"Governing in a World of Climate Change"

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by

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It is a true pleasure to be back in this center of free intellectual exploration to have the opportunity of hearing so many distinguished persons.

Let me take you to the city of Kalemie in the Congo almost exactly 40 years ago. Kalemie is on the shores of Lake Tanganyika and was then an important rail head and port. When I arrived in that town, I found that the lake had inexplicably risen quickly and dramatically. The railroad tracks into town had been raised two meters. People had filled in the first stories of their houses and were living in the second story. The large river leading into the lake had reversed course! No one could explain what had happened except to speculate that Lake Biakal in Russia was dropping quickly and that maybe that was connected to the rise of their lake(!) My point in remembering Kalemie is to tell you that governance had completely broken down. Every group in town, the Lebanese, the Greeks, the Chinese, the Cubans and of course the Congolese were practically at war with everybody else. Nightly shootouts were common. Little did I know that I had stumbled into a picture of our possible future when climate change crisis could tear our societies apart, if we don't govern differently.

When I spoke here last October to the Middle East and North Africa Network of Environmental Economists, I was discussing the kind of changes national governments and the United Nations might want to consider as they address the challenges of climate change. In essence, I suggested that each department of government, as well as each part of our economies and our communal life, needs to re-think functions and programs, as climate change will be the biggest challenge to governance in history.

I have thought about this a bit more regarding the United Nations. The UN has been enormously important in identifying climate change as a major issue and is the venue for the most significant global negotiations on it. But if it fails to adjust its own institutions and programs in response to the identified climate issues, it would be a tragic loss of opportunity. For I believe the UN will need to model for national governments what it means to reshape government. As I noted in

informal remarks to the UN General Assembly last summer, UNFPA should redouble work on population since population growth is such a driver of climate challenges, and there is a huge unmet demand for family planning services. UNESCO will need to help re-tool education systems to produce citizens and cultures that live in a new world reality. FAO and the UN's Consultative Group on International Agricultural Research will need to help re-engineer agriculture to cope with new ecological circumstances. In this new era, to deny the best of genetically modified crops could prove suicidal. And the World Bank, UNIDO and Habitat will need to help re-design industry, and our cities, and a number of low-lying countries. All of this implies remodeling government departments and numerous priorities at the national and global level.

Indeed as each UN agency, each national department and each local government function alter tasks there will be the need to mobilize human and financial resources as if our life depended upon it, which for an important fraction of the world will be true.

These kinds of governance changes will call for different leadership orientations. Leaders will need to have a longer time perspective. Instead of looking for instant political gratification, they will need to build for the future. The kind of perspective needed was demonstrated by a friend in Italy who told me that he was thinking of planting a stand of trees on the crest of a hill because they would look good in two or three hundred years. I would be so happy if political leaders were chosen because they wanted to help their countries survive major ecological changes 20 and 30 years out.

Not only must leaders lead for the long term, they will need to inculcate a long-term urgency to the tasks ahead. They will have to recognize that for a great many countries climate change will be the largest security threat, and (as the Economist Intelligence Unit tells us in the most recent Global Peace Index) that countries at peace are more likely to have a better environmental record. So the keys are long-term action, urgency, and recognition that climate change is a vital security issue.

The scientific community, of course, will be deeply involved in helping to reorient societies. The IPCC has shown us that international cooperation by the scientific community can help swing opinion everywhere. But the drama of what the IPCC and other are showing us on climate change is still not leading us to act.

A key priority remains for the scientific community to spell out the risks we face. I recall that in the 1970s in my country, the U.S., there was grave concern over the health and environmental risks due to Polychlorinated biphenyls**.** Scientists and public policy leaders agreed that if there were even a one in 10,000 risk that the Great Lakes would be polluted by PCPs, that risk would be too great. So production of PCPs was banned.

Now we have moved from remote possibility of the dangers of one chemical, to firm probability of major threats to the globe arising from our fossil fuel dependent economic systems. Moreover if you look at the fat tails of the major projections of

climate change, as Harvard economist, Professor Marty Weitzman has done recently (*On Modeling and Interpreting the Economics of Catastrophic Climate Change)*, you see not a 1 in 10,000 chance of catastrophe, but something like a 1 in 20 chance of 7 degrees Centigrade or more in global warming. A temperature rise on that order would lead to very rapid sea-level rise, mass extinctions, collapse of agriculture, and disruptions of ocean currents and carbon sinks. It is safe to say that almost all senior national and global leaders have not contemplated a response to this kind of scenario in their emergency planning.

At the United Nations, for example, the UN General Assembly is stuck in trying to react to climate change by considering adding a scientific capacity to UNEP, which I consider choosing the embroidery for the arm rest of one chair on the deck of the Titanic. Meanwhile the heads of the UN agencies have a Chief Executives Board paper that says that the UN is institutionally prepared to respond well to any aspect of climate change. Settling for either of these positions is, to say the least, unrealistic.

So a challenge for the scientific community is to help governments at the national level and at the UN by providing a reality check as to whether their actions are at all commensurate with the risks and challenges now evident. If, as Nobelist Paul Crutzen has posed, humanity is now in the Anthropocene Epoch where forever more humanity must manage the environment, this means that the scientific community will be called upon for centuries to come to take a leading role in our societies and institutions.

I suggest that scientific communities in each country will need a solidarity to speak on such issues, much as the IPCC became convincing because they are a critical mass of scientific judgment. This puts a responsibility on national and global scientific academies that they have never had to carry before. It implies a dialogue with the public as well as with political leaderships that must be constructive, serious and sustained.

The key point is that since climate change is defined as a scientific challenge, scientists will have more authority than ever before to hold the actions of society to yardsticks of adequacy and appropriateness. If we are frank, we will admit that few scientific academies are yet up to this task.

Indeed, if governments and foundations are far-sighted, they will help assure that national scientific academies are strengthened in a great number of countries so that they can become responsible partners in forming public policies in response to climate change. While there may well be common themes across countries, each ecological setting will need specific responses calling for national academies and academic centers to partner with national policy makers. The Open Society Institute and others are working to strengthen scientific communities, but it is not yet clear that such work aims at helping scientific communities take on such leading roles as is indicated here.

At the global level, the IPCC was a very successful demonstration of how to organize scientific opinion to have impact on thinking across the world. That global role is important and the IPCC should continue for the indefinite future.

The United Nations also should have a standing scientific advisory panel to assure that the work of the United Nations system reflects good science, as well as to assure that the UN maximizes the impact of its responses to climate change challenges. The panel would review the main programs of the United Nations and suggest on the shelf science and technologies to improve the impact of UN programs. At the same time the panel would convey to scientific and technologic communities needs for new work that would benefit the operations of the United Nations, knowing that such work would have application in many countries.

Thomas Rosswall, Executive Secretary of the International Council of Scientific Unions, has told me there is already some history in trying to get the UN to have a really powerful and useful advisory group on science and technology. So maybe this quest is only for the Don Quixote's of the world, but I think climate change presents a perfect opportunity to give this another try.

As we think about the need for more creative governance to respond to climate change, we need to ask ourselves who will be the people in our societies who formulate the most interesting responses in our societies to climate change. Such people are rare in governments and institutions, and in academia.

There are a community of such innovators and change makers, relatively recently defined as social entrepreneurs. These are enormously dedicated leaders who work for the public good with as much creativity and drive as private sector entrepreneurs pursue profit. The concept is not alien to the Library of Alexandria, since its Librarian, Ismail Serageldin, is a brilliant example of a social entrepreneur. Two thousand social entrepreneurs have been selected for special recognition by the Ashoka Society, a group that has helped define the field of innovative leadership in public service while helping to network these leaders. Some 350 of the 2,000 Ashoka Fellows are working on socio-economic and legal innovations to promote environmental sustainability. Over time, I am hopeful that such people will turn their enormous talents to helping to devise the governance changes needed in a world of rapidly changing climate.

The question, to me, is how do we foster more widespread innovation in governance, particularly from within the public sector and the non-profit sectors in our societies. We are sending whole armies of people to business school to earn MBAs so they can rack up profits. The training of social entrepreneurs in our institutions of higher education is rare. Fostering social entrepreneurs at a much greater scale would seem to me to be vital to climate change and so many other issues. We need to invest in those likely to help us creatively cope with our already started environmental crisis. Beyond fine training, we need to back innovations. For example, there should be innovation funds (such as the science and technology funds proposed by Ismail Serageldin in *Science: The Culture of Living Change, 2007)* so that those with a smart idea to re-engineer governance

with far more efficiency, impact and sustainability will get seed money, be they in the UN, in civil society, or in the Government of Egypt? Perhaps I can indicate that the notion of fostering social entrepreneurship is gaining salience by saying that Barack Obama has indicated that if elected president of the US, he will establish a White House office of Social Entrepreneurship.

In summary, we know that great changes in our governance will be required. We know that science will play new and very central roles. And we know that change will require very creative innovation. Maybe all this can be found in one person: the scientist who is a great public service innovator. But more likely it will be found in dream teams in which science and public sector innovators team up to create change.

Since we know that business as usual will have us all in the soup, we need to help give incentives, training and recognition to those who have the most promise to create the movements, laws, policies, organizations and inventions that can help us reorient our economies, societies, nations and global institutions to cope with the new and more perilous world unfolding around us. And in this mix the roles of science and change makers will be more central than ever in the past.

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