSIS headquarters in Washington, D.C. Faculty representatives and administrators from seven AASCU pilot campuses and one university system participated. Using the framework of 7 Revs, the project integrated resources from CSIS, the *Times*, and other sources into an Internet-based repository of materials that students and teachers at universities and colleges can use to educate globally competent citizens. 7 Revs Scholars were identified from the group that participated in the preliminary seminar and were responsible for developing and testing curriculum and cocurricular events on their campuses, with the goal of later disseminating this work to all 400-plus other AASCU institutions.

The *New York Times* is a well-known worldwide news-gathering and dissemination organization. The *Times* collaborates with AASCU, CSIS, and the 7 Revs scholars via its Knowledge Network to develop curricular resources. One of the early challenges the group faced was finding a seamless way to work together, share documents, communicate, and build curriculum and courses. The Epsilon platform was identified as a way to solve the challenge of distance by providing a true Web 2.0 learning environment and a suite of tools for collaboration and networking, document management, and course development. Outside of face-to-face meetings, the scholars continued their work with the *Times* and CSIS staffers in this online environment.

Another challenge the group faced was access to the *Times* and CSIS content and the ability to integrate the desired content into their courses. To support the initiative the *Times* created an online repository of content reaching back to 1851, with archives, articles, multimedia, graphics, and blogs that can be tailored to each of the 7 Revs. CSIS content is also integrated into the repository, providing faculty with rich and deep access to primary documents, interviews, and research.

Working with the faculty scholars, a series of 7 Revs content templates was created with *Times* and CSIS content. These templates are delivered through Epsilon and can be integrated into online courses and curriculum to support the teaching of the 7 Revs across various academic disciplines.

Representatives from seven AASCU campuses and one system have been instrumental in implementing the 7 Revs initiative. These institutions are

- California State University at Fresno
- Fort Hays State University (Kansas)
- Fort Lewis College (Colorado)
- Northern Arizona University

- Southeast Missouri State University
- University of Minnesota Duluth
- University System of Georgia
- Western Kentucky University

The primary representative from each institution has been termed a “7 Revs Scholar.” The University System of Georgia made important contributions to the project in the first two years, but had to withdraw prior to the completion of this *Tool Kit*.

Representatives from AASCU headquarters, the participating AASCU institutions, CSIS, and the *Times* have met regularly over the past three years. During this time, the 7 Revs Scholars have clarified goals and objectives for the project, refined assumptions about students and the context in which education will occur, created content and teaching/learning activities in the curriculum, and developed plans for implementing and evaluating the project. They have also tested materials and strategies in their own courses and worked with other faculty on the participating campuses to field-test the materials. The *Tool Kit* is the culminating product of this work.

Project Goals and Objectives

The partner organizations and campuses were drawn to the 7 Revs project because of the critical need for citizens to be globally competent, contrasted to the relative lack of preparation at all levels of our educational systems. On the one hand, citizens of the United States and other countries are inextricably linked with one another because of economic, social, and political integration. On the other hand, youth in the United States are relatively uninformed about the key current and future issues that face the world as a whole. Erik Peterson more fully describes the gap between the need for global competence and the current limitations of our citizens in the introduction to this *Tool Kit*.

Early activities of the partners focused on clarifying the goals and objectives of the project. The goal of the Seven Revolutions project is to educate globally competent citizens in AASCU institutions. For the purpose of this project, a *globally competent* citizen is defined as a person who possesses the knowledge, skills, and attitudes to be an engaged, responsible, and effective citizen of the United States, living in a globally interdependent society. In the context of this project, the goal of colleges and universities is to provide educational opportunities that maximize the likelihood that all graduates acquire the characteristics of a globally competent citizen.

In an effort to identify the global competencies that university students should have upon graduation, 21 individuals from the eight 7 Revs institutions were interviewed in late 2006. These individuals identified a set of knowledge, skills, and attitudes that university students should acquire in college to become globally competent citizens:

- **Knowledge**—Upon graduation students will be *able* to
 1. Describe important current events and global issues (e.g., environment, economic, political, health, population).
 2. Understand and analyze issues and events in the context of world geography.
 3. Explain how historical forces affect current events and issues.
 4. Describe the nation-state system with its strengths and limitations.

5. Describe cultures from around the world, including religions, languages, customs, and traditions.
 6. Identify transnational organizations (e.g., NGOs, multinational corporations) and their impact on current issues.
 7. Explain the interdependence of events and systems.
 8. Describe how one's own culture and history affect one's worldview and expectations.
- **Skills**—Upon graduation, students will be *able* to
 1. Obtain relevant information related to the knowledge competencies listed above.
 2. Analyze and evaluate the quality of information obtained.
 3. Think critically about problems and issues.
 4. Communicate effectively verbally and in writing.
 5. Communicate and interact effectively across cultures.
 6. Speak a second language.
 7. Take action to effect change, both individually and with a team.
 - **Attitudes**—Upon graduation, students will be *predisposed* to
 1. Be open to new ideas and perspectives.
 2. Value differences among people and cultures.
 3. Be intellectually curious about the world.
 4. Be humble, recognizing the limitations of one's knowledge and skills.
 5. Reflect on one's place in the world and connection with humanity.
 6. Engage in an ethical analysis of issues and have empathy for one's fellow human beings.
 7. Feel a sense of responsibility and efficacy to take action based on ethical analysis and empathy.

The competencies identified in the interviews overlapped significantly with other efforts to examine global competence and citizenship, including those identified by Hunter, White, and Godbey and by Siaya.¹

Context for the Project

Becoming a globally competent citizen and achieving the competencies described above can best be accomplished in the context of comprehensive internationalization of an entire college or university campus. The American Council on Education suggests that an internationalized campus should be characterized by 10 elements:

1. Commitment to internationalization is articulated in the institution's mission, goals, and objectives.
2. The local, state, and broader environment supports internationalization efforts.

1. B. Hunter, G. P. White, and G. C. Godbey, "What Does It Mean to Be Globally Competent?" *Journal of Studies in International Education* 10, 3 (Fall 2006): 267–285; L. Siaya, in M. F. Green and C. Olson, *Internationalizing the Campus: A User's Guide* (Washington, D.C.: American Council on Learning, 2003).

3. The institution has a clear strategy to accomplish its mission and goals related to internationalization.
4. Structures, policies, and practices are aligned with articulated international mission and goals.
5. Both the curriculum and co-curriculum promote international learning.
6. Study and internships abroad are available and encouraged.
7. The campus has relationships with institutions abroad for instruction, research, and service learning.
8. Internationalization is an integral part of the campus culture.
9. Communication and synergy are present among international components on campus.
10. The campus has a comprehensive internationalization plan incorporating the elements above.²

The current 7 Revs project focuses primarily on developing curricula to support globally competent citizenship. Developing other elements of internationalization described above will enhance the ability of the curriculum to achieve identified global competencies. Study abroad and service learning at both the local and international level can be key elements of moving toward global competence but are largely beyond the scope of this project.

The AASCU institutions for which the 7 Revs curricula and other resources are intended vary widely across six Carnegie Classifications. These institutions:

- have small, medium, or large student populations;
- are located in urban, suburban, or rural areas;
- are comprehensive in their coverage of the various academic disciplines; and
- are public institutions that offer baccalaureate and master's degree programs.

The *Tool Kit* is one effort to expand the work done by the original eight 7 Revs AASCU institutions to all 430 AASCU institutions and to other postsecondary and secondary institutions that are interested in educating globally competent citizens. This *Tool Kit* is intended as a resource for introductory and upper-division courses that focus on global issues such as those addressed by the seven revolutions or for infusing international content across the curriculum in varied disciplines.

Content

CSIS's 7 Revs framework encompasses most of the key global issues facing our contemporary and future world. However, based on the goals, objectives, and context of the current project, an expansion of 7 Revs was developed by participating faculty:

- Revolution One: Population
 - ◆ Population growth in developing countries
 - ◆ Population decline/aging in developed countries

2. C. Olson, M. F. Green, and B. A. Hill, *A Handbook for Advancing Comprehensive Internationalization: What Institutions Can Do and What Students Should Learn* (Washington, D.C.: American Council on Learning, 2006), 16.

- ◆ Urbanization
- ◆ Migration across borders
- Revolution Two: Resource Management
 - ◆ Food and hunger
 - ◆ Water
 - ◆ Energy
 - ◆ Climate change
 - ◆ Loss of biodiversity
 - ◆ Sustainability
- Revolution Three: Technology
 - ◆ Computation
 - ◆ Genetics and biotechnology
 - ◆ Nanotechnology
 - ◆ Information technology
 - ◆ Convergence of technologies
 - ◆ Human health
- Revolution Four: Information
 - ◆ Connectivity
 - ◆ Lifelong learning
 - ◆ Information integrity
- Revolution Five: Economic Integration
 - ◆ Globalization characteristics
 - ◆ BRIC economies (Brazil, Russia, India, China): the changing global balance of productivity
 - ◆ Continuation of extreme poverty
- Revolution Six: Conflict
 - ◆ Sources and causes of conflict
 - ◆ Changing patterns of conflict
 - ◆ Addressing conflict resolution
 - ◆ Transnational organized crime
- Revolution Seven: Governance
 - ◆ Corporate citizenship and multinational corporations
 - ◆ Civil society and nongovernmental organizations
 - ◆ National governments
 - ◆ International organizations
 - ◆ Need for strategic coalitions

CSIS has a growing reservoir of print, audio, and video resources that can be used to augment global issues content. CSIS provides regular updates on relevant topics through RSS feeds and frequently solicits questions from students and faculty to ask of international experts. Responses are video-recorded and made available to students. A [recently updated Seven Revolutions Web site](#) provides a repository of these resources.

The *Times*' extensive worldwide news reporting and archives provide current content and historical context for considering global issues. The *Times* can also provide near-daily updates on relevant topics through RSS feeds and has significantly expanded its multimedia materials. Other content can supplement and complement the resources from CSIS and the *Times*. The United Nations, the Public Broadcasting System, the BBC, and many non-western resources offer varied perspectives.

Overview of the Tool Kit

The purpose of this *Tool Kit* is to provide faculty with basic background knowledge about 7 Revs content, ideas for teaching this content in a variety of settings, and teaching materials and resources that can assist in educating globally competent citizens. Chapter 2 of the *Tool Kit* includes background information on the development and use of the 7 Revs framework and an overview of key content related to 7 Revs developed by the staff at the Global Strategy Institute. Chapter 3 provides case studies of how 7 Revs has been used on seven campuses. In the final two chapters, 7 Revs Scholars share the teaching materials and resources that they have found most helpful in teaching seven revolutions.

This printed *Tool Kit* is intended for use in conjunction with regularly updated, relevant online resources, as the topics covered in the 7 Revs and the resources to effectively educate globally competent citizens are constantly changing and being enhanced. On a daily and sometimes hourly basis, the *New York Times* Web site provides updates on the topics related to 7 Revs, and faculty are encouraged to use the online *Times* content to supplement their own knowledge and as a resource for students. One sample 7 Revs course is currently available on the Epsilon Web site, and additional courses may be available in the future. A “Teaching Seven Revolutions” group within Epsilon will provide a forum for exchanging information about educating globally competent citizens.

The Web site of the Global Strategy Institute at CSIS also provides updated and enhanced materials related to teaching seven revolutions. This site includes a PDF version of the *Tool Kit* that facilitates linking to the many online resources included (see below). The [GSI Web site](#) includes overview content on the 7 Revs, the futures for world regions, and the GSI global water futures project. A higher education section of the GSI Web site includes a blog on teaching 7 Revs content. GSI has an expanding online video library of interviews of international experts on global issues. As new resources and teaching materials related to 7 Revs are identified, they will be added to a searchable repository on the GSI site.

Conclusion

The Seven Revolutions project addresses a critical need in our society—citizens who can make informed and thoughtful judgments about the issues confronting both our country and the planet in an increasingly complex, interdependent global society. We hope that the partnership of AASCU,

CSIS, and the *New York Times* will provide crucial resources to all AASCU campuses, as well as the rest of American higher education, to enable colleges and universities to prepare the next generation of undergraduates to serve as wise stewards of our planet.

Internet Resources

- American Association of State Colleges and Universities (7 Revs link)
<http://www.aascu.org/programs/adp/initiatives/revolutions.htm>
- Center for Strategic and International Studies (Seven Revolutions site)
<http://www.csis.org/program/seven-revolutions>
- Center for Strategic and International Studies (Higher Education site)
http://gsi.csis.org/index.php?option=com_content&task=view&id=65&Itemid=94
- *New York Times* (general site)
<http://www.nytimes.com/>
- Epsilon Course Management System (home page)
<http://www.epsilon.com/Epsilon/Public/Home.aspx>

2

THE SEVEN REVOLUTIONS THE MAJOR TRENDS THAT WILL SHAPE OUR WORLD TO 2025 AND BEYOND

Leaders increasingly have few opportunities to think beyond their short-term priorities and immediate responsibilities. Instant information flows are bringing planning horizons closer and closer to the present; pressures from multiple stakeholders are eroding prospects for consensus. It is increasingly difficult for leaders to act in the short term in ways that will yield positive, long-term results. Are we preparing our students, the next generation of leaders, for this kind of flat world?

In exploring the world of 2025, the Seven Revolutions project identified seven areas of change we expect to be most “revolutionary”:

- population
- resource management and environmental stewardship
- technological innovation and diffusion
- the development and dissemination of information and knowledge
- economic integration
- the nature and mode of conflict
- the challenge of governance

Each of these seven forces embodies both opportunity and risk in the years ahead. Together, they will transform the way we live and interact with one another. That is why we call them the “Seven Revolutions.”

Revolution One: Population

How many people can our planet handle?

Over the next 20 years, the vast majority of the world’s population growth will occur in the developing world, in nations least capable of supporting it either politically, environmentally, or economically. The developed world will face its own set of challenges, including declining populations, rising aging segments, and changing migration patterns.

It is difficult to imagine the remarkable changes that have occurred historically when it comes to population, so consider how humanity arrived at this number. By the time Christopher Columbus reached the New World, global population had reached about 500 million.¹ By July 1, 2009,

1. “Historic Estimates of World Population,” U.S. Census Bureau, <http://www.census.gov/ipc/www/worldhis.html>.

total population had increased by a factor of more than 13, to 6.7 billion—the majority of this growth having occurred between the end of the World War II and the present.² By 2025, global population will likely reach 8 billion; and by 2050 there will be around 9.15 billion people on Earth.³ This addition of some 2.4 billion people to the global family (from 6.8 billion in April 2009 to nearly 9.2 billion by 2050) will strain economic and social systems and put unprecedented pressure on the allocation of scarce resources.

Developing Countries

Eight countries are expected to account for the majority (52.3%) of the world’s population in 2050. Seven of these countries (India, China, Pakistan, Nigeria, Indonesia, Bangladesh, and Brazil) are from what we now call the developing world.⁴ Over the next 20 years, 80% of population growth will occur in countries in sub-Saharan Africa and South Asia—some of the poorest, least-stable parts of the world. The population in the least-developed countries—those 49 countries defined by the United Nations as the poorest in the world⁵—is expected to double by the middle of the century, from 0.84 billion in 2008 to a projected 1.7 billion in 2050.

While the numbers problem is daunting itself, one must also factor in the effects of disease. HIV/AIDS, in particular, has devastated these parts of the world. The HIV/AIDS pandemic has plucked working adults out of their prime, leaving behind millions of orphaned children and tearing a hole in the social fabric of these nations. Here, the youngest segment of the population, newborns to 14-year-olds, comprises nearly 40% of the population. Compare this to only 20% in North America and western Europe.⁶ Countries in the Middle East and Africa also have extremely high youth dependency ratios (the percentage of young people dependent upon the working age population) that limit economic growth by forcing governments to devote a high percentage of their resources to social programs for families.⁷ History alerts us to the dangers of a teeming youth population. Countries that experience instability, terrorism, and violence often have some of the youngest populations on the planet.

Developed Countries and Aging

In much of the developed world, by contrast, population levels are plateauing or even declining. Into the next decade, some developed countries will begin to experience static or even

2. “World POPClock Projection: Monthly World Population Figures,” U.S. Census Bureau, <http://www.census.gov/ipc/www/popclockworld.html>. The United Nations estimates that the global population surpassed 6.8 billion in July 2009.

3. UN Population Division, Population Division of the Department of Economic and Social Affairs of the UN Secretariat, *World Population Prospects: The 2008 Revision*, http://www.un.org/esa/population/publications/wpp2008/wpp2008_text_tables.pdf.

4. UN Population Division, Population Division of the Department of Economic and Social Affairs of the UN Secretariat, *World Population Prospects: The 2008 Revision*.

5. As set out in UN General Assembly Resolutions 59/209, 59/210, and 60/33 in 2007. Of the 49 countries, 33 are in Africa, 10 in Asia, one in Latin America and the Caribbean, and five in Oceania. See “Definition of major areas and regions,” *World Population Prospects: The 2008 Revision*.

6. Media Eghbal, “Special Report: Global Youth Populations,” Euromonitor International, November 21, 2008, http://www.euromonitor.com/Special_Report_Global_youth_populations.

7. Ibid.

negative population growth. By 2025, at least 20 countries, primarily in eastern Europe, will be less populous than they are today.⁸ By 2030, one in four (25.8%) persons in western Europe will be over the age of 65; in 1950, the corresponding number was one out of every ten (10.2%).⁹ Advances in science and technology have allowed many to enjoy longer life spans than their parents and grandparents ever imagined. However, when a population grays and shrinks at the same time, as will be the case in large parts of the developed world, profound social, economic, and political changes are inevitable. In these countries, an increasing share of taxes will go to the rising cost of entitlement spending for the elderly. As the work force shrinks, gross domestic product will also contract, further limiting the ability of governments to make good on social spending. With time, these aging nations will be forced to look beyond their borders for young laborers, setting the stage for seismic social and cultural shifts.¹⁰

Migration and Urbanization

People, in large numbers, will move into urban centers in pursuit of higher paying jobs and better access to services. By 2050, nearly 70% of the world's population will live in cities, representing an influx of 3.1 billion people over the next 40 years.¹¹ While urbanization presents an opportunity for rural workers to modernize their skills and improve their lives, rampant urban poverty could result if governments are unable to support such growth. Migration from the countryside may threaten food security, as a smaller number of farmers will be producing agricultural goods for a larger number of urbanites incapable of growing their own food. While some will move from the countryside to the cities, others will leave the country altogether. The poor will continue to immigrate to richer countries. They may do so in higher numbers, though, as developed countries become more desperate for working-age adults. Governments in the developed world may face serious challenges, however, if they are unable to reconcile the needs and desires of their native populaces with the needs and desires of immigrant groups.

Did You Know?

- More than 1.5 billion people are between the ages of 10 and 25. This is the largest-ever generation of adolescents. More than half of them live on less than two dollars per day.¹²
- In 2008, the number of people living in cities surpassed the number living in rural settings for the first time in history. By 2030, 81% of these urban dwellers will live in cities in the developing world.¹³

8. Population Reference Bureau, "World Data: Population Trends," <http://www.prb.org/Datafinder/Topic/List.aspx?category=10>.

9. UN Population Division, Population Division of the Department of Economic and Social Affairs of the UN Secretariat, *World Population Prospects: The 2008 Revision*, <http://esa.un.org/unpp/index.asp?panel=2>.

10. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2006 Revision* and *World Urbanization Prospects: The 2007 Revision* and *The 2008 Revision*, <http://esa.un.org/unup>.

11. Ibid.

12. UNFPA, "Supporting Adolescents and Youth," <http://www.unfpa.org/adolescents/overview.htm>.

13. UNFPA, "State of the World Populations 2007: Unleashing the Potential for Urban Growth," <http://www.unfpa.org/swp/2007/english/introduction.html>.

- Between 2007 and 2025, the population of the developed world is expected to grow 3%, while the population of the developing world is expected to grow 49%.¹⁴
- Between 2000 and 2030, the urban populations of both Africa and Asia will double.¹⁵
- Out to 2050, the United States, Germany, Canada, the United Kingdom, Spain, and Australia will be the primary destinations for a majority of international immigrants, while China, Mexico, India, Philippines, Indonesia, and Pakistan will be the primary suppliers of these migrants.¹⁶
- Four out of five city dwellers will live in the developing world by 2030.¹⁷

Discussion Questions

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

1. What difficulties—from retiring baby boomers in the United States to a graying China, to the massive overhang of Europe’s elderly—can private corporations, governments, and other sectors expect as the aging revolution unfolds across the globe? How will changing demographics affect workforce composition? Retirement age? Pension outlays? Taxation? Immigration? Economic growth? How can governments, corporations, and nongovernmental organizations work together to address these issues?
2. Immigration already accounts for over 60% of population growth in developed countries. Do you believe that governments in developed countries are ready to deal with the massive immigration that will accompany, in many cases, a sharply decreasing number of citizens? What recent world events encourage pessimism or optimism in this regard?
3. According to the United Nations Population Division, by 2050 the four most-populous countries will be India, China, the United States, and Pakistan.¹⁸ What will this mean for the geopolitical balance of power? Pakistan is a prime example of the overarching global trend of the highest population growth occurring in countries with the lowest prospects for economic development, the most dire resource scarcities, the most daunting public health challenges, and the least transparent and effective systems of governance. What will be the impact of this population growth in terms of global stability and security?

14. Population Reference Bureau, “2007 World Population Data Sheet,” p. 7, http://www.prb.org/pdf07/07WPDS_Eng.pdf.

15. UNFPA, “State of the World Populations 2007: Unleashing the Potential for Urban Growth,” http://www.unfpa.org/swp/2007/english/chapter_1/index.html.

16. UN Department of Economic and Social Affairs Population Division, *World Population Prospect, 2004 Revision: Highlights*, p. 9, <http://www.un.org/esa/population/publications/WPP2004/wpp2004.htm>.

17. Allianz Knowledge Partnership, “The Future is Urban,” 2007, http://knowledge.allianz.com/en/globalissues/demographic_change/urbanization/urbanization_cities.html.

18. “Pakistan’s population to double by 2050: UN,” *Asian Tribune*, July 29, 2009, <http://asiantribune.com/07/29/pakistan%E2%80%99s-population-to-double-by-2050-un/>.

Bibliographic Materials from CSIS

- Visit the CSIS Global Aging Initiative (<http://csis.org/program/global-aging-initiative/>) to learn more about the international economic, financial, political, and security implications of aging and depopulation. Learn more about how global aging will affect eastern Europe, Latin America, East Asia, and South Asia in the decades to come. See particularly Neil Howe and Richard Jackson's [The Graying of the Great Powers](#).
- The CSIS Global Strategy Institute Video Interview Library (<http://gsi.csis.org/videolibrary>) has an interview with Richard Jackson, director of the CSIS Global Aging Initiative, on demographic trends.

Web Resources

- The United Nations Population Division (<http://www.un.org/esa/population/unpop.htm>) remains the standard of reference for global population figures, as well as analysis of trends.
- The Population Reference Bureau (<http://www.prb.org/>) provides detailed articles, datasheets, and reports on key population issues including mortality rates, gender, race/ethnicity, and fertility. PRB also offers specific country data.

Further Reading

- Carl Haub. "Tracking Trends in Low-Fertility Countries: An Uptick for Europe." Population Reference Bureau. September 2008. <http://www.prb.org/Articles/2008/tfirtrendsept08.aspx>
- Richard Cincotta, Robert Engelman, and Daniele Anastasion. "The Security Demographic: Population and Civil Conflict After the Cold War." Population Action International. August 2003. http://www.populationaction.org/Publications/Reports/The_Security_Demographic/Summary.shtml
- Richard Jackson and Rebecca Strauss. "The Geopolitics of World Population Change." CSIS Commentary. July 2007. <http://csis.org/publication/geopolitics-world-population-change>
- United Nations Population Fund (UNFPA). *State of the World Populations 2008: Culture, Gender and Human Rights* (New York: United Nations. 2008). <http://www.unfpa.org/swp/>

Spotlight:

In Japan, low birth rates have resulted in a demographic conundrum. According to the Japanese government, their country has the highest ratio of elderly people and the lowest ratio of children under 15 in the world. The government is now confronting the issue by instituting programs meant to increase the size of the youth population. For instance, it is encouraging fathers to take paternity leave and is launching matchmaking services to help people find mates. *Source: <http://news.bbc.co.uk/2/hi/asia-pacific/5132024.stm>*

Revolution Two: Resource Management

Can we manage critical resources?

Have we reached or surpassed the limits of sustainability? What will it take to support a global population of some 9.2 billion by the middle of the century?¹ To begin addressing these questions, one must look at the strategic resources of food, water, and energy and the complex interlinkages between them. How leaders meet the challenge of managing these resources will affect economic development, poverty reduction, social welfare, geopolitics, and stability and security the world over.

Food and Hunger

Thanks to advances in agricultural technology in the second half of the twentieth century, farmers have dramatically increased their crop yields, helping the world avert a once-predicted fate of mass starvation and malnutrition.² Despite this progress, the world is nearing a point of diminishing returns. Poor land management and the overuse of fertilizers are causing land degradation, soil erosion, and desertification on a massive scale in agricultural areas from the Amazon to the Yangtze. Degradation, on top of sharp increases in food prices over the past decade, has left many in the developing world without the land or the means to grow their own food. The dual forces of rising oil prices and increased production of biofuels have exacerbated this problem by increasing the supply-side cost to farmers, in addition to diverting staple crops away from kitchen tables. Water availability—agricultural use accounts for 70% of freshwater withdrawals—as well as biotechnology will play key roles in our ability to expand food production.³ The task is daunting, as food demand is projected to grow 70%–90% by 2050.⁴

Water

According to John Hamre, CSIS president and CEO, “what is now a global water challenge will soon become a global water crisis.”⁵ Almost 4 billion people will live in areas of high water stress by 2030 if governments and individuals do not change their habits and use this finite resource more responsibly.⁶ Today, more than 880 million people, or one out of every eight persons, live without safe or reliable access to this resource.⁷ Inadequate access to water is linked to malnutrition, underdevelopment, and geopolitical instability, and these problems will likely persist into the coming decades unless we dramatically change our perceptions of this resource (too much water). The scarcity problem is only compounded by the predicted “rise of the rest” developing

1. UN Population Division, Population Division of the Department of Economic and Social Affairs of the UN Secretariat, *World Population Prospects: The 2008 Revision*, http://www.un.org/esa/population/publications/wpp2008/wpp2008_text_tables.pdf.

2. See, for example, Paul Ehrlich, *Population Bomb* (New York: Ballantine Books, 1968).

3. “World Economic Forum Water Initiative: Draft for Discussion.” World Economic Forum, January 2009, p. 10, http://www.weforum.org/documents/gov/gov09/envir/Water_Initiative_Future_Water_Needs.pdf.

4. “World Economic Forum Water Initiative: Draft for Discussion.” World Economic Forum, January 2009, p. 11, http://www.weforum.org/documents/gov/gov09/envir/Water_Initiative_Future_Water_Needs.pdf.

5. Erik Peterson and Rachel Posner, *Global Water Futures: A Roadmap for Future U.S. Policy* (Washington, D.C.: CSIS, September 2008), p. iv, http://csis.org/files/media/csis/pubs/080915_peterson_globalwater-web.pdf.

6. “World Economic Forum Water Initiative: Draft for Discussion.” World Economic Forum, January 2009, p. 10, http://www.weforum.org/documents/gov/gov09/envir/Water_Initiative_Future_Water_Needs.pdf.

7. Water Partners International, “Water Facts,” <http://water.org/facts>.

nations like China and India—and their growing appetite for consumption. Affluent individuals use upwards of 660 gallons of water per day for their personal use and in the production of the products they consume, when only 13.2 gallons per person are required for survival.⁸ Future water shortages could significantly hinder economic development and precipitate serious tensions across the world.

Energy

Volatile oil prices and supply disruptions have led to international spats verging on geopolitical crises in recent years, and it is likely that tensions will flare again in the future with world energy demand expected to grow 45% by 2030.⁹ By that time, fossil fuels will account for 80% of our energy use.¹⁰ Despite continued pressures on the physical environment, fossil fuels will continue to dominate as the world's primary energy supply, with renewable energy making only modest gains. Aggregate increases in alternative sources of energy will likely be offset by high consumption of coal, oil, and natural gas driven by the astronomical rise of China and India. Together, these two countries will be responsible for more than half of the increase in energy demand by 2050.¹¹ Governments and private companies across the world are pouring money into energy development projects to keep up with domestic demand and to capitalize on burgeoning industries. One major study found that the United States is capable of producing enough biomass-derived ethanol—90 billion gallons annually—to displace nearly a third of gasoline use each year by 2030, though with tremendous upfront costs that make little sense when oil prices are low.¹²

Our addiction to fossil fuels comes at a great cost to the environment. Recent evidence suggests that our penchant for petroleum may inflict irreversible damage, with one study finding that carbon dioxide emissions affect climate systems thousands of years into the future.¹³ A truly global plan of action to address climate change remains elusive, and it may become increasingly difficult for nations to cooperate when oil wells start to run dry.

Did You Know?

- In 2007, the United States imported 58 percent of its petroleum. By 2030, that figure is expected to drop to 41 percent because of advances in biofuel and coal-to-liquid technologies and increased domestic production in the Gulf of Mexico.¹⁴

8. Water Partners International, “Water Facts,” <http://water.org/facts>.

9. *World Energy Outlook 2008: Executive Summary*. International Energy Agency, 2008, p. 4, http://www.worldenergyoutlook.org/docs/weo2008/WEO2008_es_english.pdf.

10. *World Energy Outlook 2008: Executive Summary*. International Energy Agency, 2008, p. 4, http://www.worldenergyoutlook.org/docs/weo2008/WEO2008_es_english.pdf.

11. *World Energy Outlook 2008: Executive Summary*. International Energy Agency, 2008, p. 4, http://www.worldenergyoutlook.org/docs/weo2008/WEO2008_es_english.pdf.

12. Hub for Innovation in the Transportation Energy Community, “90-Billion Gallon Biofuel Deployment Study: Executive Summary,” Sandia National Laboratories, February 2009, http://hitectransportation.org/news/2009/Exec_Summary02-2009.pdf.

13. National Oceanic and Atmospheric Administration, Department of Commerce (NOAA), “New Study Shows Climate Change Largely Irreversible,” January 2009, http://www.noaanews.noaa.gov/stories2009/20090126_climate.html.

14. Energy Information Administration, “How Dependent Are We on Foreign Oil?” April 23, 2009, http://tonto.eia.doe.gov/energy_in_brief/foreign_oil_dependence.cfm.

- There will be 611 million motor vehicles in India by 2050 compared to 254 million cars on American roads today.¹⁵
- By 2050, India's demand for water will exceed all sources of supply.¹⁶
- China will triple its coal-fired electricity production by 2030 and will account for more than half of the increase in the world's coal-fired electricity generation.¹⁷
- The 2005 Millennium Ecosystem Assessment estimates that between 5 and 20 percent of global freshwater use exceeds long-term sustainable supply. Agricultural applications raise even greater concern as an estimated 15 to 35 percent of irrigation withdrawals exceed sustainable limits.¹⁸
- The Food and Agriculture Organization (FAO) estimates that over a billion people are undernourished—the highest number in all of human history.¹⁹
- 998 million people, representing 30% of all urban dwellers, live in slums where they lack one or more of such basic services as access to basic clean water and sanitation facilities.²⁰
- Less than 1% of the world's fresh water (0.007% of all water on earth) is accessible for direct human use.²¹
- 1.02 billion people do not have enough to eat—more than the combined population of the United States, Canada, and the European Union.²²

Discussion Questions

Use the questions below to structure a discussion on the promise and peril of resource management. Sources to complement your consideration of these important issues are suggested.

1. How are the strategic resources of food, water, and energy interrelated? How will improved living standards increase demand for these resources? How can countries develop sustain-

15. Rediff India Abroad, "India to Top in Car Volumes by 2050," October 2004, <http://www.rediff.com/money/2004/oct/23car.htm>; Federal Highway Administration, *Highway Statistics*, U.S. Department of Transportation, 2007, table VM-1, <http://www.fhwa.dot.gov/policy/ohpi/hss/hsspubs.cfm>.

16. World Bank, *India's Water Economy: Bracing for a Turbulent Future, Executive Summary*, 2005, p. 7, http://siteresources.worldbank.org/INTINDIA/Resources/Water_Executive_Summary-Draft_Water_Report.pdf.

17. Frederic Beaugard-Tellier, "Electricity Production in China: Prospects and Global Environmental Effects," Economics Division, The Parliamentary Information and Research Service, Library of Parliament, Canada, April 16, 2007, p. 3, <http://www.parl.gc.ca/information/library/PRBpubs/prb0704-e.pdf>.

18. Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Opportunities and Challenges for Business and Industry*, World Resources Institute, 2005, p. 10, <http://www.millenniumassessment.org/documents/document.353.aspx.pdf>.

19. Food and Agriculture Organization (FAO), "Undernourishment around the world," *The State of Food Insecurity in the World*, 2008, p. 8, <ftp://ftp.fao.org/docrep/fao/005/y7352e/y7352e01.pdf>.

20. Eduardo Lopez Moreno and Rasna Warah, "Urban and Slum Trends in the 21st Century," UN Chronicle XLIII, no. 2 (2006), <http://www.un.org/Pubs/chronicle/2006/issue2/0206p24.htm>; Population Reference Bureau, "Urban Population to Become the New Majority Worldwide," July 2007, <http://www.prb.org/Articles/2007/UrbanPopToBecomeMajority.aspx>.

21. Water Partners International, "Water Facts," 2009, <http://water.org/facts>.

22. World Food Program, "Hunger: Hunger Stats," 2009, <http://www.wfp.org/hunger/stats>.

able strategies for ensuring the availability of these resources for human health and economic growth?

2. Despite skyrocketing demand for energy, a transition from fossil fuels to alternative sources of energy on a large scale is not expected to occur in the short term. Why? What actions could be taken to speed this transition? What is the long-term cost of a gradual versus a rapid move to alternatives?

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

Bibliographic Materials from CSIS

- The CSIS Global Water Futures Project (<http://csis.org/program/global-water-futures>) focuses on the strategic resource management of water, including [several recent publications](#).
- Frank Verrastro directs the Energy and National Security Program at CSIS (<http://csis.org/program/energy-and-national-security>) where he, Bob Ebel, and other CSIS scholars examine issues that include nuclear energy, Caspian energy, oil market studies, and strategic issues of energy. Recent publications include “The Changing Geopolitics of Energy.”
- Dr. Anthony Cordesman, CSIS Arleigh A. Burke Chair in Strategy (<http://csis.org/program/burke-chair-strategy>), conducts a number of research endeavors on Middle East energy and security and in areas pertinent to global energy policy and security.
- The CSIS Global Strategy Interview Library (<http://gsi.csis.org/videolibrary>) has clips from interviews with Frank Verrastro, director of the CSIS Energy and National Security Program, and Jerry Delli Priscoli, a senior adviser at the U.S. Army Corps of Engineers.

Web Resources

Food

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

Water

- The World Water Council’s (<http://www.worldwatercouncil.org/>) mission is to promote awareness and build political commitment on critical water issues at all levels.
- The FAO Water Development and Management Unit (<http://www.fao.org/nr/water/index.html>) provides knowledge, policy advice, and technical assistance to countries and international initiatives on issues of water, agriculture, food production, and security.

Energy

- The International Energy Agency’s annual publication entitled *World Energy Outlook* (<http://www.worldenergyoutlook.org/>) provides a global energy survey that includes detailed long-term projections of energy demand, energy supply, and CO₂ emissions.

- The U.S. Department of Energy (<http://www.energy.gov/>) offers a range of resources on energy sources, efficiency, environmental implications, pricing trends, and new technology.

Further Reading

Food

- *The State of Food Insecurity in the World 2006*, FAO, UN, 2009, <http://www.fao.org/docrep/012/i0876e/i0876e00.htm>.
- Todd Benson, Nicholas Minot, John Pender, Miguel Robles and Joachim von Braun, *Global Food Crises: Monitoring and Assessing Impact to Inform Policy Responses* (Washington: International Food Policy Research Institute, 2008).

Water

- *The 2nd UN World Water Development Report: Water, A Shared Responsibility* (Paris and New York: UNESCO and Berghahn Books, 2006), http://www.unesco.org/water/wwap/wwdr2/table_contents.shtml.
- Peter H. Gleick, *The World's Water 2006-2007: The Biennial Report on Freshwater Resources* (Washington: Island Press, 2006).

Energy

- Vaclav Smil, *Energy at the Crossroads: Global Perspectives and Uncertainties* (Cambridge: MIT Press, 2005).
- Peter Tertzakian, *A Thousand Barrels a Second: The Coming Oil Break Point and the Challenges Facing an Energy Dependent World* (New York: McGraw-Hill, 2007).

Spotlight:

Pakistan was hit especially hard by the skyrocketing food prices of 2008. In April of that year, the price for a metric ton of wheat, a staple of the Pakistani diet, was 180 percent higher than it was in April 2007. In Pakistan, supplies of wheat flour became scarce as sellers started to hoard their stocks. As people struggled to find affordable food, the numbers of Pakistanis at or below the poverty line swelled and the country saw a marked increase in the rate of suicide. The situation was so dire that the Pakistani army was even called in to protect the federal government's reserve grain supplies. Source: <http://www.irinnews.org/Report.aspx?ReportId=77683>; <http://www.indexmundi.com/commodities/?commodity=wheat&months=120>.

Revolution Three: Technology

What impact will technology have over our lifetimes?

We are entering an era in which our world is starting to look more like science fiction. Computers are becoming faster and even more ubiquitous, medical breakthroughs are prolonging and enriching our lives, and machines are becoming smaller by the day.

Leaders across the world are looking to technology to solve a number of the most daunting crises we face in areas as diverse as climate change, resource scarcity, and global health. At the same time, as new technologies become embedded in our lives, we will be forced to address issues of privacy, discrimination, and even basic human interaction.²³ Technology will increasingly test the ability of individuals, cultures, and governments to adapt to new opportunities and dangers.

Computation

Today's computers are breaking performance records and they are doing so at an exponentially faster rate Today, IBM's Roadrunner computer achieves computational capacities of 1.105 petaflops (1,105 quadrillion calculations per second), making it the most powerful supercomputer in the world and the first to break the petaflop barrier.²⁴ This milestone is a testament to the performance heights new computers are reaching, and the history of the supercomputer itself shows the exponential rate at which feats like these are achieved. In 1961, the first computer able to compute in *metaflops* was constructed; in 1984, *gigaflop* speeds were reached; 1997, *teraflops*; 2008, *petaflops*; and it is predicted that between 2017 and 2019 supercomputers will reach speeds in the *exaflops* (quintillions of calculations per second) realm.²⁵ This timeline shows that computers have reached the next-highest step in computing power in progressively shorter time periods, a phenomenon first recognized in 1965 by the cofounder of Intel, Gordon Moore. His finding, the eponymous Moore's Law, states that the number of transistors that can be placed on an integrated circuit doubles every year. There are physical limitations to circuits as they are constructed today, however, and it is predicted that Moore's Law will be valid only until 2029, after which time new technology will be required for improvements.²⁶

In addition to achieving higher speeds, computers are becoming even more ubiquitous. Wireless laptops, media players, and cell phones are just a few examples of how technology has become an integral part of our everyday lives—and not just in the developed world. The One Laptop per Child Foundation is producing low-cost, high-power laptops for children in developing countries. An astounding 464 million cell phone subscribers live in China.²⁷ As materials become

23. Ronald Sandler, *Nanotechnology: The Social and Ethical Issues* (Washington: Woodrow Wilson International Center for Scholars, 2009) 5-8.

24. "June 2009 List," Top 500 Supercomputer Sites, <http://www.top500.org/list/2009/06>.

25. Patrick Thibodeau, "IBM Breaks Petaflop Barrier," Info World, June 10, 2008, http://www.infoworld.com/article/08/06/10/IBM_breaks_petaflop_barrier_1.html; "IDF: Intel Says Moore's Law Holds Until 2029," Heise Online, April 4, 2008, <http://www.heise.de/english/newsticker/news/106017>.

26. "IDF: Intel Says Moore's Law Holds Until 2029," Heise Online, April 4, 2008, <http://www.heise.de/english/newsticker/news/106017>.

27. "China Mobile Adds 6.7 Million Mobile Users January," *TMCnews*, February 20, 2009, <http://www.tmcnet.com/usubmit/2009/02/20/4002350.htm>.

smaller, lighter, and less expensive and platforms more user-friendly, computers will become an even greater fixture of our daily lives.

Biotechnology and Genetics

The completion of the Human Genome Project, mapping the roughly 25,000 genes and sequencing the 3 billion chemical base pairs that make up the human genome, has opened up numerous paths for further exploration in biotechnology.²⁸ Information gained from this undertaking will pave the way for tailored drug therapies, cleaner energy sources, disease-resistant crops, and more accurate forensic testing. In the next 10 years, a baby could have his or her genetic code mapped at birth to predict and begin treating future medical conditions.²⁹ Some experts believe that these technological advances, combined with a better basic understanding of how the human body works, will allow us to significantly alter our own bodies by incorporating machines into them, which could yield improvements in health and life expectancy as well as mental and physical function.³⁰ While these advances hold great potential, they also raise profound questions, from the ethical to the existential. Is it immoral for a doctor to tell a patient that he is predisposed to a late-onset genetic disorder for which there is currently no cure? Will the use of biotechnology fundamentally alter what it means to be human?

Nanotechnology

Nanotechnology is not a science in and of itself, but rather an umbrella term for the study and development of structures, in a variety of fields, that are smaller than 100 nanometers. The potential applications for nanotechnology are diverse, ranging from medicine and materials to electronics and energy. Scientists have already made great strides in the field of nanotechnology with more than 1,015 nano-sized products available to consumers in 2008, mostly in the fields of health and personal fitness.³¹ Micro-electromechanical machines (MEMs), smaller than dust mites and formed out of microscopic gears, chains, and computer chips, are currently deployed in medicine, agriculture, supply chain management, materials science, and manufacturing. The most promising, and arguably most consequential, application for nanotechnology is synthetic biology—the redesigning of molecular-sized organisms—in what scientists are calling “the next big thing.”³² Nanotechnology is also proving to be a lucrative industry, one that by 2015 will contribute an estimated 1 trillion dollars to the global economy and employ 2 million workers.³³ By that time, nanotechnology will have moved from the microscopic level down to the molecular and atomic

28. “Human Genome Project Information,” Department of Energy, 12 Aug 2009, http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml.

29. Mark Henderson, “Genetic Mapping of Babies By 2019 Will Transform Preventative Medicine,” *The Times Online*, February 9, 2009, <http://www.timesonline.co.uk/tol/news/uk/science/article5689052.ece>.

30. See, for Example, Joel Garreau, *Radical Evolution* (New York: Brooklyn Books, 2005); Ray Kurzweil, *The Singularity Is Near* (New York: Penguin, 2005).

31. “Consumer Products: Analysis,” *The Project on Emerging Nanotechnologies*. http://www.nanotechproject.org/inventories/consumer/analysis_draft/, August 2009.

32. “Synthetic Biology: Coming Up Fast,” *The Project on Emerging Nanotechnologies*, <http://www.nanotechproject.org/events/archive/caruso/>, November 2008.

33. “Successful Commercialization Depends on Adequate Oversight, Risk Research Strategy, and Public Engagement,” *The Project on Emerging Nanotechnologies*, <http://www.nanotechproject.org/news/archive/successful-commercialization-depends-on/>, May 2006.

scale. Currently, relatively little is understood about the safety risks associated with nanotechnology, a concern that is likely to come to the fore as miniaturization is increasingly employed in the production of consumer goods.

Did You Know?

- We have reached a point, as MIT's Nicholas Negroponte has noted, at which "a fiber the size of a human hair can deliver every issue of the *Wall Street Journal* ever made in less than a second."³⁴
- The advancement and speed of supercomputers happens so fast that the list of top performers has to be updated twice a year.³⁵
- About 60 percent of food products on U.S. shelves have at least one ingredient that is likely to be from a genetically engineered crop. Byproducts of soybeans, corn, canola, and cotton constitute the vast majority of these ingredients.³⁶
- Nanoscale sensors may someday be able to smell cancer. Scientists have mapped out the odor profiles for some types of skin cancer and are in the process of making a nano-sized device equipped with an electronic nose capable of detecting cancer's scent; this would allow doctors to diagnose skin cancer without ever conducting a biopsy.³⁷
- In 2009, the U.S. government invested approximately \$1.5 billion in nanotechnology research, more than three times as much as in 2001.³⁸
- Three thousand new pharmaceuticals will have been identified, tested, and commercialized by 2020 (up from 500 in 2000), thanks to information gained from the Human Genome Project.³⁹

Discussion Questions

Use the questions below to structure a discussion on the promise and peril of technological advancement. Sources to complement your consideration of these important issues are suggested.

1. Who should control our personal information? What will happen when an individual's genome is routinely digitized and archived? Who should control such information? The government? The private sector? The individual? How can such information be secured? To what benefits and dangers does this information expose an individual?

34. Nicholas Negroponte, *Being Digital* (New York: Random House, 1995).

35. TOP500, Top 500 Supercomputer Sites, 2008, <http://www.top500.org>.

36. "GE Foods on the Market," *Genetically Engineered Organisms: Public Issues Education Project*, <http://www.geo-pie.cornell.edu/crops/eating.html>.

37. "Application and Products: Putting Technology to Use," *National Nanotechnology Initiative*, <http://www.nano.gov/html/facts/nanoapplicationsandproducts.html>.

38. "FAQs: Nanotechnology," *National Nanotechnology Initiative*, <http://www.nano.gov/html/facts/faqs.html>.

39. Daniel Drell and Anne Adamson, "Fast Forward to 2020: What to Expect in Molecular Medicine," Human Genome Project, 2003, http://www.ornl.gov/sci/techresources/Human_Genome/medicine/tnty.shtml.

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

3. Only in its infancy, nanotechnology has already yielded materials harder than diamonds and technologies to attack cancer at the molecular level. It will likely be a trillion dollar industry by 2020. Surprisingly, it may also be the first industry to emerge simultaneously in the developed and developing worlds. How can we begin to address the massive technological gap between the developed and developing worlds in other fields as well?

4. Why is it important that developed countries not simply leave behind the developing world as they continue to innovate? Is Thomas Friedman correct in his statement that information technology is bridging the gap and allowing geniuses in developing countries to “innovate without having to emigrate”?⁴⁰ Will we see the end of the emigration of skilled workers from the developing world or more internal migration of skilled workers within it?

Bibliographic Materials from CSIS

- The Technology and Public Policy Program (<http://csis.org/category/topics/technology>) at CSIS provides a look at emerging technologies and the issues they present for public policy and national security in the twenty-first century.
- The CSIS Global Strategy Institute Video Interview Library (<http://gsi.csis.org/videolibrary>) has clips from interviews with the following experts on technology:
 - ◆ Kelly Carnes, President and CEO, TechVision21
 - ◆ Anthony Fauci, Director, National Institute of Allergy and Infectious Diseases, National Institutes of Health
 - ◆ Joel Garreau, journalist, *The Washington Post*, and author, *Radical Evolution*
 - ◆ Ray Kurzweil, inventor, futurist, and author of *The Singularity is Near*

Web Resources

Computation

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

40. Daniel Drell and Anne Adamson, “Fast Forward to 2020: What to Expect in Molecular Medicine,” Human Genome Project, 2003, http://www.ornl.gov/sci/techresources/Human_Genome/medicine/tnty.shtml; Thomas Friedman, “It’s a Flat World After All,” *New York Times*, April 3, 2005, <http://query.nytimes.com/gst/fullpage.html?res=9F06E7D8153FF930A35757C0A9639C8B63&sec=health&spon=&pagewanted=3>.

Nanotechnology

- The Center for Responsible Nanotechnology (<http://www.crnano.org/>) researches nanotechnology-related issues—political, economic, military, humanitarian, and technological. Its purpose is to investigate the societal implications, long-range risks, and effective use of nanotechnology and to educate those who will influence its use or will be affected by it. The National Nanotechnology Initiative coordinates the multiagency U.S. efforts in nanoscale science, engineering, and technology. It gathers and conducts research on applications of nanotechnology and the societal and safety implications of the technology.
- The Project on Emerging Nanotechnologies (<http://www.nanotechproject.org/>) is dedicated to helping ensure that as nanotechnologies advance, possible risks are minimized, public and consumer engagement remains strong, and potential new benefits are realized.

Further Reading

General

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- Kurzweil, Ray. *The Singularity is Near*. New York: Penguin, 2005.
- Standage, Tom. *The Future of Technology*. London: Profile Books, 2005.
- Teich, Albert H. *Technology and the Future*. New York: Wadsworth Publishing, 2005.

Computation

- “Business’s digital black cloud.” *The Economist*, July 14, 2005. http://www.economist.com/business/displayStory.cfm?story_id=4173652.
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Genetics and Biotechnology

- Herskovits, Zara. “DNA Technology Brings Personal Gene Maps Closer.” *Boston Globe*, August 15, 2005. http://www.boston.com/news/globe/health_science/articles/2005/08/15/dna_technology_brings_personal_gene_maps_closer/Nanotechnology
- Allen, George. “The Economic Promise of Nanotechnology.” *Issues in Science and Technology* 21, no. 4 (Summer 2005), p. 55. <http://www.issues.org/21.4/allen.html>.

Spotlight:

Recent advances in nanotechnology and biotechnology might help doctors fight cancer. French specialists developed a way of using decoys to trick cancerous cells into undergoing apoptosis, or cellular suicide. Early tests on lab rodents indicate this "decoy" method in conjunction with radiotherapy can wipe out 75-100% of cancer cells with no collateral damage to healthy tissue. Compare this to a 30-50% success rate when radiotherapy is used alone. Source: <http://news.smh.com.au/breaking-news-world/decoy-molecules-kill-cancer-cells-study-20090216-88a3.html>.

Revolution Four: Information

What if every person in the world had access to a computer?

Our world is defined more than ever before by its information economy. Communication technologies are fueling this evolution by spreading new ideas and innovations to ever-greater numbers of people each day. The best students and entrepreneurs in the world are no longer limited by geography and their countries' stage of economic development.

While it is true that today much of the world has yet to reap the benefits of this revolution, the knowledge-based economy could ultimately help to lift entire countries out of poverty. As information technology continues to reach these individuals, they will be able to compete more directly with those in the developed world. In this new paradigm, constant learning and retraining will be not simply desirable, but essential.

Ideas

We are witnessing the growth of what former Federal Reserve chairman Alan Greenspan termed the “weightless economy”— an economy in which knowledge and technical capacity are contributing an ever-greater share to GDP.¹ Historically, economic growth was tied inextricably to manufacturing—when one grew, so did the other. Today, however, developed countries are witnessing the contraction of their manufacturing sectors at the same time that most of their GDPs are expanding. The reason for this apparent contradiction is that ideas themselves are increasingly becoming commodities. Think about what gives today’s companies the edge:

- the ability to use the Internet and networking tools,
- a receptiveness to customer demands and new ideas,
- all-around creativity.

The “knowledge-based” economy is also turning traditional economic and legal models on their heads. While the Internet has lowered the barriers for well-meaning entrepreneurs around the globe to enter the market, it has also enabled more nefarious behavior ranging from piracy to cyber-warfare. It is estimated that up to 95% of music downloads are made illegally, but the majority of people who download music are otherwise hardworking, tax-paying citizens.² As the information economy continues to grow, we will need to find a new mechanism that allows for the free exchange of ideas while preserving intellectual property rights and profitability.

Connectivity

Communication technologies are decentralizing information, allowing individuals and companies on opposite sides of the planet to collaborate and share ideas. As Thomas Friedman put it, “thirty years ago, if you had a choice of being born a B student in Boston or a genius in

1. Tom Hochstatter, “The Weightless Economy,” *Fluid Innovation*, September 30, 2008, <http://blog.fluid-innovation.com/2008/09/30/the-weightless-economy-a-white-paper/>.

2. “IFPI Publishes Digital Music Report 2009,” *FierceWireless*, January 16, 2009, http://www.fiercewireless.com/press-releases/ifpi-publishes-digital-music-report-2009?utm_medium=nl&utm_source=internal&cmp-id=EMC-NL-FMC&dest=FW.

Bangalore, you probably would have chosen Boston.”³ Thirty years ago it was unlikely that anyone in the developing world, even a genius, could overcome poverty and rise to prominence in the West. Nowadays, according to Friedman, “anyone with smarts, access to Google, and a cheap wireless laptop can join the innovation fray.”⁴ As information technologies reach these workers, they will be able to compete more directly with those in the developed world. Unfortunately, greater connectivity also exposes organizations, governments, and citizens to the risks of fraud and even cyber-warfare. We have yet to see how governments will regulate this new online environment to promote national security *and* protect freedom of expression.

Lifelong Learning

It is estimated that young people currently entering the workforce will experience 10–14 major career changes in their professional lives.⁵ As the information economy takes root, workers will be required to refine their skills and learn new ones to remain competitive. In short, they must become lifelong learners. Workers will acquire new skills at cyber-universities through distance-learning courses tailored to meet their individual needs. Today, only a minority of the population enjoys access to higher education, with less than one-third of Americans over 25 holding bachelor’s degrees.⁶ It is estimated that by 2020 there will be 15 million new jobs in the United States requiring a college degree, but at current graduation rates, there will be a net gain to the labor force of only 3 million workers with those credentials.⁷ Even though matriculation and graduation rates have improved over the past few decades, colleges and universities will need to embrace new technologies and promote vocational training to meet the needs of our economic future and to keep the U.S. workforce competitive.

Open Source Society and Information Integrity

One of the emerging characteristics of our interconnected society is the notion that information should be not only available to all, but also modifiable by all. The term “open source” is usually used to describe software programs, but the ideas that it represents—public access and public ownership—will influence many other aspects of our lives, including our education system, our political system, and even popular culture. In essence, “open source” represents the decentralization of knowledge, and nowhere is this more evident than on the Internet. Blogs and wikis allow individuals to spread information and opinions to a wide audience while bypassing traditional news sources. Individuals are able to share artistic and creative talents on file-sharing and image-hosting websites without paying a dime. These applications of open source technologies will greatly lower costs and spur developments that would be impossible with traditional proprietary

3. Thomas Friedman, “It’s a Flat World After All,” *New York Times*, April 3, 2005, <http://query.nytimes.com/gst/fullpage.html?res=9F06E7D8153FF930A35757C0A9639C8B63&sec=health&pagewanted=2>.

4. Thomas Friedman, “It’s a Flat World After All,” *New York Times*, April 3, 2005, <http://query.nytimes.com/gst/fullpage.html?res=9F06E7D8153FF930A35757C0A9639C8B63&sec=health&pagewanted=2>.

5. David Jason Fischer, “A Workforce Vision for Continuing Education,” Center for an Urban Future, October 2005, http://www.nycfuture.org/content/articles/article_view.cfm?article_id=1128&article_type=3.

6. T. D. Snyder, *Mini-Digest of Education Statistics, 2008* (NCES 2009-021). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Washington, DC.

7. Robin Spence and Brendan Kiel, *Skilling the American Workforce “On the Cheap,”* The Workforce Alliance, September 2003, p.1, <http://www.workforcealliance.org/atf/cf/%7B93353952-1DF1-473A-B105-7713F4529EBB%7D/twa-funding-analysis-09.pdf>.

models, but their strength—their ability to be modified—may also be their downfall. With more people sharing more information on the Internet, it will become increasingly difficult to discern fact from fiction. While the diversification of sources of information enriches our awareness of the world around us, it in no way ensures that we are learning the truth.

Did You Know?

- In 2008, the total worth of the intellectual property that was locked up in U.S. corporations was estimated at more than \$125 billion.⁸
- MIT has developed a durable wireless laptop computer for use in the developing world. As part of the One Laptop Per Child (OLPC) program, individuals in the United States and Canada can buy one laptop for themselves and one for a child in a developing country for \$400.⁹
- Almost 100% of public schools in the United States have Internet access; of these, 97% use a high-speed broadband connection, up from 85% in 2001.¹⁰
- In a ranking of most desirable nations for companies to outsource jobs into, the United States came in 20th, behind countries such as Slovakia, Vietnam, and Jordan.¹¹
- Blog search engine Technorati estimated in 2008 that there were 184 million blogs.¹²
- In 2015, 80% of people currently in the workforce will remain; however, 80% of current technology will be replaced with new technology to which existing workers must adapt.¹³
- Between the early 1980s and the Iraq War in 2003, American news coverage of foreign affairs dropped by two-thirds.¹⁴
- William Nordhaus, an economist at Yale University, has calculated that fewer than 30% of the goods and services consumed at the end of the twentieth century were variants of the goods and services produced 100 years earlier.¹⁵
- Half the world's 6.5 billion people in 2007 owned a cell phone, up from 2 billion just four years earlier.¹⁶

8. See <http://blog.fluidinnovation.com/2008/09/30/the-weightless-economy-a-white-paper/>.

9. One Laptop per Child, 2009, <http://www.laptop.org/en/vision/index.shtml>.

10. L. Lewis and John Wells, *Internet Access in U.S. Public Schools and Classrooms: 1994–2005* (NCES 2007–020). U.S. Department of Education, National Center for Education Statistics, 2006, p. 5, <http://nces.ed.gov/Pubsearch/pubsinfo.asp?pubid=2007020>.

11. “Top Countries for Outsourcing,” *Business Week*, 2007, http://bwnt.businessweek.com/interactive/reports/global_outsourcing/index.asp?sortCol=overall_score&sortOrder=2&pageNum=1&resultNum=50.

12. “State of the Blogosphere 2008,” Technorati, <http://technorati.com/blogging/state-of-the-blogosphere/>.

13. “Future Work Opportunities: Fast Facts,” Australian Government, Department of Education, Science and Training, <http://www.year12whatnext.gov.au/opportunities/fastfacts.htm>.

14. Harm De Blij, *Why Geography Matters* (New York: Oxford University Press, 2005).

15. “Into the Unknown,” *The Economist*, November 11, 2004, http://www.economist.com/Printer-Friendly.cfm?Story_ID=3351468.

16. “Mobile Phone and Development: The Future in New Hands?” ID21 Insights, September 2007, <http://www.id21.org/insights/insights69/index.html>.

Discussion Questions

Use the questions below to structure a discussion on the promise and peril of the knowledge era. Sources to complement your consideration of these important issues are suggested.

1. Are work and learning becoming “the same thing”? How can basic education prepare workers for a lifetime of adaptation, retraining, and continuing education? What role will the on-line world play in this process? How might online education level the playing field between developed and developing countries?
2. How has the media’s objectivity been affected by the explosion of information sources? Will individuals increasingly live in worlds of their own ideological and moral construction by further isolating themselves from competing ideas? Are we entering an era of “choose your truth”? How does information technology further expand the rifts between civilizations and between individuals in the same communities? How does it bridge those divides?
3. Information technology has changed the context in which governments must operate. Individual citizens and groups now have the ability to quickly organize and contest or influence the direction and mode of governance. From 24/7 news to flash mobs to blogs to political tell-alls, the rapid flow of information demands rapid results from systems of governance. How has information technology compressed the ability of governments and organizations across the board to implement long-term strategic planning? How has information technology redefined sovereign and cultural borders? How can the government leverage information technology to “fight back”? What kinds of skills and resources are needed by both the people sending the message and those receiving the information?

Bibliographic Materials from CSIS

- The Technology and Public Policy Program (<http://csis.org/category/topics/technology>) at CSIS offers a look at emerging technologies that are creating the knowledge era and the public policy and security issues they raise.
- The CSIS Global Strategy Institute Video Interview Library (<http://gsi.csis.org/videolibrary>) has a set of clips from an interview with Tom Adams, CEO of Rosetta Stone, on the importance of lifelong learning.

Web Resources

- The World Bank Group’s Global Information & Communication Technologies Department (GICT) (<http://www.worldbank.org/ict/>) plays an important role in developing and promoting access to information and communications technologies (ICT) in developing countries.
- The Pew Research Center for the People & the Press (<http://people-press.org/>) conducts opinion research and serves as a forum for ideas on the media and public policy.

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Spotlight:

In developing countries, cell phones are helping individuals protect their financial assets. In the poorest countries of the world, as few as one in five people have opened a bank account. The reason? Few people actually live near a banking institution. “Unbanked” persons’ assets are vulnerable to natural disasters and events beyond their control. Cell phones are changing this. With a mobile phone, individuals can open bank accounts and conduct transactions without ever stepping foot inside a bank. Additionally, it is giving the poor access to more capital than would be available to them from microfinance companies, the primary loan grantors in the developing world. *Source: <http://www.globalenvision.org/library/4/1708>.*

Revolution Five: Economic Integration

Will increased global wealth lead to greater equality within and between countries?

Despite the international debate surrounding economic liberalization—one that is given fodder by the current global recession—it is likely that by 2025 the world will be more economically interdependent than it is today. The BRIC countries—Brazil, Russia, India, and China—and other rapidly emerging economies will increasingly become the world’s major economic players with respect to both production and consumption.¹

The March of Globalization

Globalization has forced the integration of emerging and developing markets into the global economy and increased the flow of goods and human capital through trade and investment. The benefits and costs of integration to both developed and developing countries have become clear in recent decades. The Eurozone’s GDP is now higher than that of the United States, a development that has encouraged European nations to join the EU and countries in other parts of the world to form competing trading blocs—the Southern African Development Community and the

1. Thomas Friedman, *The Lexus and the Olive Tree* (Macmillan: New York, 2000).

Eurasian Economic Community serve as notable examples.² Worldwide exports have increased dramatically, now representing 30% of GDP, up from 17% in the 1970s.³ International bank lending grew from \$265 billion to \$4.2 trillion over the 19-year period from 1975 to 1994. People are even traveling more, with 846 million individuals trekking internationally in 2006, a 7 percent increase from 1980.⁴⁵ Despite any short-term dislocations, the global market, with the help of new technologies and proactive financial institutions, is expanding to include new groups of people each day.

While some treat economic integration like a free lunch, the true effects of globalization are a mixed bag. Our world is split largely between those who have benefitted greatly from integration and those who have not. Concerns over national identity, heritage, and culture have come to the forefront as more people, resources, and ideas are exchanged across borders. In countries as diverse as Italy, South Africa, Indonesia, India, and Turkey, restrictions on immigration enjoy the support of more than 80% of the population.⁶ This can be viewed as a negative reaction to the effects of globalization. In this era of porous borders and complex information flows, governments are becoming more aware of security threats and strategic weaknesses. By and large, people have benefited from economic integration, but we will need to critically examine the global economic system in order to spread its benefits more broadly and to avert the protectionism, prejudice, and illegal activity that can result from rapid economic integration.

BRIC Economies

If they can consolidate the conditions necessary for structural growth, by 2025 the sum of the GDPs of the BRIC economies could equal half the equivalent of the G-6 countries (United States, Japan, Germany, UK, France, and Italy). By 2032, assuming strong and sustained growth rates, the BRIC economies could overtake the G-6 altogether.⁷ China is leading in this race to the top because of its high levels of foreign direct investment and double-digit growth rates.⁸ Over the next 25 years, the GDPs of the BRIC countries will increase at breakneck speeds as they marshal their ample supplies of natural resources and human capital to economic development. However, over time, their markets will begin to appear more like those of the G-6 countries, and when this happens, growth will start to occur at a slower pace. Furthermore, in spite of

2. "Report for Selected Country Groups and Subjects," International Monetary Fund, <http://www.imf.org/external/pubs/ft/weo/2008/02/weodata/weorept.aspx?pr.x=20&pr.y=14&sy=2007&ey=2007&scsm=1&sd=1&sort=country&ds=.&br=1&c=001%2C998&s=NGDPD&grp=1&a=1>.

3. "Country Comparisons—Exports," *The World Factbook*, Central Intelligence Agency, <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2078rank.html>; "Report for Selected Country Groups and Subjects," International Monetary Fund, <http://www.imf.org/external/pubs/ft/weo/2008/02/weodata/weorept.aspx?pr.x=20&pr.y=14&sy=2007&ey=2007&scsm=1&ssd=1&sort=country&ds=.&br=1&c=001%2C998&s=NGDPD&grp=1&a=1>.

4. United Nations, *Human Development Report 1999* (New York: Oxford University Press), p. 25.

5. "Global Tourism: Key Facts & Figures," Rotorua, http://www.rotoruanz.com/rotorua/info/stats/global_tourism.php.

6. *World Publics Welcome Global Trade—But Not Immigration*, The Pew Global Attitudes Project, Pew Research Center, 2007, <http://pewglobal.org/reports/display.php?ReportID=258>.

7. Dominic Wilson and Roopa Purushothaman, "Global Economics Paper No: 99," Goldman Sachs, October 2003, <http://www2.goldmansachs.com/ideas/brics/book/99-dreaming.pdf>.

8. "Comparative Analysis of the BRICs," Mizuho Research Institute Ltd., March 2006, <http://www.esri.go.jp/jp/archive/hou/hou020/hou16a-2-1.pdf>

this tremendous progress, in 2050 per capita income in China will likely be only around \$30,000, roughly what it is *today* in the West.⁹ The divisions between the haves and have-nots in the BRIC countries are stark, with millions of Indians, Chinese, Brazilians, and Russians excluded from the benefits of economic integration. Eventually, resource scarcities, demographic shifts, price fluctuations, and political strife may prevent some or all of these countries from enjoying the prosperous future experts once predicted for them. Of the four, Russia is probably most at risk. Russia's economy is based largely on the sale of oil and is therefore subject to the vagaries of global demand and international crude prices. If the government does not diversify and invest in non-extractive industries, Russia may fall behind, leaving us with just "BIC."¹⁰

Poverty and Inequality

Tremendous economic prosperity experienced in recent decades has not affected all people in the same way. Globalization has failed to pull the poorest out of poverty, while in other parts of the world it has enabled the development of a middle class. Disparities exist not only between countries but within them as well. The fact remains that a staggering 2.8 billion people live on less than two dollars a day and the richest 10% of the population accounts for 54% of total global income.¹¹ High levels of income inequality are bad for growth and are associated with many of the negative side effects of globalization, including high infant mortality, poor education, and crumbling infrastructure.¹² The costs for basic commodities continue to fluctuate, making it increasingly difficult for the poorest of the poor to meet their daily needs. When citizens are starving or when they see their government keeping more than its fair share of national income, social stability can be threatened.

At the same time, we are witnessing the expansion of the global bourgeoisie. When countries plug into the international system, their citizens are often able to attain better jobs with better pay. To find these jobs, farmers move from small towns and villages into bustling cities. Financial institutions also begin to extend credit to these individuals, previously ineligible for loan money, viewing their extra income as insurance against default. With time, the huge income gaps we see today may become relics of the past. This middle class, freed from the burdens of subsistence living, may push for greater civil liberties and start to demand accountability from elected officials.¹³ This burgeoning middle class could be the driving force behind the democratic movements of the future.

9. Dominic Wilson and Roopa Purushothaman, "Global Economics Paper No: 99," Goldman Sachs, October 2003, p. 2, <http://www2.goldmansachs.com/ideas/brics/book/99-dreaming.pdf>.

10. Ian Bremmer, "Taking a Brick Out of BRIC," *Fortune*, February 7, 2006, http://money.cnn.com/magazines/fortune/fortune_archive/2006/02/20/8369169/index.htm.

11. *2007 Annual Report*, United Nations Development Program, http://www.undp.org/publications/annual-report2007/inclusive_globalization.shtml.

12. United Nations Development Program, *Summary: Human Development Report 2005*, p. 25, http://hdr.undp.org/en/media/hdr05_summary.pdf.

13. *The Global Middle Class*, The Pew Global Attitudes Project, Pew Research Center, 2009, <http://pew-global.org/commentary/display.php?AnalysisID=1051>.

Did You Know?

- By 2025, over 40% of the population of India will be middle class.¹⁴
- According to the UN Development Program, ten years ago the accumulated wealth of the 225 richest individuals in the world was equivalent to the combined annual earnings of the 2.7 billion people at the bottom of the global income ladder.¹⁵
- From 1990 through 2007, the GDP per capita average annual growth rate for developing countries was 4.0%; for industrialized countries, it was 1.9%.¹⁶
- 15% percent of the world's population located in the high-income countries account for 56% percent of total consumption, while the poorest 40% living in low-income countries account for only 11% of consumption.¹⁷
- The poorest 10% percent of the world's people have only 1.6% of the income of the richest 10%, and the richest 1% receives as much income as the poorest 57%.¹⁸
- Two-thirds of international trade is accounted for by just 500 corporations.¹⁹
- In 1947 the average trade tariff on manufactured imports globally was 47%; by 1980 it was only 6%.²⁰
- Canada and the United States share one of the world's largest and most comprehensive trading relationships, which supports millions of jobs in each country. In 2006, bilateral trade in goods and services totaled \$577 billion, with over \$1.6 billion worth of goods and services crossing the border every day.²¹
- In absolute terms, foreign direct investment (FDI) to developing countries increased from \$36 billion in 1991 to \$178 billion in 2000.²²

Discussion Questions

Use the questions below to structure a discussion on the promise and peril of economic integration. Sources to complement your consideration of these important issues are suggested.

14. "Burgeoning Bourgeoisie," *Economist*, February 12, 2009, http://www.economist.com/special-reports/displayStory.cfm?story_id=13063298.

15. United Nations Development Program, *1998 UN Development Report* (New York: United Nations, 1998) pg. 30, <http://hdr.undp.org/en/reports/global/hdr1998/>.

16. "GDP per capita average annual growth rate," UN data: A World of Information, <http://data.un.org/Data.aspx?q=developing+countries+GDP&d=SOWC&f=inID%3a93%3bcrID%3a10%2c16%2c18>.

17. Ibid.

18. Ibid.

19. "Globalization: The Facts," *New Internationalist*, <http://www.newint.org/issue296/facts.html>.

20. Ibid.

21. "The U.S.-Canada Trade and Investment Partnership," Government of Canada, http://www.canadainternational.gc.ca/san_francisco/commerce_can/trade_partnership-partenariat_commerce.aspx?lang=eng&menu_id=35&menu=L.

22. World Summit on Sustainable Development, "Facts about Globalization," press release, 2002, <http://www.arscp.org/pressrelease.asp?cat=wssd>.

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

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

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

4. As the EU continues to grow, it will encounter higher levels of competitiveness from other regions of the world. For the EU to continue to prosper, a reduction of trade barriers, a more liberal and competitive industry sector, and a more integrated internal market are key for stronger growth. How do you propose this change will take place? What sort of competition will the EU face with other trading blocs like the Eurasian Economic Community (EurAsEC) and the South African Development Community (SADC)?

Bibliographic Materials from CSIS

- The William M. Scholl Chair in International Business (<http://csis.org/program/scholl-chair-international-business>) was established to further the role that international business plays in advancing economic growth, innovation, prosperity, security, and freedom in the United States and throughout the world.
- Dr. Sidney Weintraub holds the Simon Chair in Political Economy (<http://csis.org/program/simon-chair-political-economy>). Dr. Weintraub examines issues of trade, investment, and international finance, particularly in Latin America and Canada.

- The Global Strategy Institute Video Interview Library (<http://gsi.csis.org/videlibrary>) has clips from an interview with Grant Aldonas, CSIS senior adviser and former under secretary for international trade, on globalization, the BRIC economies, and inequality.

Web Resources

- The Corporate Social Responsibility Newswire (<http://www.csrwire.com/>) is a reliable source to track increasingly visible corporate involvement in international affairs.
- The Economist Online (<http://www.economist.com>) is a premier online source for the analysis of world business and current affairs.
- The World Bank (<http://www.worldbank.org/>) works to eliminate poverty around the world by helping connect countries and their people to the benefits of globalization.

Further Reading

- Friedman, Thomas L. *The World is Flat: A Brief History of the Twenty-First Century*. New York: Farrar, Straus, and Giroux, 2005.
- Kletzer, Lori G. "Globalization and job loss, from manufacturing to services." *Journal of Economic Perspectives*. Vol. 29, Issue 2 (2005), pg 1. http://www.chicagofed.org/publications/economicperspectives/ep_2qtr2005_part4_kletzer.pdf.
- Stiglitz, Joseph E. *Making Globalization Work*. New York: W.W. Norton & Company, 2007.
- Sachs, Jeffrey. *The End of Poverty: Economic Possibilities of Our Time*. New York: Penguin Books, 2007.

Spotlight:

Income inequality in Brazil is fueling violence. Many experts link Brazil's income inequality, the 7th worst in the world, with its high homicide rates, it is also the 4th most violent country. Poor, young Brazilians with few prospects resort to violent crime for a taste of the lavish lifestyles they see on television. When one teenager was asked why he assaulted a motorist, the youngster replied simply, "I wanted money to eat at Burger King." Source: <http://uk.reuters.com/article/idUKN0435489020070415>.

Revolution Six: Conflict

What kinds of conflict will we see in the future?

The shift from interstate to intrastate war and the increasing capacity of non-state actors to commit acts of mega violence reflect how patterns of conflict have changed since the end of the Cold War. Today warfare is increasingly described as “asymmetric.” Traditional military powers, like the United States, are confronted by increasingly atypical adversaries—non-state ideologues, transnational criminal syndicates, and rogue states—that employ unconventional tactics in wars ambiguous in both place and time.

Today, conflict is more likely to occur between warring factions on residential streets than between armies on battlefields. As before, many belligerents today still fight for power and/or wealth, but an increasing number are fighting purely for ideology. Acts of terrorism have become the major vehicle for this malcontent, especially for well-organized and well-funded extremist groups like al Qaeda. The attacks of September 11, 2001, and similar incidents in recent decades have shown that even small groups of terrorists can carry out sophisticated attacks that result in an incredible loss of life. The proliferation of nuclear and biological technologies only ups the ante for future incidents.¹

Terrorism and Transnational Crime

Over the past few decades the size and scope of terrorists’ abilities have become truly alarming. Terrorist organizations have evolved from scrappy bands of dissidents into well-organized groups with vast human and capital resources. This situation is forcing governments around the world to develop strategies to neutralize these groups where they operate while at the same time protecting their homelands. The United States has met some success in combating terrorist organizations, but this intervention resulted in the formation of “micro-actors,” individuals spurred by militant extremism. These individuals, or groups of individuals, operate in poorly organized cells and prefer to use the Internet to spread their message and plan attacks, making it difficult to detect them. Terrorism has also heightened tensions between sovereign nations. For instance, after the Mumbai terrorist attacks of 2008, India and Pakistan neared the brink of war after India accused Pakistan of harboring individuals who coordinated the attack.

To finance their illegal activity, terrorist organizations are becoming increasingly involved in transnational crime, especially drug trafficking. Regarding the war in Afghanistan, Dr. Rachel Ehrenfeld, director of the American Center for Democracy, has stated, “The huge revenues from the heroin trade fill the coffers of the terrorists and thwart any attempt to stabilize the region.”² Over the last two decades, we have witnessed a surge in transnational crime, in large part because of the dissolution of Cold War alliances that helped keep criminal syndicates in check. Organized crime activity is not limited to the smuggling of illicit drugs, but includes the trafficking of arms, drugs, and human beings.

1. Richard Norton-Taylor, “Asymmetric Warfare,” *The Guardian*, 3 Oct 2001, <http://www.guardian.co.uk/world/2001/oct/03/afghanistan.socialsciences>.

2. Rachel Ehrenfeld, “Stop Afghani Narco-Terrorism,” *The Terror Finance Blog*, February 26, 2009, http://www.terrorfinance.org/the_terror_finance_blog/2009/02/stop-afghani-narcoterrorism.html.

In addition to terrorism and transnational crime, the unequal distribution of globalization's benefits has precipitated political upheavals and social unrest in countries across the world. This is a trend that could be aggravated by resource scarcities if food and water supplies become inadequate to meet the needs of growing populations. As the environmental security scholar Thomas Homer-Dixon asserts, resource stress "causes various forms of social dislocation—including widening gaps between rich and poor... weakening of states and deeper ethnic cleavages—that, in turn, make violence more likely."³ Former U.S. Central Command Commander General Anthony Zinni describes resource-stressed environments as "Petri dishes for extremism and for terrorist networks."⁴

Weapons of Mass Destruction

According to President Obama, "In a strange turn of history, the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up."⁵ International mechanisms established in recent decades have by and large kept the nuclear ambitions of superpowers at bay. However, the fall of the Soviet Union and the increasing prevalence and power of criminal networks have made it more likely that a single group or actor could obtain a weapon of mass destruction (WMD). The term WMD is used to describe any weapons technology (radiological, chemical, biological, or nuclear) that is capable of killing a large number of people.⁶ By and large it is believed that WMDs pose the greatest threat in the possession of belligerent states like North Korea and Iran. However, experts are warning that a more urgent threat would come from WMDs in the hands of non-state actors. Nuclear material and technical knowledge are exchanged on the black market, especially in post-Soviet countries, where WMD facilities are vulnerable.⁷ With the help of the United States, Russia and its neighbors have made strides in securing these sites and improving oversight of the nuclear industry, but there is no telling how much material has been traded over the years.⁸ The WMD threat comes not only from groups operating in the developing world, however, as recent biochemical attacks attest. The perpetrator of the anthrax attacks of 2001 was a U.S. government scientist, and the sarin gas attack on the Tokyo subway was committed by a religious group that enjoyed official government recognition. The ease with which these materials have become available, especially through online resources, is forcing governments to restrict their use. International governing bodies will need to find an acceptable paradigm that allows for the benign application of these technologies, as in power generation, while deterring the nefarious ones.

3. Thomas Homer-Dixon, "The Straw Man in the Wind," *The National Interest*, no. 93 (January/February 2008): 26.

4. General Gordon R. Sullivan, USA (Ret.) et al., *National Security and the Threat of Climate Change* (Alexandria: CNA Corporation, 2007), 31.

5. Helene Cooper and David Sanger, "Obama Seizes on Missile Launch in Seeking Nuclear Cuts," *New York Times*, April 5, 2009, http://www.nytimes.com/2009/04/06/us/politics/06prexy.html?_r=2&bl&ex=1239249600&en=8ba6184e7896eb41&ei=5087%0A.

6. *Department of Defense Dictionary of Military and Associated Terms*, October 17, 2008, p. 594, http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf.

7. Steve Bowman, "Weapons of Mass Destruction: The Terrorist Threat," *Congressional Research Service*, March 7, 2002, p.1, <http://fpc.state.gov/documents/organization/9184.pdf>.

8. C.J. Chivers, "Securing Russian Nuclear Missiles? U.S. Is Set to Say 'Done,'" *New York Times*, October 31, 2007, <http://www.nytimes.com/2007/10/31/world/europe/31russia.html>.

Force Transformation

In the face of these new asymmetric threats, militaries around the world will be forced to adapt to keep up with the new challenges posed by non-state actors. In 2008, the U.S. Army released a new field manual for stabilization operations in what signified a major shift in military strategy. In effect, the army was acknowledging that the enemy had changed and was unlikely to change back. According to Secretary of the Army Pete Geren, the armed forces must prepare for the full spectrum of military engagements in the coming years, meaning that the military will need to grow accustomed to modern, unconventional warfare, like that seen in Iraq and Afghanistan. Additionally, he argued, military leaders will need to put more emphasis on officer development and education to better prepare soldiers for modern-day threats.⁹ Today, a soldier capable of speaking the local language is often more valuable than one able to drive a tank. All the while, the military must maintain its technological edge. The proliferation of cheap but sophisticated military technologies available to enemy combatants is making this more difficult. The military will need to develop new technologies that are not only deadly but precise and adaptable to different theaters.

Did You Know?

- During World War I, civilians made up fewer than 5% of all casualties. Today, 75% or more of those killed or wounded in wars are non-combatants.¹⁰
- 60,000–90,000 people are killed every year in wars and armed conflicts.¹¹
- Twenty-two of the world's 34 poorest countries are engaged in or emerging from armed conflict.¹²
- According to the UN's Food and Agriculture Organization, armed conflicts are the second-greatest cause of world hunger; conflicts were the main cause of 35% of the food emergencies occurring from 1992 to 2003.¹³
- Approximately 14,000 terrorist attacks occurred worldwide in 2006, causing 20,000 deaths.¹⁴
- More than 30 suicide bombings from 2000 to 2005, according to *Time* magazine, were carried out by children, and multiple juvenile al Qaeda terrorists were detained at the U.S. military prison on Guantanamo Bay in the special "Camp Iguana" facility.¹⁵
- About 35% of the energy of a nuclear explosion is released as heat. The temperature at the point of explosion ("ground zero") may exceed 100 million degrees Centigrade (°C). This is about 10 times the temperature of the surface of the sun. At these temperatures, matter cannot

9. The Honorable Pete Geren. "Challenges Facing our 21st Century Army," CSIS, Washington, DC, September 29, 2008.

10. "The World at War," GlobalSecurity.com, <http://www.globalsecurity.org/military/world/war/index.html>.

11. "Gun Violence, a Global Epidemic Factsheet," International Action Network on Small Arms, 2006, <http://www.iansa.org/documents/2006/Gun-violence-a-global-epidemic.pdf>.

12. "Gun Violence and Poverty Factsheet," International Action Network on Small Arms. 2006, <http://www.iansa.org/documents/2006/Gun-violence-and-poverty.pdf>.

13. Ibid.

14. National Counterterrorism Center, "Report on Terrorist Incidents—2006," April 30, 2007, <http://wits.nctc.gov/reports/crot2006nctcannexfinal.pdf>.

15. Peter W. Singer, "Tragic Challenge of Child Soldiers," *USA Today*, March 30, 2005, http://www.brookings.edu/opinions/2005/0330humanrights_singer.aspx.

exist in its normal solid, liquid, or gaseous state. Instead, atoms are stripped of all their electrons and converted to ionized plasma.¹⁶

- The U.S. military budget is almost as large as the rest of the world's military budgets combined.¹⁷
- The U.S. Department of Energy estimates that only four kilograms of plutonium are needed to make an atomic bomb.¹⁸

Discussion Questions

Use the questions below to structure a discussion on the peril of conflict and the promise of conflict resolution. Sources to complement your consideration of these important issues are suggested.

1. Asymmetrical violence (including terrorism) has historically accompanied eras of global economic expansion and rapid technological change. How might the technologies and movements of goods, people, and money that power globalization also inspire violence? What steps can be taken to mitigate reactionary movements to the forces of globalization? Is this violence nihilistic or simply “politics by other means”? How are economics likely to drive conflict in the future?
2. How would the global risk calculus of individuals, organizations, and governments shift if a weapon of mass destruction were detonated in a heavily populated city? The likelihood of such an event is high according to experts around the globe. Would such an event promote closer cooperation between countries in fighting the spread of WMDs or would it drive countries further apart and back within their sovereign borders?
3. How does fighting a war against an ambiguous, non-state foe alter existing relations between countries? What are the keys to transforming military and police forces to meet the challenges of guarding against the threats of today and tomorrow? How might judiciary systems and international organizations be reformed to meet these threats? How many civil liberties will citizens give up to increase their feelings of security? What actions carried out by the state on their behalf will they tolerate?

Bibliographic Materials from CSIS

- The CSIS International Security Program (<http://csis.org/program/international-security-program>) tracks the major security concerns the United States faces today and beyond, including strategy and regional security issues.
- View the reports of the Strategic Assessment Project, prepared by Anthony H. Cordesman, Senior Fellow and the Arleigh A. Burke Chair in Strategy at CSIS (<http://csis.org/program/>

16. “Nuclear Terrorism,” Nuclear Threat Initiative, http://www.nti.org/h_learnmore/nuctutorial/chapter02_06.html.

17. “World Military Spending,” Global Issues, March 1, 2009, <http://www.globalissues.org/article/75/world-military-spending>.

18. “Plutonium Program,” GlobalSecurity.org, <http://www.globalsecurity.org/wmd/world/dprk/nuke-plutonium.htm>.

[burke-chair-strategy](#)). The reports summarize the global military balance in graphic and tabular form. They are divided by region and subregion, and cover the trends in conventional forces, nuclear forces, proliferation, military effort and spending, procurement and arms import activity, force modernization, and force quality.

- Visit the CSIS Transnational Threats Project (<http://csis.org/program/transnational-threats-project>) to learn more about the breadth, depth, and impact of transnational threats including crime, terrorism, information warfare, and WMD proliferation.
- The CSIS Homeland Security and Counterterrorism Program (<http://csis.org/program/homeland-security-program>) focuses on providing policy solutions to the U.S. government's newest agency by considering in a broader context the challenges it faces. The program sponsors a number of simulation exercises to help prepare for a variety of possible contingencies.
- The CSIS Global Strategy Institute Video Interview Library (<http://gsi.csis.org/videolibrary>) contains interviews on conflict with Anthony Cordesman, the CSIS Burke Chair in Strategy, and Arnaud de Borchgrave, senior adviser and director of the CSIS Transnational Threats Project.

Web Resources

- The National Memorial Institute for the Prevention of Terrorism (<http://www.mipt.org/>), located in Oklahoma City, is dedicated to preventing terrorism and mitigating its effects. The institute is a repository of knowledge on all aspects of terrorism around the world.
- The Small Arms Survey (<http://www.smallarmssurvey.org/>) is an independent research project located at the Graduate Institute of International Studies, Geneva, Switzerland. Its reports and databases examine the role small arms play in destabilizing various regions and are a resource for governments, activists, and policymakers.
- The Human Security Report (<http://www.humansecurityreport.info/>) examines worldwide political violence. The report was produced by the Human Security Center at the University of British Columbia.
- The International Crisis Group (<http://www.crisisgroup.org>) is a nongovernmental organization that is dedicated to monitoring regions of instability throughout the world. The ICG provides resources and background information on all current and potential conflicts worldwide.

Further Reading

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- Barnett, Thomas P.M. *The Pentagon's New Map: War and Peace in the 21st Century*. New York: Putnam Books, 2004.

Spotlight:

The 2009 coup in Madagascar exemplifies how globalization is shaping conflict. A large factor in the ouster of former President Marc Ravalomanana by deposed Mayor of Antonovaro, Andry Rajoelina, was a land deal with South Korean firm, Daewoo Logistics. Ravalomanana sold half of Madagascar's remaining arable land to Daewoo so that the company could grow soybeans and corn. South Korea, anticipating increasing food demand in the coming decades, looked to Madagascar to expand its farming sector. This deal outraged many in Madagascar, and provided Rajoelina with a popular grievance to justify the ouster of Ravalomanana. Source: <http://news.bbc.co.uk/2/hi/africa/7952628.stm>.

Revolution Seven: Governance

How will organizations and governments respond to the changes ahead?

We have crossed into a new period of governance – from the Westphalian nation-state system to a world with a powerful set of actors outside of traditional governments. The challenges of the previous revolutions will test our leaders as they seek innovative solutions. Strategic coalitions consisting of governments, corporations, NGOs, and academic institutions will be necessary in mounting effective responses and capitalizing on important opportunities.

Corporate Citizenship

According to Klaus Schwab, executive chair of the World Economic Forum, corporate citizenship “expresses the conviction that companies not only must be engaged with their stakeholders but are themselves stakeholders alongside governments and civil society.”¹ According to this philosophy, private companies must do more than simply provide goods and services to the public: they must serve the public good. And many private companies are well positioned to do so. The revenue of the largest private company, ExxonMobil, in 2008, was higher than the GDP of the entire country of Austria.² With such massive profits, consumers will look to the private sector to help solve many of the world's problems. In fact, according to the 2004 Cone Corporate Citizenship Study, 91% of Americans have “a more positive image of a product or a company when it supports a cause, compared to 84% in 1993.”³ And it would seem that business leaders are in

1. Klaus Schwab, “Global Corporate Citizenship: Working with Governments and Civil Society,” *Foreign Affairs*, January 2008, p. 108, http://www.weforum.org/pdf/CGC/Schwab_Article.pdf.

2. “Fortune 500: Our Annual Ranking of America's Largest Corporations,” *Fortune*, May 4, 2009, <http://money.cnn.com/magazines/fortune/fortune500/2009/snapshots/387.html>; World Economic Outlook Database. “WEO Data: October 2008 Edition,” International Monetary Fund, <http://www.imf.org/external/pubs/ft/weo/2008/02/weodata/index.aspx>.

3. “Cone Corporate Citizenship Study: Building Brand Trust,” http://www.coneinc.com/stuff/contentmgr/files/0/84d3119bfe09009ccba4134a2c9fd5ae/files/2004_cone_corporate_citizenship_exec_summary.pdf.

agreement. According to the Harvard Business Review, “when a well-run business applies its vast resources, expertise, and management talent to problems that it understands and in which it has a stake, it can have a greater impact on social good than any other institution or philanthropic organization.”⁴ However, at the end of the day, many CEOs are more concerned with the bottom line than they are with shaping public discourse, and it is unlikely that private companies would be involved in this work if it proved unprofitable. The financial crisis is forcing businesses to reevaluate their practices, and in the end they may find that the most profitable strategy is also the most socially sustainable.

Civil Society

With the decentralization of capital, technology, and information, civil society organizations (CSOs) and nongovernmental organizations (NGOs) have become important actors, filling gaps in the provision of social services, encouraging participation in local and national politics, and connecting people, resources, and ideas across the world. All of the other six revolutions discussed in this toolkit will affect civil society the world over, some in a negative way, some positive. For instance, communication technology may encourage individuals to disengage from formal politics. Also, immigration may fundamentally alter the cultural and religious makeup of political constituencies and force politicians to alter their platforms. Some governments, confronted by terrorist threats, may implement new security measures that infringe on civil liberties, while other governments may play a smaller role and encourage the professionalization of the “third sector” of nonprofit organizations.⁵

NGOs are already playing an important role around the world—according to the Union of International Associations there are more than 60,000 international NGOs in existence—but the role they will play in the future depends upon the expectations private citizens have for their governments.⁶ These expectations differ starkly in developed and developing countries. In failed states like Somalia, where neither the government nor civil society organizations can provide for citizens, people have come to rely on international aid organizations for their most basic needs. Development organizations have been active in these places for years working to empower civil society organizations, but building a truly robust civil society is a decades-long process.

Corruption

Corruption erodes public confidence in governmental institutions and encourages individuals to act outside their purview. According to Huguette Labelle, chair of Transparency International, “the continuing high levels of corruption and poverty plaguing many of the world’s societies amount to an ongoing humanitarian disaster.”⁷ Corruption, including bribery, fraud, and extortion, in low-income societies keeps the poor in poverty by dramatically increasing the costs

4. Klaus Schwab, “Global Corporate Citizenship: Working with Governments and Civil Society,” *Foreign Affairs*, January 2008, p. 117, http://www.weforum.org/pdf/CGC/Schwab_Article.pdf.

5. *Futures for Civil Society: Summary*, Inquiry into the Future of Civil Society, Carnegie UK Trust, October 2007, p. 3, <http://democracy.carnegieuktrust.org.uk/files/Futures%20for%20Civil%20Society%20-%20Summary.pdf>.

6. UIA Online Databases, Union of International Associations, <http://www.uia.be/sites/uia.be/db/db/x.php>.

7. Transparency International, “Persistently high corruption in low-income countries amounts to an ‘ongoing humanitarian disaster,’” Press Release, Sept 23, 2008, p. 1.

of providing them with public services. It is estimated that unchecked levels of corruption would add 50 billion dollars to the cost of achieving the Millennium Development Goals for water and sanitation alone, equivalent to half of what is paid in foreign assistance worldwide in an entire year.⁸ Corruption does not affect just the developing world, however; it causes excessive waste even in more advanced countries. For example, notoriously bad corruption has created stark income inequalities in Russia. There, corrupt officials siphon \$120 billion dollars from the federal budget annually; in 2008, that number represented almost a third of government spending for the entire year.⁹

Megacommunities

Dynamic, innovative, and strategic partnerships between governments, civil society, the private sector, and international institutions will be necessary to address the challenges highlighted in the other revolutions.¹⁰ National governments are no longer the uncontested actors, nor do traditional international governing institutions hold the clout they once did. Nation-states have struggled to adapt to sweeping changes but have been slow to reformulate their roles and responsibilities. Likewise, if organizations such as the UN and NATO are unable to change, they may be remembered in the future as nothing more than fixtures of the Cold War era. Recent pledges to expand the resources of the International Monetary Fund (IMF) may hint at an expanded role for that organization, but it may operate with less control by Western countries.¹¹ Where these organizations have failed, new groups and partnerships have stepped in. Private companies, civil society organizations, and international collaborations have emerged as major players on a host of economic, social, political, and cultural issues. The roles of the private sector and civil society have already been discussed, but fledging international partnerships, like the Group of Eight and, perhaps more importantly, the Group of Twenty should not be overlooked. In 2009, especially, the G-8 and G-20 meetings were followed with great anticipation, as they were seen as the most effective venues to address the international financial crisis.

The problems we face today result from our interdependence, so it is not illogical to assume that we need a collaborative and integrated solution. We will also need leaders with the wherewithal to say that our current mindset is flawed. The pressures of quarterly profit statements, election cycles, and annual reports currently prevent leaders from thinking strategically and long-term. The effective leader will jettison vertical integration, information hoarding, and dogma in favor of optimization, recalibration, and negotiation.¹² In an increasingly integrated world, seeing the big picture requires a daunting breadth and depth of knowledge. Those leaders able to bridge these gaps and create a strategic vision will enable the innovative partnerships necessary to invent a better future.

8. Transparency International, "Persistently high corruption in low-income countries amounts to an ongoing humanitarian disaster," Press Release, Sept 23, 2008, p. 2.

9. Ed Bentley, "Corruption Costs Russia \$120 Billion Annually," *The Moscow News Weekly*, October 6, 2008, <http://www.mnweekly.ru/business/20080610/55332947.html>.

10. Mark Gerencser et al., *Megacommunities* (New York: Palgrave Macmillan, 2008).

11. Anthony Faiola, "A Bigger, Bolder Role is Imagined for the IMF," *Washington Post*, April 20, 2009, <http://www.washingtonpost.com/wp-dyn/content/article/2009/04/19/AR2009041902242.html?hpid=topnews>.

12. Mark Gerencser et al., *Megacommunities* (New York: Palgrave Macmillan, 2008), pp. 81–103.

Did You Know?

- According to a survey in 2005, 8 in 10 respondents would respect a company more if it formed partnerships with NGOs or national governments.¹³
- Americans 18 -25 years old are significantly more likely than older Americans to consider a company's citizenship practices when making purchasing, employment, and investment decisions.¹⁴
- Nine out of 10 surveyed CEOs feel that partnerships between business, government, and civil society must play either a major role or some role in addressing key development challenges facing the world today.¹⁵
- A recent report from the World Economic Forum finds that the mainstream financial community places little emphasis on social, environmental, and ethical issues in its investment decisions.¹⁶
- Somalia, Iraq, and Myanmar bottom out Transparency International's 2008 Corruption Perceptions Index with the three highest levels of perceived corruption. That same year also saw significant losses in Bulgaria, Burundi, Norway, and the United Kingdom.¹⁷
- Thirty-three new sovereign countries have been created since 1990, largely due to the dissolution of the USSR and Yugoslavia. Other separatist states, like South Ossetia and Abkhazia, have declared independence, though they are largely unrecognized by the international community.¹⁸
- 2008 marked the third year in a row that the number of electoral democracies in the world declined, according to Freedom House, leaving 34% of the world's population living in "not free" countries—ones that deny the most basic political rights and civil liberties. Most reversals were in the former Soviet space and sub-Saharan Africa.¹⁹
- Nearly 500 million people live in states considered to be fragile—in other words, states unable or unwilling to assure the provision of security and basic services to significant portions of their populations.²⁰

13. Center for Corporate Citizenship, "The State of Corporate Citizenship: A View from Inside," Boston College, 2005, <http://www.bcccc.net/index.cfm?fuseaction=Page.viewPage&pageId=694&parentID=473>.

14. "Multi-Year Study Finds 21% Increase in Americans Who Say Corporate Support of Social Issues is Important in Building Trust," *Business Wire*, December 8, 2004.

15. World Economic Forum (WEF), *Partnering for Success: Business Perspectives on Multistakeholder Partnerships*, Global Corporate Citizenship Initiative, Geneva, January 2005, <http://www.weforum.org/pdf/ppp.pdf>.

16. World Economic Forum (WEF), *Mainstreaming Responsible Investment*, Global Corporate Citizenship Initiative, Geneva, January 2005, <http://www.weforum.org/pdf/mri.pdf>.

17. *2008 Corruption Perceptions Index*, Transparency International, September 23, 2008, http://www.transparency.org/news_room/latest_news/press_releases/2008/2008_09_23_cpi_2008_en.

18. "New Countries of the World," About.com: Geography, February 18, 2008, <http://geography.about.com/cs/countries/a/newcountries.htm>.

19. http://www.freedomhouse.org/uploads/fiw09/FIW09_OverviewEssay_Final.pdf, 1–2.

20. "Evaluation of World Bank's Support for Low-Income Countries Under Stress," World Bank, 2007, <http://www.worldbank.org/ieg/licus>.

- Recent research suggests that, around the world, there are 11 million stateless people—that is, people who do not enjoy citizenship with any country.²¹
- Well over half of adult American men and women believe the United States would be better off if there were more women in leadership positions.²²
- More than 9 out of 10 Americans believe that their political leaders spend too much time attacking members of the other party.²³

Discussion Questions

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

1. We live in a world in which 13 of the top 50 economies are companies, not countries. How does this change the responsibility companies have for providing for social needs and addressing big-ticket challenges of the future? How can companies ensure their own future prosperity by beginning to engage looming issues of concern—from energy needs to public health to income inequity?
2. If we have truly crossed the bridge from the Westphalian nation-state model, then what is the next step in the evolution of our societies? Will governments around the world be overwhelmed by this new environment? Will they adapt to meet the constellation of new challenges and opportunities? Will authority become increasingly decentralized? What importance does leadership play in this new system and how can it help guide countries, corporations, organizations, and institutions to necessary reform?
3. Is the proliferation of nongovernmental organizations the result of an incapacity on the part of governments? Or, are NGOs an innovation in human social organization and an important step forward for addressing global and local challenges? How can NGOs and governments work together to complement one another? How should the private sector involve itself in such coalitions?

Bibliographic Materials from CSIS

- The CSIS Hills Program on Governance (<http://csis.org/program/hills-program-governance>) focuses on the need for multinational companies and governments to work jointly to promote good governance, especially in emerging markets. Its central task is to develop an actionable

21. “The World’s Stateless People: Questions & Answers,” The UN Refugee Agency, 2006, 6, <http://www.unhcr.org/basics/BASICS/452611862.pdf>.

22. T. L. Pittinsky, S. A. Rosenthal, L. M. Bacon, R. M. Montoya, & W. Zhu, *National Leadership Index 2005: A National Study of Confidence in Leadership*, Center for Public Leadership, John F. Kennedy School of Government, Harvard University, 2005, <http://www.usnews.com/usnews/news/features/051022/22leaders.pdf>.

23. T. L. Pittinsky, S. A. Rosenthal, L. M. Bacon, R. M. Montoya, & W. Zhu, *National Leadership Index 2006: A National Study of Confidence in Leadership*, Center for Public Leadership, John F. Kennedy School of Government, Harvard University, 2006, 10, http://www.usnews.com/usnews/images/news/leaders/NLI_2006.pdf.

agenda that promotes good governance at the intersection of the private and public sectors through dialogue and training at the mid-career and university levels.

- The CSIS Global Strategy Institute Video Library (<http://gsi.csis.org/videolibrary>) contains clips on governance from an interview with Norm Augustine, former chair and CEO of Lockheed Martin Corporation.

Web Resources

- The United Nations (www.un.org), consisting of 192 countries, works to maintain international peace and security, to develop friendly relations among nations, to mediate interstate disputes, and to promote respect for human rights.
- The Center for Public Leadership (<http://content.ksg.harvard.edu/leadership/>) at Harvard University is dedicated to leadership education and research. It provides research, profiles of role models, and public opinion data on leadership.
- Based at the London School of Economics, the Centre for the Study of Global Governance (<http://www.lse.ac.uk/Depts/global/>) works to heighten awareness of global issues by promoting interaction between academics, policymakers, journalists, and activists and by proposing policy solutions.

Further Reading

- David Vogel, *The Market for Virtue: The Potential and Limits of Corporate Social Responsibility* (Washington: Brookings Institution Press, 2006).
- C. K. Prahalad, *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits* (Philadelphia: Wharton School Publishing, 2004).
- Michael Edwards, *Civil Society* (Cambridge: Polity Press, 2004).
- Margaret P. Karns and Karen A. Mingst, *International Organizations: The Politics and Processes of Global Governance* (Boulder, Colo.: Lynne Rienner, 2004).
- Jean-Francois Rischard, *High Noon: 20 Global Problems, 20 Years to Solve Them* (New York: Basic Books, 2003).

Spotlight:

Somalia has not had a functioning government since 1991. It is currently an anarchic state, where a diversity of tribes, clans, and sects control limited territories. There is no central government or any conceptual “state” that provides security and services. Governance has been reduced to decentralized clanships that preside over their traditional territories. Unfortunately, Somalia is the definition of a failed state. Source: http://news.bbc.co.uk/2/hi/africa/country_profiles/1072592.stm

3

CASE STUDIES OF SEVEN REVOLUTIONS PARTICIPANTS

Faculty participants in Seven Revolutions were asked to provide an account of how the 7 Revs framework is being used at their institutions. Collectively, responses to questions about course design, student audience, assessment, institutional support, and future plans provide a picture of the project's promise and varied curricular applications.

As established on participating campuses, 7 Revs is not a single course but an array of approaches designed to help students think about global issues. Beneath the diversity, the courses share the broad goals that students become globally competent citizens with a sense of responsibility and ability to understand and analyze global issues. These goals are consistent with larger institutional missions that highlight informed citizenship, engagement, and service.

At least two institutions (Fort Hayes State University and Northern Arizona University) use the 7 Revs architecture and content as background for considering how global trends will affect local situations. Some courses have a more futurist focus (Western Kentucky University); others emphasize current global issues (University of Minnesota Duluth). Seven Revs has also been used as the framework for analyzing disciplinary content and themes (theatre and leadership courses at University of Minnesota Duluth). In another course (Northern Arizona University), the 7 Revs framework itself is the subject of inquiry, as students are asked to consider its assumptions and what is emphasized/overlooked.

Several courses want students to develop a sense of personal agency regarding the challenges identified via course content. The ways this is addressed range from service learning components (Fort Hayes State University) to a "taking action" assignment in which students are instructed to spend five hours saving the world (California State University, Fresno) to a largely experiential course where students participate in a week-long seminar at CSIS, then make presentations at a regional conference hosted by their home institution (Southeast).

Variation extends to the location of 7 Revs content in the larger curriculum, along with how and to whom it is delivered. Seven Revs has been piloted as an elective for freshmen and sophomores and is currently in use in upper- and lower-division honors seminars, general education options at both the upper- and lower division, an experiential elective for invited juniors and seniors, and disciplinary courses (theatre and leadership). Participating institutions have plans to extend use of 7 Revs into learning communities for first-year students in need of remediation, a biology course for non-science majors, large sections of a sophomore general education course, and additional online offerings.

Some institutions use team teaching to deliver this wide-ranging content. Others provide support for guest lecturers or rely on the generosity of colleagues with special expertise on particular topics. The degree of technological innovation varies from instructor to instructor, and a version of 7 Revs has been taught online.

Faculty participants comment that preparing to teach 7 Revs can be daunting, which is why they readily share resources, PowerPoint lectures, and ideas with one another and why they believe this *Tool Kit* and plans for a continually updated online version are important. They also admit to favoring familiar perspectives and teaching to their strengths, but at the same time note that the rewards of teaching 7 Revs include their own increased understanding of global trends and the high degree of student engagement.

California State University, Fresno (CSU Fresno)

Fresno, California

20,000 undergraduates, 2,500 graduate students

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Institutional Uses of 7 Revs

California State University, Fresno has been involved in the 7 Revs project since the fall of 2006. Students in the Smittcamp Honors College take three specially designed courses to meet upper-division general education requirements. Beginning fall 2008, a 7 Revs course—Honors 102: Revolutions in science—replaced one of these courses. The provost and the dean of undergraduate studies are committed to expanding the role of the 7 Revs material into other aspects of undergraduate education at CSU Fresno.

Martin Shapiro has been the 7 Revs representative for CSU Fresno since spring 2007. An associate professor of psychology specializing in neuroscience and comparative psychology, he developed the 7 Revs honors course and taught it in fall 2008 and spring 2009. Because the course covers a wide area of topics, several instructors received stipends from the Smittcamp Honors College to give guest lectures on specific topics. Guest lecture topics included immigration and medical issues in Europe, the effects of globalization and conflict on cultures, and climate change.

CSU Fresno plans to incorporate the 7 Revs framework into three new areas. A first-year experience program is designed for students who score low on English and math entrance exams. These students participate in a yearlong learning community taking eight courses (reading, math, history, political science, critical thinking, communications, plus two English courses) with the same group of fellow students. The design and organization of these courses are developed by a university committee. In fall 2010, 7 Revs and global citizenship will be the theme. Second, a stand-alone 7 Revs course may be introduced into the general education curriculum fulfilling a humanities requirement. Finally, there are plans to teach a general education biology course for non-science majors around 7 Revs, which would be piloted in spring 2011.

Comments about Teaching 7 Revs

Students in the upper-division 7 Revs honors course come from all majors and tend to be interested in global topics and highly motivated. One goal of the honors course is to use a variety of resources to provide the most current information and opinions on global issues; thus, 7 Revs

creates opportunities to incorporate innovative technologies and resources including online videos and radio programs, as well as articles from current periodicals such as the magazine *Scientific American: Earth 3.0*. Keeping up with information is a challenging part of preparing material for students, but it also can be one of the most rewarding aspects of taking on this course. In addition to lectures, students are given the opportunity to lead small-group discussions and give short presentations to contribute to the education of fellow students.

Assessment of the 7 Revs honors course includes an end-of-the-semester standardized teaching evaluation conducted by the Smittcamp Honors College. The pre- and post-test developed by 7 Revs scholars is administered to assess students' attitudes toward global issues. Finally, because this is a new course, surveys are conducted to learn about students' opinion of the materials used in the class (text articles, *NYT* and CSIS material, videos, and radio programs).

The wide range of material covered in 7 Revs can make preparing to teach this framework intimidating. While it is doubtful that any individual faculty member is qualified to teach in all areas, there is considerable freedom regarding what is covered in each section. Guest lecturers can be helpful in bringing additional insight on specific issues. Colleagues are often happy to talk about their field of expertise and experiences.

The instructor rates the course highly: "This course has been extremely rewarding to teach. In addition to forcing me to educate myself on global issues, I find that students show a strong interest in the material and a level of engagement not found in my other courses."

Fort Hayes State University (FHSU) Hayes, Kansas

5,000 resident students, 5,000 online students

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Institutional Uses of 7 Revs

Fort Hayes State University, a public liberal arts college located in western Kansas, originally became involved in the 7 Revs project through the American Democracy Project (ADP) and was one of the pilot institutions working with CSIS and the *New York Times*. FHSU first offered an undergraduate 7 Revs course to resident students in fall 2007. Since the initial offering, the course has run each fall and spring term, will also be offered online in fall 2009, and is expected to become permanent as a first-year experience course and/or general education alternative.

Because of the broad and varied nature of the 7 Revs content, FHSU has adopted a team-teaching model. To date five faculty members have served in leadership and instructional roles

and five as guest lecturers. Course faculty and guest lecturers are from various disciplines—political science, leadership studies, physics, geosciences—and offer insight from their prospective areas of expertise.

The 7 Revs course at FHSU is a three-credit-hour, lower-division liberal arts offering through the Department of Leadership Studies. It is aimed at first-year students with enrollment capped at 25 per section. In addition to learning about global trends, learning objectives specific to this course include the ability to analyze global issues and forecasts, with a special emphasis on understanding the relationship between global trends and local events. In addition, students are expected to develop a sense of responsibility as change agents.

A feature of 7 Revs at FHSU is the emphasis placed on local perspectives. Students are required to look at critical trends globally, but also to assess the impact such trends will have on their local environment, specifically how the 7 Revs affect western Kansas. Students are also challenged to examine their own behaviors and consumption patterns in the context of the 7 Revs and to consider how they might influence what is forecast. The course includes a service learning component in which student skills and knowledge are made available to the community. Instructors are currently investigating possibilities for grant-based service initiatives to serve Kansas. To this end, 7 Revs at FHSU is an expression of the university's mission to awaken and train civic consciousness.

Comments about the 7 Revs Course

7 Revs at FHSU administers a standardized university teaching evaluation, tabulated by the university, so that the course can receive relative assessment. Additionally, course assessment is supplemented via a separate qualitative instrument administered at the end of each semester. Results have been generally positive. FHSU incorporated the 7 Revs Scholars' pre- and post-survey for students beginning spring 2009. (See chapter 4, Teaching Materials, for a reproducible sample of the survey.)

The 7 Revs program at FHSU has been a positive experience for students who consistently rate the content as fresh and distinct from other courses. The opportunity to connect with students beyond the context of a single discipline has been rewarding for both faculty and students. The challenge of relating such diverse material in a single course provides opportunities to teach transformational attitudes and skill sets that students will need in an increasingly complex world. 7 Revs also offers a rare opportunity for students to emerge from disciplinary silos to appreciate the interconnectivity of the many challenges facing individuals and society. At FHSU, the development of this course at the first-year level aims to bring this opportunity to students at the beginning of their college experience so they can bring those skills and attitudes to bear on the rest of their education.

Fort Lewis College (FLC) Durango, Colorado

3,500 undergraduate students

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Institutional Uses of 7 Revs

Fort Lewis College (FLC) is Colorado's public liberal arts college and has a widely diverse student body, among whom 18% are Native American representing over 100 tribes. The college is characterized by its focus on undergraduates and its long-standing commitment to the education of Native American students.

FLC has been involved in the 7 Revs Project since it began in 2006. A new component of general education—Education for Global Citizenship (EGC)—had just been introduced, and the 7 Revs Project seemed a natural fit. The opportunity for participation in a national community of faculty teaching related courses offered potential for enhancing both the general education program and the institutional mission regarding civic engagement and service. A course using the 7 Revs framework—EGC 310: Seven Global Revolutions—was created with the idea that faculty from various departments teach it. One of the two principals involved in the 7 Revs project at FLC, Paul McGurr, teaches a Global Issues course as part of an FLC study abroad program.

General education at Fort Lewis College includes an upper-division component—EGC—designed to give advanced students from different majors an integrative and interdisciplinary experience. Students choose EGC courses from approximately 25 possibilities. The goal of these courses is to develop an understanding of the “global dimensions of social, ecological, political, economic, or cultural systems.” Course topics are varied, ranging from global literacy to infectious diseases to world music and culture. Class size is limited to 25 to promote student research and active engagement with the issues under study.

All academic departments are expected to participate in general education. The variety of courses reflects both departmental and individual interests and initiatives in responding to this requirement. EGC 310 takes a broader view than many of the other EGC courses, but shares the same desired learning outcomes.

Plans for assessing EGC 310 were part of the course proposal and conform to the assessment model used for other EGC courses. Based on Barbara E. Walvoord's *Assessment Clear and Simple*, assessment activities are embedded in the flow of each class, with results from all courses pooled and considered collectively. For EGC 310, group discussion, extensive writing, research projects, and presentations are used to evaluate students' development as competent global citizens. It is likely that the 7 Revs pre- and post- survey (see chapter 4, Teaching Materials) will be used as a standardized way to learn about student attitudes. Desired learning outcomes for the FLC 7 Revs course include the following:

- Awareness of how global economic, social, environmental, and cultural systems interact;
- Development of a sense of responsibility for the future of current global problems;
- Ability to engage in critical analysis of global issues;
- Ability to synthesize and propose solutions in ways that recognize diverse perspectives.

Reflections on Launching 7 Revs

When one of the faculty members initially involved in the 7 Revs project moved to a different institution and another became an administrator, the need for an ongoing way of recruiting and supporting faculty to teach the course became clear. To address this need, an annual workshop was implemented in May 2009 and tested. Sponsored by the provost's office, the workshop is designed to provide resources, promote faculty collaboration, and connect FLC faculty to those teaching 7 Revs at other institutions. In addition to supporting faculty interested in teaching EGC 310, the workshop is intended to provide a broad introduction to 7 Revs so that interested faculty can consider alternative ways of utilizing the 7 Revs framework.

At the first FLC 7 Revs workshop, in May 2009, faculty from FLC, Northern Arizona University, and Fort Hayes State University participated. Dennis Falk, University of Minnesota Duluth, and Martin Shapiro, California State University–Fresno, were workshop leaders. A draft version of the 7 Revs Tool Kit: Educating Globally Competent Citizens was used and evaluated by workshop participants.

The biggest challenge of successfully implementing a 7 Revs course has been sustaining faculty participation. Because jobs and priorities change, it is not feasible to rely on the ongoing involvement of a few faculty members. There needs to be a way to expand, then support, faculty participation. The collaboration with CSIS has provided resources and a rich framework; the *New York Times*' contributions regarding resources and e-learning are valuable; but, a self-sustaining community of faculty, at both the institutional and national level, is critical.

The organization of academia provides a model for such a community. Faculty members are, first, members of an academic discipline, which can also be thought of as an intellectual community of peers. Disciplines are self-sustaining communities of inquiry, conversation, friendship, and identity. They are also powerful shapers, sustainers, and reformers of curriculum. To expand and sustain a transdisciplinary curricular initiative like 7 Revs, participants need similar opportunities for conversation, mutual support, and sense of membership in a group with shared goals. At FLC, an annual workshop where peers learn from peers is a step in that direction. Ongoing efforts at both the institutional and national level to understand and address logistical and motivational challenges of this valuable curricular initiative are also needed.

Northern Arizona University (NAU)

Flagstaff, Arizona

16,500 undergraduates

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Institutional Uses of 7 Revs

NAU has been involved with the 7 Revs from the beginning. The institution has supported faculty to attend 7 Revs meetings in Washington, D.C., and has provided reassigned time and overload stipends for faculty to teach 7 Revs courses.

Marcus Ford, professor of humanities (Ph.D. in religious studies), has led the 7 Revs project at NAU. His main area of scholarship and teaching for the past 20 years has been environmental studies and the history of higher education. With a colleague from physics, David Cole, he piloted and team-taught a 7 Revs course—titled “The State of the World”—to 25 sophomores. A second version of this course was being taught to 23 students, mostly sophomores and juniors. In fall 2009 both Ford and David Cole were scheduled to teach separate sections of the same course, each to approximately 80 sophomores. “The State of the World” as currently taught takes the following form:

- weeks 1-5 look at the 7 Revs globally;
- weeks 6-10 look at these same issues in Arizona; and
- weeks 11-15 are given to a critical analysis of the 7 Revs themselves—what is presupposed, what is left out, what is overemphasized, what is underemphasized.

Students take an exam on 7 Revs global issues, then another exam five weeks later about how the 7 Revs apply to the state of Arizona. They are also divided into teams to put together a presentation on one of the 7 Revs as it pertains to the state of Arizona. A final comprehensive exam covers material regarding both global and state issues and includes an essay in which students critically analyze the 7 Revs framework itself.

This pilot offering of “The State of the World” satisfied a science or social science general education requirement, with students choosing which they want to fulfill before beginning the course. The intention is to bring the course back to the relevant curriculum committees to gain permanent standing, then to teach several large sections each term, making it available to all sophomore students who want to take it to fulfill one of their liberal studies (general education) requirements.

Comments on Teaching 7 Revs

In the last five weeks of the class, the possibility that the 7 Revs way of thinking about the future, though factually correct, suffers from various limitations is explored. For example: Some would argue that it is narrowly anthropocentric, placing almost no value on nature itself; others would argue that, by excluding culture, especially religion, it is overly scientific or secular and reductionist. Still others would argue that “economic integration” is the overriding fact of our time but needs to be undone for the sake of social justice and economic sustainability. It could also be argued that the whole approach pays too little attention to how we got to where we are today.

Most students seem to enjoy this last section of the class, as it calls into question some of what they just learned. Criticism based on readings by a variety of authors is explicated without advocating for one author or another. Ford says, “My goal is not to convince students of anything in particular, but rather to get them to hone their own ability to think about complex issues and to be able to support their conclusions.”

Students seem genuinely interested in knowing what is going on in the world at large and in their home state, and the course works well to this end. Most students, though relatively proficient in math and language skills and presumably in their academic major, know almost nothing about the issues addressed in the 7 Revs. Most of the class is strictly factual and this seems to suit the students fine, although there is room for daily brief discussions.

Ford explains that he became involved with this project because of its potential to help students understand the world in which they live so that they can make informed decisions as they take their place in modern American society. Given the departmental structure of the university, and the modern university’s commitment to serving the business community, most students graduate from universities knowing very little about the most pressing issues of the day. The 7 Revs course provides an opportunity to help students break out of this discipline-based and job-based education mind-set and to think about what is happening in the world.

Because of demands on faculty and academic departments, this course, which exists outside of any department, will need administrative support as well as the support of individual faculty and departments. It is too soon to pronounce the project a success: the immediate challenge is having the course become a regular offering with multiple sections.

Southeast Missouri State University (Southeast) Cape Girardeau, Missouri

10,000 students

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Institutional Uses of 7 Revs

Sharing knowledge with others strengthens an individual’s comprehension and experience. As Dr. Thomas Fuller wrote nearly three centuries ago, “Education begins a gentleman, conversation completes him.” It is the unique method of conversation about the 7 Revs materials that sets the Southeast course apart. The institution has a proud tradition of embracing experiential learning. The creation and implementation of Southeast’s UI498 CSIS Senior Seminar course has resulted in not only a semester-long experience of a lifetime for 30 juniors and seniors, but also an event that brings Washington, D.C. and the world to Southeast’s campus.

Southeast’s involvement began in 2006 when Erik Peterson, former CSIS senior vice president and director of the Global Strategy Institute, gave his 7 Revs presentation to the campus. Peterson invited President Kenneth W. Dobbins to send students to the CSIS Global Strategy Institute (GSI) for a week-in-residence interacting with CSIS senior scholars. President Dobbins, Provost Jane Stephens, and Vice Provost Fred Janzow, along with Southeast’s academic deans, marshaled the institutional resources to send the first student cohort in 2007 accompanied by three faculty members.

Karie Hollerbach, associate professor of mass media, was one of the initial three faculty members assigned to the course. She has served as Southeast's CSIS project director, as the lead faculty member on the course faculty team, and as faculty liaison in 2008–2009. She continues to participate nationally as part of AASCU's initiative to bring the 7 Revs materials to AASCU campuses nationwide.

Southeast's course includes preparatory study of the 7 Revs, participation in a week-in-residence at the GSI over spring break, and student presentations made to the campus and larger community at the CSIS/Southeast Regional Conference, held approximately four weeks following the students' visit to CSIS/GSI.

“Southeast is fortunate that we have been able to develop a relationship with CSIS that puts our best students in contact with these experts for an entire week over spring break, and gives them a much better understanding of the issues they will face over the next 25 years—issues such as the rise of international competitors, the environment, international financial crises, global energy usage, population pressures, and others,” said President Dobbins.

Juniors and seniors representing every college and campus are nominated each fall by their deans or the president's office to enroll in the CSIS Senior Seminar for the spring semester. These students must have a demonstrated record of achievement both inside and outside of the classroom via their GPAs, their course work, and their campus involvement. This selection process creates a body of students for the course whose gender, age, ethnicity, and areas of study are diverse.

Students pay tuition and incidental fees for a three-credit-hour course on campus in addition to a \$200 special course fee. All of the other course expenses, including travel to and from Washington, D.C. and lodging, are covered by funds provided by the deans, the provost, and the president. Faculty members are also nominated by their deans and represent a cross-section of campus disciplines, and four are selected early in the fall semester while the student nomination and selection process is under way. Faculty members begin meeting to generate a course syllabus built around the three key components of the seminar: preparatory study of the 7 Revs materials, active participation for the week-in-residence at CSIS/GSI, and successful student presentations at the regional conference.

Students complete text readings and meet to discuss the larger ideas behind the 7 Revs material at the beginning of the course, then participate in the virtual classroom by engaging with the dedicated online resources about the 7 Revs made available as a pilot participant in the 7 Revs initiative. Students review and discuss news articles, multimedia presentations, and video interviews from the *New York Times* and CSIS/GSI.

The second section of the course is a five-day seminar held at CSIS/GSI in Washington, D.C., over spring break. Students hear presentations from CSIS experts on the 7 Revs and participate in two real-life simulation exercises. One exercise has student teams assume the role of OPEC ministers as they debate their respective positions on oil production. The second, also a team effort, has students assume the role of cabinet members assembled to advise the incoming president on such matters as economic integration, population/demographics, human rights, international security, natural resources, and energy.

The final course experience is a CSIS regional conference held at Southeast for the campus and surrounding southeast Missouri community. Students make formal team presentations based on their presidential cabinet simulation activity from their week-in-residence at CSIS/GSI. President

Dobbins said that the regional conference gives students an opportunity to share with faculty, staff, other students, and the broader community some of what they learned at their week-in-residence in Washington, D.C. Two CSIS scholars also speak during the campus event. In 2008, Erik Peterson premiered his newest work, “The Class of 2025,” and Frank Verrastro, CSIS senior fellow and director of the CSIS Energy and National Security Program, gave the luncheon keynote on “Managing the Transformation to a Sustainable Energy Future.” In 2009, Linda Jamison, CSIS senior fellow and dean of the Abshire-Inamori Leadership Academy, spoke on creative leadership in the twenty-first century and Erik Peterson gave his 7 Revs presentation as the keynote address.

Comments about Participating in 7 Revs

Informal evaluative measures suggest the success of Southeast’s approach. One of the students from the 2008 cohort completed an internship at CSIS in the Global Strategy Institute; another from the 2009 cohort interned in the CSIS External Relations division. Nearly all of the students from the 2007, 2008, and 2009 cohorts said that the exposure to the 7 Revs course materials, the visit to CSIS and Washington D.C., and the participation in the CSIS/Southeast regional conference were all experiences that they would never forget. Many commented that it was life-changing.

For faculty participants, “engaging with the students and the 7 Revs materials has been an extraordinary teaching assignment. The subject matter is fascinating and allows a professor to move out of a disciplinary box to a multidisciplinary realm.” The breadth and depth of the materials also make a variety of teaching approaches possible as can be seen throughout the case studies in this section.

University of Minnesota Duluth (UMD) Duluth, Minnesota

10,500 undergraduates, 900 graduate students

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Institutional Uses of 7 Revs

The University of Minnesota Duluth, a comprehensive regional university, has participated in the 7 Revs Project since its inception in September 2006 and was involved in American Democracy Projects (ADP) prior to that time. UMD administration has supported the project with travel funds, reassigned faculty time, and facilitation of activities. The campus is currently revising its liberal education requirements, which include an expanded international component that could be enhanced by the 7 Revs curriculum in a number of courses.

Denny Falk, Distinguished University Professor and director of graduate studies in social work, has taught introductory liberal education courses on global issues for more than 20 years in addition to graduate social work courses on research and human behavior. During a 2006 sabbatical focused on global citizenship, he was a visiting fellow at CSIS and has since served as chair of the 7 Revs national working group.

The 7 Revs materials are used at UMD primarily within introductory liberal education courses on global issues taken by freshman and sophomore students. SW 1210 Global Issues is taught to

40–50 students each year, and SW 1212 Global Issues Honors Seminar is offered each spring with 10–15 honors students enrolled. SW 1210 was also offered as a completely online version in fall 2008. Most students take these courses to meet an international perspective requirement in their liberal education program. The broad goal of these courses is for students to become more globally competent citizens. Course objectives are that students:

- adopt global perspectives in examining the critical issues currently facing our world;
- better their understanding of the nature of worldwide problems;
- recognize alternative solutions and opportunities associated with these problems;
- identify actions that can be taken locally to address global issues; and
- become intellectually curious and open to new ideas and perspectives.

The Global Issues courses use the 7 Revs content within the Epsilon environment as a primary resource for the course. The course introduction exposes students to the global perspectives of problem solving, futures, and systems thinking, and provides an overview of the 7 Revs content. The next seven units correspond to the 7 Revs, starting with population and ending with governance. Selected resources from the *New York Times* and CSIS are used within Epsilon in class, and other *Times* and CSIS resources are assigned to be independently explored by students outside of class, much as a textbook would be used. Additional units on “thinking globally, acting locally” and integrating the 7 Revs complete the course.

Throughout the course, students take on the role of a member of the “global village,” representing countries and regions around the world in proportion to the number of people who reside in those locations. As examples, in a class of 50 students, about 10 students represent China, 8 represent India, and 2 represent the United States. Students are then encouraged to examine how each of the 7 Revs affects and are affected by the person and country they represent.

Many features of Epsilon are used in the global issues courses. Students use the blog feature to describe the person they represent in the global village and the effects that each revolution has on that person. The forum feature is used for students to apply global perspectives, such as problem solving and futures, to understand the 7 Revs and the global trends and issues within the revolutions. In the online course, Epsilon was used as the delivery platform for all course content and activities. (See chapters 4 and 5 of this tool kit for syllabi and other teaching resources and learning materials.)

A theatre professor at UMD has used the 7 Revs content in his course. In an Introduction to Theatre course, 50 students read and analyzed plays from ancient Greece to the present, relating the themes of these plays to contemporary and future issues raised within 7 Revs. In an upper-division directing course, 20 students examined how they could highlight the significant 7 Revs in the plays that they would be directing.

A UMD business professor used 7 Revs content in an upper-division course on strategic leadership. In the first two weeks of the course, 50 students quickly reviewed the trends and issues identified in 7 Revs content, then referred back to this material as important contexts in which leadership is exercised.

Comments on Teaching 7 Revs

Assessment so far has been mostly informal. In general, students like the video and interactive features and the shorter articles available via Epsilen and the *Times*. Students have been somewhat reluctant to use Epsilen's profile features.

One challenge for the project is how Epsilen interfaces with the wide variety of resources available to teach global issues. Updating the templates that Epsilen uses to organize 7 Revs material and improving Epsilen's search capabilities will be important as the project moves forward.

Based on the experience at UMD, the 7 Revs framework and resources provide an excellent foundation for a broad course on global issues such as the ones offered at UMD. The resources can also provide important context for courses as diverse as business and theatre. A challenge of teaching courses on the range of issues covered in 7 Revs is that no single faculty member is knowledgeable about all of the topics covered. The advantage of the 7 Revs project is that faculty from across the country can share resources and insights about how to teach the topics and issues that they know best. The 7 Revs topics present the greatest forces that the world will face in the next 15 to 20 years, and it is important that faculty not allow disciplinary boundaries to limit study of these key issues.

Western Kentucky University (WKU) Bowling Green, Kentucky

20,000 students

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Institutional Uses of 7 Revs

Western Kentucky University, a comprehensive institution located in Bowling Green, has been an active participant in American Democracy Project initiatives since 2003 and involved with the 7 Revs since 2007. At WKU, 7 Revs is designed to tie several ADP initiatives together by examining current trends and evaluating the political dimensions of policymaking relevant to these trends. As students develop a deeper understanding of the challenges and opportunities in the present/future, they are encouraged to apply this knowledge by engaging the political process in ways that may positively shape the future. These themes also are addressed in other WKU courses and activities that are part of the Political Engagement Project (PEP). All of these programs are coordinated through the Provost's Office in Academic Affairs. Provost Barbara Burch has supported the program with travel funds and reassigned time for the coordinator, Nathan Phelps. In addition, the Honors College and the University College both have provided professional support to the program.

7 Revs at WKU is coordinated by Nathan Phelps. He is an historian, former director of the University Experience Program, and now a faculty member in the Interdisciplinary Studies Program. He currently serves on a variety of university committees that relate directly to the 7 Revs project; these include the General Education Review Task Force, the Global Leadership Studies Committee, and the University Experience Curriculum Committee.

WKU instructors have infused content from 7 Revs into lower-division courses in political science, geography, history, and the university experience program (first-year seminar). In addition,

the CSIS model and the materials produced by its analysts served as the core of an upper-division honors colloquium titled “Seven Global Revolutions: Exploring trends that may shape our future.” A new upper-division course called “The World in 2030” was offered in spring 2009 through the interdisciplinary studies program. An online version of this course will be offered for the first time in the 2009–2010 school year. A permanent course called “The World in Twenty Years” will be offered each term starting in 2010.

All of these courses are small seminar-style classes that explore the 7 Revs through a combination of common readings, videos, class discussions, analytical activities, and student presentations. WKU is currently undergoing a general education review, and it is possible that the 7 Revs may be used in core general education courses in the future. The content from the 7 Revs model also has been introduced into the first-year seminar program, and that curriculum may be modified to incorporate more 7 Revs material.

Students who take the 7 Revs courses tend to be interested in interdisciplinary thinking, and they are often active participants in campus organizations related to the environment, governance, and sustainability. This is particularly true of the honors students. The majors represented by these students are diverse, and this adds a valuable dimension to class discussions. Students in the Baccalaureate of Interdisciplinary Studies program tend to be slightly older than the traditional undergraduate, and these students bring a wealth of personal experience to their exploration of these trends. Overall, students who are interested in pondering the future tend to be students who are interested in solving “real world” problems in the present.

Comments on Teaching 7 Revs

The materials developed by CSIS and the *New York Times* are well organized and well researched. The high quality and accessibility of these materials make them useful for faculty teaching in many disciplines. Some instructors are infusing these materials into existing courses on technology, resource management, demography, and international relations. Others are using the 7 Revs model as a succinct way of showing students how their discipline fits into a broader interdisciplinary context. No faculty at WKU are currently using the Epsilon platform for this course, but a Blackboard-based online course is being developed that will use CSIS, *Times*, and other web-based materials for all of the class assignments. The wealth of web-based resources available makes this course a particularly good candidate for online teaching.

The 7 Revs courses have been assessed with a survey that is administered at the beginning and end of each course (see chapter 4, Teaching Materials, for a copy of the survey). The survey is designed to measure what students consider to be the most pressing issues today and in the future, their sense of efficacy in being able to shape their future, and their relative optimism about the future. So far, these data reveal that at the end of the course, students generally change their views on what issues will be most important in the future (e.g., “resources” replaces “conflict”), and they feel an increased capacity to make a difference in the world. One other interesting outcome of these assessments is that students tend to be highly variable on the optimism-pessimism scale at the beginning, but most report feeling neutral by the end (the median value on a Likert scale actually goes down slightly).

The relevance of this material to students from any major makes this a particularly rewarding class for people interested in interdisciplinary, problem-based teaching and learning. The unique

characteristic of 7 Revs is its deep-future orientation, but even for historical or contemporary issues courses, the seven trends explored in the model provide an effective organizational structure to think systematically about the complex web of forces that shape our world at any time. The “revolutions” are not discipline-based, but each of them does connect in some broad way with the work conducted by faculty in each of the separate colleges that make up most of our universities. In this way, the 7 Revs collectively offer a hint of the whole curriculum that sometimes is obscured by the administrative structures that tend to silo and divide our institutions. One of the most common comments from students in this course is that they feel like they now know more about what is going on in the news and they feel better prepared to influence public policies that may shape their own future. In light of the common charges of apathy leveled against this generation, these are encouraging words, indeed.

Case Studies Conclusion

Given the variety of ways 7 Revs is being used, one of its obvious advantages as a curricular framework is its flexibility. Faculty from different disciplines—neuroscience and comparative psychology, educational psychology, history, political science, leadership studies, business administration, religious studies, and physics—are teaching 7 Revs. Both beginning and advanced undergraduate students are studying 7 Revs. It is housed in general education, experiential learning, honors seminars, and discipline-based courses. In addition to this flexibility regarding course design and staffing, the focus on educating globally competent citizens is consonant with campus-wide learning objectives at many institutions.

The project’s opportunities for collaboration—both within and outside of academia—are significant. Since most college students will end up working in a field outside academics, courses that include the viewpoints of leaders in nonacademic settings can provide valuable perspectives on current and future issues for students. At the same time, the 7 Revs framework and resources can be used to help students critically analyze both academic and nonacademic ways of organizing information and addressing problems.

At participating institutions, the 7 Revs courses are unique and offer material that is new to students. Anecdotal evidence indicates that students respond well to the focus on global trends and the integrated approach that 7 Revs offers. A shared assessment survey can further shape improvements in content and pedagogy.

All of the participating institutions are working toward increased utilization of 7 Revs on their own campuses. AASCU’s goal is to extend participation in 7 Revs to as many campuses as possible, thereby supporting a national effort to educate globally competent citizens and internationalize higher education curricula. Doing so requires an expanded network of support and collaboration. The 7 Revs working group, together with AASCU and CSIS, is holding a 7 Revs institute (April 15–16, 2010) with interest in holding regional workshops during the next two years. Publication of additional case studies from institutions newly engaged with 7 Revs and a growing online repository of teaching materials and resources are also planned.

4

TEACHING MATERIALS SAMPLE SYLLABI, HANDOUTS, ASSIGN- MENTS, EXAMS, ASSESSMENT SURVEY

Introduction

This chapter includes sample materials from many of the courses described in the case studies. Where appropriate, an italicized description of the context in which the materials are used precedes the material. Some of the materials have been modified over many years, and the original developers cannot be clearly identified. We apologize if any individual is not given appropriate credit. All of these materials can be downloaded at <http://gsi.csis.org/toolkit>.

Course Outlines and Selected Syllabus Notes

Denny Falk—University of Minnesota Duluth

UMD SW 1210 Global Issues (Online course) course description: *Global problems of war, peace, national security; population, food, hunger; environmental concerns, global resources; economic and social development; human rights. Examines issues from a global problem-solving perspective. Examines value, race, class, gender differences.*

The study of issues that can be viewed as global in nature is especially appropriate currently, since we have truly become what has been termed a “global village,” and the decisions that we make in the next few years will determine the future of this village. The world has become smaller in many ways in the past few decades. We now have the capability of communicating with people around the world in less than a second. The decisions that are made in Beijing, Brussels, or the caves of Afghanistan can have almost immediate implications for those of us who live in the middle of the United States.

Our world is currently facing many crises. Population is growing at an alarming rate in some regions; environmental concerns are everywhere; global resources appear to be dwindling; national security eludes many countries, especially as terrorism has become an international phenomenon; and human rights are violated in a variety of ways. These crises certainly represent significant problems facing our world today; on the other hand they provide opportunities for us to bring about changes that will significantly increase the ongoing quality of life around the world.

In examining the crises cited above and other global issues currently facing humanity, this course will attempt to achieve the following goals:

- Students will adopt global perspectives in examining the critical issues currently facing our world, including problem solving, systems, and futures perspectives.
- Students will better understand the nature of the worldwide problems we are currently facing

and will analyze the underlying causes of these problems.

- Students will recognize alternative solutions and opportunities associated with these problems.
- Students will identify actions that can be taken locally that will address the global issues considered in this course
- Students will gain skills that will enable them to obtain and evaluate information about global issues and to take action to address these issues.
- Students will be predisposed to be open to new ideas and perspectives and to be intellectually curious about the world.

In attempting to accomplish these objectives, we will incorporate a variety of learning activities, all of which will be organized online. One text will be made available to you and a bibliography of additional readings appears in this book. The Internet provides an invaluable source of information regarding global issues, and you will be provided a rich repository of Web-based resources and guidance in searching for additional resources. Many of these resources will be organized within the Epsilon Global Learning System. Students will also be encouraged to participate in additional outside learning activities, such as attending campus presentations and using interactive technologies to understand global issues.

Students are encouraged to participate actively in this class. Please engage in the online learning activities in a timely manner. If you have ideas on how a certain topic might be presented and applied, please express them; if you are aware of learning resources that are not being used, please suggest them. If we work together, this can be a very interesting and rewarding class for all of us.

Course text: Jackson, Robert, Ed. (2008) *Global Issues 08/09*. Guilford, CT: Dushkin/McGraw-Hill.

Students will be graded on their participation in course learning activities and on the learning products they create. These learning activities and products are described in the Epsilon Global Learning System software and in the “Guidelines for Assignments.” It is expected that students will do approximately 120-135 hours of work during this semester for this course.

Each unit will require that students engage in a number of learning activities. These learning activities may include, but not be limited to, the following:

- Reading in the *Global Issues* book
- Reviewing resources from the *New York Times* and the Center for Strategic and International Studies (CSIS) on specific issues
- Reviewing other resources on specific issues
- Reading current events information from varied sources
- Viewing videos or reviewing blogs on global topics
- Obtaining information on the person you represent in the “Global Village”
- Responding to questions on the forum tool with Epsilon

Each unit will also require students to complete learning products. These learning products may include, but are not limited to, the following:

- A blog related to the person you represent in the Global Village
- A summary of the unit

Unit	Date	Topic	Readings
			(GI=Global Issues)
1	9/2-9/12	Introduction, overview of course, syllabus review; the world as a Global Village, introduction to global issues & perspectives; Erik Peterson's 7 Revs	Review syllabus & guidelines; GI 1-27, Times, CSIS, internet
2	9/15-9/24	Population	GI 28-38, Times, CSIS, internet
3	9/25-10/10	Resource management	GI 39-65, 97-109, Times, CSIS, internet
4	10/11-10/17	Technology	Times, CSIS, internet
5	10/20-10/24	Information	Times, CSIS, internet
6	10/27-11/7	Economic integration	GI 66-96
7	11/5-11/14	Conflict	GI 110-151, Times, CSIS, internet
8	11/17-11/26	Governance	GI 152-165, Times, CSIS, internet
9	12/1-12/5	Global citizenship; thinking globally, acting locally	GI 166-187, Times, CSIS, internet
10	12/8-12/12	Integration, summary, & conclusion	Times, CSIS, internet

Assignment Guidelines

In each unit you will be asked to engage in specific learning activities and to create specific learning products. The information below provides some guidelines for successfully completing these activities and describes the criteria that the instructors will use to grade the learning activities and products. A summary of the learning activities and learning products that you will be asked to complete for each unit appears at the beginning of the unit.

Learning Activities

A variety of excellent learning opportunities exist for learning about global issues. These activities are organized and specified in the Epsilon course software. In general, the learning activities that you will be asked to complete appear in bold letters. Examples of these activities include: 1) reading and reviewing resources from the *New York Times* and the Center for Strategic and International Studies, 2) reviewing other internet-based resources outside of Epsilon, 3) obtaining information about the person you represent in the Global Village, 4) viewing videos or reviewing blogs, 5) responding to questions posted in the forum tool in Epsilon, and 6) other activities that will enable you to learn about global issues.

You will be graded in each unit based on your completion of the specified activities. The Epsilon software allows the instructors to monitor whether you have engaged in many of the activities, and the expectation is that you will complete the activities indicated in bold face. Completion of learning activities accounts for about 20% of each unit grade.

Learning Products

You will be asked to create specific learning products in each of the ten course units. The products that you create will generally take the following forms:

- **Blog related to the person you represent in the global village.** In each of the first eight units you will be asked to create or add to a blog (one of the tools available in Epsilon) that describes the person you represent in the global village and how that individual and the country in which he or she lives is affected by the topics of the unit. The information to be provided will be specified in each unit. Resources for obtaining this information will be suggested. The wiki titled “Tips for Working on the Global Village Blog” provides guidance for this learning product.

The criteria for grading the global village blog entries include: 1) thoroughness of information provided, 2) accuracy of information provided, 3) specification of sources of information, and 4) clear presentation of information (clearly written, appropriate images, etc). The blog entries account for about 30% of each unit grade.

- **Unit summaries.** You will be asked to complete unit summaries for the first eight units. These summaries will ask you to respond to specific questions related to the topics covered in the unit. You will be able to download a form for each unit and then enter your responses. When you complete the summary, you should label the summary with your name and the unit summarized in the appropriate drop box in the Epsilon software. For example, if Joe Sample were to complete a summary for Unit 1, he would label it “Joe Sample Unit 1 Summary” and drop it in the “Unit 1 Summaries” drop box.

The criteria for grading the unit summaries include: 1) thoroughness of information provided, 2) accuracy of information provided, 3) indication that the information came from a variety of learning activities within the unit, and 4) clear presentation of information (clearly written, appropriate images, etc). The unit summaries account for about 40-50% of each unit grade.

- **Other learning products.** Several of the units will include other learning activities. These activities and the criteria for grading them will be specified in the individual units. As examples, Unit 9 will ask you to provide information about an organization that addresses global issues, and Unit 10 will include a take-home final exam. More information about these learning products will be provided in those units.
- **Final exam.** A final exam will be one part of Unit 10. The exam will provide a number of essay-type questions, and students will be asked to write on them and to submit the exam by December 18, 2008. The exam will be provided on about December 1 so you will have plenty of time to complete it. The final exam will account for about 10% of the final grade.

Denny Falk–University of Minnesota Duluth

UMD SW 1212 Global Issues Honors Seminar catalogue description: *Focus on global problems of war, peace, and national security; population, food, and hunger; environmental concerns and global resources; economic and social development; human rights. Examination of issues from systems, problem solving, and futurist perspectives in honors seminar format.*

Content and learning goals for this course are similar to UMD’s SW 1210, but student evaluation is based on a learning contract, and students can demonstrate basic knowledge and application and integration of concepts in a wider array of ways.

Student Evaluation

Grades will be determined on the basis of learning contracts. In all cases it is expected that students will do approximately 120-135 hours of work during this semester for this course. All students will be expected to participate in the classes, to demonstrate an understanding of the concepts presented, and to demonstrate an ability to apply the concepts and information. To earn an “A” for the course you must demonstrate an ability to integrate information, concepts, and applications. Some options for meeting these expectations are:

Goals	Suggested method of demonstration
Participation	
<ul style="list-style-type: none"> Participate in class activities 	<ul style="list-style-type: none"> Attend class, complete brief reaction papers or quizzes; participate as a “global villager”, or See instructor about missing classes to plan alternative activities
<ul style="list-style-type: none"> Complete several learning activities outside of class 	<ul style="list-style-type: none"> Devote at least 5 hours to attending campus or community presentations or related activities Find and evaluate a relevant web resource
Understanding of concepts & information	
<ul style="list-style-type: none"> Demonstrate basic knowledge of issues, concepts, & information related to global issues 	<ul style="list-style-type: none"> Complete mid-term text and final exam, or Develop an alternative method to demonstrate knowledge with the instructor
<ul style="list-style-type: none"> Demonstrate more complete knowledge of a particular topic related to global issues 	<ul style="list-style-type: none"> Provide summaries of information obtained about this topic, or Integrate this information into a paper, presentation, or final exam
Application of concepts	
<ul style="list-style-type: none"> Demonstrate an ability to apply perspectives from readings & class to global issues 	<ul style="list-style-type: none"> Participate in online forum, or Participate in ongoing discussion group, or Complete alternative application activity (e.g., short papers, ongoing journal)
Integration of concepts	
<ul style="list-style-type: none"> Demonstrate an ability to integrate concepts & information related to global issues 	<ul style="list-style-type: none"> Complete a longer paper or presentation on a topic of interest, or Develop an alternative method to demonstrate an ability to integrate
Or, develop a goal & method of demonstration for yourself. Stay within the framework of participation, understanding, application, & integration related to global or international topics, but otherwise use your creativity but check with me ahead of time.	

Paul McGurr—Fort Lewis College

FLC EGC 310: Seven global revolutions catalogue description: *Life-sustaining global systems are facing serious challenges both today and in the near future. In collaboration with the Center for Strategic and International Studies' Seven Global Revolutions project, students will learn about the ways humans, as part of the larger socio-cultural environment, can and must participate as active global citizens. We will focus on good governance through effective and enduring policy.*

Seven Revolutions is a project led by the Global Strategy Institute at CSIS to identify and analyze the key policy challenges that policymakers, business figures, and other leaders will face out to the year 2025. It is an effort to promote strategic thinking on the long-term trends that too few leaders take the time to consider.

Overview of Course

The 7 Revs identified by the Global Strategy Institute at the Center for Strategic and International Studies (CSIS) are:

1. Population
2. Resource Management
3. Technology
4. Information flows
5. Economic Integration
6. Conflict
7. Governance

We will address these issues by open discussion and by examining the issues in relationship to different countries outside the United States.

Each student will be in a group of four. Students from each group will select a country from one of the following four categories:

1. Advanced
 2. Newly industrialized
 3. Emerging
 4. Less developed
- Required text: *Taking Sides: Clashing Views on Global Issues* (5th edition) James E. Harf and Mark O. Lombardi, 2009, McGraw Hill, ISBN 0-07-351534-5.
 - Various sources provided by the Global Strategy Institute at CSIS

While most work on the seven global revolutions will be performed individually, by the end of the semester the group will be expected to bring together the reports on each country and be able to compare and contrast how the seven revolutions impact the different categories of countries. The assignments to be completed by the student include:

Original Country Research

Using the CIA *World Factbook* (yes, that CIA; alternative sources are acceptable if the same information can be found) at <https://www.cia.gov/library/publications/the-world-factbook/index.html> students must become familiar with the country including:

- Geographic location
- Neighboring countries
- The country's ranking in the following areas along with the countries adjacent in the rankings. The report should include similarities and differences with the countries adjacent in the listings.
 - ◆ Population
 - ◆ Birth Rate
 - ◆ Gross Domestic Product (GDP)
 - ◆ GDP per capita
 - ◆ Phones
 - ◆ Internet users
 - ◆ Military Expenditures

This research will be turned in during the first week in class to ensure the student is familiar with the country that will be analyzed against the seven global revolutions.

Individual Revolutions

Assignments on the seven individual revolutions will take the same 3-part format:

- Part 1- Consideration of global question (taken from *Taking Sides: Clashing Views on Global Issues* (5th ed) from the perspective of the country being analyzed.
 - ◆ Population – Issue 2 – “Should the international community attempt to curb population growth in the developing world?”
 - ◆ Resource Management – Issue 9 – “Is the threat of a global water shortage real?”
 - ◆ Technology – Issue 11 – “Is the international community adequately prepared to address global health pandemics?”
 - ◆ Information Flows – Issue 14 – “Is the world a victim of American cultural imperialism?”
 - ◆ Economic Integration – Issue 13 – “Is globalization a positive development for the world community?”
 - ◆ Conflict – Issue 18 – “Is religious and cultural extremism a global security threat?”
 - ◆ Governance – Issue 15 – “Do MySpace and YouTube make private globalization democratized?”
- Part 2 – Library Research and identification of articles related to the seven revolutions and the country being analyzed. Issues for research might include but not be limited to:
 - ◆ Population – Aging of population, birth rate, growth rate, infant mortality, HIV/AIDS, infectious diseases

- ◆ Resource Management – Natural Resources, land use, irrigation, electricity, oil, natural gas, current environmental issues
 - ◆ Technology – Communication, mobile phone use, genetically altered food, manufacturing growth, high technology industries
 - ◆ Information Flows – Internet use, censorship, radio and television availability, newspaper readership
 - ◆ Economic Integration – Components of GDP, occupation of labor force, inflation, exports, imports, World Bank loans
 - ◆ Conflict – Civil wars, international disputes, terrorism, refugees and displaced persons, military expenditures
 - ◆ Governance – Government type, corruption, number of administrative divisions, independence history, reliance on other countries, legal system
- Part 3- Written summary report and in-class presentation on the impact of the specific revolution on the country, and on the citizens, of choice. The report can be an in-depth look at one specific aspect of the revolution or can take a broader view of the overall impact of the revolution.

Final Papers and Presentations

As a wrap-up of the course, the students must assimilate what they have learned and identify possible responses to the one or more of the seven revolutions addressed. The following three assignments will show that this assimilation has been accomplished.

- **Individual Paper.** Each student will complete a “wrap around” paper. Incorporating the individual papers on the impact of the specific revolutions the student will identify the most pressing concern facing the country analyzed. The pressing concern must be derived from the previous papers on the seven revolutions. The student will then propose a possible, practical response that would alleviate the concern. The response must include information on who might initiate the response, how the response could be done, what changes would occur and how the changes would improve the country, how the initiative might be funded, and how the initiative will change the country by the year 2025.
- **Group Paper.** The four members of the group must combine and write a paper looking at each revolution and comparing the impact of the revolution on the different development levels of the countries in the group. Both similarities in issues and concerns and differences should be mentioned. As a final wrap up, a single pervasive issue considered the most important by the group across all the countries in the group should be identified. The group will then propose a possible, practical coordinated response that would alleviate the concern. The response must include information on who might initiate the response, how the response could be done, what changes would occur and how the changes would improve the country, how the initiative might be funded, and how the initiative might change the world by the year 2025.
- **Group Presentation.** Using the single pervasive issue as a focal point, the group will make a PowerPoint presentation to the class outlining the impact of the issue on each of the four countries in the group, how the issue affects countries in different levels of development differently, and how the proposed response will be implemented.

Course Outcomes

After a student has completed a course or an experience that counts for the EGC (Education for Global Citizenship) requirement, they will have met the following EGC outcomes:

- **EGC Outcome:** Demonstrated an awareness of the global dimensions of social, ecological, political, economic, or cultural systems.

Course-specific Outcomes: The student will become aware of the seven areas of change that embody opportunity and risk to the world in the days ahead. These areas are called the “seven revolutions”.

Assessment Tools: Each student will select a country and examine the seven revolutions and their impact on the specific country. Assessment of student awareness will be through the 3-part assignment on the individual revolutions.

- **Outcome:** Critically analyzed the global phenomena, problems, issues, or topics that are the specific focus of the course using diverse cultural perspectives and multiple disciplinary frameworks.

Course-specific Outcomes: The student will analyze the seven global revolutions in the context of a specific country. As the seven revolutions address different areas of focus, by its nature the course will require the students to analyze using multiple disciplinary frameworks. Since the final paper is a group paper combining country analysis of countries at different levels of development, the final analysis will utilize diverse cultural perspectives.

Assessment Tools: Each student will write a paper analyzing the impact of the seven revolutions on a specific country. Assessment of student analysis of the issues will be through the final individual paper. In addition, the final group paper will be used to assess the use of diverse cultural perspectives.

- **Outcome:** Identified possible responses to the global phenomena, problems, issues or topics that are the specific focus of the course. These responses may be enacted by individuals, social networks, movements, organizations, governments or other entities.

Course-specific Outcomes: As a culmination of the student’s country analysis, each student will identify a pressing concern in the country related to one of the seven revolutions. The student will propose a possible, practical response that would alleviate the concern. As a group, the students will identify a response to a common problem of the countries at different levels of development.

Assessment Tools: Each student will write a paper analyzing the impact of the seven revolutions on a specific country and will propose a response to a specific concern. Each group will select a common concern and propose a response that can be coordinated among all the countries involved. They will prepare a group paper and PowerPoint presentation. Assessment of student identification of a potential response to the concern will be through the final individual paper. In addition, the final group paper and presentation will be used to assess the differences in responses when viewed from a wider viewpoint.

Martin Shapiro—California State University Fresno

CSU Fresno Honors 102 7 Global Revolutions: Creating Globally Competent Citizens

Text: *Global Issues* 24th edition. (08/09): Edited by Dr. Robert M. Jackson, ISBN: 978-0-07-339763-4

Class Summary

The world is undergoing rapid changes unprecedented in human history. Human population is not only growing rapidly but shifting in age demographics. Issues of water resources, climate change, and loss of biodiversity promise to impact life on this planet in drastic and possibly devastating ways. Our technology is growing so rapidly that we have computers storing and processing information at incredible speeds; we are communicating with people all over the world in seconds; and deciphering and manipulating the very codes of life through genetic engineering. The distribution of wealth and proliferation of poverty is also going through major shifts within the United States and across the world. Finally, emergence of new governments and the proliferation of violence, conflict and peace promise to place great challenges to our “global community” in the coming years.

This class attempts to address these major revolutions (population, resources, communication, technology, economics, governance and conflict) with an emphasis on how they will change our world in the coming 25 years. This class will combine lectures on broad overviews as well as very specific examples and case studies. We will read a number of current articles from the *New York Times*, the Center for Strategic and International Studies, and many other resources. We will also incorporate other media sources such as short video (both in class and on-line), radio programs, and websites. Students will get into groups to discuss readings and share ideas. While many classes discuss very specific topics, this class will attempt to integrate many broad topics to help the student become more globally competent citizens and leaders. (This description comes, in part, from Dennis Falk, University of Minnesota)

Student Learning Outcomes

In examining the global issues currently facing humanity, this course will attempt to achieve the following goals:

1. Students will adopt global perspectives in examining the critical issues currently facing our world, including problem solving, systems, and futures perspectives.
2. Students will better understand the nature of the worldwide problems we are currently facing and will analyze the underlying causes of these problems.
3. Students will recognize alternative solutions and opportunities associated with these problems.
4. Students will identify actions that can be taken locally that will address the global issues considered in this course.
5. Students will gain skills that will enable them to obtain and evaluate information about global issues and to take action to address these issues.
6. Students will be predisposed to be open to new ideas and perspectives and to be intellectually curious about the world.

Exams

One week before each exam a review sheet will be provided that will have terms and essays that will be covered on the exam. Most of the material will come from my lecture but there may be a few terms that come from the readings and videos that were not directly covered during lectures. The exams will consist of three parts: multiple choice, define the term and essays. The material will only cover material from the review sheet. You will need to bring a scantron to each exam.

Term Paper

We will be discussing a number of big global issues throughout this course and have little time to go into great depth on any one topic. This paper is intended for you to explore, in great depth, one problem facing our world. The paper should integrate several of the seven revolutions topics. It should focus on what is happening today and how things are forecast to change in the coming years. A good paper will incorporate several references from magazines, journals, books and websites. It will state the general issue and support ideas with specific and detailed examples. I do not want a paper that deals only generalities. The abstract for the paper should outline the general topic and the specific ways you will research information relative to the topic. The first draft (NOT A ROUGH DRAFT) should be 12 – 15 pages, double spaced, 12 font, 1 inch margins, with reference cited within the text as well as a bibliography. Tables, graphs, and figures are perfectly acceptable within this paper as long as they are accompanied with figure captions and reference.

Presentation

You will be giving a 10-12 minute PowerPoint Presentation on the topic of your paper. This is an opportunity for you to educate your fellow students and instructor about what is being done about the issues described in your paper. The presentation can take one of two formats:

- Describe an organization that was established to address the problem discussed in your paper. You will address the primary mission of this organization, how they raise money, what percentage of the money raised is used for the purpose of the organization, how they raise awareness, what they have done or what they plan on doing. This could be an organization that you support and think are doing good work, or could be an organization misappropriating funds, hurting the cause or are even fraudulent.
- Describe the work of a single person that is dedicated to the topic of your paper. How has this person's experiences brought her or him to this topic and what specifically is this person doing to help solve these problems.

Taking Action

For this assignment you will be asked to take action on an issue of importance to you. This gives you the opportunity to save the world in your own way. This assignment was designed to allow for a great deal of creativity or ingenuity on your part and will be graded on effort.

Discussions and Summaries

For each of the 7 revolutions, one class will be dedicated to group discussion of specific readings. Each student will act as a group discussion leader for one week. The discussion leader will post specific questions related to the readings on blackboard. Each student will read the questions and submit a 1-2 page response to the questions based on the readings. On the discussion day, leaders will organize a group of other students to review the readings and talk about the questions. By the next night, the discussion leaders will post a 1-2 page summary of the group's discussions.

Sample Schedule

	Day	Date	Subject
1	26-Aug	Tuesday	Introduction to the course (Epsilen, NYT, CSIS, AASCU)
2	28-Aug	Thursday	Population: Lecture overview (video)
3	2-Sep	Tuesday	Population: Discussion group 1 / reading
4	4-Sep	Thursday	Population and Biodiversity (Dr. Shapiro)
5	9-Sep	Tuesday	Resources: Energy and Climate Change (Dr. Donald Hunsaker).
6	11-Sep	Thursday	Resources: Discussion group 2 / reading. Lecture: Food and water
7	16-Sep	Tuesday	Resources: Food and water continue: Water: video Thirst Resources:
8	18-Sep	Thursday	Advancing Technology: Lecture overview
9	23-Sep	Tuesday	Advancing Technology: Discussion group 3 / reading; Video / Future Car; Paper Abstract and Outline
10	25-Sep	Thursday	Advancing Technology: Special Topics Bioengineering and genetics.
11	30-Sep	Tuesday	<i>Exam 1</i>
12	2-Oct	Thursday	Flow of Information: Lecture / movie
13	7-Oct	Tuesday	CSIS Webcast
14	9-Oct	Thursday	Flow of Information (save the world topic submitted): Discussion group 4 / reading
15	14-Oct	Tuesday	Economic Integration: Micro Lending & Social Businesses
16	16-Oct	Thursday	Economic Integration: Discussion group 5 / reading
17	21-Oct	Tuesday	Economic Integration: Special Topics Thailand and Asia (Dr. Hank Delcore)
18	23-Oct	Thursday	Governance: Discussion group 6 / reading. First Draft of Paper Due
19	28-Oct	Tuesday	Governance: Kris Clarke (International Immigration)
20	30-Oct	Thursday	Conflict: Guest Lecture: Yishaiya Abosch
21	4-Nov	Tuesday	Conflict: Discussion Group 7/; Yishaiya Abosch (Dr. Shapiro is out of town)
22	6-Nov	Thursday	Conflict: Yishaiya Abosch
23	11-Nov	Tuesday	No Class
24	13-Nov	Thursday	Conflict: Yishaiya Abosch
25	18-Nov	Tuesday	<i>Exam 2</i>
26	20-Nov	Thursday	Revolutions Integrated.
27	25-Nov	Tuesday	Revolutions Integrated; Taking Action Paper Due ; Discussion Group 8
28	27-Nov	Thursday	No Class: Thanksgiving
29	2-Dec	Tuesday	Presentations
30	4-Dec	Thursday	Presentations
31	9-Dec	Tuesday	Presentations. Final Paper Draft Due
32	11-Dec	Thursday	No Class
33	16-Dec	Tuesday	No Class
34	18-Dec	Thursday	<i>Exam 3</i>

Handouts and Other Course Materials

The course handouts and other materials included here can be photocopied for class use. Other materials might be more accessible from the CSIS Global Strategies web site at <http://gsi.csis.org/toolkit>.

What Are the Seven Revolutions?

Revolution One: Population

- Population growth in developing countries
- Population decline/aging in developed countries
- Urbanization
- Migration across borders



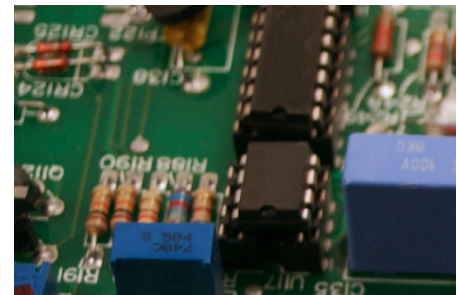
Revolution Two: Resource Management

- Food and hunger
- Water
- Energy
- Climate change
- Loss of biodiversity
- Sustainability



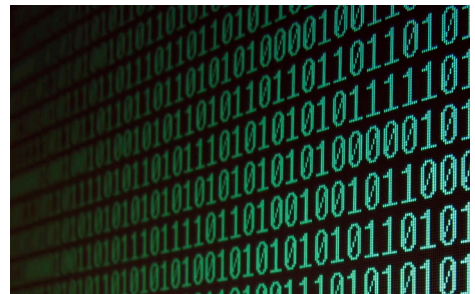
Revolution Three: Technology

- Computation
- Genetics and biotechnology
- Nanotechnology
- Information technology
- Convergence of technologies
- Human health



Revolution Four: Information

- Connectivity
- Lifelong learning
- Information integrity



Revolution Five: Economic Integration

- Globalization characteristics
- BRIC economies: the changing global balance of productivity
- Continuation of extreme poverty



Revolution Six: Conflict

- Sources and causes of conflict
- Changing patterns of conflict
- Addressing conflict resolution
- Transnational organized crime



Revolution Seven: Governance

- Corporate citizenship and multinational corporations
- Civil society and nongovernmental organizations
- National governments
- International organizations
- Need for strategic coalitions



Review Sheet for Exam 1

Terms to be addressed in the context of this class and 7 Revs

Center for Strategic and International Studies	Semi-dwarf high-yield wheat
Carrying capacity	Honeybees
Malthus' Theory of Population Growth	Ethanol
Preventative vs. positive check on population	Corn subsidies
LEDC	Flex-fuel cars
MEDC	Biodiesel
Total Fertility Rate	SVO
Population Pyramid	Genetically Modified
Demographic Transition Model	recombinant DNA
Biodiversity	Insulin
extinction	FlavrSavr
invasive species	Bt protein
tropical rainforest	GM salmon
primate depletion	Green fluorescent protein
carbon withdrawal	Spider goat
carbon addition	Genetic testing
greenhouse gases	Preimplantation Genetic Diagnosis
global warming	Eugenics
Hannover Principles	Eric R. Kandel
Natural Step Principle	CREB
Aquifers	Doogie mouse
Groundwater	NMDA
Cone of depression	Propranolol
Ogallala Aquifer	Face cells
Three Gorges Dam	EEG
Obesity	PET
diabetes	fMRI
Green revolution	
Norman Borlaug	

(continued)

- There may be multiple choice questions that simply determine if you have read, watched, or listened to an assignment. Here are a few examples.
 1. In the radio lab program the *so-called life*, what did the Harvard professor, George Church, have E-coli produce in his lab?
 - a. Diesel fuel
 - b. Insulin
 - c. Anti-HIV drugs
 - d. Different colored ink
 2. In the TED talk by Al Gore, he showed a video of a contest winner that made a commercial for communicating the urgency of the climate crisis. What did the commercial use to communicate this idea?
 - a. Showing the world flooding in slow motion
 - b. The sun moving towards the earth and the earth catching on fire
 - c. Elephants falling from the sky.
 - d. Glaciers making very low cracking noises and then finally all crashing at once.

- I will pick two to three essays from the following list as essay questions on the exams
 1. One of your instructor's main points was that when talking about population growth and its affect on the world, it is not just about raw numbers. In what ways is the population problem more than just about an overall increase. Give some specific examples.
 2. Compare and contrast the current and predicted population pyramids of developing and developed countries. Give specific examples of countries. What changes come with a changing pyramid?
 3. In the video on Population, they talk about how population changes affect countries differently. Compare and contrast India, Japan and Africa. This information can also come from article 7 and 8 in your textbook.
 4. Describe four reasons it is important for developing countries to shift from high to low fertility rates.
 5. According to the on-line article, what are 5 population trends to watch?
 6. Describe four risks of an aging population in the world. Give some specific examples.
 7. Describe how population growth is so closely tied to reducing biodiversity. Can you provide some specific examples about animals and habitats that are in trouble and why.
 8. Describe how human activity is causing coral reef depletion.
 9. According to Donald Hunsaker's guest lecture, how has global energy use changed over the past century and how does the US compare with other countries. Give some specific examples.

10. Describe the Global warming problem. What are the causes and projections? What evidence is there that it is human-caused?
11. I mentioned that water is the topic that seems to be of most concern to those trying to predict the future. Why? How is water changing in the world in terms of amount, storage, industry, usage, pollution, safety? Can you give some specific examples?
12. Describe the problems associated with food in this world. Who has too little and why and who has too much. What are some of the causes and statistics associated with obesity? Is this a US-only problem?
13. Describe the Green Revolution. What good came from it and what are some problems? What is happening to the Green Revolution of food today?
14. Tell me the story of Ethanol. How is it changing in the US, Brazil, and other countries? Why is there such a big push for ethanol production? Describe some of the problems with Ethanol, economically (provide a few statistics), environmentally, geopolitically.
15. In the radio program on “radio lab” describe the story of Karen the chimera.
16. Describe some benefits and problems associated with genetically modified foods.
17. Describe some specific examples of plants and animals that are genetically modified. How has this changed over the past 10 years and what are some projected changes? Give specific examples.
18. Describe some advances in human genetics. What are some promises and what are the perils?
19. Describe three of the cars featured in the video, “Future cars.” How will the automobile industry change in the coming years?
20. Describe some advances in Neuroscience and neuroimaging.

Students are asked to independently complete the “Political Activity Scale” in the thinking globally, acting locally unit in the SW 1210 Global Issues and SW 1212 Global Issues Honors Seminar courses. Students then examine their score in relation to the anonymous scores of their classmates and forecast the score that they believe they would obtain four years in the future.

Political Activity Scale

There are a number of activities that people can undertake to affect the political process. The scale below provides a list of political activities and gives points to generate an overall rating of political action. Please consider only **the past four years** in making your ratings. Enter a number in the right hand column by multiplying the number of activities times the points for each activity.

Political activity	# of times	points	total	maximum possible
Vote in an election		5		20
Attend a party caucus		5		10
Email (or send a letter) to an elected federal representative about your views on an issue*		5		10
Email (or send a letter) to an elected state representative about your views on an issue*		5		10
Email (or send a letter) to an elected local representative about your views on an issue*		5		10
Write a letter to the editor in a newspaper		5		10
Attend a rally for a political candidate		5		10
Attend a rally for a political cause		5		10
Engage in other political activity		5		10
*Give points for making any contact with an elected official				100

Three “global perspectives”—problem solving, futures, and systems—are presented in the introduction unit in the SW 1210 Global Issues and SW 1212 Global Issues Honors Seminar courses. These perspectives, along with key questions to ask related to each of the perspectives, are then used to analyze each of the 7 Revs as they are covered in subsequent units. These materials appear below.

Introduction to Perspectives

■ Problem Solving Perspective

Problem solving provides a systematic process of examining an issue or situation and what can be done to address it. Using this process often enables a person to understand an issue or situation more clearly and suggests possible solutions. This process involves six steps that should be undertaken in order.

Step 1. Define the problem. Defining the problem involves identifying what about this situation is creating difficulties for people and preventing them from meeting their needs. The goal of this step is to develop a clear statement of the problem that is faced in this situation.

Step 2. Assess the causes of the problem. This step attempts to understand why a problem exists. One examines what happened prior to the problem that led to its emergence and what factors are currently maintaining the problem.

Step 3. Generate alternative solutions to address the problem. Solutions should be considered only after the problem has been clearly defined and the causes have been carefully assessed. The key idea here is to generate a number of possible solutions, waiting to evaluate these solutions until the next step. Brainstorming is a process that can help generate numerous possible solutions.

Step 4. Examine the advantages and disadvantages of alternative solutions and select a solution to implement. The advantages and disadvantages of the alternative solutions generated in step 3 should now be examined. Some possible solutions that were identified can be eliminated rather quickly, possibly because they are not feasible or ethical. Other solutions will require more careful consideration. The outcome of this step is to identify a solution or set of solutions that will address the cause and solve the identified problem.

Step 5. Implement the solution (s). Once a solution or set of solutions has been identified, the next step is to implement this solution. Often you cannot implement a solution on your own, but you can do your part and encourage others to participate in implementing a solution.

Step 6. Evaluate whether the solution (s) solved the problem. This step involves both monitoring the implementation of the solution and determining if the solution has in fact solved the problem.

Questions to Ask About Global Issues from a Problem Solving Perspective

1. What is the nature of the problem related to this trend or issue? How can we define the problem associated with this issue? How is this situation causing difficulties for some people and preventing them from meeting their needs?

2. What are the causes of the problem? What happened before this problem arose that created the problem? What current factors are maintaining this problem?
3. What are a number of alternative solutions to address the problem? How can the factors that created and are maintaining the problem be addressed?
4. What are the advantages and disadvantages of each of the alternative solutions? Which solution or combination of solutions should be adopted?
5. How can the solution be implemented? Who will need to do what and when?
6. How can we evaluate whether the solution solved the problem? How can we tell if the solution been fully implemented? What will indicate that the problem has been solved?

■ The Futurist Perspective

People who study the future (futurists) use a number of key concepts that might be collectively termed the “futurist perspective” to understand the future. Thus, while psychologists might use terms like reinforcement, personality, and self-esteem to understand human behavior, and economists might use concepts like supply and demand and gross domestic product to understand an economic system, many futurists use the following concepts to understand the future. These concepts can be most useful when examining the trends associated with the Seven Revolutions.

◆ Non-Existence of the Future

The recognition that the future does not exist represents a departure point for the futurist perspective. For many aspects of the past, there are common agreements about the facts: the Declaration of Independence was signed in 1776, and a human being walked on the moon for the first time in 1969. Agreement about the present is also possible, such as the number of people in a particular room or the country where one can find the great pyramids. However, there is nothing certain about the future. The future does not exist in any concrete way.

◆ Images of the Future

Although the future does not exist, people have images, or ideas, about the future, and these images or ideas exert powerful influences on how people behave in the present.

◆ Alternative Futures

Images of the future can come in many forms, but a useful way to categorize these images involves possible, probable, and preferable futures, which are described more fully below.

Possible Futures. Almost anything is possible in the future. Possible futures are limited only by the lack of imagination or nerve of those imaging possible futures.

Probable Futures. Some futures are more probable or more likely to occur than others. These futures are often arrived at by the extrapolation of past and current trends, whether in relation to levels of population growth or global warming. Forecasts are then made about what is most probably going to happen.

Preferable Futures. Only a few of the possible futures that one can imagine are preferable, that is futures that people would like to see come about. Such desirable futures are based on our values, aspirations and dreams. They embody our notions of what a better world might be like.

- ◆ **Systems Perspective**

A systems or holistic approach to viewing the world emphasizes that everything is inter-related and must therefore be examined in context. Thus trends related to population impact environmental resources and vice versa. All global trends impact and are impacted by all other global trends.

- ◆ **Long-Term Time Perspective**

Futurists often look five to fifty years into the future when trying to understand an issue. Many of us plan our lives day-to-day and some businesses seem only to look as far forward as the next quarterly report, but futurists take the long view.

- ◆ **Futures Methodologies**

Futurists have many methodologies or tools that they can use to examine the future. **Trend extrapolation**, increasingly in the form of **computer simulations**, can be a valuable tool for forecasting population or other phenomena in the future. **Scenarios** are stories about the future that make an alternative future more real; science fiction writers have been using this tool for generations. A **futures wheel** can assist in examining inter-relationships and the implications of particular trends. **Cross impact analysis** and **relevance trees** are additional examples of futures methodologies. **Environmental impact assessments** and **social impact assessments** provide tools for examining the impact of specific possible futures on the environment and on human beings respectively.

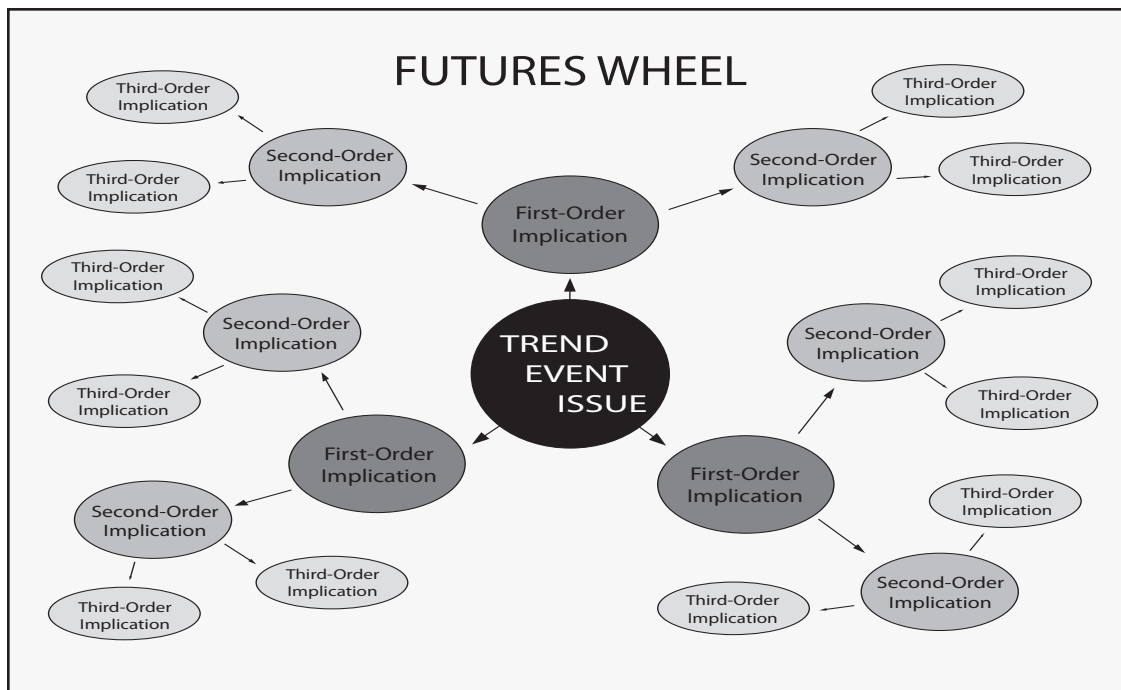
- ◆ **Creating the Future**

Futurists believe that the actions (or inactions) of today are creating the future that we, or others, will experience in the future. If the future does not exist and everything is inter-related, one can readily conclude that the choices that we make today, individually and collectively, will influence or create the world in which we will live in the future. From a futurist perspective, anything our minds can conceive and belief, we can achieve.

General Questions to Ask About Global Issues from a Futurist Perspective

1. What are some images of alternative futures with respect to this issue?
 - ◆ What are some possible futures?
 - ◆ What are some probable futures?
 - ◆ What are some preferable futures?
2. How can a systems or holistic approach be used to understand this issue? How is this issue related to other global issues?

3. How can this issue be understood using a long-term time perspective?
4. What futures methodologies could be used to understand this issue?
 - ◆ scenarios
 - ◆ futures wheel (see sample below)
 - ◆ trend extrapolation
 - ◆ computer simulation
 - ◆ environmental impact analysis
 - ◆ social impact analysis
5. What can be done to prepare for a probable future? How can an undesirable probable future be avoided?
6. How can a preferable future be created around this issue?



How to Create a Futures Wheel

Step 1: Write a global trend, event, or issue in the center circle. Use the following questions to prompt brainstorming of the first-order implications or consequences. What is likely to happen first if this trend or event continues? What will be some of the immediate consequences if this trend or event continues? Record the first-order implications, circle them, and connect them to the center circle.

Step 2: Select one first-order implication from the first round of brainstorming. Brainstorm its second order implications. (What is likely to happen first if this happens?) Record the responses, circle them, and connect each to the first-order implication. Select another first-order implication and brainstorm its second -order implications. (What will be some of the immediate consequences

of [fill in the blank with the first-order implication])? Record the responses, circle them, and connect each to the first-order implication. Continue the process until second order implications have been brainstormed for each of the first-order implications.

Step 3: Repeat the procedure to get third order implications, and possibly fourth-order implications.

■ Systems Perspective

A **systems perspective**, sometimes called systems thinking, emphasizes that everything is interconnected and related with everything else. In order to understand an issue or situation, one must not only seek a holistic understanding of a system itself, but must simultaneously understand its component parts and its context or environment.

Systems can be thought of as integrated wholes, sets of inter-related parts, irreducible wholes.

Systems dynamics describe some aspects of how systems work.

- ◆ **Inputs**—what comes into the system
- ◆ **Outputs**—what comes out of the system
- ◆ **Transforming activities**—what happens within the system to change inputs to outputs

Systems are **holons**, meaning that in order to understand a system one must simultaneously examine the system itself (focal system), component parts, and the environment.

- ◆ **Focal system**—system of primary attention
- ◆ **Component parts** (subsystem)—the basic parts of the focal system
- ◆ **Environment** (suprasystem)—those things outside the focal system that interact with it

A **systems perspective emphasizes that everything is inter-related**; multi-causality occurs between systems, within systems, and between the system and the environment. Thus, all global issues are affected by and affect other global issues.

A **futures wheel** can be used to examine how one revolution, trend, or action can have widening effects.

Application of Systems Perspective to the Global Issues Course

A systems perspective can be applied to this Global Issues course in many ways. Because everything is interrelated, when examining a revolution or a global trend within a revolution, one can examine how this revolution or trend will influence a country, a community, or an individual person. Also, revolutions and trends affect one another.

Example of Applying the Systems Perspective

One can examine food from a systems perspective, looking at how the world as a whole functions to feed (to various degrees) 6.8 billion people.

This system can be thought of as an integrated whole or set of inter-related parts, which includes land, water, farmers, food processors, distributors, food consumers, and other inter-related parts.

Systems dynamics observe that land, water, seed, fertilizer, machinery, human labor, and animals are important inputs into the food system. Outputs include cereals, vegetables, bread, meat, beverages, and fruits that are available for consumption. Transforming activities include planting seeds, tending the land, harvesting food, feeding animals, processing the food, storing food and food products, and distributing food to consumers.

The food system may be understood as a holon. The focal system is the overall food system, from inputs to consumption. The component parts include

1. the food production system,
2. the food processing system,
3. the food storage system, and
4. the food distribution system.

The environment includes

1. agricultural policy,
2. climate,
3. the market economy,
4. international relations,
5. the availability of petroleum, and
6. many other factors.

To understand the food system, one must simultaneously understand these component parts and the environment of the system.

As with other systems, everything is inter-related in the food system. The food system impacts the physical environment (e.g., soil erosion) and the physical environment affects food production (e.g., drought). Food policy subsidizes the production and processing of some food but not others. The component parts influence one another, so if food distributors can make more money selling certain kinds of food, the food producers and processors will be more likely to provide that food. Other global issues, such as climate change, population growth, conflict, globalization, and governance affect the food system.

Following are some insights that can be gained from a systems perspective on food:

1. The world generally produces sufficient food to feed all 6.8 billion people, but food is lost to storage inadequacies and food is distributed to those who have money to buy it, leaving over 800+ million with insufficient money malnourished.
2. United States energy policy that subsidizes producing ethanol from corn increases the cost of corn used for food around the world.
3. Agricultural policies in the United States and the European Union that subsidize farming among their citizens prevent farmers from countries that cannot subsidize agriculture from competing on the global market.

4. Conflicts within and between nations are major sources of food shortages that can lead to malnutrition.

Questions to Ask about Global Issues from a Systems Perspective

1. What are key systems (integrated wholes) related to this issue?
2. What are the inputs to each of these key systems? What are the outputs? What happens within the systems to transform the inputs to outputs?
3. For each system, what are some of the component parts or subsystems? What are important aspects of the environment for these systems?
4. How do all of the various systems, component parts, and aspects of the environment affect one another? How are they interrelated?
5. How is this issue related to other global issues? How does this issue affect other global issues? How is this issue affected by other global issues?
6. How is the United States affected by this issue, revolution, or trend? How is your local community affected by this issue, revolution, or trend? How are you as an individual affected by this issue, revolution, or trend?

Note: These questions are more applicable to some global issues and trends than others. The questions may be adapted to better suit some issues and trends.

Students often use Internet sites as a basis for learning about 7 Revs and related topics. The CARS checklist is presented to students as a basis for evaluating the credibility, accuracy, reasonableness, and support present in a web site.

Summary of the CARS Checklist for Internet Source Evaluation¹

Credibility

- Trustworthy source, the quality of evidence and argument, author's credentials, evidence of quality control, known or respected authority, organizational support.
- Goal: an authoritative source; a source that supplies some good evidence that allows you to trust it.

Accuracy

- Up-to-date, factual, detailed, exact, comprehensive, audience and purpose reflect intentions of completeness and accuracy.
- Goal: a source that is correct today (not yesterday); a source that gives the whole truth.

Reasonableness

- Fair, balanced, objective, reasoned, no conflict of interest, absence of fallacies or slanted tone.
- Goal: a source that engages the subject thoughtfully and reasonably; a source concerned with the truth.

Support

- Listed sources, contact information, available corroboration, claims supported, documentation supplied.
- Goal: a source that provides convincing evidence for the claims made; a source you can triangulate (find at least two other sources that support it).

When you evaluate a Web resource for global issues topics, please incorporate criteria from the CARS checklist summarized above.

1. This material comes from an online resource from Dushkin/McGraw-Hill that was previously found at: <http://dushkin.com/online/webresearch/cars.mhtml>

Students are encouraged to vision a just world in the thinking globally, acting locally unit in the SW 1210 Global Issues and SW 1212 Global Issues Honors Seminar courses. After brainstorming and recording characteristics of a just world, students are asked to vote for 3-5 characteristics that would be most desirable in a just, or preferred future, world.

Visioning a Just World

A political philosopher named John Rawls developed an understanding of social justice suggesting that justice would be present in the world when any individual in the world could trade places with any other individual in the world and the first individual would feel satisfied with that switch. Justice is obviously not present currently, because few white, middle- or upper-class Ms in the United States would feel okay about trading with a woman in India who was living on two dollars a day or less.

Imagine for a few minutes that you have died temporarily, but that you come back to earth in 2025 and randomly take the position of one of the 7-9 billion people living at that time. Since you will have an equal chance to become any one of the persons who are then occupying the earth, you probably will have a greater chance of coming back as a woman living in India than a white, middle-class, American M.

Now imagine that you are floating around the world at a height of about twenty miles just before you will take your new identity. You can see all of the people, things, and activities that are on the surface of the earth. As you look down on the world 2025, what do you see that pleases you knowing that you could become any of the 7-9 billion people that are living on the earth?

- ◆ Try to describe things or activities that you actually can see in the positive, not negative.
- ◆ You could focus on the positive resolution of global issues, such as population; food and hunger; environment; development/political economy; war, peace, and security; and human rights.
- ◆ You could focus on the presence of basic needs being met, such as physiological needs (water, food, shelter, clothing, health care); safety and security needs; belongingness; respect of self and respect from others; and growth.

List what you see that pleases you in the Wiki labeled “Visioning a Just World.”

The global village activity described below is used by Denny Falk in Global Issues courses at the University of Minnesota Duluth to encourage students to examine each of the Seven Revolutions and related trends from the perspective of an individual in another country. Each student is assigned to represent one person from around the world using the table that appears on the second and third sheets below.

Global Village Activity

One way to gain a valuable perspective on our world is to examine how people in different countries are affected by global issues and trends. The activity described below provides an opportunity for class members to simulate being a “global village” that is in many ways representative of 6.8 billion people who currently inhabit the earth.

This activity originates in several efforts to describe the world as a global village of 100 people. This idea suggests that it is very difficult to comprehend data about the world’s population as a whole (currently about 6.8 billion people), but if one created a global village of 100 people, the numbers would make more sense. For example, if the world were a global village of 100 people, about 20 of those people would live in China, 13 of them would live in Africa, and about 5 would live in the United States. About 13 would be malnourished and about 15 would live on \$1.00 a day or less.

Please review background information at the Miniature Earth Project web site. <http://www.miniature-earth.com/>

In this activity, each student will be asked to take the role of one individual from a specific country, but will in turn represent millions of people who have a similar background. The activity is set up for the class to have a proportionate number of people from the various continents and countries of the world, with half of the class being feM and half M, and ages and residence (urban or rural) also being representative. If your class is less than 100, the spreadsheet of members of the village is set up so proportions will remain appropriate as long as students are assigned to roles beginning at the top of the list and continuing down to the number of the students in the class.

To begin this activity each student in class will be assigned a role in the global village and will then use various Internet resources to more fully describe the characteristics of the person they will be in the global village. The characteristics that each student should describe include the following:

1. name:
2. age:
3. sex:
4. city and country of residence:
5. ethnicity:
6. religion:
7. life expectancy:
8. language:
9. annual income (purchasing power parity):
10. occupation:
11. nature of communication with others:
12. nature of transportation used:
13. other relevant information about this person:

Once basic characteristics have been identified and described, each “global villager” can examine how she or he might be influenced by global issues such as population changes, global warming, conflicts, globalization, and technological change, both currently and in the future.

Please download the *global village.xls* file to find out which global villager you will represent.

Create a blog that describes the basic characteristics of the global villager you will represent. The “Sample Global Village Blog” by Denny Falk provides an example of such a blog, and the wiki on “Tips for Working on the Global Village Blog” provides guidance for creating the blog.

Sample of class as a global village of 100

(if there are 100 people in the global village, each student would represent about 68 million people)

Stu- dent	Country	Sex	Age	Residence	Other	Campus	Villager name
1	China	F	32	rural			
2	India	M	6	rural			
3	United States	F	73	urban	African American		
4	Indonesia	F	1	Jakarta			
5	Brazil	M	23	rural			
6	China	M	5	Shanghai			
7	Pakistan	M	28	rural			
8	India	F	15	Mumbai			
9	Germany	M	60	urban			
10	Russia	F	25	rural			
11	China	F	44	rural			
12	Nigeria	F	4	Lagos			
13	Japan	M	75	Tokyo			
14	Bangladesh	F	31	rural			
15	India	F	48	rural			
16	China	M	17	Beijing			
17	South Africa	M	12	township	Colored		
18	Mexico	F	55	Mexico city			
19	Uganda	M	26	rural	Has AIDS		
20	Australia	M	35	Sydney			
21	China	M	52	rural			
22	India	F	33	rural			
23	Iraq	F	3	Anbar Prov			
24	Argentina	M	18	rural			
25	Philippines	F	50	Manila			
26	China	F	23	rural			
27	Afghanistan	F	32	rural			
28	Vietnam	M	10	Hanoi			
29	India	M	60	rural			
30	Egypt	F	16	Cairo			
31	China	M	72	rural			

Student	Country	Sex	Age	Residence	Other	Campus	Villager name
32	United States	M	11	New Orleans			
33	Ethiopia	F	54	rural			
34	Turkey	M	37	Istanbul			
35	India	F	22	Bangalore			
36	China	F	37	rural			
37	Iran	F	9	rural			
38	Indonesia	M	27	rural			
39	Thailand	M	6	Bangkok			
40	Congo	F	41	Kinshasa			
41	China	M	8	rural			
42	India	M	71	rural			
43	France	M	19	Paris			
44	United Kingdom	F	7	rural			
45	Italy	M	81	Venice			
46	China	F	41	rural			
47	Canada	F	22	Montreal			
48	India	F	11	rural			
49	South Korea	F	29	Seoul			
50	Burma	M	64	rural			
51	China	M	12	rural			
52	Ukraine	F	65	Kiev			
53	Pakistan	F	24	Karachi			
54	India	M	28	rural			
55	Columbia	F	5	Medellin			
56	China	F	57	Guangzhou			
57	Russia	M	17	Moscow			
58	Brazil	F	14	rural			
59	Sudan	F	34	Darfur			
60	India	F	3	Bangalore			
61	China	M	24	rural			
62	Spain	M	68	Barcelona			
63	Indonesia	F	51	rural			
64	Poland	F	18	Gdansk			
65	India	M	33	rural			
66	China	F	35	Taipei			
67	Tanzania	M	8	rural			
68	United States	M	26	New York			
69	Japan	F	15	Yokohama			

Stu- dent	Country	Sex	Age	Residence	Other	Campus	Villager name
70	Kenya	F	46	rural			
71	China	M	2	rural			
72	India	F	55	rural			
73	Saudi Arabia	F	16	Jeddah			
74	Bangladesh	M	14	Dhaka			
75	Morocco	M	57	rural			
76	China	F	42	Tianjin			
77	Nepal	F	1	rural			
78	India	M	18	Kolkata			
79	United States	F	29	Los Angeles			
80	Madagascar	F	51	rural			
81	China	M	14	rural			
82	United States	F	22	Phoenix			
83	Venezuela	M	35	Caracas			
84	India	F	45	rural			
85	Nigeria	M	4	rural			
86	China	F	54	Hong Kong			
87	Uzbekistan	M	27	rural			
88	Indonesia	M	8	rural			
89	Romania	F	59	Bucharest			
90	India	M	13	rural			
91	China	M	27	rural			
92	Cameroon	F	2	Yaounde			
93	Brazil	M	39	rural			
94	North Korea	M	46	Pyongyand			
95	India	F	25	rural			
96	China	F	61	Chongqing			
97	Mexico	M	10	rural			
98	Netherlands	F	78	Amsterdam			
99	Zimbabwe	M	19	rural			
100	Malaysia	F	4	rural			

Taking Action

A good portion of this class is spent learning about future trends and how they will impact your future. We talk about poverty, aging, learning, technology, and loss of biodiversity, and at times it seems a bit daunting. I think there is a great deal to learn from contributing to the future of humanity in a positive way. This assignment is intended for you to make that contribution. I would like you to commit at least five hours to this project from start to finish, so keep that in mind in your planning. I would also like these five hours to be spent on a project just for this class. That is, if you are already participating in some service learning activity you can do one of two things: contribute an additional five hours specifically dedicated to this project, or take on a different activity. One of the main purposes of this assignment is for you to expand your experiences when it comes to contributing to the community, the country, or the world. Upon completing your experience, you need to write a 1-2 page paper (double spaced) about what you did, what you contributed, and your overall experience. This assignment is worth 60 points, and is graded on effort. Here are just a few ideas:

1. Organize a book club with friends and family reading a book that deals with a global issue. Here are a few suggestions:
 - ◆ *Three cups of Tea* by Greg Mortenson and David Relin
 - ◆ *Banker to the Poor* by Muhammad Yunus
 - ◆ *A Long Way Gone: Memoirs of a Boy Soldier* by [Ishmael Beah](#)
 - ◆ *An Inconvenient Truth* by Al Gore
2. Arrange to go to a school and talk with kids about a global issue.
 - ◆ Volunteer in a classroom
 - ◆ Mentor a kid's science fair project
3. Have a car wash to raise money to buy a family a goat. www.heifer.org goat = \$120.00
4. Join an NGO and organize a party where you tell your friends and family about it:
 - ◆ www.worldwildlife.org
 - ◆ <http://www.kiva.org/>
 - ◆ WeCanSolveIt.org
5. Create a survey and collect data on what your fellow students are most concerned about in terms of these issues.
6. Create a YouTube video of people on campus and how they save the world.
7. Volunteer:
 - ◆ Volunteer Readers: Contact Bertha Torres Richardson: 559 459-6145. brichardson@communitymedical.org
 - ◆ Saint Agnes Hospice: Sue Sullivan (559) 450-5623
 - ◆ Community Food Bank: (559) 237-3663
 - ◆ Project Smart (Mentor program) (559) 327-1991 ([www.cusd.com/project smart](http://www.cusd.com/project_smart))

- ◆ Community Science Workshops: Manuel Hernandez (559) 621-6718
- ◆ Fresno Best/J.R. Best Advisor (after-school Programs): Claudia Ruiz (559) 621-7719.
- ◆ FresnoConnect (helping with homework and computer labs)
- ◆ KCAO (helps with poverty issues) (559) 582-4386
- ◆ Planned Parenthood: (559) 488-4908 x325 fresnovol@ppmarmonte.org
- ◆ Valley Public Television (559) 266-1800
- ◆ Fresno Chaffee Zoo (559) 498-5945. afierro@fresnochaffeezoo.com
- ◆ FCEOC Head start-preschool (559) 263-1200

This final paper assignment is used by Nathan Phelps at Western Kentucky University.

“The World in 2030” Final Paper Assignment

For the final paper assignment, I would like you to conduct your own research on some aspect of the “Seven Revolutions” model that has framed our exploration of the future. You may choose to look at one or two revolutions in more detail, or you may choose to look at all seven revolutions through a single “lens” or frame of reference. The final product should be a paper of approximately ten pages (typed, double-spaced, with footnotes and complete citations). **This paper will be due at 4 pm. on May, 13, 2009.** Prior to turning in the final paper, you will be presenting your work to the class and leading a discussion on your research topic.

Whether you choose to look at all of the revolutions or just one or two, please choose between one of the following three “focus” options:

- ◆ You may look at the first, second, and third order implications of change over time. Using the best data we have available, examine the future by looking at the possible secondary and tertiary effects of specific trends or developments within any of the revolutions.
- ◆ You may look at how the seven revolutions (one, two, or all together) may shape your own life in the future.
- ◆ You may look at the issue of efficacy—how human action may be shaped by, and shape the future. In particular, you should examine what people can or should “do” to most effectively bring about a desirable future.

I hope that this final paper gives you a chance to reflect in a holistic way on some aspect of this material and that you learn something useful in the process. If you have any questions or concerns about how to proceed with this project, please stop by or give me a call.

This exercise is used by Nathan Phelps at Western Kentucky University to get students to begin discussing a topic in small groups or pairs. Similar prompts can be used on any topic—this one deals with nuclear weapons.

Open Sentences about Nuclear Weapons and Disarmament

- Some of the things I really love about being alive today are _____.

- When I think about nuclear weapons in the world today, I think things are getting _____.

- When I think about weapons of mass destruction some of the feelings I carry around with me are _____.

- Given that Article VI of the Nuclear Non-Proliferation Treaty requires nuclear disarmament, some of the steps that can be taken towards disarmament include _____.

- The process of disarmament raises certain concerns for me, such as _____.

- When I think about international agreements on WMD in the world 20 years from now, I think that we will see changes in the following areas: _____.

- My role in helping to bring about a more peaceful world might include _____.

The set of reflection questions below, submitted by Aaron Lampman formerly of Fort Lewis College, prompts students to consider many of the key issues related to a course focusing on Seven Revolutions topics.

7 Revs Student Reflections

1. Based on our studies in this course, what is a “global citizen”? What skills, knowledge and abilities should a global citizen have?
2. One basis of the 7 Revs initiative is that few college students are aware of the most important global trends that will affect them (and their children). Do you agree with this concern, and if so, how do you think this gap can/should be addressed?
3. On a scale of 1-5 (1 being the most, 5 being the least), rate how your knowledge of each revolution increased as a result of involvement in the course:
 - ◆ Population
 - ◆ Natural Resources
 - ◆ Technology
 - ◆ Information
 - ◆ Economic Integration
 - ◆ Conflict
 - ◆ Governance
4. Now attempt to explain how the instructor could improve these rankings (what teaching methods, delivery systems, assignments, etc. would improve your learning in this course).
5. Do you agree that these trends are important for college students to know about and study? Explain why or why not.
6. Would you add or delete any of the Revolutions? Which ones and why?
7. Do you feel that the course effectively approached these issues from a multidisciplinary perspective? Was there enough emphasis on multicultural perspectives? Explain.
8. Can you see any connections between the various revolutions? Is awareness of interdependence of issues important? Why?
9. Do you feel that there are solutions to the problems presented? What are they?
10. Do you like the approach of tackling 7 major (and numerous minor) issues in a single course? Do you think each of these Revolutions would be better served as the single topic of a course? Would you advocate one or the other approach?
11. Is this course best directed towards freshmen, sophomores, juniors or seniors? Why?
12. Is the *New York Times* a good basic resource for the 7 Revs course? Please explain why or why not in detail.

13. Is the CSIS material a good basic resource for the 7 Revs course? Please explain why or why not in detail.
14. Was the online delivery model a good way to learn? Please explain.
15. What do you like about Epsilon? Are there ways in which Epsilon could be improved as a course delivery system?
16. Was the video conference an effective learning tool? Would you like to see such collaborations in other classes? Please explain.
17. In your opinion, will awareness help college students develop a sense of local or global responsibility? Why or why not? Is it important to try?
18. What is the most important thing you took away from this class?
19. What are the most effective aspects of this course?
20. What are the least effective aspects of this course?
21. Would you recommend this course to other students? Why or why not?
22. Is there anything that you, as a student, could have done to get more out of this course?

These characteristics of globally competent citizens were identified by Dennis Falk of the University of Minnesota Duluth after interviewing 22 faculty and administrators from eight institutions working on the Seven Revolutions: Educating Globally Competent Citizens Project.

Characteristics of Globally Competent Citizens

Knowledge. Upon graduation, students will be able to:

1. Describe important current events and global issues (e.g., environment, economic, political, health, population)
2. Understand and analyze issues and events in the context of world geography.
3. Explain how historical forces impact current events and issues.
4. Describe the nation/state system with its strengths and limitations.
5. Describe cultures from around the world, including religions, language, customs, and traditions.
6. Identify transnational organizations (e.g., NGOs, multinational corporations) and their impact on current issues.
7. Explain the interdependence of events and systems.
8. Describe how one's own culture and history affect one's worldview and expectations.

Skills. Upon graduation, students will be able to:

1. Obtain relevant information related to the knowledge competencies listed above.
2. Analyze and evaluate the quality of information obtained.
3. Think critically about problems and issues.
4. Communicate effectively in writing and verbally.
5. Communicate and interact effectively across cultures.
6. Speak a second language.
7. Take action to effect change, both individually and with a team.

Attitudes. Upon graduation, students will be predisposed to:

1. Be open to new ideas and perspectives.
2. Value differences among people and cultures.
3. Be intellectually curious about the world.
4. Be humble, recognizing the limitations of one's knowledge and skills.
5. Reflect on one's place in the world and connection with humanity.
6. Engage in an ethical analysis of issues and have empathy for one's fellow human beings.
7. Feel a sense of responsibility and efficacy to take action based on ethical analysis and empathy.

The survey that appears below has been used as a pre-assessment and post-assessment by several of the 7 Revs Scholars.

Seven Revolutions Student Survey

Please respond frankly to the items below by circling one number after each statement. Circling a “1” indicates that you strongly disagree with the item while “5” indicates that you strongly agree. Please circle the number that most closely reflects your opinion.

- | | Stongly
Disagree | Disagree | Neutral | Agree | Strongly
Agree |
|-----|--|-----------------|----------------|--------------|---------------------------|
| | (1) | (2) | (3) | (4) | (5) |
| 1. | I know quite a lot about the main issues facing the world today. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 2. | I know quite a lot about the main issues that will likely face the world in 2025. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 3. | I feel confident in forecasting what the world will be like in 2025. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 4. | I am committed to civic involvement (e.g., voting, public policy issues, contacting local officials) | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 5. | I am very knowledgeable about how to get involved in civic life. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 6. | I believe my actions as an individual citizen can make a difference in shaping the future. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 7. | I am optimistic about the future. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 8. | It is important to temporarily withhold judgment when exposed to new information. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 9. | I am curious about what happens in other parts of the world. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 10. | I feel a connection to people in different parts of the world. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 11. | Events happening in other parts of the world affect my daily life. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 12. | I read information about other parts of the world regularly. | | | | |
| | 1 | 2 | 3 | 4 | 5 |

13. The world is so complex that it's too difficult to understand the news.

1 2 3 4 5

14. Please rate each of the following issues in terms of how important you think they are on a scale of 1-5, with 1 being not important and 5 being extremely important. On the left, number the items as you see their importance today; on the right, indicate how important you think these issues will be in the future (the year 2025).

Not important 1 2 3 4 5 Extremely important

Today		In 2025
	Demographic issues (population growth, aging, migration, urbanization)	
	Resource management (food, water, energy, climate change, sustainability)	
	Technological issues (computation, nanotechnologies, biotechnology)	
	Information issues (connectivity, information integrity, processing/evaluating)	
	Economic concerns (globalization, poverty)	
	War/conflict (sources, patterns, solutions)	
	Issues of governance (governments, NGOs, multi-national corporations)	
	Cultural issues (religion, gender, race, identity)	
	Issues related to education (access, quality, affordability)	

Background Information:

15. Gender (please check one)

_____ Male

_____ Female

16. Year in School (please check one)

_____ First Year

_____ Sophomore

_____ Junior

_____ Senior

17. Please indicate your area of study:

_____ Social Science

_____ Humanities/Fine Arts

_____ Natural Science (biology, chemistry)

_____ Business

_____ Education/Human Services

_____ Other (please specify): ____

5

TEACHING RESOURCES

Courses based on the 7 Revs framework are unique in that they focus on current ideas about the revolutionary changes facing the world in the coming years, requiring instructors to have access to the best up-to-date information. In addition, these courses also cover a wide range of topics that span many academic disciplines. This section provides recommendations on preparatory books, magazines, DVDs, and numerous on-line resources from instructors who have taught 7 Revs courses. A searchable, expanded collection of resources can be found at the Global Strategies Institute Web Site at the following address: <http://gsi.csis.org/toolkit>.

New York Times Epsilen-based Resources

The *New York Times* makes their current and archived resources on 7 Revs available through their Knowledge Network and Epsilen platform. The extensive *Times* resources include interactive, audio, and video features, in addition to the familiar print-based articles.

Examples of *Times* resources, as well as many resources from the Center for Strategic and International Studies, can be found in the “Teaching Seven Revolutions Sample Course.” To access this course, 1) sign on (registering if necessary) to Epsilen.com, 2) select “courses” on the left hand menu, and then 3) search for the “Teaching Seven Revolutions” course. You can then request to join the course.

Additional information about teaching 7 Revs is available in the “Teaching Seven Revolutions” group within Epsilen. This group provides a means of sharing resources and information about teaching about 7 Revs and related content. To access this group, 1) sign on (registering if necessary) to Epsilen.com, 2) select “groups” on the left hand menu, and then 3) search for the “Teaching Seven Revolutions” group. You can then request to join the group. Please note that you will need to use an “.edu” email address to access Epsilen.

CSIS and Global Strategies Institute Resources

In addition to having many resources through the *New York Times* Knowledge Network, the Global Strategies Institute (GSI) at the Center for Strategic and International Studies has a wealth of resources at their general web site at: <http://forums.csis.org/gsionline/>. Information directed toward higher education, including an excellent set of interviews, can be found at the web site at: <http://gsi.csis.org/toolkit>

On-line Resources

The web is a great source for videos, articles, maps and statistics. It is highly recommended that you speak with your librarian for information about how to bring these resources into your class.

For example, your library may have an on-line subscription to *National Geographic*, and an instructor could simply link students to an article directly through the library.

The following on-line websites have been useful. This list is by no means complete, but these sites have been used often. This list is followed by some specific videos, radio programs and articles found on these sites.

Global Statistics:

- CIA: *World FactBook*: <https://www.cia.gov/library/publications/the-world-factbook/index.html>. Great country-by-country statistics and maps.
- United Nations: <http://esa.un.org/unpp/index.asp>. Create your own graphs using statistics provided.
- World Health Organization: <http://www.who.int/research/en/>.

Maps:

- Worldmapper: <http://www.worldmapper.org/> Provides images of the globe based on statistical information. For example, looking at a global map based on malaria, Africa is made disproportionately large and the United State is only a sliver.
- CIA regional maps: <https://www.cia.gov/library/publications/the-world-factbook/docs/ref-maps.html>

On-line Videos (see next page for specific videos that can be shown in-class or watched at home):

- YouTube: www.youtube.com
- TED: www.ted.com (15-20 minute talks by world experts)
- Snagfilms: <http://www.snagfilms.com/> (Allows one to watch selected documentaries in their entirety).
- CNN.com, BBC.com and PBS.org (specifically NOVA programs) also have good video archives.

On-line Radio Programs:

- This American Life: www.thislife.org
- Radio Lab: www.radiolab.org (good for science)
- The World: <http://www.theworld.org/>

PowerPoint Lectures:

- Slideshare: www.slideshare.com
- Google advanced search, filetype ppt: http://www.google.com/advanced_search?hl=en. One can also just search google.com and add (filetype:ppt) after a subject word. For example, if you wanted to look for a PowerPoint talk on ethanol, just type (ethanol filetype:ppt).

Interactive:

- World in Balance (NOVA): <http://www.pbs.org/wgbh/nova/worldbalance/>
- NASA climate change: <http://climate.jpl.nasa.gov/>
- The Nature Conservancy: <http://www.nature.org/initiatives/climatechange/strategies/art21202.html>.

Other Valuable Resources for Information:

- *New York Times*: <http://www.nytimes.com/>
- *Al Jazeera*: <http://english.aljazeera.net/>
- Washington Post: <http://www.washingtonpost.com/>
- *The Economist*: <http://www.economist.com/>
- Google News: <http://news.google.com/>
- CSIS Global Strategies Institute Blog: <http://gsi.csis.org/index.php>
- *The New Atlantis*: <http://www.thenewatlantis.com/>. Provides great articles about the future of technology.
- Global Issues: Social, Political, Economic and Environmental Issues That Affect Us All, <http://www.globalissues.org/>
- *The Better World Handbook: Small Changes that Make a Big Difference* <http://www.betterworldhandbook.com/2nd/>. This web site provides information about actions that individuals can take to positively influence the global issues raised by the 7 Revs. It summarizes some of the material from the 2007 book by Ellis Jones, Ross Haenfler, and Brett Johnson.

Specific On-line Video and Audio Programs

Because 7 Revs deals with current issues and future trends, it is important to continuously bring up-to-date information into classes. There are a number of great on-line resources for videos and radio programs. Some programs work well as out-of-class assignments while others are short clips that can add to lectures.

TED.com

The annual TED (technology, entertainment, design) conference brings together the world's most fascinating thinkers, doers, and leaders in their fields. They are challenged to give the talk of their lives in 18 minutes. These are often very dynamic speakers who emphasize innovation, insight, and commentaries on the future. These talks have been used effectively in class or as assignments.

Hans Rosling: Debunking third-world myths with the best stats you've ever seen

- ♦ http://www.ted.com/index.php/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html
- ♦ Filmed: February 2006
- ♦ Running time: 19.50 minutes
- ♦ Description: This talk describes the changes that have occurred and are predicted to occur in wealth distribution, fertility rates, population growth, and health within and between countries. Hans Rosling displays statistics using extremely interesting and unique graphics of changing trends. He breaks down several myths relating to difference between economically less developed and more developed countries.
- ♦ Rating: Excellent
- ♦ 7-Revolutions Section: Population, Economic Integration, Technology

Al Gore: 15 ways to avert a climate crisis

- ◆ http://www.ted.com/index.php/talks/al_gore_on_averting_climate_crisis.html
- ◆ Filmed: February 2006
- ◆ Running time: 16.18 minutes
- ◆ Description: This talk describes current issues related to global climate changes. Gore's presentation has a good deal of humor and is quite entertaining. He provides practical ways to reduce the effects of global climate change.
- ◆ Rating: Very Good
- ◆ 7-Revolutions Section: Resources

Al Gore: New thinking on the climate crisis

- ◆ http://www.ted.com/index.php/talks/al_gore_on_averting_climate_crisis.html
- ◆ Filmed: March 2008
- ◆ Running time: 27.54 minutes
- ◆ Description: In this talk, Al Gore updates his thinking on laws, policies and global efforts necessary for environmental challenges, including global climate change and acid rain.
- ◆ Rating: Excellent
- ◆ 7-Revolutions Section: Resources

Kevin Kelly: Predicting the next 5,000 days of the web

- ◆ http://www.ted.com/index.php/talks/kevin_kelly_on_the_next_5_000_days_of_the_web.html
- ◆ Filmed: December 2007
- ◆ Running Time: 19.34
- ◆ Description: Kevin Kelly describes what the Internet is today and predicts where it is going. He begins with interesting statistics about how the Internet is used today and then makes some predictions about how the Internet will change in the next 10, 20, and 30 years.
- ◆ Rating: Good: Interesting stats but it's a bit slow at times.
- ◆ 7-Revolutions Sections: Technology, Information Processing.

Nicholas Negroponte: The vision behind one laptop per child

- ◆ http://www.ted.com/index.php/talks/nicholas_negroponte_on_one_laptop_per_child.html
- ◆ Filmed: August 2006
- ◆ Running Time: 17.38
- ◆ Description: Nicholas Negroponte discusses his work to provide cheap (\$100), portable, self-charging laptops to developing countries. He talks about how these laptops can change education and ultimately reduce poverty.
- ◆ Rating: Good
- ◆ 7-Revolutions Sections: Technology, Information Processing.

Jeff Han: Unveiling the genius of multi-touch interface design

- ◆ http://www.ted.com/index.php/talks/jeff_han_demos_his_breakthrough_touchscreen.html
- ◆ Filmed: August 2006
- ◆ Running Time: 8:48
- ◆ Description: A short lecture demonstrating cutting edge technology for human-computer

interface showing an innovative touch screen. This is an interesting example of the future of technology.

- ◆ Rating: Very Good
- ◆ 7-Revolutions Section: Technology

Christopher deCharms: Looking inside the brain in real time.

- ◆ <http://www.ted.com/talks/view/id/236>
- ◆ Filmed: February 2008
- ◆ Running Time: 4:03
- ◆ Description: This talk describes how Function MRI and neuroimaging techniques will soon enable us to control a greater part of our brain and could replace, in part, the need for psychotherapy and drugs for depression and pain. Has a good “future” feel to it.
- ◆ Rating: Very Good (short so it is good for showing during class)
- ◆ 7-Revolutions: Technology

Ray Kurzweil: How technology’s accelerating power will transform us

- ◆ http://www.ted.com/index.php/talks/ray_kurzweil_on_how_technology_will_transform_us.html
- ◆ Filmed: February 2005
- ◆ Running Time: 22:56
- ◆ Description: Ray Kurzweil is an entrepreneur and inventor and has a unique perspective on the future merging of medicine, neuroscience, and computers. He claims that by the 2020s, we will have reverse-engineered the human brain and nanobots will be operating our consciences. His talk has great graphics, videos and imagery.
- ◆ Rating: Excellent
- ◆ 7-Revolutions: Technology

Juan Enriquez: Decoding the future with genomics

- ◆ http://www.ted.com/index.php/talks/craig_venter_is_on_the_verge_of_creating_synthetic_life.html.
- ◆ Filmed: February 2003
- ◆ Running time: 22:20
- ◆ Description: Juan Enriquez talks about the future of genomics and genetically modified organisms. He discusses why it will be important for everyone to have an understanding of genetics.
- ◆ Rating: Good (It’s a bit dry)
- ◆ 7-Revolutions: Technology

Craig Venter: On the verge of creating synthetic life

- ◆ http://www.ted.com/index.php/talks/craig_venter_is_on_the_verge_of_creating_synthetic_life.html
- ◆ Filmed: February 2008
- ◆ Running time: 15:54
- ◆ Description: Craig Venter discusses creating new organisms with bioengineering. Altered and new organisms, like bacteria, may serve an important role in the future of medicine and energy.
- ◆ Rating: Excellent
- ◆ 7-Revolutions: Technology

E. O. Wilson: TED Prize wish: Help build the Encyclopedia of Life

- ◆ http://www.ted.com/index.php/talks/e_o_wilson_on_saving_life_on_earth.html
- ◆ Filmed: March 2007
- ◆ Running time: 22:36
- ◆ Description: E. O. Wilson discusses biodiversity and the need to think about and protect the many varieties of life.
- ◆ Rating: Very good
- ◆ 7-Revolutions: Resources (Biodiversity and conservation)

Rives: “If I controlled the Internet” (a poem)

- ◆ http://www.ted.com/index.php/talks/rives_controls_the_internet.html
- ◆ Filmed: November 2006
- ◆ Running Time: 4:07
- ◆ Description: Short humorous poem about the Internet. Good way to break up a lecture.
- ◆ Rating: Very good
- ◆ 7-Revolutions: Information.

National Public Radio (NPR.org)

Ethanol Takes A Hit Amid Falling Oil Prices

- ◆ <http://www.npr.org/templates/story/story.php?storyId=99083936>
- ◆ Aired: January 2009
- ◆ Running time: 5:27
- ◆ Description: Provides information about energy prices and ethanol.
- ◆ Rating: Good. Used during a lecture on biofuels.
- ◆ 7-Revolutions Section: Resources, Technology

Wired For War Explores Robots On The Battlefield

- ◆ <http://www.npr.org/templates/story/story.php?storyId=99663723>
- ◆ Aired: January 2009
- ◆ Running time: 38:47
- ◆ Description: A “Fresh Air” interview with P. W. Singer, the author of the book *Wired For War*. Singer discusses how some military tasks previously assigned to humans are now being handled by machines, the technology behind the machines, how soldiers are affected by using these machines as weapons, and the future of war.
- ◆ Rating: Excellent
- ◆ 7-Revolutions Section: Conflict, Technology

This American Life Episode 355: The Giant Pool of Money

- ◆ http://www.thislife.org/Radio_Episode.aspx?sched=1242
- ◆ Aired: May 2008
- ◆ Running time: 54:00
- ◆ Description: An episode of “This American Life” that tackles the housing crisis, subprime loans, and the turmoil on Wall Street. Why did banks make extremely large loans to people without jobs or income?
- ◆ Rating: Excellent
- ◆ 7-Revolutions Sections: Economic Integration, Governance

Study Shows that Europe's Population Falling

- ◆ <http://www.npr.org/templates/player/mediaPlayer.html?action=1&t=1&islist=false&id=93995083&m=93995042>
- ◆ Aired: August 2008
- ◆ Running time: 4:51
- ◆ Description: This short program is about how populations in European countries are dropping dramatically and discusses some of the related problems.
- ◆ Rating: Very good (Good as link during lecture)
- ◆ 7-Revolutions Sections: Population

Radio Lab Program: (So-Called) Life

- ◆ <http://www.wnyc.org/shows/radiolab/episodes/2008/03/14>
- ◆ Aired: March 2008
- ◆ Running time: 58:58
- ◆ Description: This is a very entertaining and informative program on research in biotechnology and bioengineering. It talks about present research and makes some interesting predictions about the future.
- ◆ Rating: Excellent
- ◆ 7-Revolutions Section: Technology

Journalist Michael Pollan

- ◆ <http://www.npr.org/templates/story/story.php?storyId=100755362>
- ◆ Aired: February 2009
- ◆ Running time: 24:00
- ◆ Description: Michael Pollan is Professor of Science and Environmental Journalism at University of California at Berkeley and author of several best-selling books such as *The Omnivore's Dilemma: A Natural History of Four Meals*. He discusses a new way of thinking about how we subsidize agriculture and suggests ways of changing food policies.
- ◆ Rating: Excellent
- ◆ 7-Revolutions Sections: Resources (food)

Insurers Eye Savings from Treatment Overseas

- ◆ <http://www.npr.org/templates/player/mediaPlayer.html?action=1&t=1&islist=false&id=90268099&m=90268052>
- ◆ Aired: May 2008
- ◆ Running time: 7:37
- ◆ Description: This program discusses how medical tourism is becoming more and more common and is a good example of outsourcing.
- ◆ Rating: Good
- ◆ 7-Revolutions Sections: Economic Integration

Do Trees Worsen Droughts

- ◆ <http://www.npr.org/templates/player/mediaPlayer.html?action=1&t=1&islist=false&id=88984769&m=88984744>
- ◆ Aired: March 2008
- ◆ Running Time: 5:35

- ◆ Description: This short program discusses how countries might deal with the increasing occurrences of drought with climate change. It focuses on Panama and how the Panama Canal requires a large amount of water to function and how a local rainforest affects the water flow.
- ◆ Rating: Good
- ◆ 7-Revolutions Sections: Resources (water)

YouTube.com

The list below reflects some of the relevant video resources available as of June 2009. As new videos are being added all the time, one can search for additional relevant videos on the YouTube site.

The Truth According To Wikipedia

- ◆ http://www.youtube.com/watch?v=WMSinyx_Ab0
- ◆ Aired: April 7, 2008
- ◆ Running Time: 48 minutes
- ◆ Description: Google or Wikipedia? Those of us who search online—and who doesn't?—are getting referred more and more to Wikipedia. For the past two years, this free on-line “encyclopedia of the people” has been topping the lists of the world’s most popular websites. But do we really know what we’re using? Backlight plunges into the story behind Wikipedia and explores the wonderful world of Web 2.0. Is it a revolution, or pure hype?
- ◆ Rating: Good – especially if students think Wikipedia is the one source for everything
- ◆ 7-Revolutions: Information dissemination

P. W. Singer: Military Robots and the Future of War

- ◆ <http://www.youtube.com/watch?v=M1pr683SYFk>
- ◆ Running time: 16.:06 minutes
- ◆ Aired: April 03, 2009
- ◆ Description: In this powerful talk, P. W. Singer shows how the widespread use of robots in war is changing the realities of combat. He shows us scenarios straight out of science fiction -- that now may not be so fictitious.
- ◆ Rating: Excellent +
- ◆ 7-Revolutions: Conflict

Types of Government, Explained

- ◆ <http://www.youtube.com/watch?v=N4r0VUybeXY>
- ◆ Aired: January 12, 2009
- ◆ Running time: 10:35 minutes
- ◆ Description: This video explains the different types of government, what they mean, and what they stand for.
- ◆ Rating: Good for basic information
- ◆ 7-Revolutions: Governance

Global Environmental Outlook (GEO-4)

- ◆ <http://www.youtube.com/watch?v=EoIp9yeC78k>
- ◆ Running Time: 7:44
- ◆ Description: This short video discusses the pressing problem of environmental changes

including pollution, global climate change, and depleting biodiversity, and also discusses the United Nations Environment Program GEO-4.

- ◆ Rating: Very Good
- ◆ 7-Revolutions Section: Resources

Unnatural Selection—A Documentary

- ◆ <http://www.youtube.com/watch?v=RmYoi2QqoqE>
- ◆ Running Time: 9:59
- ◆ Description: This program discusses the current problem of declining primate populations around the world. This heart-wrenching program drives home the importance of the threat facing great apes and monkeys.
- ◆ Rating: Very Good
- ◆ 7-Revolutions Section: Resources.

Lake Chad Under Threat

- ◆ <http://www.youtube.com/watch?v=JTZUCy8tkgI>
- ◆ Running Time: 3:35
- ◆ Description: This short program shows how Lake Chad (one of the largest lakes in Africa) has shrunk to 10% of its size only a few decades ago.
- ◆ Rating: Excellent (very good for link in lectures)
- ◆ 7-Revolutions: Resources (water)

Google books

- ◆ <http://www.youtube.com/watch?v=u8vKFz09ric&feature=related>
- ◆ Running Time: 0:39
- ◆ Description: Shows how Google Book scanners work. Google is making the attempt to scan in millions of books
- ◆ Rating: Good (very short)
- ◆ 7-Revolutions: Information

The Myth about Ethanol

- ◆ http://www.youtube.com/watch?v=j9QQcP_Y1II
- ◆ Running Time: 4:45
- ◆ Aired: May 2007
- ◆ Description: John Stossel from ABC 20/20 discusses the myths and problems that come from using ethanol as fuel.
- ◆ Rating: Good
- ◆ 7-Revolutions: Technology, Resources.

P. W. Singer on the Daily Show

- ◆ <http://www.thedailyshow.com/video/index.jhtml?videoId=217010&title=P.W.-Singer>
- ◆ Aired: January 29, 2009
- ◆ Running Time: 6:07 minutes
- ◆ Description: A lighter approach to military robots
- ◆ Rating: Excellent
- ◆ 7-Revolutions: Conflict

Biofuel backlash – World

- ◆ <http://www.youtube.com/watch?v=dpf3C2EReVo&feature=related>
- ◆ Running time: 12:55
- ◆ Aired: January 2008
- ◆ Description: Discusses how biofuels (such as ethanol) are not very cost-efficient or environmentally friendly, and how using corn for fuels affects the food supply of the world.
- ◆ Rating: Very Good
- ◆ 7-Revolutions: Technology, Resources

Top Gear - Vegetable oil for your Volvo diesel – BBC

- ◆ <http://www.youtube.com/watch?v=GOFbsaNeZps&feature=rec-fresh>
- ◆ Running Time: 4:11
- ◆ Aired: March 2007
- ◆ Description: This is a short clip from a BBC program called “Top Gear” about using bio diesel made from cooking oil to run a car.
- ◆ Rating: Very Good
- ◆ 7-Revolutions: Technology, resources

Why are plastic bags evil?

- ◆ <http://www.youtube.com/watch?v=i20tw5Gcjfg>
- ◆ Running Time: 1:46
- ◆ Aired: November 2008
- ◆ Description: This was a project created by a student in a 7 Revs class at CSU Fresno. In this “save the world” project, students were asked to spend at least five hours enacting change related to one of the problems discussed in the course. It is an animated short film about the evils of plastics bags.
- ◆ Rating: Excellent
- ◆ 7-Revolutions: Resources, Technology, Introduction

Other On-line Video

Minature-Earth

- ◆ http://www.miniature-earth.com/me_english.htm
- ◆ Aired: ?
- ◆ Running time: 3:45
- ◆ Description: Short streaming video providing power statistics about the world’s population in terms of economics, religion, and healthcare. It asks the viewer to imagine the world’s population is 100, then gives world statistics relative to that number (e.g., 18 struggle to live on less than \$1.00 a day and 53 live on less than \$2.00 per day).
- ◆ Rating: Excellent
- ◆ 7-Revolutions: Population, economic integration.

PBS Frontline Series : Black Money

- ◆ <http://www.pbs.org/wgbh/pages/frontline/blackmoney/>
- ◆ Running time: Approximately 2 hours
- ◆ Aired: April 7, 2009

- ◆ Description: As the global financial downturn continues and pressure for profits increases on corporations across the world, a small group of lawyers in the U.S. Justice Department is pursuing an aggressive crackdown against an international business tactic—bribery—which the [World Bank says](#) amounts to as much as a trillion dollars a year in payments.
- ◆ Rating: Good - Excellent
- ◆ 7-Revolutions: Governance

Aqua Colbert

- ◆ <http://www.comedycentral.com/colbertreport/videos.jhtml?videoId=164482>
- ◆ Running Time: 2:34
- ◆ Aired: March 2008
- ◆ Description: A very humorous short film from the comedy show “The Colbert Report.” It is a spoof on how damaging and impractical plastic water bottles are. Warning: it does have a couple of off-color references.
- ◆ Rating: Excellent (very funny)
- ◆ 7 Revolutions: Resources, Technology

What about this fish

- ◆ <http://www.pbs.org/wgbh/harvest/etc/video.html>
- ◆ Running Time: 5:35
- ◆ Description: This gives a short report about genetically modified salmon and some of the concerns related to natural stocks of salmon.
- ◆ Rating: Very Good
- ◆ 7-Revolutions: Technology, Resources

Ground water

- ◆ <http://www.kingcounty.gov/environment/waterandland/groundwater/education/animation.aspx>.
- ◆ Running Time: 3:40
- ◆ Description: This is an animated short film about groundwater. It provides good information, but is also very humorous.
- ◆ Rating: Very good
- ◆ 7-Revolutions: Resources, Technology

Map of changes in obesity level

- ◆ <http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/index.htm>
- ◆ Description: This shows the change in obesity rates for each state from 1985 to 2007. The increase in obesity is shocking.
- ◆ Rating: Excellent
- ◆ 7-Revolutions: Resources (food)

The Story of Stuff

- ◆ Running time: 20 minutes
- ◆ Description: From its extraction through sale, use, and disposal, all the stuff in our lives affects communities at home and abroad, yet most of this is hidden from view. *The Story of Stuff* is a 20-minute, fast-paced, fact-filled look at the underside of our production and

consumption patterns. It exposes the connections between a huge number of environmental and social issues, and calls us together to create a more sustainable and just world. It'll teach you something, it'll make you laugh, and it just may change the way you look at all the stuff in your life forever. Description directly from <http://www.storyofstuff.com/> web site, from which the animation can be played directly

- ◆ Rating: Excellent
- ◆ Used in class as an example of a systems perspective; related to “resource management” and “economic integration”

The Global Banquet: the Politics of Food

- ◆ Released January 2007
- ◆ Running time: 56 minutes
- ◆ Description: *The Global Banquet* examines the ethical questions at the heart of the globalization debate including how food security and social development are related and how factory farming can lead to degradation of the natural environment.
- ◆ Available for download at <http://underdogcinema.com/politics/the-global-banquet-politics-of-food/>

Stolen Childhoods

- ◆ Released 2004
- ◆ Running time: 85 minutes
- ◆ Description: The film places these children's stories in the broader context of the worldwide struggle against child labor. *Stolen Childhoods* provides an understanding of the causes of child labor, what it costs the global community, how it contributes to global insecurity, and what it will take to eliminate it. Available as a DVD <http://store.galenfilms.com/un.html> and, perhaps more useful, clips can be viewed on line, for example, this one about children working on an onion farm in Texas, http://www.stolenchildhoods.org/mt/archives/videostories/texas_fields/index.php

Videos/DVDs

A wide selection of videos/DVDs could be used in a 7 Revs course, some of which are suggested below. When they are rated, it is the opinion of a 7 Revs instructor who has used a particular video.

Planet Earth

- ◆ Released April 2007
- ◆ Running time: Eleven 50 minute episodes
- ◆ Description: According to multiple reviews, this is *THE* best nature and wildlife series ever made. The film covers the world's different habitats in 50 minute pieces, including mountains, caves, and deserts, ending with a three-part discussion of sustainability and the current environmental threats that our world faces. This series is not to be missed by anyone interested in natural resources, the environment, sustainability, and the future of our planet.

I.O.U.S.A.

- ◆ Released April 2009

- ◆ Running time: 80 minutes
- ◆ Description: Through the eyes of former U.S. Comptroller General David Walker, *I.O.U.S.A.* daringly examines the history and rapid growth of the U.S. national debt and the effects that it will have on U.S. citizens and the world. A thirty minute version of the movie can be seen online at <http://www.ioussathemovie.com/>.

On Our Watch

- ◆ Released January 2008
- ◆ Running time: 60 minutes
- ◆ Description: The entire 60 minute video of “On Our Watch,” which addresses the humanitarian crisis in Darfur that has been labeled the first genocide of the 21st century, can be accessed at the following web site: <http://www.pbs.org/wgbh/pages/frontline/darfur/view/main.html> This video examines the emerging crisis in Darfur beginning in 2003 and continues to examine the dynamics of this complex situation as a UN official presses the world to act, the United Nations makes numerous ineffective efforts to intervene, and flickers of hope emerge in 2007. This powerful and informative video is supported by web links to additional information about the crisis in Darfur. (DVD also available for \$30 from web site at <http://www.shoppbs.org/>)
- ◆ Rating: excellent ; used selected sections in class, related to conflict resolution

Bush’s War

- ◆ Released May 2008
- ◆ Running time: 270 minutes
- ◆ Description: 9/11 and Al Qaeda, Afghanistan and Iraq, WMD and the Insurgency, Guantanamo, Abu Ghraib, Fallujah and the Surge. For six years, FRONTLINE has been revealing those stories in meticulous detail and the political dramas played out at the highest levels. Now, on the fifth anniversary of the Iraq invasion, the full saga will unfold in this special definitive documentary analysis of one of the most challenging periods in the nation’s history. 270 minutes on one disc. (Description from web site at <http://www.shoppbs.org/>) Video available for \$30.
- ◆ Rating: excellent; used outside of class as an optional learning activity, related to conflict resolution

An Inconvenient Truth

- ◆ Originally released November 2006
- ◆ Running time: 96 minutes
- ◆ Description: Former Vice President Al Gore presents a compelling look at the state of global warming in the fascinating and startling documentary. Director Davis Guggenheim eloquently weaves the science of global warming with Al Gore’s personal history and lifelong commitment to reversing the effects of global climate change in the most talked-about documentary of the year. An audience and critical favorite, *An Inconvenient Truth* makes the compelling case that global warming is real, man-made, and its effects will be cataclysmic if we don’t act now. Gore presents a wide array of facts and information in a thoughtful and compelling way: often humorous, frequently emotional, always fascinating. In the end, *An Inconvenient Truth* accomplishes what all great films should: it leaves the viewer shaken, involved and inspired. Description from <http://www.climatecrisis.net/aboutthedvd/> and from amazon.com, where it is available for \$16.

- ◆ Rating: excellent; used inside and outside class; directly related to climate change topic within “resource management” revolution

China from the Inside

- ◆ Released February 2007
- ◆ Running time: 240 minutes
- ◆ Description: *China from the Inside* is a series of four documentaries that survey China through Chinese eyes to see how history has shaped them and where the present is taking them. Episodes include Power and the People which deals with the governance of China, The Women which talks about the past and future for Chinese women, Shifting Nature, a look at China’s environmental challenges, and Freedom, an exploration of China’s conflict between personal freedom and governance. Produced in 2006 with 240 minutes on one DVD. Description from web site at <http://www.shoppbs.org/> Video available for \$30.
- ◆ Rating: very good
- ◆ Used outside class as optional learning activity; related to several revolutions

Flow: For Love of Water

- ◆ Released December 2008
- ◆ Running time: 84 minutes
- ◆ Description: This is a powerful documentary of the current state of freshwater ownership, privatization and distribution around the world. The film discusses the conflict between “predatory” corporations and engaged citizens over water rights and usage. For example, it discusses how companies like Coke and Pepsi use of water in India and Nestles use of water in Michigan for bottled water. This film also documents water wars in Bolivia, privatization in Africa, and issues of pollution of freshwater around the world. It promotes lively and emotional discussion in class.
- ◆ Rating: Excellent
- ◆ 7-Revolutions Section: Resources, Technology, Economics, Conflict.

NOVA - World in the Balance: The Population Paradox

- ◆ Released June 2004
- ◆ Running time: 120 minutes
- ◆ Description: This documentary discusses how regions and countries such as Africa, India and Japan are facing different problems related to their current and changing population demographics. It provides a number of good graphics (population pyramids) and statistics, but also relates these issues to individual, very personal, stories. The film discusses birth control and women’s rights in India, how HIV/AIDS in Africa has resulted in tragic cases that change the role of extended families, and how modernization has caused dramatically decreased fertility rates in Japan.
- ◆ PBS.org has a great interactive site dealing with this issue: <http://www.pbs.org/wgbh/nova/worldbalance/>
- ◆ Rating: Excellent
- ◆ 7-Revolutions Section: Population

NOVA – Car of the Future: Engineering for the Environment

- Released April 2008
- Running time: 54 min

- ◆ Description: This documentary is hosted by the radio hosts for NPR's program, Car Talk. The hosts Tom and Ray visit several manufacturers and entrepreneurs who are creating more efficient, eco-friendly cars, such as new versions of hybrids, hydrogen fuel cells, and electric cars. The hosts add some humor that makes the documentary more enjoyable for students, while discussing serious issues.

It can be viewed in six different parts at PBS.org—specifically: <http://www.pbs.org/wgbh/nova/car/program.html>.

- ◆ Rating: Very good
- ◆ 7-Revolutions Section: Technology

The 11th Hour

- ◆ Released April 2008
- ◆ Running time: 92 min
- ◆ Description: In this documentary several of the world's experts on climate change and sustainability are interviewed including: former Soviet leader Mikhail Gorbachev, Cambridge physicist Stephen Hawking, progressive CEO Ray Anderson, and scientist and activist David Suzuki. It contains wonderful video footage and a very high production value. It is hosted by Leonardo DiCaprio and it appears to be intended for a younger, college-age, audience. In this documentary they discuss both the science and philosophy of the future of our planet. It starts off a bit depressing, but ends with some practical ways for individuals to enact change.
- ◆ Rating: Excellent: Students rated *The 11th Hour* as their favorite video of the semester.
- ◆ 7-Revolutions Section: Resources, Population, Technology

Why We Fight

- ◆ Released June 2006
- ◆ Running time: 98 min
- ◆ Description: *Why We Fight* features interviews and observations by experts on the military, including Senator John McCain, Gore Vidal, and Dan Rather. It begins with the prophetic speech by President Dwight D. Eisenhower's warning of the rise of the "military industrial complex." The film discusses the forces – political, economic, and ideological – that drive us to fight against an ever-changing enemy? This film won the Grand Jury Prize at the 2005 Sundance Film Festival. Although it brings in experts from a number of different ideologies, the film does tend to have a left leaning viewpoint on the military and war.
- ◆ Rating: Very good.
- ◆ 7-Revolutions Section: Conflict

Commanding Heights

- ◆ Released July 2002
- ◆ Running time: 360 minutes
- ◆ Description: This three-part, six-hour documentary focuses on the history and impact of the new global economy, explaining macroeconomics and their current political and social importance without ever causing a loss of consciousness for the viewer. Segments include the history of economic thought, deregulation, and consequences of globalization. Interviews with several world leaders are featured.

6 Billion and Beyond

- ◆ Released 1999
- ◆ Running time: 60 minutes
- ◆ Produced by Berkeley Media and available through their website <http://www.berkeleymedia.com/>
- ◆ Educational discounts are available; be sure to ask. A review quoted on their site says: “This film manages, miraculously, not to fall into the simplistic trap of equating population growth with abstract numbers that count up doom and disaster. Rather, it reminds us that this is the most human of all subjects, and its future depends above all on the human lives of young women, who live in many different circumstances in many parts of the earth. It depicts these young women, appropriately, as looking ahead to lives very different from those of their mothers -- lives at a global turning point toward lower birth rates and population stabilization.” -- Donella Meadows, Professor of Environmental Studies, Dartmouth University

Gattaca

- ◆ Released 1998
- ◆ Running time: 106 minutes
- ◆ Description: In this science fiction film, being genetically engineered is an asset while those naturally born are considered flawed. It is part thriller, part futuristic drama and cautionary tale.

Children of Men

- ◆ Released March 2007
- ◆ Running time: 110 minutes
- ◆ Description: Based on the 1993 novel by P.D. James, the movie is a cautionary tale of potential things to come. Set in the crisis-ravaged future of 2027, humanity has become infertile, immigration is a crime, refugees are caged like animals, and the world has been torn apart by nuclear fallout, rampant terrorism, and political rebellion.

Outsourced

- ◆ Released: September 2008
- ◆ Running time: 103 minutes
- ◆ Description: A phone sales manager must travel to India to train operators and his own replacement.

Other ideas for popular movies that could be useful include *Hotel Rwanda*, *Slum Dog Millionaire*, and *Blood Diamond*.

Background Reading

If you are considering adopting 7 Revs or preparing to teach 7 Revs, here are some suggestions for background reading.¹

1. With the exception of the *Freakanomics* review, descriptions are adapted from the amazon.com website.

Common Wealth: Economics for a Crowded Planet by Jeffrey D. Sachs

In this sobering but optimistic manifesto, development economist Sachs (*The End of Poverty*) argues that the crises facing humanity are daunting—but solutions to them are readily at hand. Sachs focuses on four challenges for the coming decades: heading off global warming and environmental destruction; stabilizing the world's population; ending extreme poverty; and breaking the political logjams that hinder global cooperation on these issues. The author analyzes economic data, demographic trends and climate science to create a lucid, accessible and suitably grim exposition of looming problems, but his forte is elaborating concrete, pragmatic, low-cost remedies complete with benchmarks and budgets. Sachs's entire agenda would cost less than 3% of the world's annual income, and he notes that a mere two days' worth of Pentagon spending would fund a comprehensive anti-malaria program for Africa, saving countless lives.

Forthright government action is the key to avoiding catastrophe, the author contends, not the unilateral, militarized approach to international problems that he claims is pursued by the Bush administration. Combining trenchant analysis with a resounding call to arms, Sachs's book is an important contribution to the debate over the world's future. (Copyright © Reed Business Information, a division of Reed Elsevier Inc. All rights reserved.)

The World is Flat: A Brief History of the 21st Century by Thomas L. Friedman

Thomas L. Friedman is not so much a futurist, which he is sometimes called, as a presentist. His aim in *The World Is Flat*, as in his earlier, influential *Lexus and the Olive Tree*, is not to give you a speculative preview of the wonders that are sure to come in your lifetime, but rather to get you caught up on the wonders that are already here. The world isn't going to be flat, it is flat, which gives Friedman's breathless narrative much of its urgency, and which also saves it from the Epcot-style polyester sheen that futurists--the optimistic ones at least--are inevitably prey to. (Reviewed by Tom Nissley)

Banker to the Poor: Micro-Lending and the Battle Against World Poverty by Muhammad Yunus.

Banker to the Poor is an inspiring memoir of the birth of microcredit, written in a conversational tone that makes it both moving and enjoyable to read. The Grameen Bank is now a \$2.5 billion banking enterprise in Bangladesh, while the microcredit model has spread to over 50 countries worldwide, from the U.S. to Papua New Guinea, Norway to Nepal. Ever optimistic, Yunus travels the globe spreading the belief that poverty can be eliminated: "...the poor, once economically empowered, are the most determined fighters in the battle to solve the population problem; end illiteracy; and live healthier, better lives. When policy makers finally realize that the poor are their partners, rather than bystanders or enemies, we will progress much faster than we do today." Dr. Yunus's efforts prove that hope is a global currency. (Reviewed by Shawn Carkonen)

The Better World Handbook: Small Changes That Make A Big Difference by Ellis Jones, Ross Haenfler, and Brett Johnson

The book focuses on foundations for a better world, including 1) Economic Fairness, 2) Comprehensive Peace, 3) Ecological Sustainability, 4) Deep Democracy, 5) Social Justice, 6) Culture of Simplicity, and 7) Revitalized Community. It provides the 10 top actions and a shopper's guide.

The Singularity Is Near: When Humans Transcend Biology by Ray Kurzweil.

Renowned inventor Kurzweil (*The Age of Spiritual Machines*) may be technology's most credibly hyperbolic optimist. Elsewhere he has argued that eliminating fat intake can prevent cancer; here, his quarry is the future of consciousness and intelligence. Humankind, it runs, is at the threshold of an epoch ("the singularity," a reference to the theoretical limitlessness of exponential expansion) that will see the merging of our biology with the staggering achievements of "GNR" (genetics, nanotechnology and robotics) to create a species of unrecognizably high intelligence, durability, comprehension, memory and so on. The word "unrecognizable" is not chosen lightly: wherever this is heading, it won't look like us.

Kurzweil's argument is necessarily twofold: it's not enough to argue that there are virtually no constraints on our capacity; he must also convince readers that such developments are desirable. In essence, he conflates the wholesale transformation of the species with "immortality," for which read a repeal of human limit. In less capable hands, this phantasmagoria of speculative extrapolation, which incorporates a bewildering variety of charts, quotations, playful Socratic dialogues and sidebars, would be easier to dismiss.

But Kurzweil is a true scientist—a large-minded one at that—and gives due space both to "the panoply of existential risks" as he sees them and the many presumed lines of attack others might bring to bear. What's arresting isn't the degree to which Kurzweil's heady and bracing vision fails to convince—given the scope of his projections, that's inevitable—but the degree to which it seems downright plausible. (Copyright © Reed Business Information, a division of Reed Elsevier Inc. All rights reserved.)

Freakonomics: A Rogue Economist Explores the Hidden Side of Everything by Steven D. Levitt and Stephen J. Dubner

Freakonomics is a ground-breaking collaboration between Levitt and Dubner, an award-winning author and journalist. They usually begin with a mountain of data and a simple, unasked question. Some of these questions concern life-and-death issues; others have an admittedly freakish quality. Thus the new field of study contained in this book: Freakonomics. (<http://freakonomicsbook.com/>)

Course Texts

Some instructors rely exclusively on *Epsilon*, CSIS, and other online resources as course texts. Others use a mix that includes textbooks and periodicals, such as these:

Beyond Borders: Thinking Critically about Global Issues by Paula S. Rothenberg.

At a time when events anywhere in the world have the potential to impact almost instantaneously on life in the most remote hamlet, village, or town, it is essential that students learn how to think globally. Paula Rothenberg's *Beyond Borders* is an interdisciplinary collection that brings today's most pressing global issues into the classroom. Designed to help prepare today's college students to assume their roles as members of an increasingly global community, this powerful collection includes 82 articles written by today's leading scholars, activists, and policymakers from around the world. In the tradition of Rothenberg's other widely acclaimed college texts, these highly

readable, often gripping, articles are presented within a conceptual framework that encourages a thoughtful understanding of the complexities that have given rise to the issues they address. It has never been more important for students to learn to think critically about the world and their place in it. *Beyond Borders* is designed to help create such classroom conversations in courses across the disciplines. (Description from publisher at: <http://bcs.worthpublishers.com/beyondborders/>)

Annual Editions: Global Issues 09/10 by Robert Jackson

Global Issues is one in a series of over 65 volumes, each designed to provide convenient, inexpensive access to a wide range of current articles from some of the most respected magazines, newspapers, and journals published today. *Global Issues* are updated on a regular basis through a continuous monitoring of over 300 periodical sources. The articles selected are authored by prominent scholars, researchers, and commentators writing for a general audience.

The *Annual Editions* volumes have a number of common organizational features designed to make them particularly useful in the classroom: a general introduction; an annotated table of contents; a topic guide; an annotated listing of selected World Wide Web sites; and a brief overview for each section. Each volume also offers an online Instructor's Resource Guide with testing materials. (Description from publisher at <http://catalogs.mhhe.com/>)

Taking Sides: Clashing Views on Global Issues (5th edition) by James E. Harf and Mark O. Lombardi

Taking Sides presents current controversial issues in a debate-style format designed to stimulate student interest and develop critical thinking skills. Each issue is framed with an issue summary, an issue introduction, and a postscript. An instructor's manual with testing material is available online for each volume. (Description from publisher at <http://catalogs.mhhe.com/>)

National Issues Forum <http://www.nifi.org/>

National Issues Forum publishes pamphlets on topics such as education, energy and environment, government and politics, and other current issues. Available as class sets, they present multiple sides of an issue. Many include a moderator's guide and questions. An example is *The New Challenges of Immigration*, http://www.nifi.org/stream_document.aspx?rID=13784&catID=13&itemID=13780&typeID=8

Scientific American: Earth 3.0

This is a new periodical from Scientific American that is ideal for a 7 Revs class. It deals primarily with issues of our future planet including well-written articles on water, energy, green-technology, biodiversity, population and even conflict. The graphics, images and charts are easy to understand. Articles present scientific interpretations of problems, many with a future focus. Excellent for use in all course topics. (New issues are no longer available.)

Worlds Apart: Globalization and the Environment by James Gustav Speth

Worlds Apart is a collection of essays by leading thinkers on the subject of globalization, and related environmental issues. Used in critiquing the 7 Revs framework.



ABOUT THE EDITORS

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