

# CURRENT SCIENCE

Volume 102 Number 8

25 April 2012

EDITORIAL

## Academic Science: Facing the Glare of Public Scrutiny

‘Academics do live very sheltered lives by today’s standards – how many careers offer tenure or employment for life? And, frequently, an individual’s insistence on working as free from tethers as possible can be taken too far, forcing everyone and everything around them to accommodate their needs. This becomes a waste of time and effort – in other words of money. ...Has the concept of absolute academic autonomy become a luxury that the scientific enterprise can no longer afford?’ These are words that might be considered as blasphemous in academic circles. Yet they appear in an editorial entitled ‘Creative tensions’ in the April 5 issue of *Nature* (2012, **484**, 5). This critique of the ways of the world of academia begins on an ominous note: ‘Scientists must find ways to improve academic efficiency if they are to keep their independence.’ *Nature*’s call for scientists to take a hard look at practices in the community appears to have been stimulated by ‘this age of economic austerity’. Having spent considerable time moving uneasily between the freedom of the laboratory and the more constrained world of the academic administrator, the *Nature* editorial left me thinking about responses which seemed distinctly conflicting. To those charged with running and managing academic institutions, the freedom enjoyed by faculty can sometimes appear to be fostering a state of anarchy. To academics pursuing research goals with a single minded devotion, administrators are inhibitory forces impeding progress. The *Nature* editorial draws attention to a column in the issue, ‘Clean up the waste’, written by a management consultant, which is bound to spark considerable discussion (Marty, T., *Nature*, 2012, **484**, 27). A key conclusion of the analysis, one that will undoubtedly be challenged, is that the ‘main sources of inefficiencies are a wrong understanding of autonomy, weak leadership and a lack of strategic thinking when selecting research areas’. Writing in the background of the economic downturn in the West, the author argues that ‘efficiency is largely about saving time and effort, not reducing expenditures’. In a section titled ‘reduce autonomy’, the author notes (and many administrators will silently agree, even as academic faculty disagree) ‘that autonomy can be taken too far’. He argues that ‘academics have a tendency to set their own priorities; administrative matters are regarded

as unimportant and managerial decisions are usually taken at the last minute with little consideration for the consequences’. His conclusion, that ‘although such behaviour might be favourable to the individual, it represents a heavy burden for the institution as a whole’, is one that merits attention. I was reassured to read that Western institutions also suffer from governance deficits. The author notes that ‘decisions are often taken at the wrong level of hierarchy, involving too many people or too great a focus on details. This is evident in the overuse of large-membership committees which leads to decisional paralysis and takes professors away from research and teaching’. Ponderous committees, and the unending search for consensus often facilitate ‘decisional paralysis’ in our own institutions.

Marty notes that a ‘major source of inefficiency at academic institutions is weak leadership’. The short duration of many management posts, especially in Europe, appear to arise from faculty distrust of leaders. In India, rapid rotation of heads of departments and other functionaries often ensures that progressive reform rarely happens. There are some pieces of advice that may well be worth thinking about. The author, undoubtedly influenced by the corporate world, emphasizes the need to think strategically when building research capabilities. There is some sound advice in the midst of uncomfortable criticism. He reiterates what is common sense: ‘Notably, doing more research in a given area increases the efficiency of the whole institution.’ Shared infrastructure, especially major facilities, cuts costs and promotes more discussions amongst researchers, especially when inter-personal relationships are cordial and professional. A view that must strike a chord in many managers of science is voiced: ‘Departments also tend to hire academics who are studying hot topics, such as stem cells. But not everyone can bring together the critical mass of scientists required to become a prominent and successful stem-cell institute.’ The suggested prescription is to ‘identify and expand areas...which are already doing well rather than starting small institutes from scratch’. This is a route that has been pointedly and deliberately ignored in India, especially in ‘hot funding areas’ like biotechnology and nanotechnology. Indeed we have, over the last few years,

created many new institutions in highly specialized, but glamorous, areas at considerable cost. The obvious is also stated, but nevertheless merits repetition: 'The bigger the centre for a particular subject, the more likely it is to attract brilliant minds. For example, an institution with a strong backbone in physical chemistry, experimental physics and engineering might bring those fields together to build a world class materials science department.'

*Nature's* critique of Western science models is three pronged. Two more columns in the April 5 issue address problem areas. The critics are from areas outside the 'hard sciences' – economics and management science. A commentary intriguingly entitled 'Perverse incentives' argues that 'counter productive financial incentives divert time and resources from the scientific enterprise. We should spend the money more wisely' (Stephan, P., *Nature*, 2012, **484**, 29). A telling example is the use of cash incentives to promote submissions to high impact journals; a strategy adopted in China, South Korea and Turkey. The author notes caustically: 'These payments have achieved little more than overloading reviewers, taking them away from their work, and have increased submissions by the three countries to the journal *Science* by 46% in recent years, with no corresponding increase in the number of publications.' Stephan adds: 'Sadly, science is full of incentives gone awry. Look no further than expanding Ph D programmes that produce graduates with almost no career prospects or the growth of lab space with no apparent increase in productivity.' The commentary highlights the growth of laboratory space for the biological and biomedical sciences over the past decade or so. 'Biology's research footprint' has grown to a staggering level in the West, leading the author to suggest: 'Perhaps it is time for deans in the biomedical sciences to rent some of their excess space to their colleagues in chemistry and physics.'

A third commentary addresses the issue of whether current funding models used in the West need serious restructuring. Pierre Azoulay, an academic in the Sloan School at MIT, argues that it is time to 'turn the scientific method on ourselves'. He suggests that funding mechanisms need to be evaluated using the very same methods used in assessing research results. He is critical of 'retrospective analyses using selected samples' which often turn out to be 'little more than a veiled attempt to justify past choices' (*Nature*, 2012, **484**, 31). His suggestions, clearly directed towards funding by the National Institutes of Health (NIH) in the United States, merit some attention in India, where new experiments in funding modes may be needed to address the demands of an expanding research community, working in a large number of exceedingly diverse institutions. These critiques of academic science must be viewed in the background of the prolonged and unremitting economic crisis in the West, which has a strained a vastly bloated research

enterprise. Are these concerns relevant in India, where the warm glow of expanding research budgets has dominated thinking at the science departments of the central government, over the past few years? If this year's budget projections are an indicator, the era of rapid growth in research spending may be drawing to a close. Governance issues at funding agencies often neutralize the advantage of larger budgets. Institutions in India also struggle with internal constraints, historical inheritances which show no signs of disappearing, that contribute substantially to widespread inefficiency in coping with the volume of work generated by greater spending. The need for a dispassionate relook at the strategies for promoting and expanding the base of science in India is emphasized in a recent commentary. Gautam Desiraju advances a provocative thesis that science in India 'needs clear and honest leadership, not more money'. He is forthright in remarking that 'more money is better, but if there are deep cultural and social problems, it will simply drain away'. The prevailing emphasis on quantitative metrics comes in for criticism. 'Impact factors and *h*-indices become the sole arbiters of scientific excellence' in an environment 'that lacks innovation and creativity' (Desiraju, G., *Nature*, 2012, **484**, 159). He is concerned, and rightly so, of an increasingly perverse system of continuing monetary rewards, that has resulted in creating a new generation of scientists, singularly obsessed with awards and fellowships which have been made financially very attractive. Money, he notes, 'is neither the cause nor the solution to our problems, although it can facilitate progress in an otherwise healthy climate'. Critical voices are being heard with increasing frequency in India. In a letter published in *Science* (2012, **335**, 1440), P. M. Bhargava castigates the leaders of science: 'The scientific leadership in the country, with notable exceptions, rewards sycophancy and punishes independence, integrity, effective communication, scientific competence, and credibility'. This is a harsh assessment but one that should provoke introspection.

A news report in *Science* (2012, **335**, 904) titled 'India Rising' presents a positive view of growing opportunities for science in India: 'As India's economy roars and Western nations limp along, the trickle of talented expatriates returning home may turn into a flood'. Curiously, there has been little discussion on the increasing number of Ph Ds produced by our own institutions who struggle to find academic positions. The expansion in Indian science is driven by experiences of the successes in the West. Whether these models will prove fruitful in a new century in a vastly different environment remains to be seen. As public investments and expectations increase, scientists in India may have to learn to function in the harsh glare of public scrutiny.

P. Balaram