

Symbiosis between ICTP and TWAS

K.R. Sreenivasan

Abdus Salam Professor and Director, ICTP

Our session has immediately followed lunch and so I wish to keep my comments at a conversational level. You can look at ICTP's website quite easily and identify various initiatives in which we have been involved lately. Instead of listing them, I shall take for granted your graciousness in imagining that ICTP is doing its job well. Instead of dwelling on these new initiatives, I would like to take the next few minutes to discuss the symbiotic relationship between ICTP and TWAS.

ICTP and TWAS are intertwined in many different ways. For the first dozen or so years after the creation of TWAS, the two institutions worked very closely because they were spearheaded by the same person, Abdus Salam. It did not matter much that ICTP and TWAS demarcated their respective roles only loosely. In the post-Salam years, the two institutions have worked more distinctly, often in consultation with each other, and often without. Overall, however, the cooperation between ICTP and TWAS has been steady because they share the same values, goals and aspirations. Nevertheless, it is useful to record a few words on how the two institutions can accomplish more by underlining the complementarities of their roles.

Since the time I joined ICTP a little less than 3 years ago, I have known TWAS from close quarters and have high praise for how it has conducted itself. It has prospered in myriad ways and has become increasingly professional. Its officers, members and staff have worked hard to enhance the relevance of TWAS in this increasingly complex world. If TWAS were to disappear now, it would be missed by both developing countries and several institutions in industrialized countries with which TWAS has generated valuable partnerships. There is no doubt that TWAS has become an important entity.

A few words are useful to understand the continuum of functions that ICTP and TWAS serve. ICTP is first and foremost a scientific institution run by a small number of scientists for the benefit of many. It is primarily dedicated to research and to the dissemination of scientific knowledge to scientists from needy countries. It aspires to

discover good scientists from developing countries---especially when they are young and external recognitions have not come their way---and nurture and support them so they can function effectively in their home countries. ICTP creates opportunities for young scientists to take part in both pedagogical programs and top-of-the-line research, either independently or in partnership with first class scientists from all over the world, including ICTP's own. Its work concerns post-graduate students who have nothing more than bachelor's degrees as well as highly accomplished scientists. Our associates retain research connections with us for something of the order of 10 years, while maintaining activities in their own countries. Seasoned and leading researchers from every part of the world maintain research connections with ICTP; this is indeed the intellectual resource on which we bank for meeting the enormously demanding goals which we set up for ourselves every year, year after year. ICTP has generally supported individual scientists or small groups of scientists, and done so for extended periods of time with the aim of stabilizing scientific base in their home countries. ICTP prize-winners (at least one of whom is present here) have emerged as leaders of science in their own countries, often on the world scale.

On the other hand, TWAS is an academy. As all other academies, it is concerned with upholding scholarship. Some academies are active advisers to the nation on vital aspects of science and technology; some control a large part of the scientific agenda for the country in question, while some others are engaged purely in promoting basic scientific knowledge. But TWAS is like no other academy. It cannot work for a single country or a small number of countries, it cannot sustain the research agenda of the big piece of the world which it serves, and it cannot be content with promoting science in a pure form. It has to stake out a unique and effective role.

One of these unique roles of TWAS is that it is explicitly devoted to raising the profile and level of science in ALL developing countries. TWAS serves its functions by recognizing qualified scientists in every part of the world, by engaging governments and ministers in all countries, by helping create new academies where needed, and so forth. It also supports young scientists through fellowships, prizes and equipment grants.

The scientists that eventually occupy the ranks of TWAS membership, and the roll of its prize-winners, are often drawn from the ICTP base, especially when it concerns

physical sciences, mathematics and engineering. For TWAS to find qualified candidates, it is essential that ICTP do its job well. Qualified members for TWAS cannot simply appear on the horizon without serious preparatory work spanning several decades. Often, though not always, election to TWAS is at the end of a chain of events in the life of a scientist from developing countries.

There are many areas in which TWAS and ICTP can, should and, indeed, do work together. I will remark on just a few. While ICTP's primary functions are doing science and disseminating it, it cannot stay away from scientific policy: without engaging scientific advisors and, often, ministers of science, it is sometimes not easy to make the difference that ICTP must make. This is the area in which ICTP and TWAS ought to cooperate much more than now. Indeed, the present president of TWAS and I have been working cooperatively on these matters.

A further point of cooperation arises from the increased attention that TWAS has paid to South-South fellowships: if all the promised fellowships come through, TWAS will be inundated with demands in a domain in which it does not have the expertise---but one in executing which ICTP can be extremely useful.

The third area in which the two institutions should cooperate is one of sustainable development. TWAS is the only academy which explicitly proclaims its commitment to sustainable development. It says so on its masthead. While sustainable development is hard to define in precise and universally acceptable terms, it is by now clear that, in its generality, it is probably the most important issue of our time today---in my opinion, on par with the threat of nuclear weapons. It is clear that the world as a whole cannot reach the same level of development as have the industrialized countries by copying the course of progress that the latter have chosen in the recent two centuries or so. There simply aren't enough resources to undertake this route. It is clear that the developing world must choose different paths towards the same goals of development; this demands both ingenuity and adaptation of scientific solutions, both existing and novel. Unsustainable development in any part of the world will affect all of us because we have become a more interconnected world today; what makes it explicitly dangerous is that our population patterns are quite different from those at any time in the past, and is vulnerable to global changes as never before. This is an area in which ICTP intends to expand, and one in

which TWAS must make greater contributions. In scientific terms, this is probably the most important contribution that TWAS and ICTP can make together, each at its own level, to the world at large. Let me emphasize that the science that deals with sustainable development is not hinterland science: indeed, the most modern science will be needed even if some problems are not necessarily novel.

There are scientific issues that touch many parts of the world in an interconnected way. Take as an example the seismological fault-line that extends through most of Asia to Iran---stretching across the Gangetic plain to in India to Pakistan. There is a lot that each of the countries involved can learn from the other, for instance in earthquake preparedness. ICTP and TWAS are two institutions in the world that could best generate common scientific programs that connect scientists from all these countries, and can facilitate a common research enterprise.

ICTP and TWAS are both scientific institutions though they are different in character, as I have already explained. ICTP emphasizes basic sciences but TWAS does so in a social context. Both institutions can serve the world at large by identifying a few grand and common programs that have particular relevance to developing countries, and by encouraging their solutions to be found. Only ICTP and TWAS can do this with some credibility. Perhaps one way to start this is to redefine the prize policies of TWAS. Instead of awarding prizes in traditional areas, we may consider awarding them to people who have contributed significantly to these great challenges. This may make the structure of TWAS more inclusive without sacrificing excellence.

Finally, ICTP and TWAS exist for purposes of raising the level of science and scientific development in poor countries which lack the needed resources to do so on their own. Let us not forget, however, that the eventual goal of scientific development, at least as Abdus Salam saw in its creation, is economic and social development. This is the aspect to which TWAS in particular should be paying better attention. Our eventual goal is to create civil societies which can explore more fully their potential for betterment.

While TWAS and ICTP have both expanded in different ways in recent years, the case I wish to make is that the two institutions must work together, and be seen as working together as one unit---more or less---working towards a common cause. The common cause must not be to remain content with supporting some number of

individuals and their careers for some years, but to change the scientific landscape altogether. Otherwise, we will be constantly putting out our little fires without addressing the central malaise; we will be spinning wheels and lose stamina and vitality in the process, without accomplishing something permanent. This is something we cannot afford to ignore.