



# Q&A

## SCIENCE DIPLOMACY: SEIZING A NEW OPPORTUNITY

 by Cristina Serra

*Science diplomacy holds enormous potential for solving problems and building international relationships. Three science policy leaders explore how the South can build its capacity for a new era.*

In recent years, the concept of science diplomacy has gained momentum in the developed world, and today, the idea is winning attention in the developing world. But science policy leaders say that, especially in the South, a focused effort is needed to prepare government officials and scientists to take full advantage.

In interviews with TWAS, three high-level policy leaders suggested that science diplomacy can help build new relationships between developing and developed nations to support advances in food and energy production, pursuit of big, complex science projects, and even public engagement with science. And yet there is a lingering concern that science diplomacy must be a tool for building equitable partnerships, with fair benefits even for the least developed partners.

To explore these issues, TWAS staff writer Cristina Serra conducted email interviews with TWAS Fellow Krishnaswamy VijayRaghavan, secretary of the Indian Department of Biotechnology; Jorge Pastrana, foreign secretary and executive director, *Academia de Ciencias de*

*Cuba*; and Willie Ganda, the director of research development and innovation for the Ministry of Higher and Tertiary Education, Science and Technology Development in Zimbabwe. Both Pastrana and Ganda participated in science diplomacy events at TWAS.

### **What is the state of science diplomacy, and the level of awareness of this concept, today in developing nations?**

**VijayRaghavan:** Science diplomacy needs to move to centre-stage from the periphery. Science is the fulcrum on which technology, industry, trade, energy, health and agriculture rest. Many developed countries see this and have taken the lead, but developing countries should see the importance of this soon.

**Ganda:** In the developing world science diplomacy is still in its infancy and the awareness levels of the concept are very low. In some countries knowledge about the concept of science diplomacy is almost nonexistent. To those already exposed to the concept, interest is growing, but that interest has not been matched with sustained

capacity-building programmes to develop this concept.

**Pastrana:** The concept of science diplomacy may not define a discipline, but rather describe a tool. Diplomats tend to dismiss the title as it should not be considered any separate entity within diplomacy, while scientists tend to think that science cannot be manoeuvred to support national interests. Since the end of WWII, the way scientific enterprise became part of national development strategies, and science, technology and innovation became unavoidable elements of national development, the need for science advice for decision-making has increased in both developed and developing societies.

### **Science diplomacy has typically been associated with the US and Europe. Compared to them, are there differences in the ways developing nations might use science diplomacy?**

**Ganda:** Developed countries can apply science diplomacy through leveraging their science resources to interface with other countries, especially in the area of capacity-building and collaborations. Due to limitations in resources, the scope and impact of science diplomacy efforts is limited in developing countries. Developing countries are more inclined to science diplomacy efforts that address social

problems in areas like health and natural resources management which tend to be transboundary in nature.

**Pastrana:** The differences in convenience of the use of science diplomacy by developed or developing countries must always be questioned on the basis of intentions. Science diplomacy would be an effective tool for developing countries when it allows widening the scope of limited discussion for decision-making across political borders. It will become a liability when diplomacy turns to advocacy on the part of a powerful partner, and it goes beyond discussion to arm-twisting, from advice to interference on sovereignty, and from

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*Krishnaswamy VijayRaghavan*



building understanding to building subversion.

**VijayRaghavan:** The US and Europe have seen science and education as instruments of foreign policy, of income and of brain-gain. Developing countries have seen science and education in the West as a trade-off between the gains of training against the loss of brain-drain. Developing countries must now push to develop capacity of the highest quality, locally. This can happen with speed only if there is internal will and international collaboration with the West.

#### **What would be some areas where science diplomacy might be most promising for the developing world?**

**Pastrana:** I believe that capacity-building in the advisory role of scientists, public understanding of science, and the building of consensus to support sustainable development efforts are several of those issues that could be beneficial for developing countries and can be better advanced by relations supported by science diplomacy. It will also be effective in any work against widespread poverty and hunger.

**VijayRaghavan:** Science diplomacy holds promise in the field of life science in general, including health, climate research, renewable energy, agriculture, as well as in the preservation of ecosystems. These are matters that concern the planet as a whole and know no national boundaries.

**Ganda:** Some areas where science diplomacy might be promising include the bringing together of countries to collaborate and work together at regional level to address transboundary problems in areas like health, agriculture, natural resources exploitation, management and others. These collaborations and sharing of

best practices will foster unity and common understanding and minimize conflicts which may stem from the scarcity of these natural resources.

#### **Some developing countries are using science diplomacy to establish or improve their relationships with neighbouring countries. Is such an approach effective?**

**VijayRaghavan:** To answer this question, we must keep in mind the “hope” underlying science diplomacy. One expectation could be that it is a way to extend national influence. In my view this should not be our expectation, and when it is, it may not succeed, or at least not in a planned way. Our expectation should be, in the context of relationships, that science is a great aid in improving understanding between cultures and peoples in general. Larger countries have the possibility of starting many kinds of science institutions that smaller nations may not be able to afford. Access should be freely available to smaller countries from the rest of the world at the same terms as for their citizens. This is not easy to do, as we often get caught in structuring different fees and fellowships for different people, and resources are always short.

**Ganda:** Yes. However this depends on the context and level of cooperation or collaboration. Where big science projects with huge budgets and high impact for countries are involved, the degree and levels of inter-state interactions are sufficiently senior and adequate for significant improvements in country relations. For developing countries, however, science diplomacy may not yet be possible at such high levels, as the status of science has not grown to levels where those directly involved in influencing bilateral or multilateral relations can directly see it as a valuable tool.



**Pastrana:** Sure. I have defended that point of view in several lectures and papers; notably in the case of Cuba and the United States, but also across countries of Latin America and the Caribbean, and several others in North-South and South-South relations. Although it is difficult to assess how effective it has been in bringing defining results, science diplomacy efforts of this sort have evidently contributed to conflict resolution or at least to establish a climate of rapprochement in many political conflicts during the second part of the 20th century and the beginnings of the present one.

### **How could science diplomacy be used better, especially in developing countries?**

**Ganda:** In developing countries science diplomacy can be used better through tailor-made and more appropriate strategies that encompass programmes or projects that do not involve a lot of money. Whilst developed countries have applied science diplomacy in large projects or programmes that require significant resources, this may not be possible in developing countries due to lack of resources and personnel to participate in such programmes or projects.

**Pastrana:** It can be much better used by building and developing the science-policy interface. Most developing countries have not identified a national science, technology and innovation system, or even when they have an emerging STI system, they lack the definition of any established national science policy. To be able to engage on science diplomacy activities, any country must have a recognized national scientific structure with a representative status and an effective science advisory system. Sometimes, they lack independent respected institutions or persons. In other

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*Willie Ganda*

cases the governmental structure denies every possibility to build such a relation. In both cases national interests suffer because decisions are arbitrarily defined on immediate constraints.

**VijayRaghavan:** We need to do three things. First, set up teaching, training and research programmes on a large scale in developing countries to be used by developing countries' citizens. [I'm thinking of a developing-country version of the European Molecular Biology Organization and the European Molecular Biology Laboratory]. Second, we need to attract the best scientists in the world to come and work in the new structures that we create in developing countries. Third, we need to make sure that scientists in the developing world have access to major research centres in the West, like synchrotrons, accelerators, telescopes, animal research facilities. All these three require money, but also diplomacy.

### **Are there obstacles or limits to using science diplomacy in the developing world? What are they, and how can they be overcome?**

**Pastrana:** In the case of developing countries, problems like widespread hunger and poverty can only be solved by the application of knowledge. Most of the knowledge to be applied is to be found in developed and



emerging countries. A good way for science diplomacy to prove its case is the work that can be done across borders in this sense. This shall in time contribute to better relations between neighbouring countries of different levels of development. The way to overcome problems would depend on the will to use this tool for government, and the capacity to do it. Both the will and the capacities can be created and promoted.

**VijayRaghavan:** There is only so much strategy-planning one can do. Scientists are least equipped in predicting what will happen in the world of politics. If the purpose of science diplomacy is to build relationships on a foundation of science, realpolitik

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*Jorge Pastrana*

will always have to be taken into account. But a tradition of scientific relationships can be a balm in troubled times. So, even in the most difficult of relationships, exchanges in science and art and culture can be an important component for communication and the building of a new direction.

**Ganda:** Yes, obstacles do exist. One includes limited financial resources for countries to initiate or collaborate on science diplomacy programmes or initiatives. The second is the lack of the required human skills to enable collaboration or engagements in science diplomacy. The third obstacle is the general lack of appreciation of science, hence it's not prioritized when it comes to national processes of allocating resources. To overcome these obstacles, a lot of capacity-building needs to be done focusing on science education for policymakers so that any initiatives to promote science and in turn science diplomacy are well supported.

**What is the role of science diplomacy in facilitating and supporting big global projects that bring together**



## BIOGRAPHIES

**Krishnaswamy VijayRaghavan** is the secretary of the Indian Department of Biotechnology. He is distinguished professor and former director of The National Centre for Biological Sciences, Bangalore, India. He received the Padma Shri prize, the fourth highest civilian award in the Republic of India [2013].

**Jorge Pastrana** is the foreign secretary of the Cuban Academy of Sciences [CAS] since 1996. He is a member of the Advisory Commission on International Relations of the Ministry for Science, Technology, and Environment of Cuba. He has been involved in the establishment and coordination of international programs of cooperation of CAS since 1975.

**Willie Ganda** is the director of research development and innovation for the Ministry of Higher and Tertiary Education, Science and Technology Development in Zimbabwe. He holds a master's degree in business administration [Edinburgh Business School, Heriot Watt University] and a Master of Philosophy in engineering for sustainable development [Cambridge University, UK]. He has also worked in consultancy, manufacturing and academia.

**the developed and developing world, like the European Organization for Nuclear Research (CERN) or the Square Kilometre Array radio telescope project in Australia and South Africa?**

**VijayRaghavan:** The poorest of the poor must be exposed to the best of world science and must have an education that allows them to dream to become a deep-sea explorer, an astronaut, a mathematician, or go to CERN. Massive training programmes in basic science and mathematics at the school and college level are needed. Then we will have bright leaders of the future from developing countries and not just from the West.

**Ganda:** Science diplomacy can help in facilitating such projects through capacity-building programmes that enable developing countries to fully participate in such projects. Whilst opportunities to participate can be availed, everything boils down to capacity to make any meaningful contribution. Science diplomacy

can thus help by putting initiatives that build the required capacities in developing countries so that they can meaningfully contribute and participate in such large projects.

**Pastrana:** Many big science tools and big projects these days cannot be run by one single nation. The International Space Station and the Large Hadron Collider are glaring examples of that. Since many countries will participate in any such effort, the need to include developing countries is the result of the realization that we need scientific capacity and literacy everywhere if we are to address global issues and solve global problems. The way to achieve that is through capacity-building, and the need to support such a position should be recognized not only by developed, but by developing countries. The administration of such programmes should be in partnership, but the financial support must come for those more affluent, considering those expenses as an investment toward a rewarding future solution of shared problems. ■