CURRENT SCIENCE

Volume 77 Number 3 10 August 1999

EDITORIAL

Deserting disciplines

'Brain drain' was a phrase popular in the 1960s and 1970s, to describe the flight of trained scientists and engineers to the West, particularly the United States. The term became less commonly used in the 1980s, when it became apparent that our production of engineers and scientists far exceeded the capacity of our institutions to absorb them. Indeed the best of our institutions are quietly reconciled to training research students purely for export purposes. Hundreds of Indian Ph Ds man the benches in the most productive laboratories across the world. Concerns about the exodus of trained manpower have slowly begun to give way to a feeling of pride that Indian institutions produce scientists and technologists, who are capable of competing with the best in the world. In the last decade or so, the worries about the brain drain appear to have diminished, although an occasional scheme, like the Swarnajayanthi Fellowships of the Department of Science Technology, is justified by its ostensible purpose of attracting talented young Indians from overseas, to return to this country. In reality, the scheme has been instantly converted to cater exclusively to scientists already in India; an inevitable and, probably, justifiable transformation.

In simpler times the flight of talented scientists and engineers, to greener pastures, was easy to comprehend; the practice of their chosen professions was more facile in the West. Today there is an even more insidious mechanism that is responsible for the drain of trained scientists and technologists from their fields of specialization, catalysed simply by the growing differential in salaries and employment opportunities in science and technology on the one hand and management, finance and 'software development' on the other.

The training of scientists and engineers in India is enormously subsidized, despite the recent increases in the fee structure of some of our most prestigious institutions, like the Indian Institutes of Technology. Students at the IITs are drawn from a large pool by a tough selection procedure and then trained in various disciplines of engineering and science. Their basic training provides them mathematical and computational skills and a quantitative outlook, which are more than adequate to allow them to perform effectively in the 'softer' disciplines of 'management', accounting, finance and even software development. Indeed, an alarming number of our 'technologists' desert their chosen professions even before they start a career. This is ironic since there is such a headlong rush to enter the IITs and other engineering institutions, only to flee from the discipline once the degrees are awarded. For many years now IIT graduates (and others of the same class) have been entering management schools and financial institutions in the United States. More recently, liberalization has provided ample opportunities for such transitions in India. The pity is that this diversion not only depletes the pool of technologists but also subverts the process for which these institutions were created. Software development and the myriad opportunities for keyboard employment generated by the 'information revolution', have now become major avenues by which trained scientists and engineers are lost to their professions. This situation is compounded by the drain in resources; considerable expenditure is involved in training students at the best institutions, in disciplines that they will desert as soon as their degrees are conferred. While there is a glut of 'software engineers' and financial managers (e-commerce will soon be a buzzword), there will necessarily be a shortage of technologists capable of innovation on the shop floor. Even the laboratories involved in strategic research, like the institutions of the Departments of Atomic Energy, Space and Defence will eventually (if not already) be hardpressed to find 'real' engineers and scientists to solve practical problems of design and construction, associated with their missions.

It is hard today to find good engineering students, who would like to pursue a career in the discipline in which they have been trained. All the streams of aerospace, chemical, civil, metallurgy, mechanical and of course, electrical engineering flow inexorably into the sea of software development. Even the students of masters degrees in science at the IITs are converted into 'software

engineers'. The better and more ambitious students quickly realize that 'management' (particularly, financial) is a better option. In this scenario one cannot but wonder about a brave new world, where everyone is either peddling information, managing money (and people) or modelling production in a virtual environment. The engines of a modern industrial economy are driven by technological innovation. As the pool of good engineers gets increasingly depleted, imitation and import will be viewed as a comfortable, but eventually dangerous, solution. The phrase 'brain drain' may have a different connotation today, but it is a problem that must be confronted.

P. Balaram