Scientific truths and values

One would like to appreciate Lavania[1] for developing an integrated statutory model of scientific values. It is clear that Indian science is suffering from many ills like abuse of power, scientific corruption, grabbing of others' works by science bosses, and unethical questionable practices[2]. It is not possible to dislodge this cancerous growth from science unless we accept that 'it is happening'. The common characterizations of science as value-free or neutral can be misleading. As correctly pointed out by Subhash Chandra, many of us may lack real understanding of moral and ethical considerations and may rely more on faith, but both science and faith are different entities and the former is the search for truth[4]. Actually values emerge from science, both as a product and process, and may be distributed broadly in society. The desire to do good science is in itself a human value and so is the conviction that standards of scientific honesty, value and objectivity need to be maintained at all costs. The value system is such that a growing scientist is not evaluated on the originality and capability to fully understand the work or design the experiment in search of scientific truth[5], but on other parameters. The corrupt picture of our society, where values are deteriorating fast, reflects a lot in every sphere of our life, and science is no exception. The principle of fairness and the role of personal recognition in science accounts for the emphasis given to proper allocation of credit. Failure to cite the work of others can lead to more than just hard feelings and these citations are part of the award systems of science. At times, scientists who fail to cite the work of others may find themselves excluded from peer recognition. This consideration is particularly important in one of the more tangible aspects of a scientific career – that of building a reputation. Published papers document a person's approach to science; that is why it is important that it must be clear, verifiable and honest. In addition, a researcher who is open and helpful becomes known to his fellow workers and will benefit much more than someone who is secretive, uncooperative, egoistic and thankless. In recent years, the allocation of credit has become a value-based issue in the listing of authors' names. Science has become more of a collaborative enterprise than it was in the past. Several considerations must be weighed in determining the proper division of credit among a student, research assistant and senior scientist. The senior scientist is well aware of this importance of the credit in science and should give the junior researcher his due credit. At times, a name is forcefully included in the list of authors even though the person concerned had little or nothing to do with the concept of the work. Such 'honorary' authors, many a times are the bosses; they dilute the credit due to the people who actually did the work. The so-called 'drumbeaters', 'pseudoscientists', 'honorary authors', 'science lords' and 'science managers' are causing considerably more damage than uplifting or popularizing scientific values. It is high time that such unethical scientists be exposed at all suitable platforms[6], and concrete efforts be made at every level to wipe-off this menace, although a lot has been written in this journal on this topic[7,8].

1. Lavania, U. C., *Curr. Sci.*, 2006, **90**, 247.
2. Akhila, A., *Curr. Sci.*, 2006, **90**, 143.
3. Subhash Chandra, K. C., *Curr. Sci.*, 2006, **90**, 895.
4. Nagar, P. K., *Curr. Sci.*, 2006, **90**, 1051.
5. Chatterji, D., *Curr. Sci.*, 2006, **90**, 141–142.
6. www.scientificvalues.org.
7. Balaram, P., *Curr. Sci.*, 2005, **88**, 529–530.
8. Rajamani, V., *Curr. Sci.*, 2005, **88**, 545.

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Scientific management of Indian universities

Indian universities as well as institutions of higher education have been facing several problems. The relevance and productivity of higher education is being questioned. Increased demand for the best in the employment sector has further caused the migration of our students to so-called glamorous educational shops as well as foreign universities. The reasons and remedial measures to solve this problem can be analysed according to Taylor's method of scientific management to increase productivity in the university system, both in terms of quality and quantity.

The fundamental contribution of management in the 20th century was a fifty-fold increase in productivity of a manual worker[1]. The challenge ahead is to increase productivity of knowledge work and knowledge worker. Our university system has resulted in quantity but quality has subsided.

The first man to apply the concept of scientific management in terms of productivity of the worker was Fredrick Winslow Taylor (1856–1915)[2]. According to him, there is no such thing as skill. What makes the knowledge worker productive is knowledge. His principle can be stretched to teachers, students and the administration if we define higher education as knowledge work and teachers and students as knowledge workers.

The knowledge worker and knowledge work are the two main arenas in higher education, which are true challenges to be managed. This would enhance productivity of universities, be it in terms of research or education. Quality would be the main future challenge apart from quantity.

At the university level each university has to coordinate its resources, define its tasks after due analysis, organize its manpower and qualitatively improve its performance.

To increase productivity of the knowledge worker, a change in basic attitude is required. A manual worker can be told or trained to do a job in a better way and hence (s)he can be more productive; it is not true in case of a knowledge worker. In the case of knowledge worker, it requires change in attitude not only at the

level of the knowledge worker (teacher and student) but also at all levels of the organization, i.e. university or other administration bodies such as the UGC and the Government. Treating this as a scientific management project, a plan can be suggested as follows:

Define goals of each department, by defining the thrust areas with respect to specialization of faculty and ongoing research. Teaching courses have to be formulated accordingly.

Evaluate research quality and teaching quality of individual departments, taking into account the constraints which are hampering individual productivity or productivity of the department.

Possibilities of inter-departmental collaboration. This is important in terms of science departments. The heterogeneous funding has created a gap between faculties in each department. Through individual research projects, some departments are overtly funded whereas others are not. A feedback has to be generated on the faculty versus output and constraints (lack of funds, equipments) versus results by an individual researcher. Outcome should be to coordinate these data so that an equitable distribution of facilities is done.

To audit the number of instruments available in the entire university. How many of them are optimally utilized? How many persons are using them? Who else other than the Principal Investigator and his team can use them? How to access these?

To monitor and execute this plan, at every university a research coordination and monitoring cell has to be developed comprising faculty members from science, humanities and management departments.

These steps, it is hoped, would optimize the research facilities with output.

1. Drucker, P. F. (ed.), *Management Challenges for the 21st Century*, Butterworth–Heinemann, Oxford, 1999.
2. Taylor, F. W., http://www.brunel.ac.uk/bustcfj/bola/motivation/taylor.html

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INSA in the growth of Indian science

Under the Indian National Science Academy (INSA), various national committees are formed for a period of three years. Each committee consists of 5–6 members, most of them being members of such committees since a long time. These members are rotated from one committee to another. These committees meet infrequently, sometimes once in three years without much agenda. The formation of these committees is never looked into seriously and some members do not even have any experience of the objectives of the committees and are made members for namesake. Is it really justified? The Academy has never debated on the role of these committees. Once in four years or once in two years the General Assemblies of International Committees of different committees (e.g. International Union of Geodesy and Geophysics – IUGG, Committee on Space Research – COSPAR, International Union of Geological Sciences – IUGS, International Union of Pure and Applied Physics – IUPAP, International Union of Pure and Applied Chemistry – IUPAC, etc.) are held, only at that time these committees make an effort to report national activities. In some committees serious efforts are made. A few persons are identified who write only about their activities (e.g. one can see the report prepared by the National Committee of the International Union of Geological Sciences for the International Union of Geological Congress – IGC, Florence Assembly). Serious efforts are needed by these committees to collect information from various scientists and institutions if we really want to project our activities internationally.

The Indian National Science Academy is one of the pioneer academies in India. This academy has about 1000 Fellows. It is high time these Fellows must become active and think about what role they are playing apart from writing FNA (Fellow of National Academy) after their names.

From my experience with several assemblies, I have found that INSA deputes a delegation of a few scientists and the delegation has a leader but there is lack of proper coordination. As a result our bids for hosting General Assemblies are being defeated. The National Committees must discuss these matters and the leader of the National Delegation must try to coordinate and assign the responsibility of each delegate at the assembly. The membership of the National Committees may be enlarged – it should not be limited to four and five members and also representation of different disciplines/areas must be made. In the 2003 IUGG meeting, no representation was made to the International Association of Hydrological Sciences – IAHS, International Association of Meteorology and Atmospheric Sciences – IAMAS, and International Association for the Physical Sciences of the Ocean – IAPSO. Efforts should be made to depute scientists to represent each and every association of IUGG. The INSA is conservative about including scientists who are attending such assemblies as national delegates; due to such restrictions many international committees are not being represented by Indians and as a result even the work of Indian scientists is not projected in the International forum/committees. During the IUGG 2003 Assembly, three scientists were attending a meeting related to International Association of Hydrological Sciences (IAHS), when a question came by the IAHS about the national delegate from India. The scientists attending the meeting were not aware since they were not part of the national delegation sponsored by the INSA and as a result, Indian representation was not counted. A proper coordination prior to the General Assemblies of ICSU sub-committees and deputed delegates or participants is needed for the growth of science in the country and for better visibility in the international scene.

The National Committees must be broadened and feedback must be taken for the growth of science in the country