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Leading Edge
Commentary

Science in Diplomacy

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Throughout human history, science and technology have been the backbone of innovations that have driven economic development. Yet, rather oddly, they have not been seriously invoked in the pursuit of diplomacy. This Commentary examines the important role of science in diplomacy and its soft-power in world affairs and peace.

The world goes through economic, political, and religious turbulence, but throughout history science has maintained a steady impact on improving human lives. Despite its central role in driving world markets and as a universal language of communication, science has not been seriously invoked in diplomacy. The Science Envoy program outlined by President Barack Obama in his historic Cairo speech last year has the potential to redefine the role of science in the landscape of diplomacy in general and to define a new beginning with the Muslim world of 1.5 billion people. "Scientopolitics" is a term that may become part of the lexicon of diplomacy. Here, as President Obama's Science Envoy to the Middle East, I reflect on the issues involved and the lessons learned so far.

World Order

The world before World War I, described as "La Belle Époque," was one of peace and prosperity. The material standard of living was on the rise, democracy flourished, and continents were connected by railroads, steam ships, automobiles, airplanes, the telegraph, and the telephone. Man conquered the last uncharted territories of the world, and the United States continued to be the land of promise for millions. Achievements in the sciences, literature, and peace were honored with the first Nobel Prizes in 1901. Science and technology played a pivotal role in this progress.

In the 1990s, the world looked beautiful again: European economic and political cooperation took on a new dimension with the creation of the European Union (EU), and China, Japan, and other so-called Asian Tigers assumed a major role in world economic development. In 1989, the unification of Germany gave the world new hope for solidarity with the end of an era of separation. The policy of apartheid in South Africa was abandoned and the world of the Cold War and nuclear armament appeared to have changed into a "world of globalization." Once again, science and technology were a driving force. Information technology brought the world much closer in distance and in time, prompting Thomas Friedman to title his book, "The World is Flat." Science discoveries and innovations transformed the human condition with improvements in communication and health and led to revolutionary developments, including direct visualization of the nano-world, telescopic observations of the very distant, and robotic landings on Mars. That is not to say that the world has become perfect—conflicts still rage, diseases take their toll, and human rights violations continue. Yet the nations of the world are aiming for unity through understanding and cooperation.

World of the Have-Nots

Despite this progress, the distribution of wealth is skewed. Only 20% of the world's population enjoys the benefits of life in the developed world, and the gap between the haves and have-nots continues to increase. The World Bank has reported that out of the 6 billion people on Earth, 4.8 billion live in developing countries, 3 billion live on less than $2 a day, and 1.2 billion live on less than $1 a day, the absolute poverty standard. About 1.5 billion people have no access to clean water and suffer the consequences of water-borne diseases, and about 2 billion people are still awaiting the benefits of the industrial revolution. The per capita gross domestic product (GDP) in some developed Western countries is ~$50,000, compared with ~$1,000 or less per year in underdeveloped countries.

This vast difference in living standards between the haves and have-nots ultimately contributes to dissatisfaction, violence, and racial and ethnic conflicts. Politically, there are other factors that kindle the frustration of the population of the have-nots. Among them are the double standards that often arise in the resolution of international disputes and in the support of undemocratic or even corrupt regimes for the sake of national economic or political gains. It is not fair to simply blame the haves for the problems of the have-nots, as there are intrinsic political, economic, and cultural issues involved. However, it is in our own interest to optimize world peace through mutual benefit. Can science play a role?

World Partnership through Science

It is clear that world order requires a coherent and comprehensive policy of partnership, especially between the developed and developing worlds. In my view, education and science should be a cornerstone of this policy as they are of paramount importance in achieving progress and prosperity. They are also the tools that can facilitate the alliance between cultures and nations because science is an international language that is not colored by race or culture. Educating the world's children is not impossible and doing so would open new doors for economic opportunities, involvement in democratic governance, and building knowledge-based societies.

The developed world is so because of its scientific and technological power. The contribution of the U.S. to the world's annual economic output is about 30%, comparable to its share of scientific output on a global scale. Europe's annual economic output is similar and also correlates with its scientific and technological contributions. It is unlikely that this correlation is coincidental. In this century, knowledge-based societies will capture the lion's share of the world economy. As the former UN Secretary General Mr. Kofi Annan pointed out, "Ninety-five percent of the new science in the world is created in countries comprising only one-fifth of the world's population." And, he adds, "Much of that science—in the realm of health, for example—neglects the problems that afflict most of the world's people."

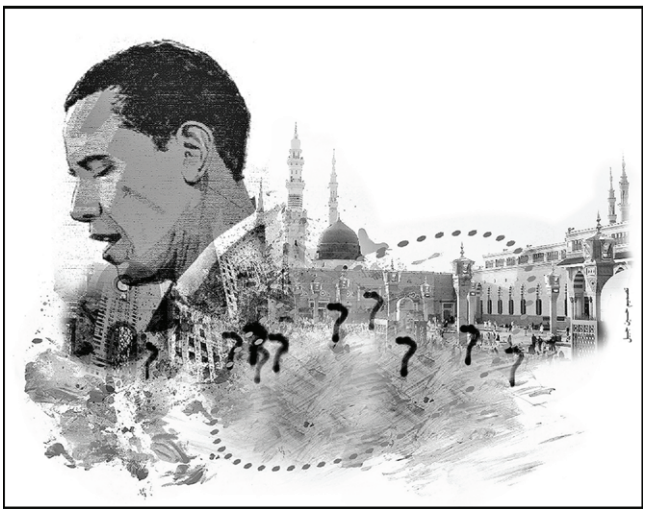

Figure 1. A New Beginning
In his speech last year in Cairo, President Obama promised to use science and technology in diplomacy as part of a new beginning with the Muslim world. Several major initiatives, including the launch of a Science Envoy program, are already underway. Image courtesy of Al Shorouk Newspaper; art by Hussein Gobayel.

If we are aware of these trends and understand the problems that stand in the way of progress, why do such difficulties and chasms exist in building scientific capacity in the developing world and in harnessing science to improve economic well-being? Admittedly, developing countries have their own political and cultural challenges and responsibilities, but the answer to the question, in part, comes from the fact that science has not been center stage in the foreign policy of developed countries. The United States, through its Agency for International Development (USAID) and other agencies, does provide critical funding of various projects in developing nations, but a new way of thinking about the involvement of science in diplomacy is needed.

Obama's Science Envoys

In his Cairo speech on June 4th last year, President Obama spoke of a "new beginning" with Muslim-majority countries. Besides the relevant political issues, the President addressed issues pertinent to development, education, and science and technology. Specifically, the initiative includes (1) the launching of a new fund to support technical developments and help transfer jobs to the marketplace; (2) the opening of "centers of excellence" for scientific and technological developments in Africa, the Middle East, and Southeast Asia; and (3) the appointment of Science Envoys to build new partnerships and to identify new opportunities for cooperation between the U.S. and Muslim countries.

U.S. Secretary of State, Mrs. Hillary Clinton, announced the Science Envoy program on November 3, 2009 in Morocco. I was asked to be the U.S. Science Envoy for the Middle East; my colleagues Elias Zerhouni and Bruce Alberts are the Envoys to North Africa's Maghreb region and some Gulf countries and to countries in Southeast Asia, respectively. In January this year, I visited Egypt (the most populous country in the Arab world with 80 million people, and a GDP of $2,500 per capita), Turkey (75 million people of Middle Eastern but non-Arab descent, and a GDP of $10,000 per capita), and the Gulf State of Qatar (1.5 million people with 0.3 million Qataris, and a GDP of nearly $100,000 per capita). In these countries, the meetings were wide-ranging and included visits with government officials (heads of state, prime ministers, ministers, and some members of parliament), members of the education sector (teachers, students, and university professors), institutions of higher learning and research (private and state universities), members of the private sector (economists, industrialists, writers, and publishers), and some media representatives.

The results from these visits are alarming but, at the same time, suggest a new opportunity for the U.S. to address key issues in foreign aid and in partnerships through "science in diplomacy." The alarming aspect comes from the fact that education in many Muslim-majority countries is lagging behind international standards, and universities, including those that led the region (such as Cairo University), are no longer among the world's top 500 according to the Shanghai university ranking system. The current situation is in sharp contrast to the system of schools and universities that existed in the 1960s, when I benefited personally from an excellent education in Egypt. The low performance in world-ranked education, and in the world market, together with the economic hardship felt by the majority and the lack of job opportunities for the youth are becoming sources of frustration and despair. This state of affairs is the consequence of political and social problems, compounded by the increase in population and by the ascending rigidity toward liberal education.

On the positive side, some Muslim-majority countries, such as Turkey and Malaysia, are making significant progress in education. Egypt is rich in human resources and still is home to the best R&D in the Arab world. In both Turkey and Malaysia, I saw the fruits of an improved education system and visited some rising R&D institutions. Even though this progress may be associated with select institutions and does not necessarily reflect the totality of the school and university system in the country, nevertheless the impact on their GDP is evident. Such trends affirm that, in today's world, Muslim-majority

countries are capable of achieving progress, in this case with supporting efforts from the EU and Japan.

At present, the image of the U.S. in Muslim-majority countries is enjoying a positive trend. Indeed, the speech by President Obama in Cairo has transformed the perception of Muslims at large, and the majority now believes in his good intentions for a new beginning with the U.S. (Figure 1). Some of the people I met are aware of the complexity of America's political system, and they think the actual deliverables, which involve decisions by the U.S. Congress, will not in the end reflect the President's vision. The announcement of the Science Envoy program was well received as a concept in partnership, but again some were skeptical and raised the question: Will this program bring about a paradigm shift in partnership and policy? In spite of these reservations, I believe we have real opportunities to invoke science in diplomacy, to promote new standards of education, and to aid development in the Muslim world.

Science and Technology in Diplomacy

It is remarkable that during all of the meetings conducted for the Envoy mission, there was unanimous agreement on the need for S&T development and in the hope for a leadership role by the U.S. The U.S. is still admired by the youth and by institutions of learned societies and the private sector. Despite various opinions I heard about U.S. foreign policy in regard to political issues of concern in the Middle East, there was full agreement on the importance of science in diplomacy. In this regard, I believe the U.S. should utilize one of its best currencies—science—for foreign policy. Current efforts by many government agencies (the National Institutes of Health, the National Science Foundation, and others) and by private foundations are fragmented. The USAID program provides support in numerous areas and the work is undoubtedly leading to improvements, but the landscape of foreign aid should be redrawn with greater focus on education and on free market economies and job opportunities. The U.S. should also strengthen the role of embassies by appointing scientists of high caliber as Science Attaches, who can truly mediate in such projects.

Partnerships

Given the state of education and science in Muslim-majority countries, partnerships with the U.S. must transcend the issue of "giving money." Equally important to the funding of projects is the involvement of the U.S. in management and in building the capacity of human resources and infrastructure. This requires a new type of partnership that goes beyond workshops and sporadic exchanges by officials. Perhaps a "Sabbatical System" for U.S. scientists and other professionals may be implemented in order to facilitate in-field management aid and the execution of prototypical projects.

Other rising world powers are involved in creating partnerships and aid programs in the region; for example, the EU is partnering with Turkey, and China is building partnerships in Africa and the Middle East. It is in the best interests of the U.S. to maintain a strong influence in the Middle East, and education and science are tools that can be used effectively to forge diplomatic ties and to build strategic alliances in long-term, profitable partnerships. Through diplomacy, it is also possible to obtain significant funding for such partnerships from economically well-to-do countries in the Muslim world.

Centers of Excellence

As President Obama noted in his Cairo speech, centers of excellence are significant not only for the education of youth but also for the vital growth of any economy. Two prominent examples—India's Institutes of Technology (IITs) and South Korea's KAIST (Korea Advanced Institute of Science and Technology)—have had such an impact and both benefited from U.S. involvement. In the Middle East, we already have a few examples that demonstrate an impact on undergraduate education. The American University in Cairo, on whose Board of Trustees I serve, and the American University of Beirut, which I have visited, are two outstanding institutions that have become a critical source for capacity building, with their graduates becoming leaders in different professions. These institutions, which are standing testimonies of U.S. partnership efforts, also play an important role in cultural exchanges and knowledge enrichment.

Another impressive institution I visited was the Naval Medical Research Unit No. 3 (NAMRU-3) in Cairo, which contributes to U.S. government relations in the region through cooperative research in Egypt and neighboring countries. The NAMRU facilities conduct infectious disease research, including work on the H1N1 influenza virus, with mostly Egyptian personnel in partnership with American professionals residing in Cairo. The infrastructure, including the medical library, has provided substantial aid to other institutions in the country and the region since World War II.

In my view, the U.S. should have a sustainable, long-term plan for creating such centers of excellence, particularly those that can build the foundations for an efficient transfer of knowledge to the marketplace. In each country I visited I received proposals for such centers, and, with focused and directed effort, the U.S. can have a transformative impact in this part of the world. As importantly, partnerships with the U.S. will enable these centers, through legally binding government-to-government agreements, to be essentially free of bureaucratic constraints and regulations, thus providing the free intellectual atmosphere needed for innovation.

Epilogue

When I was a boy growing up on the banks of the Nile, my contemporaries and I viewed America's success story, including its impressive and seemingly unstoppable advances in science and technology, as almost exclusively rooted in the U.S. economic and political system. It was only after moving to the U.S. in 1969 that I came to appreciate the extent to which progress in any society is deep-rooted in that society's cultural values and in its ability to accommodate both reason and faith.

Islam in its pristine state is not a source of backwardness. It was in the Muslim world centuries ago that great civilizations emerged, that world-class universities and scholars arose, and that the rich heritage of ancient Greece and Rome was honored, preserved, and ulti-

mately transmitted to future generations, paving the way for the Renaissance in Western Europe. Today, there are many Muslims in the West who have excelled in nearly all fields of endeavor. If my experiences as a product of both "East" and "West" have taught me anything, it is that the quest for new knowledge and the acquirement of good governance are what lead to progress. It is these values that the Muslim world must cultivate if it is to recover its heritage and take its place among the modern family of nations. Although many Muslim countries possess a wealth of both human and natural resources, it is clear that a cultural rebirth is badly needed—Muslims are ultimately responsible for their own destiny.

Mr. Obama's presidency has the potential to signal a new beginning. I believe that significant progress can be achieved and wish to suggest three pillars for a new policy vision.

First, a coherent and comprehensive, not fragmented, policy for science diplomacy in Muslim-majority countries must be established. The involvement of "science in diplomacy" should focus on education and S&T that are relevant to capacity building and economic progress. I suggest a new program, "Reformation of Education and Development," whose acronym, READ, would have special significance for every Muslim, as it is the first word of the Quran.

Second, a partnership is needed to enable the creation of prototype centers of excellence (in the Middle East and other regions) that will serve as a network among countries. I have discussed possibilities with—and obtained commitments from—several heads of state. Such centers are critical for restoring pride and building new knowledge-based economies and can be a source of enlightenment. They will also stand as testimonies of U.S. partnership and will aid in the peace process.

Third, an unwavering commitment to the issues of human rights and good governance—America's constitutional values—must be made. Today in many Islamic nations, people are demanding change, but their hands are often tied by restrictive, even punitive internal policies. We also badly need concrete steps toward a resolution of the Palestinian-Israeli conflict. This political action, which can be charted in parallel with READ, will catalyze the desired progress by inspiring people to rechannel their energies into creating forward-looking and economically productive societies.

President Obama's election was celebrated in many parts of the Muslim world, and people are hopeful for a new beginning. If the President's vision of cooperation, hope, and mutual respect as set forth in the Cairo speech is followed up with tangible deliverables, it could enter the lexicon of history as the Zero Hour, or as we say in Arabic, "Saat El Sifr," for ushering in an era of real positive change in the world of 1.5 billion Muslims and beyond.

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