Long-term goals for governments

David Rejeski and Carly Wobig

David Rejeski directs the Foresight and Governance Project at the Woodrow Wilson International Center for Scholars in Washington, DC. E-mail: rejeskidw@wwic.si.edu
Carly Wobig is a Special Assistant at the Foresight and Governance Project at the Woodrow Wilson Center. E-mail: wobigcs@wwic.si.edu

Abstract *In the fall of 2001, the Foresight and Governance Project at the Woodrow Wilson Center began a process to develop long-term (40-50 year) goals for governments. This project, supported by NASA, involved both domestic and international surveys and a workshop held in May of 2002. The workshop produced ten high priority goals and examined these goals in terms of their importance, acceptability, and possibility as well as exploring key actors and barriers to implementation. Work is now underway to develop scenarios to reach each of these goals and expand the network of stakeholders involved in the project.*

Beginnings

In the fall of 2001, NASA approached the Foresight and Governance Project at the Wilson Center with a fascinating challenge: Could we stimulate the government to think out 50 years and set a series of long-term goals? For most governments and businesses, 50 years is an eternity, reaching far beyond the normal planning, budgeting, and business cycles. But for NASA, 50 years just begins to stretch the imagination, given their 200-year plan that envisions the first interstellar human mission to a neighboring solar system in 2200 (see Figure 1). The exploration of space unfolds in a hazy area where science and science fiction meet and breed concepts like the space elevator, asteroid capture and mining, the terra-forming of Mars, and antimatter vehicles.

But what about government organizations with more prosaic, earth-bound missions, such as protecting the environment, building transportation infrastructure, battling infectious diseases, or assuring national and international security? What role does long-term thinking and goal setting play in establishing their missions and shaping their accomplishments? One could argue, quite a lot.

From a historical perspective, much of what we might classify as significant public sector achievements did not fit neatly into one-year budget cycles or the two- to four-year political cycles that normally shape government plans and budgets. In fact, by limiting planning cycles to short increments, we effectively make certain goals not only unachievable, but also unthinkable. The Brookings Institution recently published a list of the 50 greatest accomplishments of the US government over the last half century (Light, 2000). The research was based on a mail survey of over 1,000 college and university professors, who ranked the government's efforts in terms of success, importance, and difficulty. The list of top ten accomplishments includes such things as the rebuilding of Europe after the Second World War, the expansion of the right to vote, the reduction of workplace discrimination, building of the US highway system, and ensuring safe food and drinking water. These achievements often required decades of work, the cooperation of multiple political parties, and collaboration between the branches of government. Ultimately, the achievements outlived their original champions, changes in political parties, and the ups and downs of the media and press cycles. A persistent focus on the long-term can bring about results, but to what degree is this type of long-term approach stimulated in today's world of government or business?

For those in the US government interested in "future weaving" there are few opportunities or incentives to wander

Figure 1— Part of the NASA 200-year plan showing years 2120 to 2200

Developing Space for Earth

Source: Courtesy of Marshall Space Flight Center
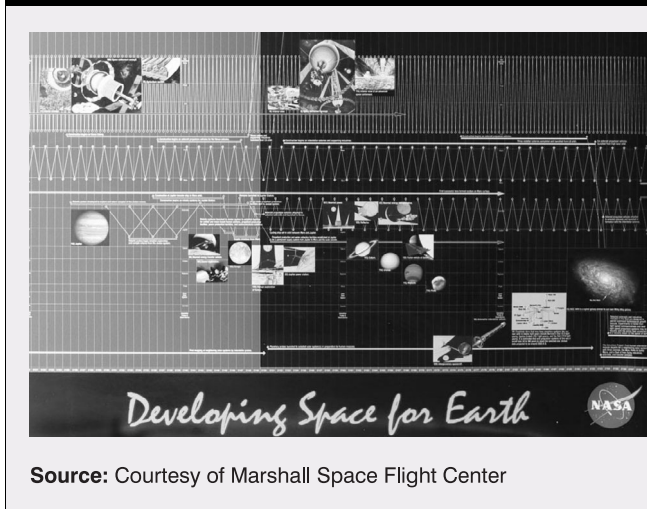
outside of the normal planning process or to speculate about long-term futures (Dror, 2001). The last truly comprehensive long-term study undertaken by the US government (involving the cooperation of 13 agencies) was the Global 2000 Report to the President published in 1979. Though it eventually sold over 1.5 million copies in eight languages, Global 2000 (and its companion set of policy recommendations – "Global future: a time to act") found few supporters in the Reagan Administration and died an untimely death.

Unlike many other nations and supra-national bodies like the EU, the USA presently has no coordinated activities focused on comprehensive, long-term planning for the nation as a whole, or what might be termed "national foresight". The government-wide strategic planning process mandated under the Government Performance and Results Act (GPRA) requires agencies to prepare and update five-year strategic plans but provides no specific requirements or incentives for longer-term thinking. The end product of the GPRA process is not a national long-term strategy, but a collection of agency-specific, shorter-term agendas, focused more on linking tactical goals to performance measures. Whether this linkage is effective remains a much debated subject (Newcomer and Otto, 2000). In addition, we have witnessed over the past decade the elimination of a number of institutions focused on long-term issues in the USA, such as the Office of Technology Assessment[1] and Congressional Clearinghouse on the Future[2]. These are all disturbing trends given the fact that we live in a high-tempo world where key decision makers need more foresight, not less.

One of the fundamental strategic decisions facing both governments and businesses is whether they should shape or adapt in a constantly changing world (Courtney, 2001). Shaping strategies require foresight and the related organizational capacity to get in front of issues. But in a high

"clockspeed" world where change is rampant and uncertainty high, governments are often in a constant catch-up position and lose the capacity to shape outcomes (Fine, 1999). At this point in human evolution, there is no government entity at any level, at any place on earth, which has the luxury to ignore the future. The project at the Wilson Center began as a modest attempt to provide a place and a rationale for long-term, anticipatory thinking and planning to occur.

Preparation

> The cardinal tendency of progress is the replacement of an indifferent chance environmental by a deliberately created one (J.D. Bernal, 1969).

As we began the preparation for the workshop in the winter of 2002, we realized we faced four primary challenges.
(1)   think long term;
(2)   think audaciously;
(3)   think normatively;
(4)   think globally.

A number of writers have pointed out the difficulty that modern societies have in thinking outside of the immediate present (see, for instance, Polak (1961), or Boulding (1978)). Because of this long time horizon, a decision was made early on to integrate science fiction writers into the workshop. Unlike government bureaucrats, science fiction writers have far fewer inhibitions about thinking either audaciously or long term.

Our connection with the science fiction community was facilitated by NASA astrophysicist, Dr Yoji Kondo. When he is not busy trying to unlock the secrets of the universe, Dr Kondo writes science fiction under the pseudonym of Eric Kotani. Through Kondo, we contacted five science fiction writers, including Arthur C. Clarke. All were interested in the project and agreed to share their thoughts with the group that would be assembled in Washington. Three of the science fiction writers, Greg Bear, Joe Haldeman, and Elizabeth Moon[3], were filmed at various locations around the USA and their remarks edited into a 30-minute film that was shown at the workshop. This film, *When Fiction Becomes Reality*, can be viewed on the Web and is also available on CD[4]. Arthur C. Clarke, who lives in Sri Lanka, recorded a video for the workshop and agreed to take part in a live question-and-answer session by phone with the workshop participants. Dr Charles Sheffield attended the conference and delivered his remarks at the beginning of the first day. Many of these science fiction writers are also accomplished scientists. We often forget that Arthur Clarke authored hundreds of technical articles and it was he who originated the idea of the geosynchronous communications satellite, published in *Wireless World* in 1945.

George Bernard Shaw once commented that "Progress depends on the unreasonable man [or woman]". Given the 50-year time frame, we were interested in people being

unreasonable and even somewhat outrageous in their thinking. If we look at great achievements, we find that in many cases the goals behind them seemed audacious and unreasonable at the outset. They forced people to reach. In 1960, John F. Kennedy did not say, "Let's make NASA a bit better." He challenged us to go to the moon in a decade and this combination of an audacious goal and long-term persistence paid off. In 1907, Henry Ford set out to "democratize the automobile". Steve Jobs once challenged his people at Apple Computer to "create a supercomputer that a child can use". Recently we witnessed a scientific accomplishment of incredible proportions – the sequencing of the human genome. Lest we forget, it was the government that set out in 1987 to sequence the human genome at a time when such an endeavor was far too risky for business to undertake.

These audacious goals were also highly normative; they provided people with a desired end state. Keeping in mind Alan Kay's maxim that, "The best way to predict the future is to invent it", we encouraged people throughout the process to think about the future in terms of desired outcomes and to think non-incrementally. One of the most dangerous assumptions in government or business is that important objectives can be reached through the application of incremental strategies. Complex systems often exhibit punctuated behavior and goals may only be reachable in such systems through drastic changes, not in response to small policy adjustments (Jervis, 1997).

To begin the collection of long-term goals, a document called "Bold moves: what governments might accomplish in the next 50 years", was prepared in cooperation with the Institute for Alternative Futures (Rejeski and Olson, 2001). It included a summary of some audacious goals of the past, as well as some failures of imagination, cases where peoples' perceptions of long-term possibilities were clearly clouded by past and present experiences and an inability to imagine discontinuous changes that could radically alter the future.

We realized that audacity is difficult, largely because of the existence of what Gordon MacKenzie aptly called the Genius Cartel, that "originality-suppression agency that permeates our lives" (MacKenzie, 1996). So we also provided some guidance on what constitutes an audacious goal, drawing on work from both the public and private sectors (see, for instance, Collins and Porras, 1994):
■ audacious goals go beyond what most people have assumed is possible or reasonable;
■ they are seen (correctly) by some as achievable;
■ they engage and energize people (once accepted, their boldness grabs people in the gut);
■ they go beyond "making a profit" or "getting re-elected" to higher aspirations for "making a difference in the world";
■ they require little or no explanation;

■ they motivate and align efforts, stimulating forward progress throughout an organization or across multiple organizations; and
■ they continue to drive progress regardless of what happens to their originator (they take on a life of their own).

The "Bold moves" document was distributed to a wide range of people in the public and private sectors (via the Web and e-mail) and became the stimulus for the first set of approximately 30 long-term goals.

Finally, we realized that one of the worst offenses we could commit with such a process would be a failure to reach beyond our own culture and mindset. The USA is only one actor on the larger international stage and the goals needed to reflect the aspirations of a larger set of global actors.

As part of the project, we worked with the Millennium Project of the American Council for the United Nations University to conduct a two-round international Delphi survey of long-term goals. An initial list of 26 audacious goals for the year 2050 was created, based on research by the Millennium Project and the Foresight and Governance Project. This list was rated during the first round of the Delphi and an additional 111 suggestions for goals collected. These were reduced to a list of 18 goals and submitted to the panel during the second round of the Delphi (for a summary of this research, see Glenn and Gordon, 2002, Ch. 3).

The workshop
I not only use all the brains I have, but all I can borrow (Woodrow Wilson).

The Workshop on Global Foresight was held on 5 and 6 May at the Woodrow Wilson International Center for Scholars in Washington, DC. Over 45 people attended from a variety of government agencies, non-governmental organizations, and businesses.

During the morning of the first day, participants had an opportunity to hear the science fiction writers and interact with practitioners involved in areas where long time periods were required to achieve outcomes (the management of earth systems, exploration of space, development of legal frameworks, and prevention of deadly conflict).

The rest of the day was dedicated to the prioritization of the long-term goals. All participants were given a wireless, hand-held voting device that could communicate directly to a computer. This system allowed near real time results of voting to be shown to participants, allowed for anonymity during the voting process, and helped counteract the tendency of the discussion to be dominated by a few extroverted, verbal participants.

The participants were shown a list of 25 high priority goals that had been extracted from both the global and domestic

surveys and asked to rank these goals keeping in mind the following three criteria:

(1) *Importance* – the ability to improve the future for all, inspire global cooperation, and help other goals to occur.

(2) *Acceptability* – the likelihood that at least one leader of government will eventually adopt the goal and commit the resources necessary to achieve it.

(3) *Possibility* – the likelihood that the goal could be achieved by the year 2050.

The top ten goals are listed below with the complete ranking in the Appendix.

(1) No human being lacks for access to clean water and food.
(2) Provide clean and abundant energy.
(3) Eliminate all major infectious and inherited diseases.
(4) End slavery globally.
(5) Provide universal health care for all.
(6) Eliminate weapons of mass destruction.
(7) Establish a system of world justice.
(8) Develop the capability to understand and manage global systems.
(9) Understand biologic processes at the cellular; organ; organism; and ecological levels.
(10) Make the world into a truly global organism.

It is important to note that a number of the goals that made it onto the top ten list would not have been there without the input of the international survey. Most obvious are the call for a system of world justice and the end to global slavery.

The top ten goals were then presented to the participants and they were asked to provide specific numerical rankings (1-10) for the variables of importance, acceptability, and possibility. Interestingly, the two top goals concerning the provision of food and water and clean, abundant energy (Figures 2 and 3) emerged with high ratings in all three categories, indicating a high degree of "doability".

Voting on the other goals produced a more complex picture. The elimination of weapons of mass destruction was viewed as highly important though less politically acceptable or feasible (see Figure 4).

The elimination of major infectious and inherited diseases was seen as acceptable across the political spectrum but harder to achieve (see Figure 5).
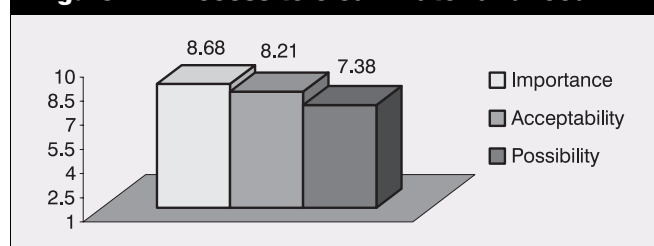

Figure 3 — Provide clean and abundant energy

8.24   7.73   8.03

☐ Importance
■ Acceptability
■ Possibility
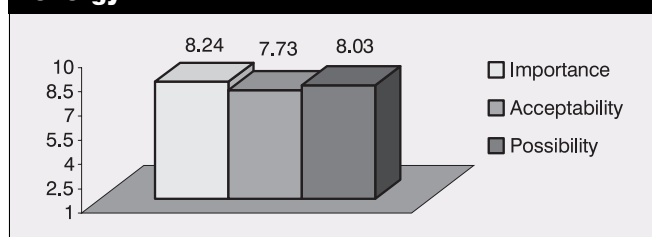
Figure 4 — Eliminate weapons of mass destruction

6.78   5.58   5.08

☐ Importance
■ Acceptability
■ Possibility
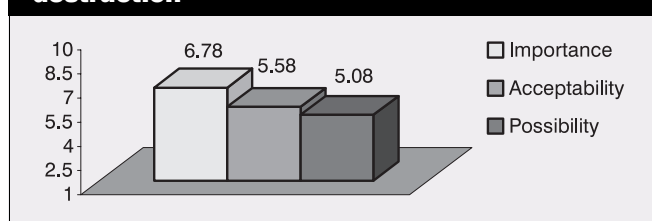
Figure 5 — Eliminate major infectious and inherited diseases

8.39   7.32   6.16

☐ Importance
■ Acceptability
■ Possibility
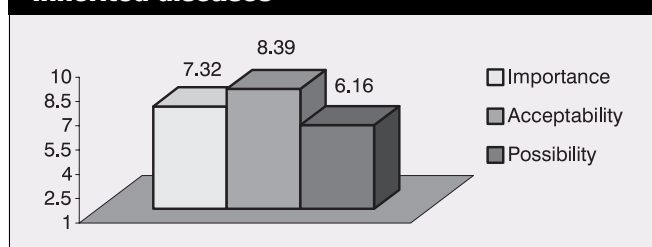
The existing US political position *vis-à-vis* the world court undoubtedly influenced the voting on the goal of establishing a system of world justice (see Figure 6), though the importance ranked fairly high. Unilateralist strategies and policies on the part of the USA or other countries may have a significant impact on our ability to shape and achieve international goals.

We began day two of the workshop by showing the video provided by Arthur C. Clarke (see Figure 7). Clarke speculated about the possible future uses of C_{60}, an extremely strong and light form of carbon, and the possibilities of energy production using low-temperature

Figure 2 — Access to clean water and food

8.68   8.21   7.38

☐ Importance
■ Acceptability
■ Possibility

Figure 6 — Establish a system of world justice

6.38   3.92   4.65
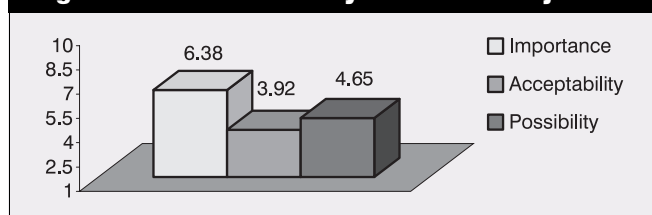
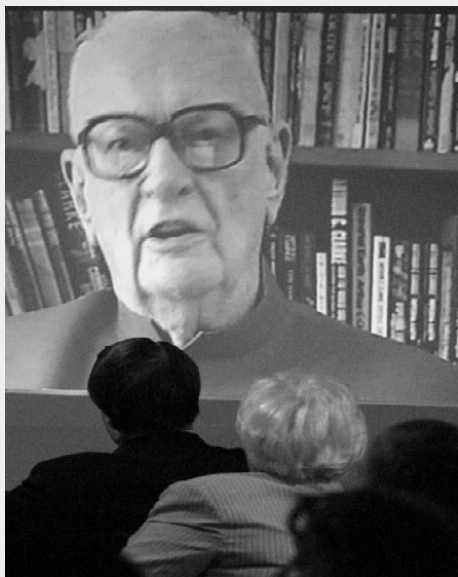☐ Importance
■ Acceptability
■ Possibility

Figure 7 — The Arthur C. Clarke video

nuclear reactions. He suggested that the biggest "wild card" in our future is the existence of extraterrestrial life and its detection or actual contact with life on Earth. Clarke ended his comments with a reading from his book *Greetings, Carbon-Based Bipeds!* Immediately after the video a question-and-answer session took place with Clarke via a telephone conference link.

We then asked the workshop participants to more closely examine the goals developed the day before in terms of implementation. We asked them, "Who could be most influential in moving specific goals forward?" We wanted to examine the assumption that governments were important to the establishment and achievement of these goals. After brainstorming a number of possible key actors, voting took place for five of the ten goals.

In achieving access to clean water and food (see Figure 8) and providing clean, abundant energy (see Figure 9), it

was clear that governments, along with transnational organizations (such as the UN), and NGOs, played key roles. The understanding of biological processes (see Figure 10) required a different mix of actors, relying more heavily on the academic community and private sector, whereas ending slavery globally (see Figure 11) would require more engagement from NGOs, the private sector and governments.

Given the reach of these goals, it should not be surprising that collaboration between multiple organizations and across multiple sectors will be necessary to achieve them. It may be that such goals can only be reached through the efforts of what Warren Bennis has called "great groups", and the creation of such groups needs to be a focused and conscious activity of governments (Bennis and Biederman, 1997). It will also be necessary to achieve the right mix of both "dreamers" and "doers" to make sure that creative ideas are implemented.

The reality: barriers to setting long-term goals

During the second day of the workshop, the participants were shown a short clip from the US television show *The West Wing*, in which the fictitious President suggests to his staff the audacious goal of "eliminating cancer" and is immediately confronted with a litany of reasons why such a goal would be politically and technically infeasible. To what degree does fiction mirror reality? Workshop participants were asked to brainstorm on social, cultural, organizational, and other possible barriers to setting and achieving long-terms goals. The collected suggestions were inputted into the voting system for prioritization (see Figure 12).

Interestingly, some of the reasons commonly suggested for organizational myopia, such as the tyranny of the inbox, media pressure, and methodological shortcomings, ranked fairly low. The top three barriers, having to do with a failure of political will, leadership, and vision, are much more intractable and endemic problems in government (and many businesses). As an interrelated constellation of issues, they will not be easy to remedy, largely because overcoming

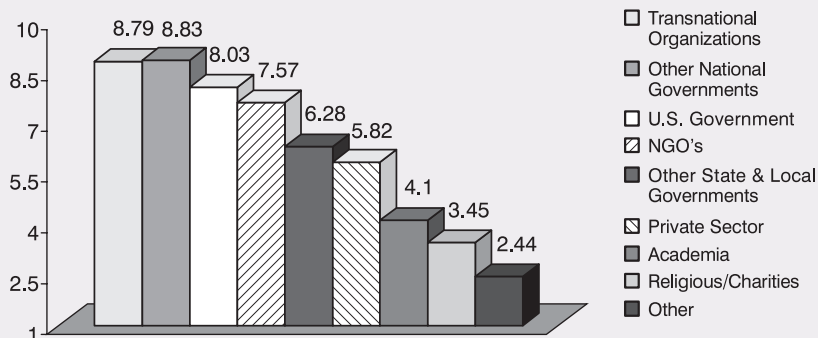Figure 8 — Access to clean water and food
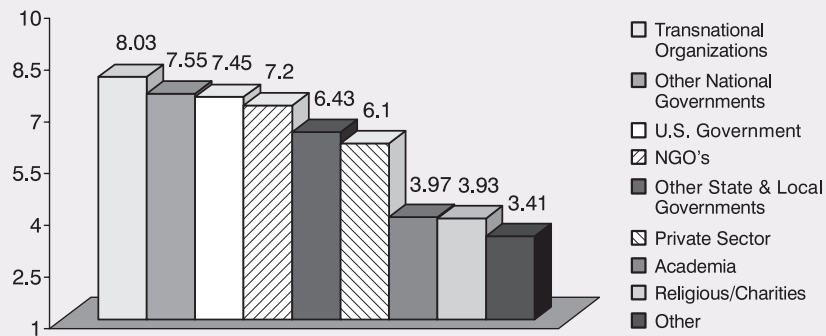
Figure 9 — Provide clean abundant energy

Values: 8.03, 7.55, 7.45, 7.2, 6.43, 6.1, 3.97, 3.93, 3.41

Legend:
- Transnational Organizations
- Other National Governments
- U.S. Government
- NGO's
- Other State & Local Governments
- Private Sector
- Academia
- Religious/Charities
- Other

Figure 10 — Understand biological processes

Values: 6.57, 7.43, 8.4, 5.07, 3.97, 7.5, 9.63, 2.41, 2.46

Legend:
- Transnational Organizations
- Other National Governments
- U.S. Government
- NGO's
- Other State & Local Governments
- Private Sector
- Academia
- Religious/Charities
- Other

Figure 11 — End slavery globally

Values: 6.23, 7.87, 8.47, 5.68, 5.65, 8.19, 5.19, 1.9, 2.15

Legend:
- Transnational Organizations
- Other National Governments
- U.S. Government
- NGO's
- Other State & Local Governments
- Private Sector
- Academia
- Religious/Charities
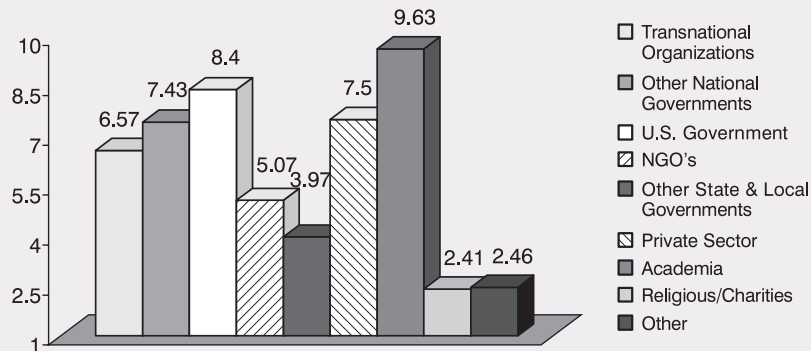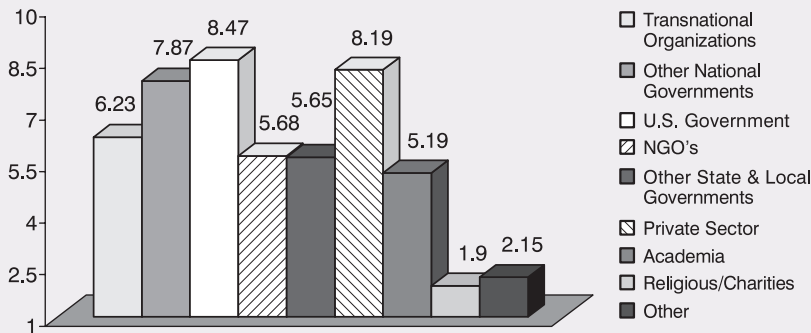- Other

these barriers depends heavily on choosing the right people to lead.

Management guru Chester Barnard once described leadership as the "art of seeing the whole" (Barnard, 1972). Achieving truly ambitious, long-term goals may require a very different type of leadership style, one focused on the future, on transformation, and on managing connections and systems in an interconnected world (see Burns, 1978; Lipman-Blumen, 1996). Maybe we must return to a view of leadership that emerged in Plato's *The Statesman*, where leaders, like weavers, brought together different types of people and ideals around moral imperatives. Clearly, when it comes to achieving long-term objectives, people will matter as much, or more, than process or methods.

The other challenge faced by governments interested in pursuing long-term agendas is the slow erosion in public confidence and trust in the public sector. If government is the problem, why should we trust government with our future, or, from an internal standpoint, why should government even bother trying to influence the future? This problem was

Figure 12 — Barriers to creating and achieving long-term goals
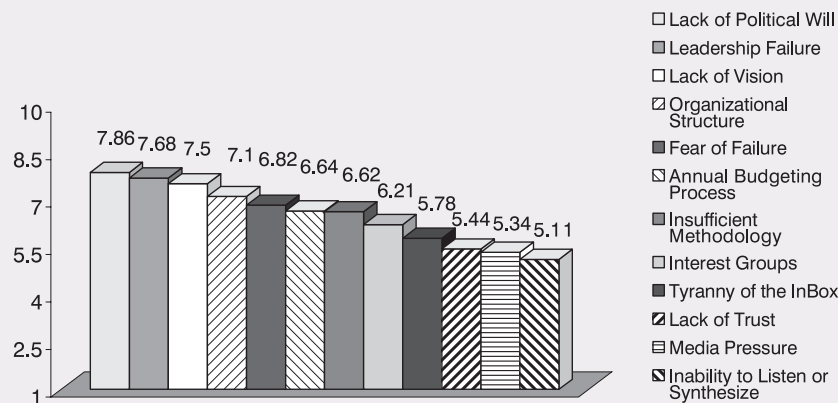
summed up by a former director of the US Congressional Clearinghouse for the Future who remarked in a 1989 interview that:

> I think most people in the [Administration] believed you didn't really need to think through future problems if you didn't see the government as being one of the big players in solving them.

The recent dotcom collapse and corporate scandals may have eroded our confidence in the private sector as a provider of solutions to the enduring problems of humanity, but it is not clear that this economic meltdown has translated into unmitigated support of the public sector. Maybe the NGO sector can achieve such expansive goals, but it is doubtful. The more basic question is how long we can wait before we begin building the necessary coalitions needed to reach these objectives. During the workshop, Arthur Clarke was asked whether he thought the types of ambitious goals we were discussing could be accomplished during the next 50 years. His comment was simply, "They better be, or we won't be here."

Next steps

> The sense of the future is behind all good politics. Unless we have it, we give nothing either wise or decent to the world (C.P. Snow).

The workshop ended with a discussion of possible next steps, which were flushed out and voted on (summarized in Figure 13).

Through this article and other means we have been disseminating information on the goals. The results of the workshop were heavily documented (including videos of many of the presentations). This material is available on the Web at: http://www.globalforesight.org/agenda2.htm

As the workshop ended many of the participants stressed the need to move from ends to means and explore how, exactly, we might reach the goals. Over the next eight to ten months, the Foresight and Governance Project will commission a set of papers to develop scenarios to achieve each of the top ten goals. These papers will be presented,

beginning in the fall, at the Wilson Center and pulled together in a publication.

We are specifically interested in developing an architecture for long-term goal setting and have asked the authors to explore various mechanisms that might be used by government and other organizations interested in setting and achieving long-term objectives. These might include strategies to keep options open over time, decrease uncertainty (fiscal and otherwise), enhance continuous learning/unlearning, and allow better control/use of market and other information signals.

We are also undertaking a meta-analysis of other goal setting processes to compare the goals developed in the workshop with those from related projects such as the UN Millennium Development Goals (http://www.developmentgoals.org/) and those developed by Brookings (Light, 2001).

Obviously, we need many more people involved in thinking about, and planning for, the long-term future. Though one of the primary focuses of this project has been to stimulate US government focus on the longer term, the expansive nature of the goals requires many stakeholders and perspectives to succeed. We are interested in expanding the coalition of people working on long-term goal setting and ensuring that these people have an opportunity to meet on a frequent basis to think together about the future.

However, this project raises a host of more serious questions, questions about the role and responsibility of government in preparing for an uncertain future and our society's commitment to foresight in general. If no institution in government is explicitly tasked to think about the long-term future, or if foresight functions in government or society go unheeded, the future is free to surprise us in painful ways. The nineteenth century American writer, Ralph Waldo Emerson, once noted that, "We often learn about geography the day after the earthquake." The day after is too late. It is simply bad governance to wait for a crisis to occur before we begin to think about the future. By that time, many technological, social,

Figure 13 — Next steps
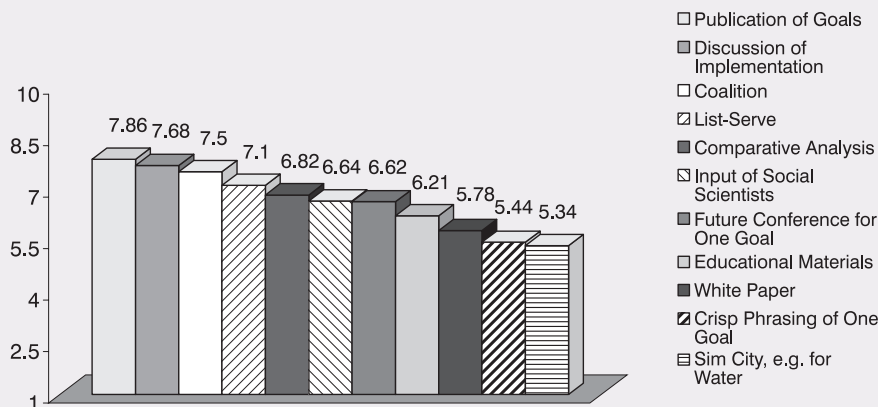
and political options will have been closed out, opportunities for reflection limited, and the possibility of having an informed democratic dialogue reduced.

It is ironic that the US government, which had taken a leadership role in advancing futures research during the decades following the Second World War, has become short-sighted and unilateralist in a era that demands just the opposite approach to global governance. As we enter the new millennium, our ability to look ahead has been compromised – by lack of support, political will, and public trust. Our policymakers need to understand that the future provides more than a rhetorical ploy for public speeches, it provides a sanctuary for reflection and democratic process in a rapidly changing world. We have a choice: to live in a world constrained by inevitability, or a world framed by possibility. The difference between those worlds will be largely determined by our commitment to foresight.

Notes

1   Congressional Office of Technology Assessment closed on 29 September 1995. During its 23-year history, OTA provided Congressional members and committees with objective and authoritative analysis of the complex scientific and technical issues of the late twentieth century and served as a model for similar organizations worldwide. A Web site has been constructed to honor the legacy of OTA, which can be found at: http://www.wws.princeton.edu/~ota/ns20/legacy_n.html

2   A short history of the Congressional Clearinghouse on the Future, including examples of publications and legislative proposals can be found at: http://wwics.si.edu/foresight/Clearinghouse/clear.htm Part of the function of the Clearinghouse was to aid members of the US Congress implement a 1976 House of Representatives' rule that stated: "All committees and subcommittees (except Budget and Appropriations) shall on a continuing basis undertake futures research and forecasting on matters under the jurisdiction of that committee."

3   More information of these science fiction writers can be found at their Web sites. Greg Bear: http://www.gregbear.com/; Joe

Haldeman: http://home.earthlink.net/~haldeman/; Elizabeth Moon: http://www.sff.net/people/Elizabeth.Moon/

4   Those interested in receiving a copy of the film, *When Fiction Becomes Reality*, on CD (in QuickTime format) should contact the Foresight and Governance Project at foresight@wwic.si.edu. The film can also be viewed on the Web at: http://www.globalforesight.org/agenda2.htm

References

Barnard, C. (1972), *The Functions of the Executive*, Harvard University Press, Cambridge, MA.

Bennis, W. and Biederman, P.W. (1997), *Organizing Genius: The Secrets of Creative Collaboration*, Addison-Wesley Publishing, Reading, MA.

Bernal, J.D. (1969), *The World, the Flesh and the Devil*, 2nd ed., Indiana University Press, Bloomington, IN.

Boulding, E. (1978), "The dynamics of imaging futures", *World Future Society Bulletin*, September-October.

Burns, J.M. (1978), *Leadership*, Harper & Row, New York, NY.

Collins, J. and Porras, J. (1994), *Built to Last: Successful Habits of Visionary Companies*, Harper Business, New York, NY.

Courtney, H. (2001), "Making the most of uncertainty", *McKinsey Quarterly*, No. 4.

Dror, Y. (2001), *The Capacity to Govern*, Frank Cass Publishers, London.

Fine, C. (1999), *Clockspeed: Winning Industry Control in the Age of Temporary Advantage*, Perseus Books, Reading, MA.

Glenn, J. and Gordon, T. (2002), *2002 State of the Future*, American Council for the United Nations University, Washington, DC.

Jervis, R. (1997), *System Effects: Complexity in Political and Social Life*, Princeton University Press, Princeton, NJ.

Light, P. (2000), "Government's greatest achievements of the last half century", *Brookings Reform Watch Brief #2*, Brookings Institution, Washington, DC, available at: www.brookings.org/comm/reformwatch/rw02.htm

Light, P. (2001), "Government's 50 greatest priorities of the first half of the twentieth century", *Brookings Reform Watch Brief #4*, Brookings Institution, Washington, DC, available at: www.brookings.org/dybdocroot/Comm/reformwatch/rw04/rw4.htm

Lipman-Blumen, J. (1996), *The Connective Edge: Leading in an Interdependent World*, Jossey-Bass Publishers, San Francisco, CA.

MacKenzie, G. (1996), *Orbiting the Giant Hairball: A Corporate Fool's Guide to Surviving with Grace*, Viking Press, New York, NY.

Newcomer, K. and Otto, A. (2000), "Is GPRA improving the performance of the Federal Government?", *The Public Manager*, Winter.
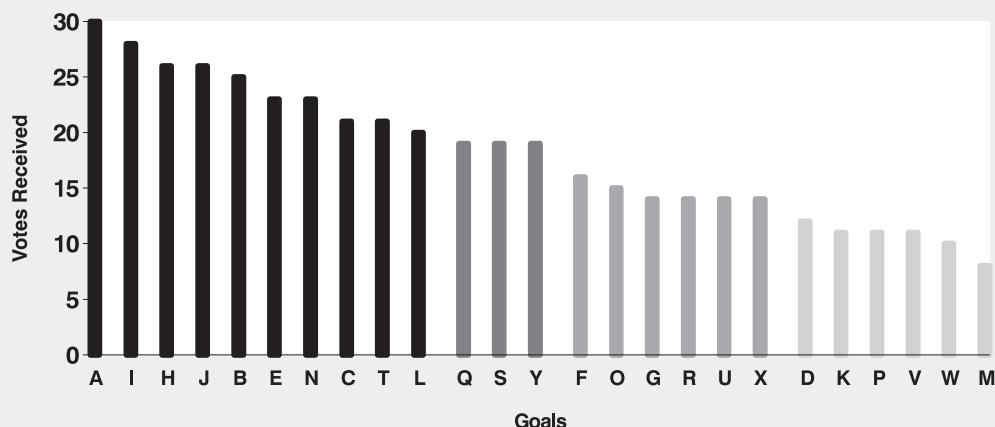
Polak, F. (translated by Elise Boulding) (1961), *The Image of the Future*, Oceana Press, New York, NY.

Rejeski, D. and Olson, R. (2001), "Bold moves: what governments might accomplish in the next 50 years", available at: www.globalforesight.org/survey.htm

Appendix

The graph in Figure AI shows results of voting on the 25 goals, broken down into four clusters.

Figure AI

KEY

A. No human being lacks for access to clean water and food

I. Provide clean and abundant energy

H. Eliminate all major infectious and inherited diseases

J. End slavery globally

B. Provide universal health care for all

E. Eliminate weapons of mass destruction

N. Establish a system of world justice

C. Develop the capability to understand and manage global systems - e.g., the hydrologic cycle, carbon and nitrogen cycles, oceanic circulation patterns, global climate systems, biological communities at all scales – in ranges appropriate to achieving an ethically and rationally designed planet

T. Understand biologic processes at the cellular; organ; organism; and ecological levels

L. Make the world into a truly global organism – meaning that the global infrastructures for energy, computation, communications, transportation, banking, etc, have been (re)engineered to be a). Fully integrated; b). Intelligent and adaptive in the face of shifting demands; c). Self-healing in the face of small- to mid-sized failures (or terrorist attacks!); d). Robust and "fail-soft" in the face of rare, catastrophic failures; and e). Possessed of a digital "immune system" that can detect and ward off hackers, terrorists, or other unauthorized assaults

Q. Create permanent civic mechanisms for deliberation, monitoring, and evaluation of the performance of the state and its officials

S. Improve the quality of life of all people to the level enjoyed by OECD countries today

Y. Make cities more livable (e.g. eliminate traffic gridlock, crime, insecurity, lack of help)

F. Nearly zero emissions and nearly full recycling for all production

O. Normalize and align international pursuit of key technologies to benefit humanity in a manner similar to the Human Genome Project

G. Catalog and preserve the world's species diversity

R. Colonize the moon and Mars, establishing permanent habitats throughout the solar system

U. Catalog and assess all Earth-approaching asteroids and comets for possible collision with earth and design protective systems

X. Understand the origins and likely futures of the universe

D. Reduce the environmental impact of producing each unit of U.S. gross domestic product (GDP) by a factor of four

K. Provide universal on-line education for all

P. End organized crime

V. Establish an efficient, effective, affordable and environmentally-benign global transportation system that seamlessly moves people and goods across oceans and continents – and between Earth and other destinations in the solar system – without hindrance or delays

W. Provide near perfect prediction of natural disasters

M. Establish a global system to review science and technology directions and impacts