Hoshangabad science teaching programme

The scientific community should note with concern that the Hoshangabad Science Teaching Programme (HSTP) is being made to withdraw its syllabi and teaching methods from all schools in Hoshangabad district. This programme has been active in Madhya Pradesh since 1975, under the aegis of the erstwhile Kishore Bharati and now with Ekalavya.

Those of us who have had the privilege of being associated with the HSTP recognize the value of a school syllabus that is based on the philosophy of learning science by doing. The syllabi for classes six to eight are built up around simple, doable experiments, excursions, discussions, workbooks and extracurricular support. Teachers are invited for extensive interactive training and cope marvellously with the novelty of the curriculum.

The HSTP has had a very definite impact upon students. To cite one of many examples, we recall with a sense of awe that a child once asked us why it is that air blown out of the mouth through pursed lips feels cool on the palm, while the same air feels warm if blown out with the mouth fully open? This child was asking the same question that led to the establishment of the Joule–Thompson effect. Now, in its wisdom, the government proposes to nip this kind of spirit of enquiry in the bud. Perhaps our politicians would actually prefer to have submissive, unquestioning students who would meekly accept the word of authority. Such children would believe all they are told about fanciful achievements of our imaginary past, refuse to apply scientific methods to either the physical or the social world, and certainly grow up to be mute victims of a predatory state.

Even within the narrow precincts of science education alone, the government's decision expresses disapproval of innovation and collision with status-quoist rote learning. Such an attitude deserves our censure and calls for active intervention before politics can hijack science, the way it has made a mess of history.

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Science reporting

The editorial on the public perception of science (*Curr. Sci.*, 2002, **82**, 5–6) prompts me to write this. It is true that there is a growing need to enhance the public perception of science in India, but the question is how do we do that? There are a few official channels for science communication such NCSTC, Vigyan Prasar, National Institute of Science Communication, etc. They have never been successful in disseminating science among the general public to the extent they suppose to be. Then come the journalists. From my own experience as a journalist who has a little interest in science also, the media at present is not really bothered about S&T until a controversy erupts. I think scientists have to come forward to solve the crisis.

1. Each scientific institution has to identify a person (scientist) who can understand science as well as the pulse of the media to interact with the latter on a regular basis. Most of our PROs in scientific establishments are not professionals.
2. Science journalists are to be cultivated, especially in television.
3. As a TV journalist, I have faced major difficulties in getting information about R&D activities from scientific institutions. Scientists refuse to talk on camera, as it may invite unnecessary displeasure from their bosses. The bosses are on tour most of the time, so one has to fax a letter to get an inerview. This would delay the story and it becomes obsolete.

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You just can't win (with apologies to Shiv Khera)

Over the past decade, a series of excellent articles on the state of Indian science and scientists, have regularly graced the columns of *Current Science*. In general, the problems stated by various researchers can be outlined as follows: lack of infrastructure and/or funds; lack of career advancement/poor pay scales; government/public apathy; the system, i.e. pressure from the boss, peer pressure (crab mentality), plagiarism, bureaucratic interference, etc. and lack of excellence/ethics/guidance/support from seniors.

From a cursory look, these odds do not appear to be insurmountable. How is it that these 'trivial' issues have been allowed to become part and parcel of our very scientific existence? Is it true that Indian science has not attained the excellence it should have, simply because some people at the top (read: politicians, technocrats and science managers) and some people at the bottom (read: clerks, bureaucrats and the like) have hijacked

an entire community of sincere scientific workers?

The problems/issues outlined above have been *confined exclusively to government-funded research in research institutes and universities/colleges.* No research scientist (to the best of my knowledge) working in the lucrative private sector, e.g. pharma industry, engineering or IT sector has vented any major grievance in the pages of this journal. Grievances from researchers of the public-sector enterprises have also been far and few. This is an important pointer and gives two strong indications: (a) That the researchers in the private sector and PSUs are so busy *that they do not have time to vent their grievances* and/or (b) that these researchers are generally satisfied and do not *have* any major grievances.

The reader may protest against the dismal picture that I have painted about public-funded research in our country. There will be references to the Green Revolution, our strides in ballistic missile technology, our export of software coolies to the Silicon Valley, etc. One sees rapidly shrinking science classrooms in colleges and universities. It is also depressing to note that science, medical and engineering students prepare for the Civil Services exams because science is no longer a challenging, prestigious and conducive career option. We talk of preventing brain drain, but we have failed to prevent this colossal internal waste of human resources. There are only talks of making science attractive for our youngsters; of encouraging young people to take up science as a career. If a scientific career was really attractive, the government would have had to take appropriate measures to *prevent* a mad rush for it, and not other way around!

Of the few who *are* in scientific research, we browbeat and humiliate them, impose all sorts of rules and restrictions on them, gradually converting them into zombies – mere cogs in the eternal, self-perpetuating system. The ground reality is such that no amount of reading self-help books by Dale Carnegie, Norman Vincent Peale or Shiv Khera can help us win.

Government scientists in India are actually civil servants, coming under the purview of the CCS Rules. The Administrative Tribunals in each state sort out cases of injustice as a result of *the application of these rules*. It is laudable, and many a scientist has got relief from these Tribunals. How unfortunate that a government scientist has to seek relief from a Tribunal, rather than from his own organization! We *can* win, however, before these Tribunals, provided our legal knowledge is sound and we refuse to bow down before injustice, humiliation and exploitation.

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TRG – A tribute

The tribute to T. R. Govindachari by K. Nagarajan (*Curr. Sci.*, 2002, **82**, 219–222) was richly deserved.

As a young scientist at the Centre for Biotechnology, SPIC Science Foundation, I used to interact very closely with TRG, who was the head of the Centre for Agro-chemical research. While all his work was in the area of natural products chemistry, he had interests in others fields too, particularly in the emerging areas of biotechnology. I recall many an occasion when TRG would come up to me with the latest issue of *Nature* or *Science*, and request me to explain the article that made it to the cover story. It could be the story of 'Dolly' or the cloning of a male-sterility gene in *Arabidopsis* using transposon insertions – he would insist that I treat him as a student who 'doesn't know anything'! Few people at his level would have his intellectual curiosity, particularly for developments in an area outside one's own. I also cannot stop admiring his simplicity.

One of his passions was his orchid collection. There were many plants in his vast collection that were either too young to flower or were so recalcitrant that in spite of all persuasions, were refusing to oblige. TRG would often say that he was not sure if he would live long enough to see these in bloom and justify his efforts at tending them by adding, 'one day they will and then there will be someone to enjoy it'. Such was his generosity that I am sure there must be many like me, whose lives have been enriched by association with this great scientist and above all a noble soul.

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Resurrection of palaeobotany in India

This has reference to the correspondence by A. K. Srivastava on 'Taxonomy, palaeobotany and biodiversity' (*Curr. Sci.*, 2001, **81**, 1278–1279). The author has shown his anguish, as currently the taxonomical studies on fossil plants in India are being neglected, in spite of the fact that it has earlier contributed new information on extinct plant groups, floristic diversification in time and their evolution, phylogeny and migration of fossil plants. According to his view, the present situation has arisen due to over-emphasis on the geological aspects. Further, he has stated that nowadays modern botanists and earth scientists are questioning the importance of taxonomic study of fossil plants. I understand that