

Professionals and innovators

We all know that the trend among our country's bright students is to go for professional courses like information technology, engineering and medicine. Those who fail in getting entry into these courses take up general science subjects, most of them with a frustrated mind. And it is this second group who, on completion of their study, enter into research by qualifying CSIR-UGC NET or other such examinations. Although to take up a research career is not at all a barrier to the first group, whom we consider as comparatively more talented students, they look for a professional career. How many medical doctors or engineers do research in our country? We have to admit, only very few. But this is not the case in Western countries. Why is the professional career so lucrative in our country? Because it assures wealth and our society extends more respect to it. A researcher usually spends a lonely life with little or no respect from the society and often from the family. The question is why

do we not even rarely see a professional to be an inventor or creator? This is because of the different mindset that develops with the professional culture and the concept of success in profession. In this connection, the following points may be noted:

A professional utilizes existing knowledge and technology, while wanting to compete and rise above others, with the primary objective to earn money and fame. He/she remains within the domain of the learned information and knowledge. Observing things as others see them and thinking about it as others think. Generally the thought process is limited to the subject of specialization; he/she may enjoy the work, but that usually does not touch the world outside materials and the contributions from efficient professionals result in gradual development of a country.

On the other hand, the innovator is not satisfied with existing knowledge and technology; the main objective is to do something new. The innovator's mind dwells

on novel and unknown domains, observing things as others observe them, but thinking differently (unlimited and boundless thinking). For him/her success in innovation or creation lifts the mind above the materialistic world. Most importantly, an innovator's contribution may radically change the face of a country.

These points are written with a hope that someone may be encouraged to select the path of innovation. Today's science and technology has greatly widened the scope for a creative mind by removing the compartments between different subjects. This has considerably removed the limitation and inhibition to transform the impossible to the possible.

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Copying the US system!

The advice to the policy makers in India not to copy the US system for funding scientific research is well intentioned¹, but basic questions related to science, technology and society are not mentioned. In fact, the main thrust of the arguments itself is very American – technology necessarily leads to prosperity, and the meaning of prosperity is defined by the US model. The inter-relationship between science and technology, and the necessity for new technology for the welfare of human society are complex issues. Roy¹ suggests that application-driven basic research is the only socially responsible paradigm. Let me invite the attention of the readers to some observations made by Feynman in his Nobel lecture, while describing the development of the path integral approach. He recounts his conversation with a European physicist Her-

bert Jehle and quotes, presumably from Jehle: 'You Americans! You always want to find a use for everything! ...You Americans are always trying to find out how something can be used. That's a good way to discover things'. I think this is true, but then science does not always move in this way, search for truth and pure thought are the sole objectives of science.

It seems that profit-making, application-oriented science and planned, heavily funded research in the US have led not only to what I call 'grey science', but to 'black technology'. The question is that of financial support: fantasies like testing early universe model or work on quantum computers or very high energy physics presented as basic sciences, do not deserve huge funding. Perhaps Herndon² is right that serious criticisms of such heavily

funded research are seldom taken notice of. Somewhere the balance between applied and pure science got lost, and science is controlled by those who have money or political power. This is a self-destructive process, and I have no doubt that US science is on a decline. Therefore, instead of devaluing pure science, the need is to check the unbridled commercialization of knowledge.

1. Roy, R., *Curr. Sci.*, 2005, **89**, 423.
2. Herndon, J. M., *Curr. Sci.*, 2005, **89**, 425.

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