Can our national laboratories become research universities?

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The Higher Education scene has suddenly come to the forefront of news. From merely proclaiming policies on higher education over the last few decades, the government has now started taking specific measures. Education reforms are being introduced in the legislation. Two apex committee reports[1,2] have given rise to five legislative bills to be introduced in the parliament[3]. Government approvals have been given to almost doubling the number of IITs, IIMs, NITs and Central Universities and more such professional institutions.

Enhancing gross enrollment ratio

All these dramatic movements in the last couple of years have been primarily due to the concern acute shortage of appropriately educated manpower at all levels, from trained technicians to Ph Ds. The expectations of the youth seeking higher education are not being met. For social and economic reasons, access to education at all levels is becoming difficult. In this article, we will only focus on the question of access to higher education and the role of a university.

The gross enrolment ratio (GER) that indicates the percentage of students who are actually pursuing higher education, in comparison to the total number of youths in the age group that should be in college, is only about 12% – much below even the average of about 20% for all countries put together[4]. Indian talent has been in great demand, particularly in the IT sector, and this is only the tip of iceberg of the untapped youth potential that India has. It is alarming to realize that we are sitting on a large and unutilized section of our youth population. The main national focus is therefore to increase GER from the present 12–15% by 2015; and to at least 25% by 2020. This is a major target, demanding a phenomenal growth in the number of higher educational institutions (and teachers). At present, India has 504 universities and 25,951 colleges[5]. The committee reports[1,2] have projected a requirement of additional 1500 universities! It has taken over 60 years for India to establish these 500 odd universities. How do we 'establish' additional 1500 universities in a short time? This big question is being answered in different innovative ways. One suggestion – and perhaps the most logical one – has been to convert a large number of well-established colleges (or cluster of colleges) into full fledged universities with expanded and networked infrastructure. Other solutions indicate setting up more state and central level universities with public private partnership, and also permitting foreign universities to establish branch campuses in India.

National laboratories and deemed universities

Another major initiative that has been taken by scientific agencies like the Atomic Energy and Space is to get their existing national laboratories recognized as 'deemed' universities, allowing them to recruit mainly postgraduate students who can be awarded degrees by these 'deemed' universities. The CSIR has approached the government for approval to set up a 'CSIR Academy'[6] that would be allowed to give formal postgraduate degrees (as is done by UGC recognized universities), to researchers working in their large number of laboratories. If this bill is approved by the parliament, the proposed academy would be able to take up the 'degree giving' role that is so far only been allowed to UGC! This will be a major reform in the 'university system'. Will UGC allow this? Will the other academies of sciences be allowed to play the same role?

In this article, we will focus on these initiatives of the scientific agencies and examine how this transformation of 'national' laboratories into the so called 'deemed' universities or a degree giving academy would be effective. How will these initiatives serve the purpose of enhancing the need of increasing the number of 'universities' required by the government?

The importance of 'University' education

The basic issue is that we need a much enlarged 'system' that will give opportunities to students to enter the higher education stream and get high quality education and exposure to a research culture that is so essential today for the scientific development in the country. From the students' perspective, such a system should provide them a well rounded education (and this is the role of an ideal university) leading to an undergraduate or a postgraduate degree that will help them to enter the outside world to undertake any career – teaching, research, entrepreneurial, social service, or even prepare them for public service and political public life. This broad-based requirement expected of a university system has been aptly defined in the Yash Pal committee report where the 'idea of a university' is given as follows[2]:

> 'A university is a place where new ideas germinate, strike roots and grow tall and sturdy. It is a unique space, which covers the entire universe of knowledge. It is a place where creative minds converge, interact with each other and construct visions of new realities. Established notions of truth are challenged in the pursuit of knowledge.'

In India, we may have a few universities that may meet this 'idea of a university' description, but by and large, most of our universities fail to comply with this definition. This lacuna should not be perpetuated and we should not continue to be satisfied with setting up the same kind of 'incomplete' universities, with 'more of the same' approach. I think India has now an opportunity to work towards building universities that will meet the noble concept of a university defined above, provided we do not dilute our ambitions and settle for something that just results in one more institution handing out paper degrees to our students, without giving them the kind of 'space'.

We need to address the question of higher education from the point of all disciplines of knowledge. But for the purpose of this article, let us look at how scientific knowledge (leading to degrees in science and engineering) can be imbibed amongst our 'future scientists' (viz. science and engineering degree holders) without depriving them of opportunities to taste 'the entire universe of knowledge' existing in disciplines like philosophy, history, literature, fine arts, etc., just to name a few disciplines that are normally considered to be 'outside' the purview of a 'science and engineering' degree requirement. Ideally we would like our 'scientists and engineers' to be well developed and rounded 'complete'

individuals who should be able to meander in different areas of knowledge that they would be attracted to as they move into the outside world. We do not want over specialization without broadening the knowledge base of our specialized graduates. Our new universities (and academies) should address this basic question of higher education or else we will end up creating 'more of the same' type of institutions and with the same criticism that our graduates are unemployable and not fit to face the multiple challenges in the real world outside.

A challenge to our national laboratories to become true universities

If our national laboratories wish to take up this new 'degree giving' role of a university, they must also take up the bigger responsibility to satisfy the above definition of a university[2]. Universities that satisfy this role are seen in the USA and UK and also perhaps in Europe. The MIT, Caltech, Stanford and Harvard universities are not universities providing knowledge only in specialized areas of science, technology or business (as perhaps their names suggest). They offer courses on their campuses that cover 'the entire universe of knowledge' and, over the years, the students get a chance to taste this knowledge as they pursue their degrees in specialized areas. When a fresh student enters these universities as an undergraduate, very often he/she decides on the topic of specialization only after he/she has 'tasted' the pleasures of other disciplines. Our universities and colleges in India put you into compartmentalized boxes of 'Science', 'Arts' and 'Commerce' with literally solid wall boundaries preventing students and faculty to enjoy the flavours of other disciplines besides their 'chosen' one. If our national laboratories wish to become universities, they must aspire to fulfil the definition of an ideal university that permits such multi-disciplinary approach to seeking knowledge. Are they ready to play this bigger role?

Our national laboratories are considered 'prestigious' institutions for pursuit of pure and applied science (and many of them have rightly deserved that honour), but now if they wish to enter the portals of an 'ideal university', they would have to change their approach to 'giving' and 'creating' knowledge. Thanks to the initiatives taken by Homi Bhabha and Shanti Swarup Bhatnagar, our national laboratories have developed a culture of excellence and good governance, but limited to pursuing research in specialized areas. The national laboratories are not known for undertaking basic teaching responsibilities that would be equally important if they have to become 'universities'. Our good universities have done a commendable job of teaching and producing graduates that have, by and large, served the society well. But overall, our university system has not provided the space where '*new ideas germinate, strike roots and grow tall and sturdy… a place where creative minds converge, interact with each other and construct visions of new realities. Established notions of truth are challenged in the pursuit of knowledge*.' Can these two arms of 'giving' and 'creating' knowledge do a hand shake? I think it is possible if both sides see the importance of developing competent and a well-rounded manpower required by the country.

The national laboratories have the experience of good governance, have a large scientific infrastructure with research capabilities; and in many cases, well developed land and buildings. They should use this strength and take additional responsibilities of teaching adequate number of undergraduate (to begin with, say just 100) as well as postgraduate students. They need to add and, more importantly involve, faculty in the areas of humanities and social sciences. But they must retain their emphasis on research in specialized areas of science and engineering. The existing scientists and new faculty should be expected to teach as well as to do research. On the campuses of these national laboratories, students and faculty from various disciplines should be able to live together and interact with each other.

Writing about 'Universities and National Life'[7], S. Radhakrishnan, India's philosopher-statesman had said: '*I am not much in sympathy with the idea of developing the sciences in one centre and the arts in another. The liberal arts and the pure sciences complete, correct and balance each other*.' Further, quoting from Lord Haldane's address on 'Civic Universities' he writes[7]: '*You cannot, without danger of partial starvation, separate science from literature and philosophy. Each grows best in the presence of the other*.'

Radhakrishnan deliberates further on the role of universities when he recognized the importance of specialization in certain areas of knowledge. He had said: '*In these days of specialization, it is difficult for one to keep oneself up-to-date in any of branch of learning without neglecting to a certain extent other of branches of learning. University life, where men pursuing learning in different spheres daily meet together in intellectual and social intercourse, is the only safeguard against the dangers of over-specialization.*'

If our national laboratories truly want to be universities (and let us ban the word 'deemed', as it is only a legalistic creation of the UGC) – and one genuinely believes that they can be excellent research universities as well – they will have to incorporate, in their new structures, the concepts of an ideal university so clearly spelt out by Radhakrishnan and further propounded extensively in the Yash Pal committee report. Incidentally, the report has not accepted the suggestion that a national laboratory, in its present form, could be considered as a 'university'.

One would like to conclude on an optimistic note that if national laboratories, in their demand for university status, also accept the major responsibilities of an ideal university, our country would have taken a major step in higher education reform. We would have created an ideal blend of 'teaching and research' in our education system – a blend that we had lost when we created the structures of national laboratories. Surely, we can think of a Bhabha like innovation and create a new brand of 'research universities' incorporated in our national laboratories. We would have created our own Caltech and Stanford models for university education in India.

1. National Knowledge Commission Report, Govt of India, March 2009.
2. Report of The Committee to Advise on Renovation and Rejuvenation of Higher Education, 2009; http://www.education.nic.in/HigherEdu/YPC-Report.pdf
3. Education Reform Bills for Parliament; Govt of India, 2010.
4. UNESCO Institute of Statistics Report, 2010; http://www.uis.unesco.org
5. Annual Report 2009–10; Ministry of Human Resources Development, Govt of India, 2010.
6. The CSIR Academy Bill, 2010, http://csirindia.wordpress.com
7. Radhakrishnan, S., *Reader – An Anthology*, Bharatiya Vidya Bhavan, 1990, pp. 481–494.

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