

Thoughts for India's scientific renaissance

As India embarks on a daring and ambitious programme to revolutionize her science activities, science in the USA, once a premiere activity, continues its decline towards a second-rate status. India might wish to consider America's mistakes, so that she will not repeat them and ultimately suffer the same consequences.

The necessities of World War II brought the first major US government funding to American science. Government funding for science continued after the war with the establishment of the National Science Foundation (NSF) in 1951 and the National Aeronautics and Space Administration (NASA) in 1958. The administrative procedures employed today have been in place for about five decades with little substantive change. However, these procedures are seriously flawed, thus slowing, eroding and corrupting American science.

Someone nearly half a century ago had the idea that, if peer reviewers were anonymous, given a shield of secrecy and freedom from accountability, they would be candid and honest in evaluating proposals from their peers, some of whom might also be their competitors. This is the way the system has worked at NSF, NASA, and elsewhere for almost five decades.

Secrecy is certainly necessary in matters of national security and defence. But, in science does secrecy and freedom from accountability really encourage the truth? If secrecy did in fact lead to truth, it would be put to great advantage in the courts. In

fact, courts have employed secrecy – during the Spanish Inquisition and in virtually every totalitarian dictatorship – and the result is always the same: people falsely denounce others, for a wide variety of reasons, and corruption becomes endemic.

The application of anonymity and freedom from accountability in the peer review system gives unfair advantage to those who would unjustly berate a competitor's proposal for obtaining funding for research. The perception – real or imagined – that some individuals would do just that has had a chilling effect, forcing scientists to become defensive, adopting only the consensus-approved viewpoint and refraining from discussing anything that might be considered as a challenge to another's work or to the funding agency's programmes. And that is not what science is about at all. Science is about challenging present perceptions and discovering what is wrong with current thinking. Science is about discovery and debate, not about consensus conformity.

I have described above the most serious failings of the US government peer review, as applied at NSF, NASA, and elsewhere, in evaluating scientific support proposals. These failings, I submit, are the principal cause for the decline of American science. There are other elements of maladministration, however, which are contributory.

As India moves forward with her ambitious programmes to revolutionize science, she might well reflect on the failings

of the American system and construct her own system in better ways. Perhaps first and foremost, I suggest that India need not put all her eggs into one basket as America did. Rather than one NSF-like funding organization, India should have at least three or more, each with its own way of supporting research. And, unlike America's one-size-fits-all approach, I suggest that India's funding agencies should be amenable to different types of support, e.g. funding projects, funding people and funding laboratories. From an administrative standpoint, I suggest the following: (i) secret reviews should never be used; (ii) reviewers with conflicts of interest should never be allowed, and (iii) an independent ombudsman agency should handle disputes between proposal-submitters and funding agencies.

As India proceeds forward with her plans, there will be an initial sense of enthusiasm and euphoria. Much will be new and without entrenched bureaucracy. Success will seem inevitable. New ideas and new approaches will be welcomed. As India develops her own science infrastructure, she would do well to avoid repeating America's mistakes.

J. MARVIN HERNDON

*Transdyne Corporation,
11044 Red Rock Drive,
San Diego, CA 92131, USA
e-mail: mherndon@san.rr.com
internet: http://NuclearPlanet.com*

Master's degree in medical science and technology

Recently, I saw a printed brochure/prospectus for an IIT-GATE examination for a new three-year postgraduate course run by the Indian Institute of Technology, Kharagpur, 'Masters in Medical Science and Technology' for the MBBS graduates. Although I find that this course had been initiated 2 or 3 years before, we were unaware of such an ill-conceived course. I am surprised to see that one becomes a Master of medicine without practicing or studying any medical course for 3 years after graduation. Similarly, the candidate does not have any basics of engineering subjects as he/she is a medical graduate, but becomes a Master in technology. It is not clear for what profession and at what

level they will be taken in. Nothing is written about this in the prospectus being circulated for the GATE test. The course appears to mislead prospective medical graduates. This course could be renamed as Masters in Biomedical Engineering or Masters in Medical Technology, provided there are at least half a dozen medical faculties involved in teaching essential postgraduate medical subjects along with the engineering course. In addition, association with a medical college and a hospital would be indispensable for running such a course. It is surprising that there is not a single medical person in the long list of as many as 28 faculties involved in teaching the course. Also, no medical

college or hospital is involved with it. Whatever organization may be involved in recognizing this course, the very name of the degree, is not correct. Students may become 'jack of all trades', but they will be 'masters of none'. Concerned authorities such as All India Council for Technical Education and Medical Council of India should take note of this situation.

B. C. DAS

*Institute of Cytology and
Preventive Oncology,
Indian Council of Medical Research,
I-7, Sector-39,
Noida 201 301, India
e-mail: dasbc@icmr.org.in*