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EDITORIAL

Research guides and students

The recent suicide of a fifth year graduate student in Chemistry at Harvard University, apparently the third case in the last few years, has sparked off widespread concern about the pressures to which Ph D students are subjected, during their research towards a doctoral degree. The extensive comments on the case in many journals (cf *Nature*, 1998, vol. 396, p. 823, 826) suggest that a complete reexamination of the mentor-student relationship, in the context of modern day science, may be overdue. In India, almost all basic research involves students who work towards Ph D degrees. This is in contrast to the West, where teams of postdoctoral researchers (who are usually battle hardened) often tackle major problems, under the general guidance of an established scientist. In the best of Indian institutions Ph D students not only work towards their own theses; they also carry out the projects of prime concern to their laboratories. This is not a pressure-free exercise nowadays, since many investigators promise the moon in return for large grants from funding agencies. Once the Faustian bargain has been struck, the die is cast. Unfortunately, it is the students who must finally deliver. It is thus not uncommon to find overstressed and misunderstood research students on campuses across the country (and indeed the world over).

Students enter research in our institutions, poorly prepared in their disciplines – a consequence of the many strains to which the teaching system has been subject to in the Universities. Some enter research with a sadly romantic view of science, only to be rapidly disillusioned. Dreamers can be misfits in the best of institutions nowadays. Others drift into a Ph D programme, because this is a comfortable option, in areas where jobs are scarce and Masters degrees largely worthless. There are, of course, many pragmatic and level-headed individuals who see a Ph D degree as a passport to research positions at laboratories across the world. Even before globalization, science provided opportunities for worldwide employment.

The process of entry into a career in scientific research can be painfully slow. Ph D degrees often require periods as long as 5–7 years to acquire; long stints of postdoctoral

research, in temporary positions, are almost obligatory, before consideration for an entry level appointment at an academic institution or R&D laboratory. Despite salary hikes, students and research associates are poorly paid compared to their compatriots in other professions, who quickly enter permanent career positions. The period of uncertainty can sometimes last well into the mid-thirties (or even beyond), by which time 'the young scientist' is neither really young nor in a position to take significant professional risks, which are often a key to success in research. By this stage in life, most others opting for careers in the bureaucracy or in commercial professions are already well set on their career paths. Even the lucky few who find faculty positions in academia, struggle with a situation where research funds are drying up and the environment is tilting decidedly away from academic pursuits. It is against this background, which is now almost a global phenomenon, that we must view the frustrations of those who seek to enter research careers.

Mentors are critically important for most students who wish to enter research. Geniuses who suddenly bloom without any tending are extremely rare. The relationship between Ph D students and their research guides can make or break the careers of aspiring researchers. Like in marriage, divorce can be difficult and unpleasant. Academic departments also tend to be places where the individual autonomy of the faculty is strongly protected. The result is that guide-student conflicts are allowed to simmer endlessly; most often the student is the loser. Departments usually adopt a hands-off attitude towards guide-student problems, until it is too late. Surprisingly, the same departments (and institutions) adopt a collective stance when students are admitted. This attitude is a worldwide phenomenon, with the best of Universities being no exceptions. The strategy of leaving students exclusively at the mercy of their supervisors has been largely successful; many research guides turn out to be good mentors. It is only when problems surface, do institutions wonder whether there are any formal alternatives to this system. The possibility of involving multiple faculty members (graduate committees in Ameri-

EDITORIAL

can parlance) have been tried in some places, but invariably the system lapses into the classical mode, where the equations with a guide are the dominant determinant of a student's future. Institutions are usually reluctant to accept the fact that despite their apparently rigorous selection procedures they do admit students, clearly unsuited for a research career. There is, of course, even greater reluctance to admit that there can be members of the permanent faculty, who are unsuitable to be mentors for fresh PhD students; great scientific accomplishment, while desirable in a mentor, is not an essential prerequisite for a research guide. In the modern day context, there is indeed a danger that the overweening scientific ambition of established scientists may become an altar on which many beginning students can be sacrificed. Institutions must recognize the importance of

developing robust internal mechanisms, which can permit the graceful exit of students, who do not possess the motivation (and stamina) to pursue research as a career. At the same time an effort must be made to ensure that academic review procedures protect serious students from systemic faults associated with poor mentoring.

Incidents, like the one at Harvard, remind us that academic frustration amongst students is not uncommon and that problems can be compounded in hostile or impersonal environments. Supportive surroundings can mitigate even the most unpleasant circumstances. Academic departments and research institutions would do well to reflect on their ambience; unhappy researchers are hardly the right ingredient for scientific success.

P. Balaram

