

Glory on sale

The development of science and technology over the previous millennium was the subject of many reviews that contributed to our appreciation of exciting discoveries and inventions. It was a tribute to the closed loop of intellectual curiosity and market forces that triggers and sustains research effort, provides inputs and absorbs output.

If one views every paycheck as an investment made by society, scientists would be perceived as special people. We are essentially a high-risk low-return investment. Many are privileged to do what they would *like* to. Even after 50 years of development, our country does not boast of a competitive 'R&D services market'. Most scientific and industrial R&D projects are initiated by those who *want to work* on them. The question of productivity and cost effectiveness therefore does not arise. In the absence of linkages between R&D and industry, we have an open loop. We can make any claim without the fear of serious cross-examination.

Despite their unique status, a few scientists choose to whine about recognition and remuneration. We now have a movement to create one more 'caste system' by having 'services' to handle the 'more important' disciplines – space, nuclear, defence. How about IT, agriculture, medi-care and transportation? As Indian Aeronautical Services scientist, I would be able to add the IAS tag to my card!

Even in a stifling environment and with limited funding, many scientists

deliver and do so in a manner that is a tribute to values they cherish. Given all reasonable demands of obligation to the scientific profession, it is perturbing to see some 'scientists' literally take things into their own hands. They open catalogues and place orders for citations and medals. Institutions have sprung up that see a business opportunity in the plight of the 'poor unappreciated Indian scientist who sacrificed foreign (or MNC) career opportunities for the sake of his country'. As the *Bangalore Weekly* reported in its February 4th issue, 'You too can become the Man (or Woman) of the Millennium'. For a mere \$ 150 you can receive an 'Outstanding Achievement Diploma'. A 'Lifetime Achievement Award' or 'International Man of the Year' would cost a little more. Judging from proclamations in leading dailies, outfits like the International Biographical Institute and the American Biographical Institute appear to have done brisk business these past few months. Even an indigenous equivalent is said to be operating out of Mysore. Bangalore being the 'Scientific Capital' has obviously brought in good business.

Having suffered the indignity of being conned, these self-proclaimed 'Achievers' also become the laughing stock of their own colleagues. But one fails to understand the attitude of organizations they are affiliated to. One local National laboratory carries purchased citations on its web site to showcase its 'super

achiever' to the whole world. Organizational blessing is thus conferred to 'procured image'. You do not have to earn or even 'manufacture' (plagiarize) your next discovery or invention. Glory is available off-the-shelf. There is a back door to the hall of fame. Even the Wizard of Oz would have been impressed.

We read reports about some scientists agitating for a non-consulting allowance and for a literature allowance. Can we now expect a demand for a 'Citation Allowance'. Perhaps it is time the RBI formally approved issue of foreign exchange to purchase medals and the Customs exempted the same from duty – it is for R&D after all! Surely, our research institutions are equipped to *build* the image they seek.

Nowhere in the *world* does any one get into science for the money. R&D is like education, a long-term investment. It *cannot* command the remuneration enjoyed by those in industry and trade. Research is chosen for the challenges and unknown intellectual frontiers it presents for conquest. Scientists who *deliver* simply do not have the time to hanker after recognition. No earthly reward can match the experience of discovery and invention.

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Two views on the atomic bomb

I read with interest the article 'The amoral scientists – the tragedy of Hiroshima' (*Curr. Sci.*, 2000, 78, 19–22). In this connection I wish to bring to the attention of our readers views by two refugees from Hitler's Germany who became famous in their respective fields.

The first was Hans Bethe who did so much to shape quantum physics and was awarded the Nobel Prize for his work in Astrophysics. He collaborated in the development of the atom bomb and then fought for nuclear arms control. To the

specific question 'Was it right to have built the atom bomb' his answer was, 'Yes, because it ended the war against Japan quickly, with fewer Japanese casualties than would have occurred if the fire bombing of Japanese cities had continued. Atom bombs also helped to ensure that the cold war between the United States and the Soviet Union never became hot wars'.

The other was Bertolt Brecht the renowned playwright who wrote the following postscript to the American

production in his play *Life of Galileo* in the summer of 1947 at Beverly Hills, California with Charles Laughton as Galileo:

'It must be understood that our production took place at the time, and in the country of the production of the atom bomb and of its use for military purposes: when atomic physics was wrapped in impenetrable secrecy. The day the bomb was dropped will be difficult to forget for anyone who experienced it in the United States. It was the Japanese

war which had cost America her real sacrifices. The troop transports went off from the West Coast, and returned there with the wounded and the victims of Asiatic diseases. When the first news reports reached Los Angeles, people knew that this meant the end of the detested war, the return of sons and brothers. But the great city gave an astonishing display of grief. The present writer heard bus-conductors and sales-girls in the fruit markets express nothing but horror. This

was victory; but there was a bitter savour of defeat about it. Then came the secretiveness of the politicians and the military about this gigantic source of energy—secrecy which infuriated the intellectuals. The freedom of research, the exchange of information about discoveries, the international fellowship of scientists were clamped down on by officials who were deeply mistrusted. Great physicists fled precipitately from the service of their militaristic government;

one of the most celebrated took a teaching job which compelled him to waste his working time at teaching the most elementary fundamentals of physics, in order not to have to serve under these officials. It had become a disgrace to discover anything.'

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Frustrations of doing science in India

Hetu C. Sheth (*Curr. Sci.*, 1999, 77, 1385–1386) has highlighted the pathetic state of young research scientists in India. The situation is extremely bad in earth sciences as there are no job opportunities for fresh Ph Ds in any field; teaching, research or industry. I know about a dozen Ph Ds moving from pillar to post, changing from one project to another looking for some research associate position. I fully agree with his viewpoint that for shaping the future of Indian science, the reservation policy of Indian Government should be legally abolished.

The future of Indian science is at stake if remedial steps are not taken to stem the rot at the university level. Indian universities are starved of funds and there is a total ban on filling up of vacant positions due to financial crunch imposed by states. Research support is available only from funding agencies like UGC, CSIR, DST, DAE, etc. in the project mode for a limited period of 3–4 years. It is a frustrating experience to carry out research in the project mode both for the Principal

Investigator (PI) and his team consisting of JRF, SRF or Research Associate. On the average, a project is sanctioned after the gestation period of 2 years including peer review and some revisions. Almost one year is lost in calling for quotations, recruitment of staff, purchase of equipment and getting the sanctioned grants released by the university. The funding agencies insist on following the university rules which vary from institution to institution. Since the financial powers are with the Registrar or Vice Chancellor and not with PI, it causes delays, unnecessary harassment and the research work suffers. Why cannot the funding agencies empower the PIs as in Europe and America for efficiently running the research projects. No wonder, 50% time of a PI is wasted in clearing the bureaucratic hurdles.

Hetu's remarks are noteworthy regarding the inordinate delays in payment of CSIR stipends to research staff. I have experience of dealing with various funding agencies during the last 25 years.

They have all one thing in common: inefficiency. A recent example of a BRNS-funded project is illustrative. The sanctioned grant due in April 1999 was released in January 2000, after a lapse of 9 months, and the project will be over in March 2000. How can the targets be achieved when the research staff is not paid any remuneration for so long? The situation is not much better in projects funded by DST, once considered to be the most efficient agency. Our research associate has not been paid salary since September 1999 and despite many reminders and personal visits, the bureaucratic hurdle is yet to be cleared. All PIs have similar tales of woe and frustration to share but keep mum lest they may annoy their benefactors!

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More suggestions to overcome problems faced by post-docs

I wish to draw the attention of science administrators and scientific research funding agencies to the plight of scientists like me who after relentless hard-work are still without any job or fellowship to support themselves and their families. There may be several other sci-

entists with a good educational career, highly acclaimed doctoral thesis, 10 to 15 years of post-doctoral research experience and several internationally cited papers in refereed journals. There is a tendency on the part of CSIR and other funding agencies to reduce post-doctoral

fellowships and their tenure periods. The tenure of existing Pool Scientists is being terminated even though the scientists may not have got any job. The Government fails to find a solution for such a frustrating problem faced by the most brilliant segment of the society.