had been made at different points of time, their impact would not have been as great as that made by the 1953 *Nature* paper. For example, Chargaff's data of G = C and A = T hardly made an impact on biologists, as he did not interpret the data. He did, however, express his annoyance for not sharing the Nobel prize.

I would, therefore, raise both Watson and Crick to the 'Bradman class' for their far-reaching interpretation of the limited data and for their insight into the DNA molecule which made possible the understanding of 'information flow in living organisms', the genetic code, genetic engineering and all the rest. It is praiseworthy that they continue to contribute to science at such high gear even after half a century.

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Academic leadership and the ailing state of Indian science

Indian institutions have not produced even one Nobel prize winner since independence, despite proliferation of very many universities and a large number of national research institutes. Concerns regarding the decline in academic and scientific quality in India have also been voiced recently. R. Kalshian[1], referring to the decline in quality of research in India states that, 'In the entire history of CSIR, only three out of over 20,000 papers published by its scientists have been cited more than 100 times against a world average of one out of every 250'. This may constrain people to infer that the functioning of the national research institutes is far from being satisfactory, since there is an asymmetrical relationship between the funding and their performances. This may be possible because in the post-independence period the high priests of academic and scientific organizations, instead of confronting the political bosses to defend quality and truth like Asutosh Mukherjee and others of pre-independence period, have become the messengers of political bosses and behave like chameleons depending on the political bosses. P. V. Indiresan, former Director of IIT, Madras has vividly compared the happenings of the pre- and post-independence period and has said[1], 'As a Vice-Chancellor Asutosh Mukherjee could straight away make Raman the Palit Professor in Calcutta University . . . Those days Vice-Chancellors were 10 feet tall. These days, their counterparts are pygmies. How did that happen?'.

These 'pygmies', devoid of adequate academic quality and integrity, in their capacity as Vice-Chancellor/Director tend to be scavengers of quality and settle for second raters and third raters. In the process merit and quality are sacrificed and the entire generation suffers. As a result, academicians with courage, integrity, conviction and originality are becoming casualities of the system justifying Gresham's law, i.e. bad money drives away good money out of circulation.

If India has to make a mark it is necessary to preserve, protect and defend quality in human capital. This cannot be assured without ensuring the quality of the Vice-Chancellors/Directors because they play a vital role in ensuring/damaging the quality of the institutions which serve as gold mines of human quality.

In the absence of an objective assessment of quality, judgments are mostly subjective and prejudiced and result in the selection of Vice-Chancellors of poor calibre, in spite of an elaborate procedure involving the University Grants Commission, Chancellor and the Syndicate vicariously. A similar situation holds true for research institutes. A corrupt and incompetent bureaucracy further contributes immensely to the said selection. Clearly, an objective assessment of quality through citation counts – the acid test of quality – has become mandatory[2], in addition to other prevailing criteria for the selection of Vice-Chancellors, Directors and other personnel for top academic positions. Only men of quality can preserve, protect and defend quality. As a result quality will breed merit and merit will no longer be a casualty and a glorious India can be assured.

1. Kalshian, R., *Outlook*, 23 October 2000, pp. 56–66.
2. Basa, D. K., *Curr. Sci.*, 2000, **79**, 1042–1043.

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Need for reforms in Indian National Science Academy

I was delighted to read the column 'News in brief' in *Current Science* (2001, **80**, 726) regarding the reforms and restructuring of Indian National Science Academy (INSA), proposed by Goverdhan Mehta, the President of INSA. As a matter of fact, restructuring of INSA has been long overdue in view of the changing scenario at the global level. INSA has been acting more or less like an exclusive 'White man's club' in India. It is one of the most prestigious science academies in the country. Unfortunately, after the independence, university academia have found less and less representation in its elected fellows compared with the scientists from institutes like TIFR and IISc. It may be considered as an index of decline in quality of research produced by our universities.

The President of INSA deserves all praise for introducing innovative ideas for the election of INSA fellows. Due recognition will be given to scientists working in inter-disciplinary areas of research by creating a separate sectional committee to consider their nominations. I know many physicists working in border-line or cross-border disciplines being ignored year after year, as there was no

slot for them in INSA. It is a well-known fact that the discipline of molecular biology was created due to the pioneering efforts of physicists, both experimental and theoretical. There is an overlap of basic science, applied science and technology in all disciplines and due weightage must be given for inter-disciplinary research.

INSA plans to involve itself in popularization and promotion of science education at all levels. A beginning has been made at the school level by recommending new curriculum in science subjects to the NCERT. INSA is also involved in promotion of history and philosophy of science (Virk, H. S., *Curr. Sci*., 2000, **79**, 1514). In fact, it is the only organization doing its bit in this inter-disciplinary area. It is my earnest desire that INSA should recognize the contribution of scientists engaged in promotion of science education in India by electing them as its fellows. To cite an example: B. L. Saraf (formerly of Rajasthan University, Jaipur) at the Institute for Laboratory Education, Indore had involved himself in promotion of physics-laboratory education in the country for the last 30 years and has achieved tremendous success, but INSA never bothered to elect him a fellow.

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Jyotir-vigyan

P. Balaram's editorial in *Current Science* (2000, **79**, 1139) drew my attention to the UGC proposal of introducing Vedic Astrology in Universities, though it was not clear whether this subject was to be included in the science faculty. A news report says that Patna University plans to create a Vedic Astrology Department, that will not be in the science faculty. If this course is not a part of science faculty, the campaign by scientists against it is misplaced. K. N. Ganeshaiah (*Curr. Sci*., **80**, 2001, 719–720) has quite convincingly refuted Balaram's alarmist editorial. Media reports show how a serious matter pertaining to knowledge is being scandalized by the so-called eminent scientists from premier institutions (see *The Hindu*, 19 April 2001 and *Hindustan Times*, 25 April 2001). A statement is quoted ending with 'astrological charlatans', but then science philosopher Paul Feyerabend made the statement 'Leading intellectuals with their zeal for objectivity. . . are criminals, not the liberators of mankind', and 'Scientists are every bit the equal of ancient myth-tellers, troubadours and court jesters' (*Sci. Am*., May 1993, p. 36). A letter from IUCAA, Pune claims that the UGC move will take us backwards to medieval times. Even if we accept this claim, do they have any evidence to prove that modern society is more enlightened than the medieval one? Ganeshaiah observes that these scientists reject any idea originating from Hindu heritage, but cite erroneous views of Greek philosophers (though he is unnecessarily apologetic using the word Hindu). In contrast, Misner and Wheeler cite the Indian Vedas to have propounded the ideas related to 'physics is geometry' (*Ann. Phys*., 1957, p. 535–536). Why is it so? I think the main reason is that most of the leading scientists in India are imitators of West, lack original thoughts, and they neither understand philosophy of science nor ancient Indian wisdom. Media is obsessed with the eminent people, and in this case, Narlikar spearheading the crusade against 'Vedic astrology' has become the authority on this.

In his recent interview (*Times of India*, 3 May 2001), Narlikar has misinterpreted Vigyan as science. Vigyan is an ancient word and translating it as 'science' and then objecting to 'jyotir-vigyan' shows either lack of understanding or ill intention. He says that no astrologer could predict any event with certainty. If no physicist can prove an established law, does that invalidate the physical law or show the incompetence of the physicists? Reading the interview, it becomes clear that 'jyotir-vigyan' for Narlikar means 'what the stars foretell'/horoscopes, which are a few of its applications only.

Returning to science, Narlikar says that, 'There are no controlled tests to prove astrological predictions right'. Is there any such test for cosmological models? Is cosmology science? Why does he believe in the steady state theory disproved by 'observational evidence as defined by science establishment?' Big-bang cosmology and early universe scenario do not differ from mythological stories, yet scientists continue demanding huge funds for their so-called scientific predictions combining cosmology with high energy physics. The standard model of particle physics has as many as 19 or 20 (!) adjustable parameters; 'The history of super-symmetry' is exceptional. In the past, virtually all major conceptual breakthroughs have occurred because physicists were trying to understand some established aspect of nature. In contrast, the discovery of super-symmetry in the early 1970s was a purely intellectual achievement, driven by the logic of theoretical development rather than by the pressure of existing data' (see *CERN Courier*, March 2001, p. 19); there is no testable prediction of super string theory – a pure speculation. There are many eminent scientists in the premier institutions working on such speculations made by western scientists; real science is being strained, and meagre public resources are being misused for such fantasies. Today big science is suppressing new ideas. If the tyranny of the orthodox science establishment is not challenged, we are sure to enter the age of darkness. Narlikar and crusaders against jyotir-vigyan would do well to address the problems on philosophy, methods and limitations of science rather than indulging in misleading propaganda diverting public attention from their failures.

Finally a remark on the UGC move: I do not think that either the HRD Minister or the UGC Chairman also understands 'jyotir-vigyan'. In an article I read that 'exporting this knowledge' also figures in UGC circular. It may be true because now-a-days there is a brand of Indian heritage that is aimed at being marketed for 'dollars', and why not! NRIs have proved marketability of 'yoga', 'ayurveda', etc! The real danger to 'jyotir-vigyan' is from such people, not from Narlikar & Co.

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