

Stages of scientists

Balamram should be complemented for his perceptive editorial¹. Of the six stages he described, the future scientist's value systems and culture are decisively influenced in the first stage and passed on by him to future generations of scientists in the latter stages of his career. His ethics in the practice of science, i.e. his research efforts, will define his own value systems and these in turn define what he passes on in the latter stages of his scientific career to his successors, either as a teacher or a research scientist in a laboratory. To this extent, how his value systems are shaped in the first stage by his seniors, in a very real sense, will shape the future of science and science-based technologies, on which the future of our country so crucially depends.

Balamram in his editorials in the past commented on the ethics in the practice of science in India. He liberally gave space in several issues of *Current Science* for a debate on this issue. There was broad consensus on the need for ethical practices. But

the devil is in the details and what followed. Even as the debate was going on in the *Current Science* columns, there were blatant violations of these ethics, even in well-known institutions, clearly with scant concern for their consequences.

The situation attracted the attention of our National Science and Engineering Academies. I recall an informal chat with a well-known scientist during the administrative phase of his career. He stated that the easiest way of avoiding the responsibility to take a decision on complex issues is to appoint a committee which will bury the issue. This is particularly true when the solution is evident but unpleasant to recommend, as it affects vested interests and clearly unhealthy practices by them.

We the scientists have a moral responsibility, if Indian science and its offspring modern technology are to grow in a healthy manner to make it possible for our country to join the cadre of developed nations. We have to remember that when we spend pub-

lic money, we are trustees for public good and do not have the luxury of betraying it by indulging in practices that do not contribute to the healthy growth of science which is largely supported by the government. The other stages of science, so well described in the editorial by Balamram, lose their relevance if in the first stage, the young scientist is not made aware through practice and precept, the importance of these ethics.

1. Balamram, P., *Curr. Sci.*, 2004, **87**, 1319–1320.

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Tribal literacy disparity in India

Literacy is universally recognized as the most powerful instrument of social change and its level is undoubtedly one of most important indicators of social, cultural and health development of a country. Tribal literacy is important for the development of tribals and for the adolescent girls amongst them because it has correlations with the survival of their children later on. Tribal populations in India have high levels of morbidity arising due to poor nutrition, coupled with high infant, child and maternal mortality. The total tribal population in India is about 67.8 million, with the largest number in undivided Madhya Pradesh (16.40 million), followed by Orissa (7 million) and Bihar (6.6 million). However, the largest proportion of tribals is in Mizoram (95%), followed by Lakshadweep (93%), Nagaland (88%), Meghalaya (86%) and Arunachal

Pradesh (64%). The Indian Constitution assigns special status to the Scheduled Tribes (STs), traditionally referred to as adivasis, vanbasis, tribes or tribals. There are about 573 Scheduled Tribes living in different parts of the country, speaking their own languages different from the one mostly spoken in the State where they live. It has been observed that Mizoram, Nagaland and Meghalaya have high tribal literacy rate compared to that in Madhya Pradesh, Orissa, Rajasthan and Andhra Pradesh. For instance, tribal literacy in Madhya Pradesh was 7.6% in 1971, 10.7% in 1981, 21.5% in 1991 and 36% in 1999–2000 (NSSs 55th Round) – all below the national average for tribal literacy. Just writing name does not mean being literate. A person can be called literate when he is able to read instructions on the packet of fertilizer

or commodity or that written on a medicine. Questions have been raised regarding the low literacy rates in states which have a large proportion of STs. While considering the socio-economic development of the tribes in India, it was observed that comprehensive area health-related studies were lacking and they did not cover various dimensions related to education. Therefore special efforts should be made to advice a better literacy rate among the tribal population, particularly in the states that have a large number of tribals.

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