

Comments by K.R. Sreenivasan

I came directly from the airport after an overnight flight from New York, with prepared remarks on Pakistan and Afghanistan together---but I now see that Pakistan, about which I know better, has disappeared from the formal title. Anyone with an acquaintance of the world news knows the importance of Afghanistan and of stitching back its torn social fabric, but I should confess that I have myself never been to Afghanistan and have no first-hand experience of that country; so my knowledge is second-hand.

In fact, I wonder how many of us here have visited Afghanistan during the time of its downward spiral. To get some idea, since we are all friends here, may I ask those who have been to Afghanistan in the last 20 years, say, to raise their hands?

It is a pity that there do not seem to be many; so many of our comments, including my own, are likely to be based on second-hand knowledge. And coming late in the program, most important points have already been made, so I cannot be expected to make startlingly original proposals.

A few words about ICTP, to which others have already made a reference, may be useful: The Centre has been mandated “to foster advanced studies and scientific research in developing countries.” This mandate has evolved over time to cover basic work in all areas of physics and mathematics, including their applications in areas of sustainable development (e.g., aspects of global change in climate and ecological balance, shifting dynamics of the earthquake activity across the world, predictability of extreme events, and the impact of these factors, and so forth). We still focus on basic aspects of all the sciences that we consider, whether traditional or emerging; one of our strengths is the building of networks of the best scientists and students in developing countries, who are the key catalyzing elements for building the scientific capacity needed for the development of their own countries. Indeed, we do carry on the “science diplomacy” extensively, as has been already mentioned.

This prosaic description should not hide the lofty goal that motivated the creation of our Centre. This lofty goal is that science is at once part of the mainstream culture of our era and a tool for overall economic development. The Center's creators knew, as we do, that there exist huge disparities in the level of science in the world. These differences are debilitating to developing nations across the world. Our Centre was created as a platform for sharing the best of science with good scientists, independent of the stature of their countries or the pedigree of their institutions---as long as they are competent and serious about their pursuits. Our goal is to support quality and diversity at the same time. In keeping with this belief, the Centre has devised a number of schemes which, I am happy to say, have since been adapted by many institutions across the world. Because the Centre is small and the tasks to which it addresses are large, we cannot expect to make a direct impact on important problems of better public health, primary education, poverty reduction, clean drinking water, etc: what we do is to educate the best people in any country requiring such assistance, and channel them in the right directions.

Science encourages open minded inquiry that places value on external evidence rather than revealed words, and, in this sense, transcends national and religious boundaries. In addition to leading to improved standards of living, science can lift the spirit of an individual and of a nation. Allow me to remind you how Japan, psychologically depressed as it was from the trouncing defeat in the second world war, rejoiced as one body after receiving the news of Yukawa's Nobel Prize in 1949. It is in this sense that its values are universal and uplifting, capable of uniting people across the world, rather than magnify differences among them. The creation of many such instances of pride in the accomplishments of each nation about its own people was the dream of ICTP's creators, and it continues to be our fond hope.

It is thus clear to me that Afghanistan should develop a solid base of high-level science if it has to assume a meaningful place in the world community of the 21st century. A few arguments will be made against this inference. First, some will argue that high level science is a luxury for a poor country. They are simply wrong. People who aspire for challenges and possess the needed intellectual

drive to do something constructive for their countries need a sympathetic platform from which to spring their own actions. Thus, every country needs to have a good culture of doing science at a high level. One needs to make no apology for the small number of publications produced and research institutions working, for these aspects depend on various circumstances, but there can be no compromise on quality. No good will come out an activity whose standards are low; and nothing worthwhile can be built on indifferent standards. Good scientists can raise the level of independent thought in their own countries and inspire the youth, much like high-class athletes.

Secondly, some will argue that applied science is far more important in the technological development of a country. The difference between basic and applied sciences is somewhat artificial, and what is of consequence is the high quality of the work that one does. Nothing can be built on the basis of the work of poor quality.

Thirdly, some people think that international centers such as ICTP should not be transferring advanced knowledge to certain countries, because of their concern that advanced knowledge can be used for destructive military purposes. Indeed, unless one is naïve, one knows that this does happen. So what is the appropriate stand to take? If we espouse the principle that the entire humanity should have access to scientific knowledge, since it is indeed built on accomplishments of many civilizations, albeit to different degrees, it follows that sharing knowledge should be done with mutual trust, respect for human rights, and the commitment to peace and well-being of the entire humanity. This may be utopian but I don't know a better system.

Unfortunately, the links between Afghanistan and ICTP have not been very strong. This is historical and also reflects the turmoil into which the country has been thrown in recent decades. Only 11 visitors from Afghanistan have participated in ICTP's activities during the period 1970-1983, and essentially none since then. For a centre that gets about 6000 visitors each year, this is a small number, consistent with the data that Mohamed Hassan provided earlier. In 2004, ICTP made a proposal to UNESCO, through its Kabul office, to help

Afghanistan in its reconstruction through the training of scientists. This proposal involved training a number of Afghan students through the ICTP Diploma Course in Mathematics, after undergoing a preparatory course. It was recognized that this was a good initiative that would stimulate capacity-building in the basic sciences and the Director of the UNESCO Office in Kabul was very favorable to the idea. He pointed out, however, that the problem would be in finding students with the necessary English language expertise and the appropriate academic skills-level to undertake a course of this nature. Regretfully, we had to drop the idea. This exercise showed that Afghanistan presently has no critical mass in any area of science.

What can ICTP do to change the situation, with a long-term perspective? I can think of three action items. If you draw a circle of about 750 km radius, with its centre at the midpoint of the border between the two countries, Pakistan and Afghanistan fall nearly entirely and exclusively within that circle. It is thus natural that the two countries should develop networks of scientists in different subjects of basic science, supporting each other. ICTP has been involved in basic science activities in Pakistan and for many years since Salam's time. In fact, the high-level Pakistan scientific community thinks, as it rightly should, that ICTP is a pillar of support for them. Indeed it is. Thus, ICTP will be happy to initiate and enable the formation of networks between Pakistan and Afghanistan.

If one draws another circle with double the radius, the countries that become included are the Central Asian countries of Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, China and India, perhaps Nepal, Oman and other Gulf Countries, and Iran (which is missing here). The expertise and resources that get included in this bigger circle is large and extensive. ICTP's involvement in these countries is also extensive. We can see many new connections that can be established beyond those that already exist (as noted by a number of people already). For instance, one can conceive of a Centre of Excellence dedicated to this region, with large participation by ICTP, located at a suitable place in the region. I understand that the political complexity is tremendous but the gains to be made are immense. Again, ICTP will be willing to provide the intellectual and organizational direction in establishing such a Centre. This is my second point.

As my third point, already touched upon by Professor Hassan, ICTP could play an important role in recreating the old grandeur of the University of Kabul. In any country, a great research university is essential for focusing intellectual innovations and for building institutions needed for a country. Imagine the contributions made to the US cultural and economic development of the US by universities such as Stanford and Harvard, and of Cambridge and Oxford in UK. If Afghanistan wishes to aspire for a status as a long-term creator of new ideas, it has to recreate a great university. It is difficult to build a great university, but it will be possible only if the region as a whole cooperates. It will be possible, if, in addition, all Trieste institutions join hands together.

I wish to close with two points.

(a) Whatever centers like ICTP do, a country can prosper in science only if its own government is strongly supportive. Thus, the progress that can be made by a country depends primarily on its own philosophy, but international centers can indeed facilitate many aspects of scientific advancement.

(b) Like others, I too have used words such as development, networks, sustainable development, capacity building, etc., in my own comments. I wish to reiterate the importance of scientific quality and personal integrity of individual scientists who are needed to build such networks and translate the gains of science for development. In my conversations with many young scientists, my exhortation has been essentially that one cannot contribute to development if one has no intellectual stamina, or achieve much by networking if one brings no strengths of one's own. I tell them to use their time at ICTP to build their inner strengths for working on the same footing as most others from any part of the world (there are always a gifted few who work on a different plane of neuronal connectivity, and must be left out of such comparisons). This is a point worth making again and again. The best traditions of capacity building consist of high-level work which empowers people to do something serious with their hands and mind.