

How to improve the University System in India

K R Sreenivasan, ICTP Trieste (krs@ictp.it)

To produce students who are capable of creative work in both public and private sectors of the country, it is important for the university teaching to improve. For reasons that can be defended, but into which I shall not enter here, this task requires university teachers to have direct connection with research, at least for part of the time. Since it is difficult to make every university in India a research university (and this may even be counter-productive), it is better to think of other ways by which those university teachers who desire to be engaged in research are provided research opportunities for some time of the year, each year. This is the spirit of the proposal.

The proposal is to set up a centre (to be called the Main Center below) in a research-oriented institution (identified as ROI), and set up mirror centers in other reasonable universities across the country. The *eventual* goal is to set up mirror centers in at least one university in each state of the country. It is not enough to set up just one center for the whole country because the magnitude of the problem and the numbers involved are immense. Without enhancing the quality of teachers, one cannot expect to produce creative students. Most of us who are successful will no doubt remember how much we owe to a few teachers.

Let me discuss the Main Centre first. I already said the Main Centre will be created as part of a well-known ROI in the country, as its outreach arm. It will have its own director, its own budget and its own activities, but this will be done in conjunction with other activities of ROI, maintaining formal functional relationships. As its first task, the Main Centre will run a variety of high-level schools, conferences and workshops, through which a set of university teachers come up to speed in various branches of science and mathematics, especially in interdisciplinary areas. The Main Center should organize and run, through the cooperation of a number of interested researchers in premier institutions across the country, some thirty conferences each year on different aspects of science, for each of which some 50 university teachers can be chosen from those who apply. These programs have to be run at a world-class level and broadcast live to universities that show the needed interest. The programs will change from one year to another, just as the people who organize them. These aspects will be determined by scientific needs and the timeliness of the programs. The goal is to provide the needed background for independent research of the participants in certain key areas.

The second function of the Main Center is to provide facilities for a set of medium-term visitors, numbering something like 30 each year, for something like two months each year, extending over a period of some six years, for doing research at the Main Centre, or in the groups of others affiliated with it. The

visitors will be chosen on the basis of merit and ability. They will be provided stipend for the few months that they reside at the Main Centre, including accommodation, computing and library facilities; for experimental work, they may be placed in other research institutions in the country where such facilities are available. These visitors will use their time doing research, participating in discussions and seminars, collaborating with local scientists, and so forth.

The two functions need not, and indeed should not, be detached from each other.

The Main Centre should have a dynamic director and should draw upon the permanent researchers of great distinction in the country; it should have a small but strong research base; it would have to create a large network of scientists from all over the world, especially from all first-rate research institutions in the country. Indeed, the Main Centre will have to draw instructors and program directors from this large pool of active scientists. The goal is to mix active researchers with those that are dormant, so there is benefit for each party.

There are additional aspects that can be included, but the basic functions are as described.

Now to the mirror centers: The mirror centers that would be set up in each (or at least some) of the universities in India would be very similar. Each of these centers will be networking with the others loosely, and have some loose affiliation with the Main Center at ROI; should have their own budgets and their own directors who are free to pursue their own agendas, roughly within a broad, stipulated scope. They should receive money in part from the State in question and should, to that extent, be more concerned about the universities in their State. Private money from enlightened business may be solicited. The mirror centers should receive some budget from the Main Center---one of whose tasks should be to raise money---but the underlying idea is to give each mirror center enough flexibility and independence from local politics.

I would be happy to set up some affiliation with ICTP with the Main Center and with some of the mirror centers. If it is deemed essential and useful, I will work for possible connections with other international bodies such as UNESCO.

The advantage of the proposal is that it will not detach the university teachers permanently from their institutions. It will usher, on the one hand, the much-needed connection between the elite institutions in the country (whose members will initially be among those who will organize such programs), and the university teachers on the other. It will enable a large number of university teachers to be engaged in research at least for part of the time, so they can impart the feeling of excitement to the students whom they teach. In turn, the students can develop curious minds and take part better in the overall national development.

I think that it is practical to do this. From my private conversations, universities such as Mysore, Hyderabad, some in the North, are ready to consider this proposal. I have suggested this particular scenario because several people in the country have talked to me about creating such centers in India. This has brought me to the conclusion that there should indeed be more than one of them, and that they should all network together in some loose fashion, supporting each other but not hindered by each other. I am also aware, from the very beginning, a recent proposal from TIFR. I have talked at various times to Professor CNR Rao and a number of others (including those on this list). I believe that considerable enthusiasm for the idea exists.

What needs to be done is this:

1. Develop consensus at high level, such as the SAC to PM, and make a recommendation to the government. This will ensure that the level of such centers will remain high. We should not add another mediocre center.
2. Decide on the ROI which will house the Main Centre, and start it.
3. Negotiate with other universities that wish to house mirror centers.

I shall be happy to be engaged in further discussions as appropriate.