Table 3. Time taken by the SSB awardees to get the TWAS prize

Time taken (years)	Number of SSB awardees conferred with TWAS prize	% share
0–5	7	14.5
6–10	18	37.5
11–15	12	25
16–20	8	17
21–25	3	6

engineering, mathematics, medical sciences and physics. Each TWAS prize carries a cash award of USD 15,000 and a plaque[3].

The latest list shows that there are 338 TWAS prize-winners from 27 countries[4]. Table 1 shows geographical distribution of TWAS prize-winners during the period 1985–2016. India dominates the number of recipients (62) followed by China (50) and Brazil (38). Thirty-seven scientists belonging to Mexico and Argentina, 27 belonging to South Africa, Pakistan, Chile and Taiwan and, 24 scientists belonging to 18 countries – Bangladesh, Costa Rica, Ethiopia, Ghana, Iran, Jordan, Korea, Malaysia, the Philippines, Sultanate of Oman, Uruguay, Venezuela, Colombia, Egypt, Lebanon, Nigeria, Turkey and Uzbekistan have been conferred with the prestigious TWAS prize.

Table 2 presents Indian recipients of the TWAS prize from 1985 to 2016. Of these, 48 are recipients of the SSB prize as well. Table 3 provides a snapshot of the time taken by SSB awardees to win the TWAS prize. The result is in line with our previous studies[1,2] that winners of SSB prize are more likely to get international recognitions.

1. Singh, I. and Luthra, R., *Curr. Sci.*, 2014, **107**(2), 163–166.
2. Singh, I. and Luthra, R., *Curr. Sci.*, 2015, **109**(2), 661–663.
3. http://twas.org
4. https://en.wikipedia.org/wiki/TWAS_Prize

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Rediscovering universities: bring back academic respectability

P. J. Lavakare[1] in his commentary on rediscovering our universities has made certain points that are partially agreeable. The focus of the note is essentially on science and technology-based subjects; it has completely ignored language and literature, history, political science, sociology and other related subjects.

Lavakare[1] wants the Academies of Science in our country to have close association with colleges and universities, and through such association and involvement wants to do away with the caste system in education. Science has grown to become an extremely specialized field today. While CSIR laboratories and institutes of higher learning promote the depth of knowledge, traditional universities promote the expanse of knowledge. It would have been better if the depth and expanse could be combined together to create a new recipe. Successive governments, and the Department of Science and Technology have been interested in showcasing advancement in science and technology; the universities have got a raw deal. Most of the affiliated colleges across the country have not received much (and desired) academic attention.

India is a vast country with extraordinary diversity; but there has been no planning of education based on resource availability at a particular geographical location in the country. The university laboratories need upgradation, and should attract talented students. Researchers should stick to the field of research for all-round development of the country and get all administrative and financial support. I agree with Lavakare[1] that there is a need to infuse 'life' in the universities in the country today. In the prevailing situation, a more synergetic relationship among the CSIR laboratories, universities and colleges should be established. Science needs to move from laboratory bench to the meadows and factories and unless that happens, the real strength of science in a big country like India cannot be harnessed. It is a fact that CSIR laboratories have received huge grants over the years. Now it is time that they transfer the knowledge created, through universities and affiliated colleges, to the less fortunate ones of the country. The major problem in India is that true centres of knowledge creation have been too few, although there are colleges and universities all over the country. The rediscovery of the institutions calls for proactive action from the top and also from the bottom. The gifted institutions must shake hands with the emaciated ones; this will bring forth a cultural change. That is the only way to rediscover our universities and affiliated colleges.

Lavakare[1] has proposed phase-wise abolition of the affiliation system. I do not know whether it will do good to the affiliated colleges. These colleges need mentoring by the universities. Rules and regulations related to registration, examination, reviewing of answer scripts, publication of results, etc. made by the universities need to be adhered to by the colleges. It has been my experience that when colleges are given partial responsibility of conducting, say, examinations, they back-track citing certain operational problems. These operational problems/difficulties stem from the student community, which puts pressure on the college administration to relax rules, enhance marks, admit students beyond their capacity, and when their demands are not met, the students often resort to violence, etc. The principals of the affiliated colleges are in direct contact with the students and often it becomes difficult for them to ignore requests. Sometimes, local politics creeps in making the system ineffective. Under these conditions, the principals use/consider the universities as sacrosanct institutions where rules are made and which cannot

be flouted or ignored at the level of the colleges. In my own experience I have seen that these strategies generally work. If the vice-chancellor of a university and the other officials remain firm, most of the time the colleges fall in line, and acceptable academic atmosphere can be maintained in them. If the fear of affiliation/de-affiliation and occasional inspection of colleges by university officials is removed, maintenance of academic standard (whatever remains), and general law and order in colleges will be difficult.

Lavakare[1] has been practically silent on education in arts and commerce. The purpose of a university is not to create scientists only; a university must create human beings who will be educated and will be able to articulate their hopes and aspirations as they develop. This aspect of the university is not talked about at all these days. Scholastic aptitude may end up in marginal financial gains, but the sheer pleasure of gaining knowledge and insight, the joy of understanding is (or should be) the real motivating force behind any university. Do we want to make our universities 'profit and loss centres' only? Or will they be a fountainhead of knowledge for those seeking it? Lavakare[1] has talked about France and Germany. These two countries are making new experiments in education. However, mere imitation of the practice in these countries like zero affiliation may not yield the desired results in India. It is also necessary to be aware of what the students in those countries studying language, literature and social sciences are doing. It is my feeling – and please note the word 'feeling' – that their passion and profession are, in many cases, different. In India, whosoever enters the precincts of a college or a university needs a job. A teacher who imparts rigorous training is much less rated compared to one who can provide contact or marks or even questions (before the examination is actually held). This matter-of-fact attitude has destroyed the colleges and universities in India. I do not see these days 'academic respectability' because of scholarship only. Scholarship without pomp and grandeur does not entice young scholars nowadays. Even a good scientist has to somehow become a Fellow of a science academy; otherwise, all his science will be considered utter waste. This is a bad trend. A true scholar will never be a sycophant. If sycophancy is the price an educated man has to pay to make his life worthwhile or worth living, education as a whole will suffer and suffer badly.

For the rediscovery of our universities and colleges, we must bring back 'academic respectability' in our campuses. We need a critical mass of 'scholar teachers' now in all our universities and colleges to bring back transformation. Too much 'marketization' of universities and colleges is counter-productive. Universities and colleges must have a certain amount of traditional ideals left; mere imitation of Western models without thorough evaluation and chances of efficacy in the existing ground reality, I am afraid, may result in a caricature where education will be only 'job-oriented signboards' devoid of inherent scholarship and academic leadership. India as a whole will not gain from such education.

Lavakare[1] has mentioned about Richard Feynman – perhaps the best Physics teacher of the 20th century who used to infect undergraduates (UGs) with curiosity and enthusiasm. In European countries, it was (and perhaps still is) a practice for senior teachers to teach the UG level, especially the first-year students. The young minds were ignited through questions and queries. The teaching of UGs by senior scientists and professors (for subjects in arts and commerce) all over the country will indeed be a good idea. At the same time, teaching in schools needs to be improved. Understanding science does not mean ending up as doctors and engineers only. The present socio-economic conditions of the country and the acceptance of financial respectability as the ultimate by the middle and lower–middle class propel families to force their wards to leave scientific curiosity down the line and choose avenues with job security. In this process talents are lost. Although there are scholarships available for researchers, they are too few against the number competing for them. Somehow, 'the pleasure of finding things out' is not being ingrained in the vast majority of students opting for science courses in colleges. This is giving rise to frustration in the minds of even those scholars who intend to pursue science against all odds. For scientific culture to grow, society has a big role to play. Without the support of society, science will not take root in the country as in the Western nations.

Often a question is asked as to why a researcher succeeds in the Western university, but fails in the Indian system. The reason is obvious. Western countries have over many years created a culture of science and technology, and an inquisitive mind readily fits in there in the overall scheme of work. In India, organized science teaching started in 1916 in the University of Calcutta. So we are only 100-years-old. That, however, does not justify completely our development. In colonial India, with scanty resources, what we could achieve was remarkable. Even after independence, our progress was laudable.

E. M. Purcell, who won the Nobel Prize in physics in 1952, in his acceptance speech said and I quote[2]: 'It is the fact that our particular field of research, growing since the war, has played some small part in renewing the bonds with laboratories in many countries. I think first of three great laboratories on this side of the Atlantic, the Kamerlingh Onnes Laboratory at Leiden, the Clarendon Laboratory at Oxford, and the Nobel Institute for Physics here in Stockholm, with its illustrious tradition of elegant and precise experiment. Progress in the understanding of nuclear magnetism, and in its applications, owes very much to the work in these laboratories. But there are many other laboratories too, some as far away as Tokyo and Calcutta, where our scientific friends are working in nuclear magnetism. No walls of secrecy or suspicion divide us. On the contrary, free and friendly exchange of ideas has brought us close together. I wish only that these friends could share with us the warmth and kindness of your hospitality – for which, from Professor Bloch and myself, our very sincere thanks.' The quote above was the tribute of a Nobel laureate back in 1952, glorifying science done in the cities of Tokyo and Calcutta (doubt if, and I will be happy if proved wrong, after 1952, such a tribute to an Indian city's culture of science was so lauded before the world's most enlightened and elite scientific congregation). Since 1952, there has been so much restructuring in science policy in India. Meanwhile, we all have seen Tokyo advancing at break-neck speed in science with so many Nobel Prizes in the 21st century, including the 2016 Nobel Prize in Medicine/Physiology to Yoshinori Ohsumi. There is no doubt that India has also advanced. But what happened to the creativity in our universities? I am a resident of Calcutta and I feel pensive over the

fact as to why we fell back. Is it completely our fault (I mean our universities), or is it too much reliance on the new laboratories set-up after independence because of which university tradition and its creative impulses in our country slowly dried up, and a new stream was directed towards the national laboratories? Through setting up of laboratories outside the university, did we establish a new post-independence and distorted caste system in academia? Didn't we dissect, through this means, UG teaching and research completely that Lavakare[1] wants again to be entwined? Did we fill our university positions with less gifted people through petty politicization of the campuses where unfortunately, even some powerful scientists got (or get) involved? Did we destroy dissent in science completely, thereby bringing into it a tendency of glorifying 'Sir and Madam' at any cost for personal gains? We must look back and reflect on these questions, as a reflective mind gives rise to wisdom. We must change course if need be.

Good science compels us to become absolutely objective and action-oriented. Revival of universities may come through course correction. We need at this hour honorable professors having erudition and integrity to change the system. Perhaps, the system will change – sooner or later – automatically or under compulsion. But change it must.

1. Lavakare, P. J., *Curr. Sci.*, 2016, **111**(7), 1146–1147.
2. Jain, G., *Selected Nobel Laureates' Prize Acceptance Speeches*, MG Books, New Delhi, p. 71; ISBN 978-81-906278-7-0.

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Response:

My commentary was in response to the guest editorial by T. V. Ramakrishnan (TVR)[1] on the subject 'Rediscovering universities', where he had given several specific and phase-wise suggestions for bringing about changes in our university system. Chaudhuri should have referred to the original editorial and not only make comments on my limited response to the original issues raised by TVR. For example, my reference to France and Germany is in response to what TVR has written on the new initiatives being taken by these two countries in linking national laboratories to their universities. Why are we so touchy about adopting best practices from other parts of the world? We adopted the British system of universities and affiliated colleges after independence and gave up our 'guru–shishya' parampara of traditional times. We adopted the American system for our IITs when we took the help of a group of universities from the US to set up IIT Kanpur. We are now adopting the 'credit' and semester-based system of the Western countries. These are good changes that have to be brought in with changing times. Chaudhuri has quoted a 'foreign' scientist Purcell in emphasizing the role of global research in our laboratories. Why could he not quote C. V. Raman, an Indian Nobel laureate who said that in India we need 'science, and more science' to emphasize the need for scientific research in the country. Why are we still so repugnant of foreign models, but still love to quote them?

The focus of my commentary was to enhance scientific research in our universities using the existing large infrastructure of national laboratories created by the Government. Unfortunately, the so-called mandate of national laboratories like CSIR has kept the university system isolated from using the benefits of these excellent R&D facilities. Recently, the CSIR-National Chemical Laboratory, Pune, has set a good example by giving away a large part of its land and some of its top scientists in setting up the 'university' system of IISER, Pune. Many more national laboratories could have such nexus with the degree-giving Education and Research system that has been ranked amongst the top 100 in the National Framework for Institutional Ranking. The example of Feynman could be emulated by top-notch scientists in national laboratories and top-ranked universities by requesting these scientists to teach UG students from nearby colleges.

I fully agree with him that university education is not to be confined only to developing excellence in research and teaching in science and technology, but should also include humanities and social sciences. What has been recommended for national science laboratories could also be applied to specialized institutes (though not many exist) in the field of social science. ICSSR should adopt several of our universities and promote research in social science and encourage its scientists to get involved with university students and teachers.

Finally Chaudhuri is demanding that 'academic respectability' has to be given to the university teaching profession. I believe that academic respectability has to be 'earned' by the teachers. Unfortunately, unlike our tradition of 'Guru–shishya', today our teachers do not dedicate themselves fully to their students (and hence perhaps vice versa). Often I have asked students about their role models amongst the teachers and have got no response at all. Unfortunately, most of the teachers are no longer able to 'earn' the respect that Chaudhuri wants to be 'given' to them. Either due to their lack of up-to-date knowledge or their reluctance to 'learn' with the students, most of the teachers are isolating themselves from the students. With this environment, how can they expect to receive 'academic respectability'. My experience as a student and a teacher has been a pleasant one because I think my teachers took a lot of interest in me, talking to me, spending quality time with me – inside and outside the classroom – and so did I with my students. Earning 'academic respectability' is a major challenge to be considered seriously by the academic community. It cannot come from an official order from the UGC!

In conclusion, one shares the dismay Chaudhuri has shown about our university education system, but the academic community should also point the finger inwards and see what it can do to change rather than blame the rest of the world.

1. Ramakrishnan, T. V., *Curr. Sci.*, 2016, **110**, 1879–1880.

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