




Common Wealth

ECONOMICS FOR A CROWDED PLANET

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Chapter 14

The Power of One

*After the final no there comes a yes
And on that yes the future world depends.*

SO WROTE THE POET WALLACE STEVENS, and so goes our generation's challenge to turn the world from its unsustainable course. Our problems are solvable, but as we try to solve them, we will hear a million noes. No, we need not change; no, we cannot change; no, we must prepare for war; no, we cannot risk making peace. Yet after that final no will come a yes.

It has been said that the most important trait in a successful politician is persistence. As our task—achieving cooperation at a global scale—is political at the core, persistence will be our greatest asset as well. We will have to believe in our own Millennium Promises despite a global chorus of pessimists who pronounce those promises to be unattainable. Yet persistence will pay off in the end. The goals are achievable, as we have seen, and at vastly lower cost and vastly greater benefit than is currently imagined.

We have to gird ourselves against the unholy trinity of reactionary rhetoric identified by the great development economist Albert Hirschman. He noted that every new idea for constructive change is met with three attacks. The first is *futility*: the course of reform cannot work because the problem is unsolvable. The second is *perversity*: any attempt at solution will actually make matters worse. The third is *jeopardy*: attempting to solve the problem will take attention and resources away from something even more important. This negativism is a state of mind, not a view based on facts. Vigorous debate over the methods of change is, of course, healthy and vital, but relentless acceptance of the status quo is not acceptable in the face of the challenges we confront.

I have sketched a model of global change based on the idea that shared global goals, with timetables and targets, can create a slipstream of change. If

the world hews to the Millennium Promises, they will induce each of us—in our personal lives, our work, and our communities—to move toward the shared global objectives. As the world converges toward those objectives, the force of convergence will strengthen. What seems impossible at the start, requiring billions of fragmentary and uncoordinated actions, will ultimately take shape as a global movement to achieve peace, prosperity, and environmental sustainability.

However, we are not only the subjects of history, carried along by blind forces, but also the agents of history. Our intentions help determine whether the world converges to shared goals or breaks apart into war and distrust. The chances for success will depend on the extent to which each of us, in our many roles in society, becomes a positive force for change. In the end, as John Kennedy said, peace will be a process, not the result of a grand or magic formula but “the sum of many acts.” Or in his brother Robert’s famous formulation:

It is from numberless diverse acts of courage and belief that human history is shaped. Each time a man stands up for an ideal, or acts to improve the lot of others, or strikes out against injustice, he sends forth a tiny ripple of hope, and crossing each other from a million different centers of energy and daring those ripples to build a current which can sweep down the mightiest walls of oppression and resistance.

The energy and daring is to resist the noes, until the final yes has been achieved.

THE STAKEHOLDERS OF CHANGE

Human activity is organized through institutions that facilitate long-term cooperation. That begins with the family and extends into larger groups, including the clan, the community, business enterprise, government, all the way to global apex organizations such as the United Nations, with its membership of 192 governments. Each of these institutions arose because it facilitated some kind of specialized cooperation not available in the other institutions. Institutions die when they no longer serve a useful role in coordinating such activities.

We have seen in the case of economic development, cooperation is needed at all levels, from the most micro, within the household, to the most global, for example, in treaties at the World Trade Organization to manage international trade. The households manage certain kinds of cooperation on the smallest scale, between parents and children, husbands and wives. The community is vital for other kinds of cooperation, for example, to build and manage schools and clinics, to tend to the local environment, to settle local disputes. Higher levels of government are needed to pave the roads that connect communities and to create the power grid that brings electricity to them; and national governments are needed to look after national borders, seaports, and international airports, and to support the basic and applied sciences needed to address complex economic and social problems. Of course, business organizations, from a one-person shop to a global multinational corporation, manage technologies and the international coordination of the workforce needed to supply goods and services to customers.

The challenges of sustainable development, whether in heading off climate change, fighting extreme poverty, stabilizing populations, or ensuring adequate water supplies for human use and crops, all must harness actions from a wide array of institutions. No major problem can be solved by government, or the business sector, or one community alone. Complex social problems have multiple stakeholders who are all party to the problem and who generally must all be part of the solution. Gaining that cooperation among the disparate stakeholders is the toughest challenge of all.

If market forces alone could solve these problems, the challenge of cooperation would be fairly straightforward. Markets are wonderful because they coordinate the actions of a vast number of suppliers and customers who can remain largely anonymous to one another. No great ethics or acts of courage, or virtues of coordination are needed, only the decentralized self-interest of each business and each consumer. Adam Smith memorably noted, “It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest.”

This has led some economists into the erroneous and simplistic viewpoint that markets can be relied on to solve all problems. William Easterly, for example, attacked the notion that large-scale plans and coordination are needed to get medicines to the poor by noting that millions of copies of Harry Potter books have gotten into the hands of readers without any such grand plans. The difference, of course, is that Harry Potter’s readers have money to buy the

books, while the poorest of the poor lack the means to buy, for example, life-saving medicines. If a child doesn't have the money to buy the book, the child nonetheless survives (with a touch of disappointment), whereas a child without the money for medicine could die before morning. Ten million of them do each year. If our goal is merely to get large numbers of vaccines to the public, markets would suffice. If our goal is to get vaccines to *all* children who need them, markets cannot do the job by themselves. If our particular focus is on the very poorest people, who lack any financial resources and who live far from paved roads, transport, clinics, and health information, then markets may be very far down on the list of institutions we need to muster.

Markets fail, we have stressed, when the poorest of the poor cannot afford to take part in them or when private incentives don't operate properly to provide public goods, such as environmental protection or disease surveillance or scientific breakthroughs, which are predictably underprovided by market forces alone. In those cases, more complex forms of cooperation are required, with a wider range of institutions that include not only businesses and consumers but also the public and not-for-profit sectors.

To say that such cooperation is hard is not to say it shouldn't be attempted. John Kennedy said the following about the challenge of going to the moon:

We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.

We can say the same about global cooperation to end poverty and save our planet.

THE CASE OF ANTIRETROVIRAL MEDICINES

Consider further the problem of medicines for the poorest of the poor and specifically the life-and-death challenge of HIV/AIDS medicines, or antiretroviral medicines. This will help us to see the vast range of stakeholders

whose actions are critical to address a complex need and the complex forms of cooperation required when markets alone will not solve the problem.

From the mid-1990s, scientists and clinical practitioners, backed by large-scale public funding, identified a class of drugs that successfully controlled the replication of the HIV virus in infected individuals, thereby stopping the progression of AIDS in treated individuals. The underlying scientific work was itself a complex partnership of government (for example, the National Institutes of Health), private pharmaceutical companies, and academic scientists. Given the complex incentive systems that have been devised to promote such discovery, several pharmaceutical companies ended up with patented medicines of high efficacy. Scientists determined that these medicines should be taken in a three-drug "cocktail" to forestall a patient's development of drug resistance to any single one of the medicines.

Patent-protected drug cocktails have sold for around \$10,000 per patient per year since the first years of the twenty-first century. In most high-income countries, the vast majority of these costs are borne by health insurance, whether public or private, or by government-financed programs (such as the Ryan White program in the United States). In some cases, but only a few, individuals are forced to pay out of pocket, and the more fortunate among those can afford to do so. By the time the drug cocktails came into widespread use in the rich countries, Africa harbored between ten and twenty million HIV-infected individuals. Neither their governments nor the individuals themselves could come anywhere close to paying the \$10,000-per-person costs of the medicines (or even the low costs for preventative methods and testing, for that matter). Indeed, nearly all Africans with HIV simply progressed to death from AIDS without the benefit of the antiretroviral therapy that could keep them alive. No miracle of the market was in sight. Indeed, official institutions, such as the World Bank, simply operated on the assumption that antiretroviral medicines were for rich people, not for Africans. The World Bank even avoided mention of antiretroviral medicines in its articles about AIDS.

Here is a complex problem par excellence. A pandemic disease is ravaging Africa, a technical solution exists to transform the disease from a killer to a manageable condition, yet that solution is utterly beyond reach of those who need it. The injustice was immediately stark, but the solutions less so. The first breakthrough came when some generic drug producers, notably in India,

reverse-engineered the medicines and announced that they could produce the drug cocktails at a tiny fraction of the market price. Of course, so too could the patent-holding pharmaceutical companies, who were reaping high prices for the medicines only by virtue of their patent protection (and the temporary monopoly that the patents provided). In 2000 and 2001, several generics companies announced that they would provide the medicines to low-income countries at around \$1 per day per patient for the drug cocktail, that is, roughly \$350 per year. The major patent-holding companies confirmed that they, too, could produce at such a low cost, but they argued that the lower cost would not recoup the preceding R & D, and even worse, would adversely affect their incentives for future R & D.

Through heated discussions and vociferous debate, the multiple stakeholders in this crisis—including the World Health Organization, the patent-holding pharmaceutical companies, various groups representing HIV-infected individuals, academic groups, and African governments—came to several realizations. First, they realized (with varying time lags) that the patent-holding pharmaceutical companies could “afford” to sell their antiretroviral medicines at production cost in Africa (that is, at \$350 or so per year), while maintaining their patent-protected margins in the rich countries (that is, at \$10,000 per year). This would not lose money, even potential revenues, since the patent-holding companies in any event had no real market in Africa at a price of \$10,000. Moreover, it would be possible, through normal policing, to “segment” the African markets from the high-income markets. The drugs destined for Africa could not legally be sent back across the borders of the rich countries, and effective policing could realistically be put in place (as has proven to be the case).

Second, even when the drugs were offered at marginal production cost, the African countries (governments and households) could not afford them. Health budgets in these countries are roughly \$10 per person per year or less, and cannot cover drugs that cost hundreds of dollars per year. Therefore, donors would be required to buy the drugs at reduced prices on behalf of African patients and then provide them in Africa for free, or at prices that are a tiny fraction of the \$350 per patient per year. This was one of the reasons for establishing the new Global Fund to Fight AIDS, Tuberculosis and Malaria.

Yet the parties to the emerging strategy then faced a third set of obstacles. Even when the drugs got to the warehouses in Africa, they were hard to move to the patients. The “last mile” of the supply chain, from the drug inventories

to the dying patients in huts in rural villages, could not be bridged through automatic market forces. The challenges of scaling up basic health services—including public education, counseling and testing, medical care, patient oversight, and drug logistics to transport medicines from regional health centers and hospitals to local villages—are all part of the daunting challenges. At the end of the supply chain is an impoverished household that cannot afford to cover even a pittance of the costs.

Actually, even this description is too simple. Some drug companies, for example, Bristol-Myers Squibb (BMS), launched wonderful philanthropic programs of HIV-drug delivery, supporting their own teams or independent NGOs in the medical supply chain and delivery. But they then discovered yet another obstacle facing the poorest of the poor. Many lacked the means even for a minimum of daily caloric intake, and the HIV medicines don’t function well with a chronically undernourished patient. A group of project leaders from BMS at one point came to my office for advice on how they might grow food in their HIV project site!

Actually, by 2007, many of these problems have been recognized and are being addressed on a large scale. Roughly one million Africans are now on HIV treatment supported by donor funding, compared with almost none in the year 2001. Each of the multiple stakeholders is performing a piece of the magic. Markets are not the drivers of this success, though of course market returns helped to make available the medicines in the first place and helped to generate the income in the high-income world needed to finance access to antiretrovirals for the poorest of the poor. The actual institutions delivering AIDS medicines include a bewildering array of market-based, public-sector, and not-for-profit nongovernmental actors, including the drug companies, NGOs such as Partners in Health and Doctors Without Borders, the Global Fund, national African governments, local communities, and volunteer village health workers. The common thread is not market returns but rather commitment to a common goal: AIDS treatment for all who need it, even the poorest of the poor.

CORPORATE SOCIAL RESPONSIBILITY

The overriding job of business is to make money for the owners, but that in no way precludes an active role for business in solving nonmarket problems

such as access to HIV medicines. Indeed, CEOs understand that if they neglect the nonmarket side of their activities, they can risk the very success of the company. The reputational costs to business of blocking solutions to vital challenges can be devastating to shared values, customer loyalties, worker morale, the ability to recruit new employees, and even the social acceptability of their continued operations. As one businessman has put it, "Either we're at the table on these issues, or we're on the menu!"

During the AIDS episode in 1998–2001, before the start of the Global Fund, the major pharmaceutical companies were threatened by just such a debacle. The companies were getting heatedly attacked by highly visible activists because of the cruel neglect of Africa's dying AIDS victims and the seeming unwillingness of the companies to reduce prices. The companies aimed to maintain the high patent-protected prices for the high-income markets, but they didn't yet recognize that they could and should segment the markets vis-à-vis the poorest countries. They also understood, if only intuitively, that it would never be enough to simply ship low-cost drugs to Africa. There would need to be a system-wide scale-up of health care capacity in the receiving countries.

At the time, I met with several CEOs to encourage them to cut their prices to production cost and to encourage the industry as a whole to rally to this standard. I told them that such market segmentation would be crucial for them to keep their good names. I also suggested, in every way that I could as chairman of the WHO Commission on Macroeconomics and Health and as director of the UN Millennium Project, that the ancillary supply chain needs (logistics, health workers, local clinics, and the rest) should be met by other donors. The pieces of the puzzle began to fall into place and former president Bill Clinton and the Clinton Foundation moved things forward significantly by helping developing-country governments negotiate low-cost agreements on antiretrovirals. The CEO of Merck Pharmaceuticals at the time, Ray Gilmartin, later told me about a moving lesson for the company. After Merck agreed to cut its prices to a no-profit basis for the poor countries, the employees in the company responded with enormous pride and enthusiasm. Gilmartin said it was the greatest boost to company morale that he had seen as CEO. All of us want to work in institutions that are part of the solution, not part of the problem.

The difficulties are not over, to be sure. Some pharmaceutical companies still resist the intrusion of generics producers, or they try to negotiate for

higher prices or royalties on new drugs even in the lowest-income countries. Some patent-holding companies continue to delay the introduction of new life-saving drugs in low-income countries produced by generics companies even when the new drugs may be more effective than older versions or may be better suited for the poorest of the poor (because they do not require refrigeration or are easier to ingest). Most problematic, there is no agreement internationally on where to draw the line between the poorest countries, other low-income countries, and middle-income countries (like Brazil and Thailand) that are rich enough to pay some amount above the zero-cost level for international medicines but are too poor to pay the same market prices as the rich countries. Standards of fairness, justice, and above all, public health, have not yet been agreed upon, and acrimony still flares. Nonetheless, I would emphasize that it is possible, indeed in the interests of all parties, to find workable solutions that constructively engage the world's major companies, respect their fundamental position as profit-making rather than charitable entities, and call for goodwill and adequate public funding to enable public-private partnerships to work effectively on behalf of the poor.

This is the general message that I give to all CEOs regarding the Millennium Promises. Each company needs to be part of the solution and needs to stretch its activities beyond normal market activities. This does not mean to turn the company upside down or into a charitable institution, but rather to identify the unique contribution the company may make as part of a broader effort to solve a major social challenge. This is the real meaning of corporate social responsibility: to operate in a manner that promotes broad social objectives, including nonmarket goals, in a way consistent with core business principles, values, and practices. It means much more than simple corporate philanthropy. It demands creativity.

In most cases, a company's main assets are its proprietary technologies, its supplier and customer networks, its good name, and its workforce. These are the assets that it can bring to bear in the fight against poverty, disease, hunger, and environmental degradation. In the case of extreme poverty, for example, companies should examine their technologies to identify those that can be of significant value to the world's poorest people. This might be medical equipment, high-yield seed varieties, chemical fertilizers, computer hardware and software, telecommunications equipment, trucks, financial service expertise, or more. In many cases, as with the antiretroviral medicines, the market prices for such goods and services are well above the marginal production costs, so

the technologies could be extended to impoverished regions without jeopardizing the bottom line. Doing so will not only have minor immediate costs but will also have enormous long-term market benefits by bringing the firm into new markets that may grow significantly in the coming decade or two.

There is almost always a major problem, however, and once again, it is one that is familiar from the HIV experience. The technologies in question are often of enormous benefit only in conjunction with other goods and services. Computers might be great for rural schools but only if there is electricity. Trucks might be vital for farm communities but only if there are roads. Hospital equipment, of course, requires a hospital. Corporate philanthropy cannot be too complicated, or it can punish a company attempting to do the right thing. No private company can realistically be required to ensure a community's access to roads, power, schools, clinics, and the rest of the community's basic needs. A company is not a charity, nor is it a development agency. The companies should be pressed to contribute, most critically though not exclusively, by supplying their own technologies on favorable terms and provide the training and guidance in adapting those technologies and skills to local needs.

My own somewhat serendipitous discovery is that business philanthropy works best as part of a holistic development effort, where many partners—including philanthropists, donor agencies, and private business—come together to make their mark. The HIV episode, ultimately backed by billions of dollars from the new Global Fund, was one such approach. In the Millennium Villages throughout Africa, a large number of companies have lent a hand, largely by focusing on their core competency in a network of like-minded and farsighted businesses. Each of the following companies has helped to solve one part of the puzzle of extreme poverty in these villages: Yara for fertilizer; Monsanto for high-yield seeds; Sumitomo Chemical for antimalarial bed nets; KPMG for financial expertise; General Electric for surgical equipment; Ericsson for mobile phone and Internet connectivity; Novartis for malaria medicines; Becton, Dickinson for medical supplies and diagnostics. The list continues to grow.

A special kind of cooperation, pioneered by the Gates Foundation, has been public-private partnerships (PPPs) around research and development in which the philanthropies support research costs carried out by laboratories and research scientists of major academic and private-sector institutions. These PPPs have been established for the discovery and development of new

medicines, diagnostics, vaccines, and other crucial medical inputs for major killer diseases including AIDS, TB, malaria, and several parasitic diseases. In each case, market forces alone would not justify the outlays of R & D. There is no market to solve the problems of the poorest of the poor. The Gates Foundation, in partnership with cutting-edge scientific enterprises, is stepping in where markets do not reach.

Companies should stretch in three ways. First, they should agree to focus on the Millennium Promises as part of their commitment. Second, they should work creatively to see how their particular technologies, networks, and expertise can become part of the solution. This process is one of discovery, in which the company works iteratively with on-the-ground problem solvers in different parts of the world. Third, they should agree to operate in places they've not yet reached. Perhaps they will not make much of a profit when they first open operations in Mali, Malawi, Tajikistan, or Bolivia, but they won't lose much either, especially if companies enter these new places in partnership with other like-minded firms. The Millennium Villages Project and others like it offer a basic platform upon which each company can leverage its special role and can help this entry process enormously.

Companies can play a huge role not only as providers of technology but also as customers of local output from impoverished regions. When companies like Starbucks, Nike, or the Gap source from low-income communities, they are not creating poverty (as is sometimes alleged) but reducing it. Of course, this is only true if these companies abide by internationally recognized labor standards and human rights principles related to community rights, workers' health, and so on. Thanks to relentless and dedicated pressure by NGOs, the major companies, intent on burnishing their names, are working toward or fulfilling those standards in many important cases. Many NGOs—such as Global Witness, Oxfam, the Interfaith Center on Corporate Responsibility, Amnesty International, and CERES—are performing a vital and heroic service in exposing companies that continue to abuse the privilege of their position and power. Yet there needs to be a situation of long-term trust and mutual accountability. When companies do the right thing, the watchdog NGOs should be prepared to praise them, thereby adding weight and support to the arguments being waged *inside* those companies. If bad performance is punished, good performance requires reputational rewards. This is a valuable point emphasized by the director of the Novartis Foundation, and one of the great leaders in corporate social responsibility, Klaus Leisinger.

The worst abuses have come—and continue to come—from the extractive industries, especially hydrocarbons (oil and gas), precious gems, gold, and other sectors where it is easy for companies to make a fortune by extracting high-value resources at a rapid rate without care for local communities or the physical environment. Oil companies may complain about lawlessness in the Niger Delta, but we must be clear that many among them were themselves agents of lawlessness when they paid massive bribes to national authorities over the heads of impoverished and local communities, and relentlessly cheated on contracts, records of shipments, reports on costs, and other aspects of business operations that affected their taxes and production-sharing arrangements. These efforts are hidden from view except when pried out by aggressive NGO monitors. Part of the hiding has been achieved by excluding Africans from senior ranks in some of the companies.

The most important global initiative to address the often egregious practices in this sector is the Extractive Industries Transparency Initiative (EITI). The basis of the initiative is “to support improved governance in resource-rich countries through the verification and full publication of company payments and government revenues from oil, gas, and mining.” The EITI prepares a technical sourcebook to support companies and countries seeking to join the transparency initiative. As of mid-2007, fourteen resource-rich African countries, mainly in West Africa, had joined the initiative.

THE NONGOVERNMENTAL SECTOR

No part of the modern world has played as constructive a role in the challenges of poverty, disease, hunger, and the environment as the NGO sector. The scope of NGO activity, if defined broadly, is absolutely immense. There are millions of NGOs around the world and hundreds of billions of dollars of NGO activity each year. A precise accounting is not possible, but the sector is undeniably vast and growing much faster than the host economies themselves. The sector includes a huge array of institutions: large parts of academia, philanthropic foundations and individuals, activist groups, professional associations, scientific organizations, the social service divisions of religious groups, and many more. The common attributes are that the activities are nongovernmental and not for profit.

NGOs are crucial, of course, precisely because market forces by them-

selves do not optimally allocate society's resources, especially when it comes to poverty and the global environmental commons. In theory, governments could step in where markets fail to perform, but governments are only effective at covering a part of market failures. Governments are rarely entrepreneurial. They operate best when approaches have been tried and proven successful, and the challenge is to bring them to scale. Then the heft of the government's tax-raising and borrowing abilities can be crucial in providing the needed financing for scale-up. But the ideas about *what to do* require exploration and entrepreneurship, and that is where the NGOs have played such a vital and unique role.

The storied successes of NGOs are far too vast to canvass. Several NGOs have received the Nobel Peace Prize in the past half century, a vivid indicator of the path-breaking leadership that has emerged from the nongovernmental sector. We have already discussed the winner in 2006, Muhammad Yunus, whose name is synonymous with microfinance and whose institution, Grameen Bank, is a model of NGO activity throughout the developing world. Wangari Maathai, the 2004 winner, is the founder of Greenbelt, the tree-planting environmental movement in Africa. Jimmy Carter won the 2002 prize in significant part for guiding the path-breaking work of the Carter Center, an NGO devoted to the promotion of social and economic development. In 1999, Doctors Without Borders won for pioneering the delivery of life-saving health care to the most impoverished and troubled regions of the world. The International Campaign to Ban Landmines won in 1997, and Joseph Rotblat and the Pugwash Conferences on Science and World Affairs won in 1995 for NGO activity devoted to nuclear disarmament. Amnesty International received the prize in 1977 for NGO leadership in putting human rights at the forefront of global political and social awareness, and in 1970, Norman Borlaug won the prize for the Green Revolution technologies he helped to develop and bring to India, all with the backing of the Rockefeller Foundation.

One can say that the most important economic development institution in the world during the twentieth century was a path-breaking NGO, the Rockefeller Foundation. No other organization—not the World Bank, USAID, or any other international body—came close to playing the transformative role of the Rockefeller Foundation during its first seventy-five years. The Rockefeller Foundation is a special kind of institution, that of transformative philanthropy, in which a world-class philanthropist commits vast sums to

improving the world. Until recently this has been largely a U.S. activity, though now billionaires from around the world are joining the effort. It is a storied list, starting with Andrew Carnegie and John D. Rockefeller and including Andrew Mellon, Edsel Ford, John D. and Catherine T. MacArthur, George Soros, David Packard, William Hewlett, and now Bill and Melinda Gates and Warren Buffett, among a growing list.

Rockefeller was deeply impressed with the example and leadership of the steel and railroad magnate Andrew Carnegie, who pioneered the role of philanthropy in social transformation. In 1889, Carnegie wrote that "the day is not far distant when the man who dies leaving behind him millions of available wealth, which was free for him to administer during life, will pass away unwept, unhonored, and unsung." Carnegie acted upon that by establishing the Carnegie Foundation. Rockefeller similarly rose to the challenge, telling the U.S. Congress in 1907 that he would endow a federal institution to fight disease, poverty, and ignorance. At the time, political hotheads attacked him rather than welcomed him, claiming that he was just trying to buy a good name. Congress demurred, and the offer was withdrawn. Instead, Rockefeller set up shop in New York State, establishing the Rockefeller Foundation in 1913 with two initial gifts totaling \$100 million. No institution did more in the twentieth century to further the cause of international development. Almost everything that the Rockefeller Foundation undertook during its first sixty years turned to gold. Around 170 scientists supported by the foundation have gone on to win Nobel Prizes.

The foundation led the eradication of hookworm in the U.S. South, helping to pave the way for the South's economic development. It revolutionized the teaching of medicine. It founded schools of public health. It supported the Nobel Prize-winning work that established the yellow fever vaccine. It established the University of Chicago as a world-leading university. It helped Brazil to eliminate a dangerous malaria-transmitting strain of mosquito. And stunningly, it funded the science and transfer of knowledge that produced the Asian Green Revolution, the transformative agricultural success that enabled India and other countries to escape from the endless cycles of famine and poverty, earning another Nobel Prize along the way. The key to the foundation's success was its investment in knowledge and its capacity to identify crucial needs (public health, clinical medicine, vaccine development, Green Revolution seed varieties, and much more). Its *modus operandi* was a dream for the recipient scientists. The foundation would choose a subject

of interest and a leader in the field, and then invest heavily and patiently, without micromanagement or strings attached. The foundation ended up supporting many of the most fertile minds of twentieth-century science and public policy.

Now Bill and Melinda Gates can do the same, backed by \$25 billion of their own funds and another \$30 billion or so contributed by Warren Buffett. The Gateses have rightly focused on extreme poverty and disease as their main targets. And like the Rockefeller Foundation, the Bill & Melinda Gates Foundation looks to technology for the breakthroughs that can end extreme poverty on a global basis. The original focus had been on health technologies, but now the foundation is expanding to agriculture, water, and other areas that are also critical in the fight against poverty. Of course, Bill and Melinda Gates are not alone in transformative billionaire philanthropy in recent years. George Soros's well-targeted support for brave truth tellers in Central Europe and the former Soviet Union helped to catalyze the peaceful end of communism. The Google team, Larry Page and Sergey Brin, are out to prove how information technologies can also be transformative. They've recently partnered with Amnesty International to post satellite imagery of Darfur in order to raise awareness, accountability, and technical support for solutions in that violence-ravaged region.

With the recent publication by *Forbes* magazine of the ranking of the world's richest people, a new prospect comes into focus. According to *Forbes*, there are now around 950 billionaires in the world, with an estimated combined wealth of \$3.5 trillion. That's up an amazing \$900 billion in just one year. Even after all the yachts, mansions, and luxury living that money can buy have been funded many times over, these billionaires will still have nearly \$3.5 trillion to change the world. Suppose they pooled their wealth, as Buffett has done with Bill and Melinda Gates. By standard and conservative principles of foundation management, a \$3.5 trillion endowment would have a 5 percent payout of around \$175 billion, an amount sufficient to extend basic health care to all the poorest of the world; end massive pandemics of AIDS, TB, and malaria; jump-start an African Green Revolution; end the digital divide; and address the crying need for safe drinking water for one billion people.

The group of fewer than one thousand people would outstrip the entire \$105 billion development aid of the twenty-two donor governments that represent a combined population of nearly one billion people. This speaks both to the incredible wealth of the super-rich and to the current shortsight-

edness of Washington, Tokyo, and much of Europe. In short, this billionaires' foundation would be enough to end extreme poverty according to the calculations we made earlier. All in all, it's not a bad job for men and women who have already transcended the daily economic struggle faced by the rest of humanity!

THE UNIQUE ROLE OF RESEARCH UNIVERSITIES

Among nongovernmental organizations, the institutions of higher learning and the research universities, especially, have a unique role in meeting the Millennium Promises. Only universities have within their walls the vast range of expert scientific knowledge that is vital for deep problem solving on the issues of sustainable development. Moreover, universities bring three other fundamental strengths to bear on global problems.

First, as much as any of our social institutions, universities take the long view. Harvard University predates the establishment of the U.S. government by 143 years, and my own academic home, Columbia University, was founded a quarter century before the U.S. government. Great centers of learning in the Middle East and Europe are, of course, even older: Al-Azhar University in Cairo (founded 988), Bologna (1088), the University of Paris (1150), Oxford (1167), and Cambridge (1209). These institutions are built to last, and for that reason they can take the long-term perspective.

Second, universities can approach global problems with less bias—political, social, and economic—than just about any other social institution. They are not for profit (alas, often decisively so!). They do not represent specific commercial interests. They are not, in most cases, beholden to the state and thereby not an agent of national policy. They are typically self-governing, often by a combination of faculty-based institutions and elected overseers. Senior scholars usually have lifetime tenure, resulting in an added measure of independence from political control. As a faculty member of a major research university, I have invariably felt welcomed in all parts of the world and have felt the confidence of my counterparts that I am there as an independent truth seeker, not as an agent of private or governmental interests.

Third, major universities were established, in most cases, with a mission to improve the world and to do so not only by shining light on problems

through research and education but by making a difference in their community and others. There is, of course, a very long tradition of engagement by universities in *local* problem solving. The U.S. land-grant universities, first established by President Abraham Lincoln in 1862, have the responsibility to promote local agricultural development. For example, land-grant universities receive, under the 1887 Hatch Act, funding to operate an agricultural experiment station affiliated with the university. The U.S. tradition, therefore, of universities stepping outside of the ivory tower to support economic development is robust, but it is mainly local. The challenge today is to extend such local actions to global problems, with universities taking on the challenges in other parts of the world.

These characteristics of universities—scientific expertise, the long view, an unbiased position, and a mission of service to the community—are a unique combination among major societal institutions. Yet this uniqueness does not quite mean that universities will immediately and automatically assume leadership on the great global challenges. There are also three obstacles to that leadership. The first is the tradition of most universities of seeing themselves as national rather than international institutions. While this is changing rapidly, especially at the graduate level, most colleges and universities in the United States and Europe still draw the preponderance of their students from the home country, and most alumni are, of course, nationals as well. This leads to hesitancy in the universities to seize opportunities abroad. Even so, students are clearly pushing university administrations, faculty, and alumni to internationalize college life, including more options for study abroad.

Second, universities are often reluctant to take on practical challenges of sustainable development in developing countries, such as projects to promote public health or economic development in poor countries. Such projects are seen as risky and may be criticized as involving too little basic research. Yet the dichotomy between research and practice is miscast. Stay-at-home research on sustainable development is often impossible to do well. In most kinds of complex problem solving in sustainable development, there can be little chance of grasping truly fundamental issues—whether in business, law, public health, ecology, or governance—by theory alone. Engagement in actual problem solving is vital in order to construct a sound theoretical explanation of complex problems.

Third, universities, like governments, are actually not well organized to take on the intellectual challenges of sustainable development. Faculties and

research activities are divided among traditional academic disciplines, such as economics, politics, or ecology, rather than along problem-solving lines. The problems themselves—such as poverty, environmental degradation, climate change, water stress, and biodiversity loss—don't come packaged along the traditional lines of inquiry. They require cross-disciplinary teams and research strategies. This creates tensions throughout a university in hiring, resource allocation, research funding, student enrollments, and project oversight.

Cross-disciplinary efforts, such as the one I direct at The Earth Institute at Columbia University, are promising ways to recast the conventional disciplinary lines so that the expertise of the university can be harnessed on complex interdisciplinary challenges. In 1993, the father of the Green Revolution, Nobel laureate Norman Borlaug, summarized beautifully the case for such a multidisciplinary science-based unit:

It seems to me that as our science becomes more specialized, each of us is inclined to give more emphasis to our own specialty, our own discipline. This creates great difficulties when we are trying to transmit the global picture of the impact of science and technology, not just on one discipline but on all of them, including economics, for the benefit of the policy maker, so that he can gather the true essence of what we are talking about, in many different languages as it were. What it seems to imply—and I say this having worked in many different countries—is that we need to encourage a certain attitude among our young scientists: that while some of them stay with their own specialty or discipline, some others among them should work in an integrated way across disciplines. Their voice would be the one most likely to be heard, with the least confusion, by the policy makers in government. I do not know how we can encourage this, but I see a real need for it, and I think the unique opportunity of working in many countries of the world has brought that home to me.

In the case of The Earth Institute, the leadership of Columbia University has made a strong multiyear commitment of financial support that enables the complex cross-disciplinary activities to gain a foothold inside the university and around the world. Several universities, including Yale, Duke, Berkeley, Stanford, and Harvard, are experimenting now with similar cross-disciplinary efforts in sustainable development and global health.

THE SINEWS OF GLOBAL SOCIETY

Nongovernmental organizations, including academic institutions, fill multiple roles that markets and governments cannot. NGOs can be socially entrepreneurial, while governments are cautious and bureaucratic. Academic institutions harness cutting-edge science and technology in ways that government cannot. Just as important, nongovernmental organizations form the sinews, the connective tissue, of our new global society. Market forces are anonymous. Government interactions are formal and diplomatic, or even overtly hostile. Nongovernment groups put faces to names by deepening the person-to-person connections that must undergird global trust and cooperation.

A good example is the world of science. With few exceptions, scientific organizations and their membership work easily across cultures and across political divides. Physicists or biologists or ecologists speak the same language across ethnic, racial, and religious lines. Scientific academies can easily work together on scientific projects and, indeed, have come together now in a worldwide network of ninety-four national science academies as the new InterAcademy Council (IAC), headquartered in the Royal Academy of Arts and Sciences of the Netherlands in Amsterdam. The IAC is designed to provide sound scientific advice to international organizations and the United Nations. An early influential report by the IAC was on prospects for improved agricultural productivity in Africa. The report has contributed to the current efforts to achieve a new African Green Revolution.

At a time when our governments are far too prone to using threats, sanctions, and war in response to problems of instability, nongovernmental contacts across countries and cultures become ever more important as builders of trust, understanding, and a common global ethic. The global links that scientists make regularly should also be encouraged in countless other human endeavors. Artists, athletes, jurists, doctors, and engineers all speak their own distinct languages that bridge cultural divides. Sports events such as the World Cup and the Olympics play a vital role in forging global linkages, even though such events are from time to time hijacked for narrower political purposes. Global concerts, such as the Live 8 concerts, which were staged simultaneously in many parts of the world at the time of the 2005 G8 Summit, and the Live

Earth concerts in July 2007 to promote action on climate change, can have a similar effect.

Communications technology makes possible seamless linkages that were unimaginable just a few years ago. The concerts were not only simultaneously presented on television and the Internet, but they were mutually broadcast between the various concert sites. It was a worldwide gathering, not merely a simultaneous broadcast of distinct events. Creative educators are increasingly forging global classrooms in which lectures and scientific symposia link multiple sites around the world through live videoconferencing. Group meetings by Skype or other digital platforms can meld together teams in dozens of countries. Social networking tools such as MySpace and Facebook are becoming crucial tools for cross-cultural contacts and group mobilization as well.

These social networking tools, which connect tens of millions of individuals in online networks of friends, hobbyists, fans, and bloggers, are now turning to mobilization for social causes. Online social networking allows friends to know who is participating in what causes, to give social approbation for such participation, and to facilitate linkages of the network of friends with particular social service organizations. These tools will allow people with shared interests and commitments to organize at vastly lower transaction costs than in the past and to use gentle social cues to promote participation and avoid free riding.

NEW FORMS OF GOVERNANCE

Corporations, academic institutions, NGOs, and professional bodies are all being reshaped by the forces and opportunities of globalization. Governments need an even greater overhaul. The consistent driver of organizational change must be that government form must follow function. Governments and intergovernmental organizations such as the UN agencies need to be reshaped to give substance to the Millennium Promises. Nation-states were originally forged in the cauldron of war, or for the purpose of creating a national market for goods, services, capital, and labor out of a congeries of local markets. Yet these original drivers of political organization are increasingly passé. National governments are too small to address global economic, demo-

graphic, and environmental threats, and yet too big to preserve cultural diversity and traditions, which are found at the local level.

Nor are governments well organized to process the scientific knowledge regarding sustainable development that cuts across multiple disciplines. They therefore flail blindly when challenged by global forces they cannot comprehend. Challenges of extreme poverty and environmental stress get repackaged as traditional security threats. Military responses yield pitiful results. We've already argued for a new U.S. foreign policy backed by a major institutional reorganization, and the creation of a Department of International Sustainable Development. Governments will need such restructuring so that they can better understand and respond to the complex forms of environmental change, demography, and economy that are reshaping geopolitics.

Intergovernmental processes must also change in fundamental ways. The European Union is surely the harbinger of further regional integration. As our problems have become global, old nation-state boundaries have become too small to provide many of the public goods required at a transnational scale. The EU not only makes war unthinkable among its member states but also provides critical Europe-wide investments in environmental management, physical infrastructure, and governance "software" such as monetary policy, food safety, and financial market regulation. Other regions in the world, notably Africa, will follow Europe's lead in forging a much stronger transnational organization. Even the United States, relentless in its pursuit of its own destiny, has, of course, bound some of its national economic and environmental policies to the transnational North American Free Trade Agreement (NAFTA), including Canada and Mexico.

These transnational organizations have had a difficult time achieving direct democratic legitimacy. They are often remote and theoretical, run by an appointed civil service or appointed representatives of member countries, rather than by direct democratic engagement of the people. Part of the answer is to empower transnational democratic institutions such as the European Parliament. Information technology can help as well. A wonderful new project, e-Parliament, aims to knit together the world's parliaments and assemblies via videoconferencing and the Internet to forge a new kind of hybrid democratic institution at a transnational and even global scale. An e-Parliament that links national parliaments could help solve a host of problems. How can a challenge such as global climate change be addressed in

a democratic manner when global institutions lack adequate democratic legitimacy? If the world's parliaments would hold simultaneous hearings, for example, with leading scientists and policy analysts presenting evidence to dozens of parliaments simultaneously, the world's democratic bodies could engage sensibly and jointly in a global undertaking. Even global legislation, or at least global resolutions on crucial topics like climate change, could be debated and adopted across the world. I believe that the sense of legitimacy and global connectedness that would result would be galvanizing. The imagination would expand as all of us better appreciated how common our challenges are.

Another fundamentally important trend is localization, in which public goods are provided by the lowest feasible level of governance. While nation-states are too small to address many environmental challenges that are regional or global, they are too big and too unaccountable to provide many public services that should be the purview of local communities and subnational regions. Many countries have regions with powerful and distinctive ethnic, linguistic, and historical identities. Cases include Quebec within Canada; Basque Country and Catalonia within Spain; Scotland and Wales within the United Kingdom; Flanders and Wallonia within Belgium; Tamil Nadu and West Bengal within India. The list is endless. Devolution of power to these regions in areas of education, health, social security, and regional development policy is a global phenomenon, and a healthy one. Regional governments have been among the most dynamic in architectural and cultural pursuits in recent years. Power to the regions signifies power to maintain cultural diversity, and to share that diversity with the world.

THE UN DELIVERING AS ONE

The United Nations serves three vital roles: as a meeting ground for the world's governments, as a kind of secretariat for global goals and treaties, and as a provider of urgent public goods when national governments cannot or do not provide them (such as emergency relief operations and peacekeeping when national governments have collapsed or are overwhelmed by conflicts or natural disasters). In the United States, the face of the UN is mainly in its first role, as a debating shop in the UN Security Council. In fact, the UN's most powerful contributions probably fall into the second and third cate-

gories. The UN remains the world's repository of shared commitments on global objectives, whether in the environmental treaties, the Millennium Development Goals, or the protection against global pandemic diseases. Its agencies are the indispensable providers of public services in the poorest and most vulnerable places on the planet, a role that is almost invisible in the rich countries but nearly omnipresent in the poorest.

Beyond the specific acts of peacekeeping and the countless individual development initiatives of UN agencies, the deepest measure of UN success will be whether the Millennium Promises are sustained over time as shared active global goals and whether these goals are achieved in practice. Given the centrality of the United Nations to this overarching challenge, the UN itself needs to be reformed to fulfill these leading tasks. For example, the Millennium Promises require actions on the ground that cut across multiple UN agencies, connecting the work in agriculture of the World Food Program and the Food and Agricultural Organization with the public health work of the World Health Organization and the poverty reduction work of the United Nations Development Program, to name just a few of the relevant agencies.

The organizational challenge for the UN will be to press its diverse and often loosely managed institutions into a cohesive force, thereby giving strong and creative backing to global goals. On paper, this has recently been described as the UN "delivering as one." Such an outcome will sound unlikely to many, almost the opposite of what they expect from a global bureaucracy. Yet it is not impossible. If the secretary-general charges the UN agencies, above all else, with supporting member governments to implement the global goals, UN teams operating within each of the member countries will become much more actively engaged in real problem solving. Form will then follow function within the UN itself. UN agencies would find themselves working together despite the odds, and working against the calendar and against the skeptics.

THE POWER OF ONE

We are all shaped by our countless and cross-cutting individual identities—as citizens of a nation, residents of a local region, members of cultural groups, workers in an enterprise, members of civil-society organizations. Our multiple identities, as Amartya Sen has brilliantly emphasized in *Identity and*

Violence, allow us each to connect not just to one place or culture or region or religion but to multiple facets of our world. Each of us is, at least potentially, a node of a truly global network in which we help to weave together diverse traditions, areas of knowledge, and cultural pursuits on the global tapestry. We are each the potential shapers of a global society that can share values and address common global challenges.

I believe that it is as citizens of the world that we can flourish in the coming generation. As individuals we will find the maximum outlet for our creative energies and income-earning potential when we are part of global networks, at work and at play. Workers in enterprises that are active on the global stage, in finance, tourism, information technology, or manufactures, will have more opportunities in the growing global economy. An expanding world market will offer avenues of advancement for professionals engaged with China, India, and other emerging markets. Being part of such global networks will force each of us to be acutely aware of global trends. We will understand much better the forces of global politics, demography, economics, and ecology that are reshaping the world and that will provoke new forms of global cooperation. In short, being part of the global networks means being ahead of the curve.

As individuals, our most important responsibility is a commitment to know the truth as best we can, truth that is both technical and ethical. Our saving grace will be a broadened scientific awareness combined with an empathy that enables us to understand the plight of the poor, the dispossessed, the young people without hope, or the rural communities challenged by bewildering change. Gandhi called his life an experiment in "living in truth." That approach will have to become the experiment of our generation as well. Without the commitment to truth, we will be blinded by false and provocative divisions across religions, regions, and countries. Without the commitment to science, we will be prey to false and messianic claims without real substance. Without a determined effort to build understanding and empathy for other societies, cultures, religions, and the voiceless poor, we will risk a downward spiral of distrust and even hate across the divides of "us versus them."

Here are eight actions that each of us can take to fulfill the hopes of a generation in building a world of peace and sustainable development.

First, learn about this generation's challenges. Become acquainted with the underlying science of sustainable development. Those in school should

take classes in environment, development economics, climate change, public health, and other relevant fields. For those out of school, find ways to stay abreast of scientific developments. The weekly and monthly leading scientific publications—*Nature*, *Science*, *New Scientist*, *Discover*, *Scientific American*—are must-reads for our age. Nobody can master each article, or even a modest fraction of the most technical of them, but each of these publications gives a general update of recent discoveries as well as coverage of the main challenges of science policy. Countless high-quality Web sites, such as realclimate.org (on climate change), also enable each of us to stay aware of serious scientific thinking and advances.

Second, to the extent that it is personally possible, travel. Seeing other places and cultures is the best way to understand the common interests and aspirations that unite us as well as the special challenges that are unique to different parts of the world. The travel can be a trip across town, across the country, or for the fortunate, abroad. Students have a special opportunity as they forge their careers and their life commitments. There are new opportunities to travel and work abroad. A travel year between high school and college gives today's students the opportunity to learn about other cultures and about the great gaps between rich and poor. Students can see firsthand the despoiled planet, the regions of water stress, and the risks of climate change. Most colleges promote years of foreign study, with the opportunity for immersion in a foreign culture and society. These are life-changing and life-shaping opportunities not to be missed whenever available. They are the window not just to other parts of the world but to the future as well, since globalization and the rising role of today's emerging markets bring us even closer to each other in the decades to come.

Third, start or join an organization committed to sustainable development. Many new and established organizations are doing wonderful work on some aspects of the challenge. On campuses across the United States, there has been a surge in recent years in activism regarding extreme poverty, public health, and environmental threats, opening new lifelong opportunities for students to become involved.

You and your organization may change the world and inspire others to do so as well. Muhammad Yunus began Grameen Bank and gave life to the worldwide microfinance revolution. Paul Farmer started Partners in Health, and has shown the world the true possibilities of health for all. Norman Borlaug helped to establish the wheat research institute CIMMYT, and thereby helped

feed the world. Today's new leaders will promote the African Green Revolution, the control of malaria, new solutions for dryland crops, Internet connectivity in villages, and much more.

Fourth, encourage the engagement of your community and inspire others to join the cause of global sustainable development. In 2007, ballet star Jacques d'Amboise turned his National Dance Institute (NDI) to the cause of African development, inspiring thousands of New York City schoolchildren in the process. NDI teaches dance in the public schools, often in difficult, low-income neighborhoods; raising kids' sights about excellence, beauty, and personal accomplishment. When he dedicated NDI's 2007 program year to the dance, culture, and rhythms of African villages, the children themselves responded magnificently, with countless creative ways to get their schools, families, and neighborhoods involved in raising funds to support the Millennium Village in Potou, Senegal.

Fifth, promote sustainable development through social networking sites, which deploy the most popular and advanced tools of the Internet for the spread and support of social activism. Go out of the way to be the link across the nodes of your own social network—friends, school, workplace, blog sites—to bring different communities together in a common purpose.

Sixth, get politically engaged, demanding of our politicians that they honor our government's Millennium Promises. If the public insists on our government's follow-through, politicians will respond accordingly. Politicians should be pursued during election campaigns, through letter writing, visits to their offices, and at public rallies.

Seventh, engage your workplace. Every company can add to global sustainable development. First and foremost, each company should abide by standards of corporate social responsibility, for example, by adhering to the norms and standards of the United Nations Global Compact. But more than that, each company has special technologies, organizational systems, employee skills, and corporate reputations that can contribute to meeting the Millennium Promises. We've emphasized that corporate social responsibility is not philanthropy but good business practice. Customers, suppliers, and, most important, employees themselves rally to the cause of companies that take these responsibilities seriously.

Eighth, live personally according to the standards of the Millennium Promises. Seek out contacts across countries, cultures, and class divides to ensure that we can each appreciate the common interests of our generation.

Donate time, dollars, and the energy of your social networks. Lead among your friends and colleagues. Act honorably as a consumer, choosing the products and technologies that support sustainability. Act honorably as a citizen, making clear to our politicians that the Millennium Promises are the commitments of each of us, to be upheld by elected representatives.

Our generation's greatest challenges—in environment, demography, poverty, and global politics—are also our most exciting opportunities. John Kennedy bracingly told Americans in his inaugural address that while Americans faced the challenge of defending freedom in its hour of maximum danger (in the context of the Cold War), "I do not believe that any of us would exchange places with any other people or any other generation." I'm sure that the same is true today. Ours is the generation that can end extreme poverty, turn the tide against climate change, and head off a massive and thoughtless extinction of other species. Ours is the generation that can grapple with, and solve, the conundrum of combining economic well-being with environmental sustainability. Ours is the generation that can harness science and a new ethic of global cooperation to bequeath a healthy planet to future generations.