Publish in Indian journals

About 50 billion rupees is being spent annually on research and development in our country. But due to the malpractices by administrators and higher authorities of research institutes and universities of India, the top-class research findings are being sent for publication in foreign journals. Thus Indian citizens do not get any benefit from this research which only goes to the developed countries.

Currently, preference for promotions and other monetary benefits is being given to research workers on the basis of their publications in foreign journals. Thus Indian research workers are compelled to send their work for publication in foreign journals for personal benefits. It is a sort of corruption in the sense that public money is being used for personal benefits rather than for the benefit of the whole country or the state where the research is carried out. Such research work is draining our country both economically and technically.

The research workers should be promoted on the basis of their work published in Indian research journals only, so that good research papers may be published in Indian journals, which will lead to all-round development of our country.

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Science – Big, small and beautiful

The editorial 'Big science, small science' (ref. 1) is timely as well as forthrightly accurate. It seems tragic that human endeavours in creativity and search for truth, when they get organized and structured, seem to lose their core strengths.

I am reminded here of a Sufi friend's parable. Satan and his friend on a walk notice a piece of paper on the sidewalk. Satan picks it up, reads it, pauses for a moment, smilingly puts it in his pocket and resumes his walking. The friend is curious and asks Satan what it is all about. 'Oh! Nothing I read the Truth on the piece of paper' says Satan. The friend is puzzled, 'Shouldn't it worry you that with Truth discovered, you will have no place?' he remarks. Satan's reply is classic on the value of structure and organization. He says 'Oh! No problem. I will organize and put Truth on a structure!' The rest is the history of mankind's problems with organized religions and movements based on Truth discovered by prophets! – a history not too glorious for the bloodshed, tyranny, bigotry and intolerance perpetrated in the name of Truth.

It is worrisome that science, a hallmark of the human mind and spirit to seek truth, without any trappings, appears to be facing a similar crisis in structure and organization, this time around, driven by considerations of its economic potential by centres of power, commercial as well as political. Painful has been the recent history of science operating under political ideologies, where science had to subserve the ideological dogmas of totalitarian systems, which had to crumble under their own follies of curbing individuality and not recognizing the value of irreverence to authority and dogma of any kind, economic, political or social.

The overwhelming momentum of the engines of free economies which result in scams such as the recent UTI episode are but symptoms. The mindless dismantling and demoralization of trained technical and scientific manpower in several economies to the dictates of stock markets, is yet another equally painful symptom. For good science to flourish, it has to stay free and unfettered by ideologies, political, economic (or spiritual). If one were to examine the evolution of big science, it becomes clearly evident that the promotion of big science is most often by patrons in the political or economic sectors to subserve their own agenda. (Thank heavens, patronage from spiritual sources has thus far not occurred, one can imagine its comic and tragic consequences.) In terms of outcome, such patronage might have produced results as products, services, innovations and improvements in man's condition. No quarrel with such productive association for utilization of the efforts of real science for value to mankind. The crucial and often ignored point is that such structures have rarely nurtured the kind of creativity and originality in minds, so critical for epochal understanding of nature in which man is situated and functions. This requires small and free entities and has to be handled with understanding and deference for inquiry most often not associated with visible and ready market value. In support of such an ideology, reference to the following may be considered.

Let us take examples of science's contribution over the last century to human health. One can state, argue and provide proof in the form of published scientific papers that most of the modern miracles of medicine, be it critical care of a patient in a modern intensive care unit, coronary bypass surgery or differential diagnosis of a large number of life-threatening diseases using the awesome diagnostic armamentarium at our disposal, have evolved and become possible not because scientists performed in big teams supported by big money provided by big companies or bigger and mightier governments. There is documented proof in the literature

that there were 'small' scientists, barely subsisting on shoestring budgets, working in obscure basement laboratories trying to take small steps in the unravelling of nature's secrets which were of fascination and passionate interest to them, whether they were chemists, entomologists, physicians, physicists or botanists, being of no relevance. In a classic paper[2] in *Science* in the 1970s and in a monograph[3], Comroe provided the strongest argument ever made why science has to be 'free' and open-ended and by his inference, small, in order to be creative. His thesis was that coronary bypass surgery was facilitated by scientific findings by numerous but critical contributions in disparate disciplines by individual (individualistic) scientists over a period of almost a century, and did not follow a mission and big money-driven and structured effort. Another example. Boyle, Van Slyke and Sorenson were all small scientists, pursuing problems of their own interest, with a fierce focus, solutions to which eventually led us to understand the physiological basis of blood gas homeostasis and ionic balance in circulating human plasma in health and disease. Most of what we measure in diagnosis, management and prognosis of critically-ill patients in ICUs around the world today, as physical biochemical parameters, would not have been possible were it not for such unstructured small science working without a mission of solving big problems with big money.

The current frenetic chase for the golden helix and the rush for a mirage created by hyped and venture capital-driven scientific revolutions, need some moderation and calibration to sobriety. More often, these conquests are more admired on the covers of business magazines, hardly contributing to lasting scientific lexicon. Perhaps, it is time for a distinction to be evolved and drawn between the two types of sciences and let the discriminating public and professionals know which one we are dealing with and with what expectation. Crucially, the development of the big fish should not be by cannibalization or starving of the small fish, downgrading the support and recognition the latter needs. The 'real thing' is the small one, while the big one is an instrument to harvest the golden eggs.

History of science is full of examples of such natural evolution of the so-called small science generating without pre-planning and mission orientation, crucial foundations for such spectacular applications that have transformed our lives.

This is the time to look at the two, in balance and perspective and keep small science nurtured and supported. That 'invention is the mother of all necessities' as stated by Arthur Kornberg[4], may be the reality, rather than the long held belief of the reverse that 'necessity is the mother of all invention', the modified aphorism truly applicable in the big science, small science context.

1. Balaram, P., *Curr. Sci.*, 2001, **81**, 133–134.
2. Comroe, J. H., Jr. and Dripps, R. D., *Science*, 1976, **192**, 105–111.
3. Comroe, J. H., Jr. *Retrospective Insights into Medical Discovery*, Von Gehr Press, Menlo Park, CA, 1977.
4. Kornberg, A., Conference on Future of Biomedical Research, *FASEB Symposium*, 13 March 1997.

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Appointment of Vice-Chancellors in universities

D. K. Basa in his write up (*Curr. Sci.*, 2001, **80**, 1364) laments the poor quality of academic leadership provided by Vice-Chancellors in our universities and Directors in national research institutions, because of a faulty system of appointment and selection. He points out that the high priests of academic and scientific organizations in modern-day India succumb to political pressure and instead of confronting the political bosses to defend quality and truth like Asutosh Mukherjee, behave like chameleons and depend on political bosses.

Basa suggests the citation counts of a candidate be mandatory for an objective assessment of quality, in addition to other selection criteria of Vice-Chancellors/Directors. In pre-independence India, Vice-Chancellors of Calcutta, Bombay and Madras Universities were appointed by none other than the Governor-General of India. Asutosh Mukherjee got as many as five terms as Vice-Chancellor and was not removed even when the Secretary of Education of British India gave an adverse report against him for his nationalistic views. But in independent India, Vice-Chancellors in state-run universities are appointed by the Governors (in their capacity as Chancellors) on the recommendations of the Chief Ministers of the respective states. Hence, political interference is an inherent character of our university system. When the political leadership changes in a state, the first casualty are the Vice-Chancellors, who are either asked to resign or shown the door by other means. It happened time and again in Haryana and in some other states of India. Our universities have become hotbeds of politics and the Vice-Chancellors are obliged to play to the tunes of their political bosses. This vitiates the academic environment in the university campuses, with faculty and students pulling the strings with the involvement of political bosses. The universities are thus reduced to act as extension centres of the state government.

To improve upon the present system of appointments of Vice-Chancellors in Indian Universities, the following criteria may be followed uniformly in all state-run and central universities: (i) The term of a Vice-Chancellor should be fixed, e.g. 5 years and no further extension should be given. (ii) A panel of experts consisting of topmost academicians should be constituted, to advice the Chief Minister/Governor of a state