SCIENCE AND CULTURE

VOLUME 73 ❑ SEPTEMBER-OCTOBER 2007 ❑ NOS. 9–10

EDITORIAL

ACCOUNTABILITY FOR SCIENTIFIC RESEARCH

After a long research career spanning almost forty years, I am today being introduced to terms which were unknown during my younger age, and I would like to share some of this modern vocabulary with others in my situation. One of my colleagues advised me just the other day that I would need to increase my "visibility" if I wanted to be successful. Before I could retort that his advice is relevant only in politics and corporates, he continued, almost as if reading my mind, that this applied to the world of science and education as much as it did to that of business and finance. This was a blow to my long held conviction that a scientist becomes successful only by the work and research he performs during his lifetime. The conversation continued around the meaning of "visibility" in this context and the means to increase it. Apparently one needs to make one's presence announced in any way possible—no longer are the days when successful scientists would be confined to their laboratory performing experiments and talking about research with fellow-scientists only. Startled as I was by this revelation, I couldn't help thinking 'O tempora, O mores'.

The second piece of jargon which is increasingly in circulation among the scientific community today is "PR". Comments like 'he was not offered or promoted to a position because his PR is not good' are not uncommon. One needs to maintain good public relations with everyone, starting from the *mali* to the director, from an unscrupulous engineer to a corrupt accountant, to remain successful. The proverb "A man is known by the company he keeps" has been turned on its head. Instead, the following indigenous proverb has become the new *mantra* for success: "*uttam nishchinte chale adhamer sathe, madhyam tini-i jini chalen tafate*" (The Best can adjust with the Bad, only the Mediocre tries to remain apart). Good scientific work is no longer the only merit that is considered for the advancement of one's professional career.

The proverb "A man is known by the company he keeps" has been turned on its head. Instead, the following indigenous proverb has become the new *mantra* for success: "*uttam nishchinte chale adhamer sathe, madhyam tini-i jini chalen tafate*" (The Best can adjust with the Bad, only the Mediocre tries to remain apart).

These are some of the terms and expressions today's scientists are juggling with along their path to success. To blow one's trumpet is a known trend in the western world, the argument being that the world would otherwise remain oblivious to one's virtues (obviously, virtue is no longer its own reward!). This is in complete contrast to the philosophy of the orient, where modesty is considered to be a desirable quality in the belief that, to use a

metaphor, a rose in the garden will automatically attract people by its sweet perfume. Similarly, it is believed that good scientific work will automatically attract people's attention and does not require the beating of any drum. Sadly, many think this is no longer true.

How and when this element of western culture entered into the mindset of the Indian scientific community may be an interesting subject for sociologists. These terms, which are mostly in use in the corporate world and are relevant to a large extent to the nature of the work, gradually have spread into almost every sphere of life. With the increased multinational presence in our workplaces, and with millions of Indians being exposed to corporate culture, it is no wonder that this new vocabulary is now a part of our life and culture. In addition, thousands of students and scientists who were exposed to western education and life abroad have imbibed these customs even as they have since returned home. Globalization has also been responsible for bringing Americans, the British, and many other foreigners to important cities of India on short-term projects. While Thomas Friedman, the New York Times columnist, has spoken about a flat world in terms of facilities, communications, economy, and even hierarchy; the world may be truly flat in terms of culture in a few years from now. Americans returning home after a visit to Indian cities will no longer say that it is a very different country, returning Europeans will no longer be impressed by a different culture and exotic food and glamorous dresses, because it will not be very different. This is particularly true since Indian culture is spreading everywhere—one finds many foreigners greeting Indians with folded hands and attempting to say '*namaste*', or struggling with '*dhanyabad*' at the end of their trip. With globalization, the boundaries between countries are fast disappearing. Imagine what a loss it will be if globalization converts the whole world into one language, one culture and one faith?

Another word which is very popular among bureaucrats at scientific institutes and organizations is 'accountability'. This term was introduced politically in all spheres of English public life by Margaret Thatcher—as daughter of a small-town grocer it was natural for her to quantify any process of evaluation—and crossed over to Indian shores in the early days of economic liberalisation. This has made a permanent imprint in the judging of effectiveness in any functioning system, including education. Many Oxford academics have since claimed that Mrs. Thatcher has been responsible for damaging British science irrevocably. Government ministries, departments, and funding agencies having responsibilities for the initiation and administration of research programs are routinely confronted with the tough job of rethinking and re-evaluating their own performance so as to direct scarce resources towards new, and rather more explicitly specified societal goals.

Accountability has different meanings in different contexts—outside the world of economics, its intention is to make one responsible and answerable to someone or to an authority. Accountability in terms of economic return is relevant to industries and businesses because they follow a linear model: maximum economic output is expected to be delivered by a given direct input of resources used in production. However, this linear model might not be true for general research, particularly in the case of fundamental research. The general perception of science is to see a tangible result, and hence applied research tends to receive more public support in terms of funding compared to fundamental research.

Accountability in terms of economic return is relevant to industries and businesses because they follow a linear model: maximum economic output is expected to be delivered by a given direct input of resources used in production. However, this linear model might not be true for general research, particularly in the case of fundamental research.

This conflict between the relative importance of basic research and applied science has been present since the early ages of modern science. Exactly two and a quarter centuries ago, the German physicist and philosopher Georg Christoph Lichtenberg wrote in his diary after the discovery of the planet Uranus by Sir William Herschel, "To invent an infallible remedy against toothache, which would take it away in a moment, might be as valuable and more than to discover a new planet... but I do not know how to start the diary of this year with a more important topic than the news of the new planet". Fundamental research can not be made accountable either in terms of its economic returns, or in terms of its immediate recognition of application. It is an ingenious outcome of a brilliant mind which does not follow any fixed rules and regulations and should be left to flourish on its own.

It is hard to distinguish between basic and fundamental research. Fundamental research is the research which leads to a fundamental discovery or produces new knowledge. All basic researches are not fundamental but all fundamental researches are basic research. Basic research may lead to a fundamental discovery, and one can appreciate its significance only after it is discovered. However, most of the research works done in the name of basic research is 'routine research' which merely results in an expansion of knowledge. Any discovery out of such work which is fundamental in nature has to depend on serendipity. Thus any form of accountability is irrelevant in the case of fundamental research. Basic scientific research, however, usually makes the scientist answerable to the funding agency. In order to make a scientist accountable, he is given a definite target to achieve within a specified time and one can evaluate the performance after that period. In fundamental research, a definite time-frame cannot be set to achieve the result and hence the conventional method of accountability is not applicable. No scientist can be time bound to make a discovery—after all, the discovery of Uranus or the discovery of x-rays cannot be the product of accountability! It is easier to impose accountability for applied research in terms of economic returns since one can visualize a product, and the development of a process or method of practical use is easier to comprehend in terms of economic returns. And for basic research of routine in nature, time-bound accountability is not improper.

In India, scientific research is essentially funded by the public exchequer through government agencies like the Department of Science and Technology. However, this economic model is not very sustainable, and investment in research by private players should be encouraged, particularly for applied research. At the same time, the number of patents granted or the number of published papers should not be the criterion for funding. As Terence Kealey, a researcher and lecturer in clinical biochemistry at the University of Cambridge, remarked in his book *The Economic Laws of Scientific Research*, "The Market Place does not worship false Idols, it makes empirically correct judgements. It is the government funding of science that is an Idol of the Tribe". Fundamental research needs to be fully supported by the Government, while 'routine' research should be supported by private-public partnership. ❐

S C Roy

STOP PRESS !

We just received the news of sad demise of Dr. A. P. Mitra who was the President of ISNA. We deeply mourn this irreparable loss.