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Recesses of the mind

The editorial 'The recesses of the mind' (*Curr. Sci.*, 2002, **82**, 1065–1066), highlights the important issue of mental illness.

The moving story of the achievements and the illness of John F. Nash Ph D, appeared in *The New York Times* (13 November 1994, Section 3, p. 1) before the appearance of 'A Beautiful Mind' under the caption 'The lost years of a Nobel Laureate'. Nash (now 73) received the Nobel Prize in Economics in his 66th year (1994) for the work on game theory carried out by him in his 20s. In his 30s he fell a victim to a severe type of 'paranoid schizophrenia' and spent the next twenty five years undergoing treatment as an inpatient and outpatient in hospitals, with medication and psychotherapy. He had fearful delusions and disordered thinking. 'A mute figure who scribbled strange equations on black-boards and searched anxiously for secret messages in numbers!'. He heard 'voices' – hallucinations periodically. Around his fiftieth year, he came out of schizophrenia and started to work on computers in ingenious ways – a remarkable sign of recovery. He did not publish any scientific paper after 1958 nor did he hold any

academic post after 1959, indicating thereby a lack of creativity during the years of illness. The most significant contributor for his recovery was the immense psycho-social support he received from his wife and friends.

The narration on Nash has important messages: (i) Intensive treatment, including family care towards recovery; (ii) A number of clinical researchers who have followed patients with schizophrenia have observed that 20–35% of them achieve a good quality remission even after decades of severe illness; (iii) The stigma of mental illness did not deter the Nobel Committee from their final decision. Nash was among the living Nobel Laureates who participated in the Centenary of the Nobel Foundation in December 2001.

The statement in the editorial that 'schizophrenia is an affliction that may defy our understanding for some time to come' is indeed true. Schizophrenia like the proverbial Sphinx poses more questions than can be answered.

The German psychiatrist Emil Kraepelin developed the concept of this illness from 1883 and it was in his *Compendium of Psychiatry* (1899 6th edn) that he used

the term 'dementia praecox'. Later the Zurich psychiatrist Eugen Bleuler rechristened the illness as 'schizophrenia' (1908). However the first use of the word 'dementia praecox' was by Morel, the French psychiatrist.

Recent genetic research on schizophrenia has highlighted the interaction between the gene and the environment. The schizophrenia gene is a necessary cause but not a sufficient one. The latter comes from the environment. In the absence of the gene, the disease is unlikely to occur. Nasar's book discusses that Johnny, the son of Nash, also suffers from schizophrenia.

Creativity, indeed is a complex subject that is being debated. Creativity is more evident in patients with 'mood disorders' than schizophrenia and manifests in spite of mental illness.

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Spirit of scientific innovation in India

Science is the key to salvation for the poor nations¹. It has been a liberating force in ancient India² upon which the foundation of modern science rests^{2–4}. We are a nation of one billion people.

Performance of science in India has been spectacular in several fields^{1–4}, but we also have problems; fortunately these can be corrected. I propose to make a case here that the only way to correct the

situation and thereby be a leading nation is by taking measures to cultivate the spirit of innovation in children. This can bring an innovative wave of science in India over the next 25 years.

A recent attempt by *Nature* and *Science* to launch the SciDev.Net, to bring useful literature to the reach of developing countries^{5,6} talks about the role of innovations, but there is indeed nothing in the web site for the children of developing countries that may help them cultivate the spirit of innovation. It is true that poverty can be cured by development, and that true development can take place only by innovations, which are an integral part of development⁶. However, in order to translate this to reality we must understand that children are the future of the world, and the seeds of innovation should be sown early in life.

Science teaching for children should be more than just the course-work⁷. It should be fun and frolic, and also a way to understand the environment. Inculcating the spirit of innovation must be the mantra for science in India.

For this, the internet can be one of the powerful tools. The need, however, is to make available all forms of medium, facilities and systems, including the Internet to children. There is also an urgent need to inform all sections of the society as to how education and knowledge can be helpful in bringing creativity and innovation. How can that happen?

Both students and teachers need to be aware of the latest developments in science. More than this, scientists need to understand that they are being paid by the society not only for good research, but they also have the responsibility to teach the scientists of tomorrow.

Opening knowledge kiosks at every school can provide latest information and knowledge. Organizing regular seminars and meetings for children can also help. But, all this needs to go beyond the ribbon-cutting celebrations we are so familiar with. In India a large section of the population is poor. The areas in which these people live do not even have electricity, let alone computer or the Internet. Moreover, as many of them do not know English (in which most material on the Internet is often available), local languages may be the answer, through which to initially operate.

Teachers can help students to take part in research and participate in conferences. Good teachers should avoid running away from teaching in the name of research. Scientists and teachers can do more than just complaining about declining standards of science in India. I wonder, how many top scientists in India have ever gone to primary schools – apart from being chief guests in school functions – to talk to school children or deliver an inspiring talk to motivate them and inculcate the kind of spirit of innovation that helped C. V. Raman to discover ‘a new type of secondary radiation’⁸ and made him the first Asian scientist to win the Nobel Prize. It was this inner drive that compelled Raman not to bask in the glory after becoming a Nobel Laureate; he went on to provide experimental proof for the spin of photons⁹ soon after.

The government alone cannot bring a wave or movement in science. History

teaches us that such movements can only come through public action. Therefore investment in science is worth doing by all: the government, philanthropists, and parents for the cause of science in India (Figure 1). Particularly, the last two have not been very forthcoming in India. The time has come to realize that results of such action ‘could yield a return that will overwhelm the small investment required’¹⁰.

Parents and schools should invest in providing at least one leading scientific journal, to their children. Is it not deplorable that in our country with several million teachers, doctors, engineers and officers, a journal like *Current Science* should have only 4200 subscribers. It is a pity, since a five-year subscription to *Current Science* costs less than many useless things that the 120 million middle and upper class people purchase every month. They consider purchasing such journals as a waste of money or they may not be aware about such journals. There is a way to correct this situation. Teachers and students should be made aware that journals like *Current Science* are being published. There are two more groups of students who should be contacted. Every year about 220,000 students complete their education in science subjects, and there are several thousand Indian students who are able to afford to study in foreign countries. They can be contacted by email. This chain reaction may bring the readership and subscription of *Current Science* to at least 300,000 in next 10 years. But, there should be at least some pages in the magazine for students and children, and maybe by children. This is a dream, but it can come true. The situation is equally bad for children in terms of availability of material for them in leading journals such as *Nature* and *Science*, but *Current Science* should become the leader in this noble work.

Another important issue which needs to be addressed is to inform people about the various job opportunities which one gets when they choose science as a career. An important aspect in life is earning a respectable livelihood. According to latest reports¹¹, children and youth worldwide are neglecting careers in the field of science as they think it does not provide them with enough money to lead a happy and successful life. The need here is to convince the youth that none of the famous scientists has died of wealthlessness

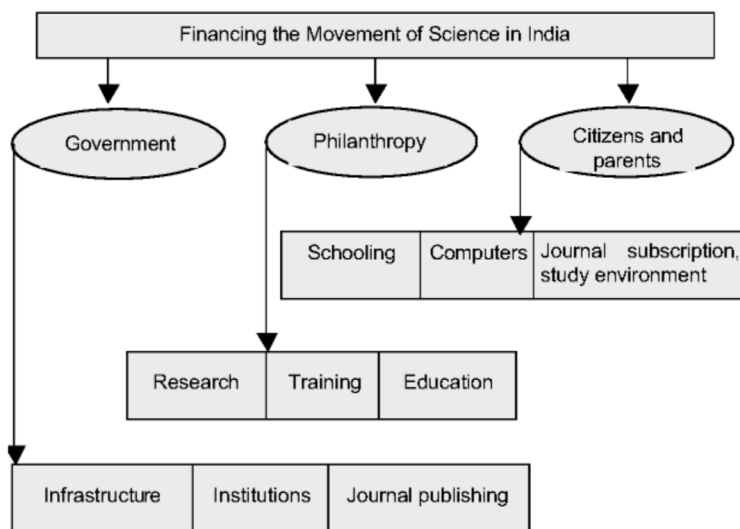


Figure 1. Raising resources to help children to bring a wave of science in India.

rather, in contemporary society science graduates are converting their knowledge into wealth.

Science has, and will continue to have, a definite role in the future of India^{1-4,12}. If Indian society wants to increase the scientific wealth of the country¹³ and see several Nobel Prizes, then the advice of the great Indian scientist Homi Bhabha on education must be addressed¹. The problems hampering Indian science^{14,15} need to be addressed, and the quality of journals should be made comparable with the best in the world¹⁶. Children and youth should be taught well, so that they can change India for generations to come.

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White coat in the medical profession

Patients' perception of doctors in their white coats has an important role in the doctor–patient relationship. The white coat depicts the complete image of a doctor in the hospital. Surprisingly, in recent times, there is a gradual decline in the number of medicos wearing white coats. Unfortunately, the younger generation also dislikes to wear white coats, especially after passing the final MBBS examination. A visit to any hospital, would corroborate this sad tale.

Contrary to the usual misconception that patients, especially children, fear doctors in white coats, the results of a study conducted by McCarthy *et al.*¹, in the Children's Hospital, Denver, surprisingly showed that children are not afraid of doctors in white coats¹. A multiple questionnaire distributed to all the patients in Saint Marianna Hospital, Tokyo, showed that 71% of patients preferred doctors with a white coat compared to

29% who preferred them in casual clothes². The most important reason for preference to the white coat is its cleanliness. Interestingly, it has been found that the patient's preference to white coats also increases with age.

The white coat worn by the physician signifies adoption and acceptance of aseptic and precautionary measures. *Staphylococcus aureus* and Gram-negative bacilli are the commonest organisms contaminating hospital uniforms³. A neat and tidy physician's attire would definitely add to the patient's satisfaction during any consultation, besides checking entry of unwanted micro-organisms.

A casual attitude by the physician and relaxation of rules by the hospital authorities have resulted in this scenario. It has to be clearly understood that when a doctor dons the white coat, he/she defines himself/herself in the medical profession. It also sets a trend for the

younger generation of doctors, nurses and paramedical staff to follow. The white coat should be recognized as a major component of the doctor–patient relationship and must be worn by all doctors on duty.

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Future of science and science education in India

The interview of C. N. R. Rao with Nirupa Sen (*Curr. Sci.*, 2002, **82**, 788–792) is timely and covers many issues

which have far-reaching consequences. Rao has clearly emphasized several key science policy issues, including food,

shelter and clean water which are often forgotten by our scientists and policy makers. Rao's vision and ideas about