

## Fundamental scientific research

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'The essential role of fundamental scientific research' was the subject of a day-long discussion meeting organized jointly by the Indian Academy of Sciences and the Indian National Science Academy on 15 December 1989 at the Indian Institute of Science, Bangalore. Since the country's science academies have rarely come together to sponsor such a meeting, it was hoped that the affair would lead to a critical evaluation of the role (and status) of fundamental scientific research in India. However, the organizers had omitted (a Freudian slip?) any reference to India in the title. The result was a meeting largely devoid of substance and relevance. To their credit, the eight invited speakers and the presidents of the two academies made technically excellent presentations. The proceedings, unfortunately, lacked even the flavour of an academic debate, since all the speakers were on the same side—extolling the undeniable virtues of basic research. The connection (?) between the motivations underlying art (*a la* Picasso) and basic research was repeatedly stressed. The fact that today's research attracts considerable public subsidy was conveniently forgotten. The relative smallness of the sums (fairly substantial in absolute terms) of money allocated to science in the national budget appeared to provide solace to some. Good management practices (or so we were told) apparently dictate that minor expenditures often escape detailed scrutiny. This was music to the ears of many.

There was little 'discussion' in this meeting and the sparse audience was testimony to the sterility of the issues considered. Surprisingly, even the students of one of the country's largest academic research institutions largely failed to enliven the proceedings by their participation. They were not helped by a tightly structured programme which left little time for discussion. A few references

to the Indian research climate made by a couple of late afternoon speakers and a final, eloquent speech by C. N. R. Rao, president of the Indian Academy of Sciences, attempted to inject some local realities into the meeting. As always, it was too little and too late. The presidents of both Academies, M. M. Sharma and C. N. R. Rao, forcefully pointed out that Indian scientists should not be apologetic about doing fundamental research, although local conditions cry out for applied, 'useful' research. What they failed to emphasize was that we should be apologetic and modest about mediocre basic research. Indeed, contemporary Indian science has a great deal to be modest about. Throughout the day, well-prepared speakers made elegant presentations of the eventual fruits of basic research in diverse fields. The names from Science's hall of fame appeared fast and furious—Rutherford, Ziegler and his catalysts, Carothers and his nylon, Fleming and penicillin, Kalman, Polanyi and Cavendish, among others. Even Mark Twain made an appearance during the summing up of the morning session. References to Indian efforts were conspicuous by their absence, prompting a plaintive pre-lunch question. (Regrettably, this writer missed most of the presentation of M. S. Valiathan (Director of the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum), which did indeed offer a balanced perspective of the medical sciences in our country.) The sole Indian contribution, almost until day's end, was the humorous reference to the Pandavas' sophisticated destruction of Dronacharya. Mythology apart, it was almost a relief to hear of Raman and Ramanujan in the final summing up, providing the audience with some reassurance that basic research did flourish, not so long ago, in India. Does it still do so? India's Academies, which carefully sidestep difficult issues, would

do well to ponder on the state of scientific and educational institutions.

International science is moving breathtaking pace as the end of century approaches. Irrespective of individual, the field or the institution has become practically impossible to keep up with advances on all fronts. Never before has science promised so much in the areas of biomedical research and agriculture, fields of vital concern to this country. This relentless advance of the frontiers of science is happening at a time when our scientific institutions are plagued by diminishing morale, indifferent management and internal difficulties. In the background, the decay in standards of higher education in the universities is an all-too-visible phenomenon. The scarcity of research opportunities for young trained scientists and the diminishing number of scientifically viable institutions, despite a proliferation of laboratories, are matters of major concern. Individuals have invariably sidestepped these problems by either seeking greener pastures in the West or by retreating into comfortable cocoons. However, the collective state of Indian science is far from healthy, plagued as it is by various ills that afflict other walks of life—enveloping mediocrity, misplaced socialism and personality cults. The total dependence on governmental support of science, together with a sluggish and unresponsive bureaucracy, both regional and in Delhi, cloud an increasingly dismal scene.

India's academies of science would do well to remember that it is not enough to be democratic and political institutions that need to be periodically renewed. The goals of Indian science must be clarified and our collective commitment to the growth of various disciplines needs to be reemphasized. A little introspection never hurts, and may give rise to a public debate within the scientific community which will emerge as the seeds of a new and promising future for Indian science.

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