

Rethinking the University of Teaching and Research: Challenges Now and in the Future

27

Dhruv Raina & Prakrati Bhargava, JNU

Paper Reprint from



Rethinking Universities for Development: Intermediaries Innovation & Inclusion

Rethinking Universities for Development Intermediaries Innovation & Inclusion



IDRC * CRDI

CCO Centre for Innovation and Entrepreneurship
Centre for Innovation and Entrepreneurship

Rethinking the University of Teaching and Research **Challenges Now and in the Future¹** **Dhruv Raina and Prakriti Bhargava²**

This reflection has been cobbled together out of three distinct activities. The first has to do with my own historical investigations into the institutions and processes of the production of knowledge; the second very briefly from my teaching on the changing conceptions of the university; and the third has to do with the specific manifestations of the university in India. Any student of the history of the university as a corporate institution would be confronted by the variety of institutional and organizational structures within which it has evolved in this long millennium. And yet the history of the university as a corporate institution of higher learning commences in two related organizational curricular formats namely the university of students and the university of the masters in the twelfth century AD. Over the next six centuries the elements of these two university structures synthesized and multiplied in a variety of combinations and geographical and cultural environments to give rise to new generations of universities each reflecting larger social and political changes.

Furthermore, towards the end of the eighteenth century with the rise of nation states and the spreading industrial revolution, this ensemble of corporate institutions underwent another radical mutation, undergoing speciation along two distinct axes – the university of teaching and research and the specialist polytechnics and *grandes ecoles* which by the end of the nineteenth century served as a model for MIT and the related family of institutions. As the nineteenth century progressed these new institutional and organizational forms were globalised or expanded, first within Europe and then outside of it – although the expansion of the university outside Europe commenced two centuries earlier – I am referring here to Latin America. In this migration, either through the efforts of imperial regimes, or otherwise as in Japan, different models of the university domesticated from varieties derived from Europe developed.

The development of institutions, it has been suggested by historians and sociologists of knowledge, is driven through internal social impulses and external pressures. This leads us to the paradox Bourdieu associates with knowledge institutions, namely the drive to reproduce a tradition which is manifest in the resistance to innovation, and on the other is the drive towards innovation which too is an essential feature of knowledge institutions. In a manner of speaking, then in definitional terms, the attempt to qualify a knowledge institution as innovative is superfluous – we are almost in the neighbourhood of an oxymoron. In any case, if the university is in a state of crisis as several scholars of the universities believe it is, then that also has to do with how the paradox is seen as resolvable.

¹ The paper draws upon the following articles: Dhruv Raina, 2011. “Institutions and Knowledge: Framing the Translation of Science in Colonial South Asia”, *Asiatische Studien/ Études Asiatiques*, LXV, 4, pp.945-967; Dhruv Raina, “Science since Independence”, in Ira Pande (Ed.), *India 60: Towards a New Paradigm*, Harper Collins India, 2007, pp. 182-195; and two forthcoming chapters entitled “Land-and-Other ‘Scapes’ of Knowledge, Institutions and Curriculum: From now till 2035” – appearing in a Vision Document, and “Transformation in the World of Higher Learning: Changing Norms and Values of Universities and Research Institutes in India”, in Rajeswari S. Raina (Ed), *Values and Norms: S & T and Development Policy in India*, Orient Blackswan..

² Zakir Husain Centre for Educational Studies, School of Social Sciences, Jawaharlal Nehru University

Today, the university in its latest incarnation, namely the Humboldtian university – though some would argue that the university of teaching and research predates it, is facing a major crisis, and we cannot anticipate what new forms it shall acquire in negotiating its way out of its present predicament. In any case, in taking a long *durée* view of the history of the university it is but certain that the historiography of decline is not a particularly fruitful one. Consequently, the history of the university or that of the system of higher education needs to be viewed in terms of the historiography of crisis and reform, rather than one of revolutionary change and rupture. Ironically enough, the crisis of the university of teaching and research may well be a product of the mass expansion of higher education and the raised levels of general education in contemporary society. This expansion is further reflected in the explosive growth in the number of universities and in the expansion of its institutional structure.

Nevertheless, the Humboldtian university – characterized by its emphasis on the unity of teaching and research activities was globalized in the twentieth century and transformed the university into the primary site for the production of knowledge. This university was patronized by the nation state and could be seen as one of its central institutions. The crisis today is that this model of the university is in decline as the nation state retreats and new patrons introduce different values and norms. The epistemic dilemma of the university today relates to the disconnectedness of teaching and research. Consequently, the crisis presents itself at many levels: epistemological, in the movement from department based disciplines to new transdisciplinary formations, to concerns about the re-organization of the production of knowledge and the emerging patterns of enrollment. Amidst the ongoing process of reform collective myths central to the identity of the university are abandoned – these include the idea that the university was a space of free politics, and the cultivation of democratic citizenship. These ideas appear today to belong to a golden age that universities refer to in their self-understanding and in engaging with the realities of the post-Humboldtian era.

I shan't go into the transformations in the world of the production of scientific knowledge and the epistemological metamorphosis of contemporary science. As far as the world of science is concerned it could be said that there are three global trends and these include: [1] the declining enrolment of students in science at the collegiate and university levels; which puts the fear of god into those who have been celebrating the arrival of the knowledge society; [2] the migration of students to NBICT – this migration threatens linkages with other components of the science system., [3] and finally, but most importantly the migration of research from the university to research institutes – the university no longer remains the primary site for knowledge production. Consequently, outside the highly structured regimes of modernity; a whole new range of organizational structures have altered the landscape of knowledge production and these include consultancies, a range of laboratories, think tanks, research centers, industrial labs, government labs, universities and now social movements as well. This migration from the university separates the pursuit of knowledge from its transmission; and for some is seen to be the single causative factor for the perceived decline in the quality of students coming in for research.

Some Concerns plaguing Indian Universities

Without going into the history of the university in colonial India, it can be argued that one of the primary tasks for the newly independent state was to reorient the system of education and expand it to suit the objectives of decolonization and development. Like most other governments committed to the idea of the mass university in the post World War II decades that coincided with the decades of decolonization the issue of access was prioritized. Two reports were commissioned that sought to develop a rationale for a centralized education system. The University Education Commission under the chairmanship of Dr. S. Radhakrishnan was set up in 1948. The Commission recommended the

establishment of a national standards regulator.³ Following this recommendation, in 1956, Parliament established the University Grant Commission not just to provide financial support for the university system but as a national regulator of standards. The governance of the University system in the first two decades after independence; thus shifted away from provincial state control towards centralization under the central government. The very constitution of the republic of India (seventh schedule) squarely put the responsibility for coordination and determination of standards in the institutions of higher learning and research on the central government. However, the UGC, though responsible for setting national quality standards, was not empowered to implement them by accrediting universities or through financial incentives. In practice, its remit over quality and standards was ignored by the provincial university. Amrik Singh rightly pointed out UGC was made more of a recommendatory entity than a body which could lay down the law.⁴

In the next decade another important commission was constituted under the chairmanship of Prof. D.S. Kothari in 1964 again to reform national education but this time around to develop policy instruments for all stages of education. The model of national system of education proposed by Education Commission was based on number of tacit assumptions about the future visions of society or the nation, the role education was to play in that society and the relationship between the two.⁵ As far as the commission was concerned the education system needed to foster a “scientific outlook” and to become “a part of our way of life and culture”. Science and technology would not merely relate education to productivity but science was emblematic of a culture of reason and free inquiry. This required radical changes in objectives, content, teaching methods etc; and the implementation of these reforms required strong political and financial support at the level of the state and central governments – not to mention the role of educationists who would provide academic leadership. The Kothari Commission Report and subsequent National Policy on Education of 1968 (NPE-1968) reflected these priorities, with a new stress on multilingual instruction, agricultural education and adult education, while noting the continuing importance of scientific and technical education. The primary concern at the time was to ensure some financial stability and autonomy for the university while protecting it from what may have been considered political intrusiveness. The instruments and recommendations were never internalized as policy.⁶

However, the politicization of university governance and the liberalization of the Indian economy were reflected in the National Policy of Education in 1986 and its updated version in 1986.⁷ Officially for the first time, the idea of autonomous colleges was mooted that involved creation not just of autonomous colleges but providing mechanisms for the creation of new courses, regulated by an umbrella university. The NPE notes that: ‘in view of mixed experiences with the system of affiliation,

³ Carnoy, Martin and Dossani, Rafiq. 2011. “The Changing Governance of Higher Education in India,” Working Paper, Stanford University.

⁴ Singh, Amrik. (2004) Challenges in Higher Education, Economic and Political Weekly, Vol. 39, pp. 2155-2158.

⁵ Naik, J.P. (1997). The Education Commission and After, A.P.H. Publishing Corporation, New Delhi, p. 9.

⁶ The Committee was headed by an academic, Dr. P.B. Gajendragadkar, the Vice-Chancellor of Bombay University. It was mandated to ‘to consider the structure of universities, the functions, the responsibilities, and power of the various statutory bodies and student participation.’ From Carnoy, Martin and Dossani, Rafiq, “The Changing Governance of Higher Education in India,” Working paper, Stanford University, 2011, p. 13.

⁷ NPE-1986 noted the need to protect the system from degradation through unplanned expansion. The policy noted that future expansion should be within existing institutions rather than via an expansion of the number of the institutions.

autonomous colleges will be helped to develop in large numbers until the affiliating system is replaced by a freer and more creative association of universities and colleges. Similarly, the creation of autonomous departments within universities on selective basis will be encouraged. Autonomy and freedom will be accompanied by accountability.' Raising fees as a strategy was also mooted for the first time, marking an expansion in the objectives to include cost effectiveness. (NPE-1986, p. 18) The 1992 amendment to NPE-1986 noted that AICTE, which was given statutory status by the Act of 1987, would be responsible for planning, formulating and maintaining standards. An accreditation board would be created. AICTE was earlier an advisory body without statutory powers, but the 1987 Act, pursuant to the recommendation of NPE-1986 established as a statutory body. AICTE mandate covered engineering, management and other professional fields (excluding healthcare education). As initially designed it mirrored UGC in its function of financing and regulating the standards of education in its domain, setting fee scales, approving new programs and institutions and granting autonomy to colleges. In practice, the finance function continued to be retained by UGC. This demand gradually snowballed in the 1990s in the form of a demand for autonomous universities.

Manifestations in the World of Science

The debate itself coruscates in the scientific world in India around two related themes, and nested within this are a range of other issues. The first has to do with an attempt to understand the factors behind the qualitative and quantitative decline in Indian science, which has prompted the participants to propose broad organizational and logistic questions. The second issue is that of the decline of student enrolment in the sciences has resulted in academics frontally attacking the information technology industry that appears to be sucking away the entire student population – this debate could as well be called the *coolie*-ization debate. This tasteless neologism is not mine, but is a creation of the interlocutors and I see in it the inherent hierarchies operating in the world of science.

The relationship between the research institutes and the university in India has always been a tense one, wherein the latter see the former as parasitic upon financial and human resources that were really meant for the university. The decline of the university is in part ascribed to the rise of research institutes and national laboratories. So the conflict and the tension between the two is not a really new one, but the debate took on a new turn recently when some national laboratories decided to apply for deemed university status. It is important here to understand what is at stake here and why it prompted a knee-jerk reaction from the universities. Off the variety of universities, whether legislated by state or central governments, private universities, the deemed universities could well be considered institutions of higher learning. It is found that more private institutions in the sector of higher education are aspiring for deemed university status. There is an interesting cross- over phenomenon here. On the one hand most of these seeking a sort of upgradation are teaching institutions with limited research facilities, and on the other hand the national laboratories and research institutes are research organizations with little teaching if any at all [Lakhotia, 2005, p. 1303].

The idea of the deemed university, proposed by the Radhakrishnan Commission on, arose out of the need to accommodate research institutions that were independently established during the freedom struggle. The UGC Charter Act gave these institutions an autonomy; and empowered the commission to confer any institution of higher education that it considered fit the status of a deemed university –“all the provisions of this Act shall apply to such institution as if it were a university” [Lakhotia, 2005, p. 1303]. The diagnosis of the deterioration in the quality of teaching and research in the universities is pretty standard fare. Interestingly however, the new argument appearing in the current discussion is the evocation of the mandate of the research institutes that was to do applied research. The conventional university did not gain anything from the linkages they established with these institutes

other than awarding doctoral degrees to the students of these research institutes. On the other hand, the university lost quality faculty to the research institutes and this migration did tell on the university departments. In a way then the divorce between the teaching and research functions of the university in India was accomplished well before the contemporary crisis of the Humboldtian university inaugurated a debate on higher education.

Thus it was felt that conferring deemed university status on national laboratories would only further polarize the dichotomy between the national laboratories/deemed universities and other universities [Raghuram, 2005, p. 21]. One could as well take the view that the national laboratories are faced with deterioration in the quality of students enrolling in their research programmes. By acquiring deemed university status they could break their ties with the university system altogether and systemically become autonomous of the former [Raghuram, 2005, p.22]. In which case, the distinction between the two would only increase and create a greater scope for the technocratic transformation of society. Another way of looking at the same problematic that does not engage with the conflictual or antagonistic polarization of these institutional frames would argue that universities and national laboratories need to simultaneously revise their mandates. In fact mobility between the two needs to be encouraged while the university system needs to acquire greater flexibility without compromising on its knowledge ideals [Sangar, 2005, p. 1305]. The question here is can organizational structures dedicated to the task of imparting higher learning learn from their organizational experiences, can they become learning organizations and codify their norms of innovation and change. In other words the university has a pressing need for greater reflexivity since it is the location for training new generations of students and imbuing them with the capacity for reflection, which entails the ability to develop capabilities to handle both risk and unwanted side-effects and institutional crises.

The other side of the crisis for science and the university is that the brightest students, whatever that may mean, are opting for professional and vocational courses, and most of these are within the information technology related sectors. Those students who opt for professional courses do not subsequently opt for research careers [Bhattacharya, 2005, p. 1453]. In the long run these trends are seen to be detrimental for the knowledge economy and this is the cause of anxiety amongst sections of the academic community. The “Pied Piper” of information technology appears to be drawing away a large number of students from the more classical disciplines [Devdas, 2006, p.7]. This anxiety exploded in discussions about the *coolieization* of India [Prathap, 2005, 1063-4, Vidyasagar, 2005, 1063, Siddhartha, 2005, p. 1975; Mukund, 2006, p.8]. The engagement was rather heated, for the tasteless neologism of *coolieization* referred to two related phenomenon. The one had to do with the brain of India’s engineering graduates into the new economy IT firms, and the second was that this white collar force in the current state was fast becoming a blue collar force – thus there was not only an external migration but an internal one within the IT sector as well. This double migration was then about a substantial de-skilling. Sections of the IT industry dismissed the *coolieization* argument by insisting that at least alternate employment opportunities were available for the new generation of engineers. Underlying this exchange was a deep tension between industry and academy, with each side holding the other responsible for either IT *coolieization* or for not contributing to an innovative industrial culture. One way out of the dilemma was a proposal for building closer ties between the academy and industry – an idea that arrived late in the Indian environment but arrive it has nevertheless.

What does this mean for the research system and the university? During the early fifty’s science policy discourse shaped by the cold war found expression in Vannevar Bush’s bible of science policy *Science the Endless Frontier* and the linear model of innovation that it proposed. According to this model pure science pursued in the university produced applied science again pursued in the

university produced technology developed by industry that resulted in societal prosperity. This model that proposed a linear sequence from basic science to applied science to technology to prosperity went into decline in the 1990s when some magnificent research laboratories such as Bell Labs, IBM, and Phillips Eindhoven closed down [Roy, 2005, p.424]. Since then science itself has undergone a reorganization of its practices and a new mode of knowledge production is now in place called post-academic science or mode-2; wherein knowledge production is distributed throughout society and wherein a diverse range of specialists are assembled to work in teams, thus widening the production base of science.

However, on the down-side the anti-elitist democratization of Higher Education after World War II has created a financial crisis for the widely admired university of “research and scholarship”. So much so two core assumptions around which the career of the Twentieth century University was sustained are no longer held sacred: [1] teachers in the framework of good undergraduate training have to be good researchers; [2] all citizens undergoing a university education should receive the same training; [Elkana, 2005]. The second assumption is challenged on the ground that globally only 7-8% of the student population ends up as researchers. Thus the economic logic of maintaining large Humboldtian universities or the multiversities for such a small fraction of the student population does not appear to convince anybody in today’s policy circles. Thus in the past two decades we have witnessed a re-visioning of the system of the production and reproduction of knowledge. One of the proposals is to dismantle the large research-curriculum based university and replace them with small, well-staffed, well equipped research universities. Quality teaching functions could be imparted at teaching universities. What the social costs of such a fragmentation of the world of learning might entail still escapes most of us. In a manner of speaking, the move by research institutes to seek deemed university status may be visualized as one such response to the present crisis. The larger question to which I have no answer at the moment is how will the university of culture and citizenship respond. Further, could we afford this kind of down-scaling while we embark on joining the so-called knowledge societies? In the world of science and technology we have one model in MIT, but then that is an elite technological institute and not a classical university. As usual I have ended up asking more questions than I have attempted to answer.

Some Considerations for the Future

As part of a team working on likely scenarios for the future of technology education I would like to bring up three themes for consideration as elements undergoing transformation within the structures of higher education.

(i) The Theory-Practice Divide

By the beginning of the nineteenth century two large structures for higher education emerged in revolutionary Europe that went on to subsequently structure the domains of higher education and its subsequent institutionalization. These were the German university of teaching and research and the French model of the *grande écoles* or the specialist technical institutions. In either case they catered to the demands of an emerging industrial civilization, nourished by the crystallization of a culture of techno-science strung together by ties between universities, research institutes and industrial research laboratories. Hybrids of these two modes began to populate the landscape of nation states across the globe as the twentieth century progressed.

In India, as happened elsewhere, both kinds of institutions were established during the post-independence period. Nevertheless, the knowledge ideals of the university, the research institute and the specialised engineering schools were conceptually quite distinct although there were significant

zones of overlapping commitments. The limitations of the specialised engineering institutes were recognised in the 1950s and Melvin Kranzberg and others looking into engineering education recognised the shortcomings of a purely technocratic instruction. This form of education could only foster a dystopian technological future unless the values underpinning technical education were recognized and problematised. These aperçus when seen more than half a century later still bother engineering educators and is manifest in the efforts of engineering and medical schools to restore some courses in the humanities, ethics and philosophy into their graduate and undergraduate curricula.

If on the one hand, this institutional and epistemic divide distinguishing the two structures is seen as a divide of a humanist education and a value-free technology driven programme, there is another larger divide that institutionally plays itself out in different knowledge ideals and related curricular practices. It may be suggested that at the foundational level curricula and research programmes at the *grandes écoles* and the polytechnics are separated by their commitments to theoretical or formal knowledge on the one hand seemingly transmitted through the university and practical or applied knowledge transmitted through the technical schools. This separation provided the impetus for innovation and development during the first and second industrial revolutions. However, during the information and biotechnology based revolutions or synthesising the two - the genetic communication revolution - there has been an irreversible change in the modes of the production of knowledge as well as within the regimes of knowledge production and consumption.

The inauguration of this phase of what some call post-normal science and others post-academic science generates both institutional and social tensions that are resolvable by redefining and reconfiguring knowledge production regimes to the extent that it is possible to do so. It could be argued that the so called mode-2 knowledge production is itself a response to the changing character of techno-scientific knowledge and the need for modifying the social and institutional arrangements that this revision necessitates. The changes in the social character of techno-scientific knowledge are further exemplified in the efforts of international agencies to conceptually grasp and reorient the changing relationship between science and state reflected in the contract between science and state.

In addition, this larger reflection is also an outcome of the recognition that the global crises confronting us such as climate change, the impending water crisis etc. have no just solutions if we were to put all our eggs into the basket of modern science and technology alone. In other words a serious social engagement not just with local knowledges but the contextually bound knowledge systems would complement not just our understanding of the deeply social dimensions of technological regimes but complement efforts towards finding sustainable and just solutions to environmental crises of the future. This engagement will take the form wherein it would become imperative to enlist indigenous knowledge systems into the curricula of institutions of higher education of the traditional or hybrid varieties. The existing institutions of higher education will not have to jettison the frames within which earlier curricula were established but to redefine their relationship with other ways of knowing. A very ambitious goal would then be to not only produce scientists in universities and engineers in the elite technical schools but well honed practitioners in the anthropology of knowledge.

(ii) How Engineering Scientists Envision Future Sustainable Development?

The engineering profession too has for sometime felt the need to develop a more holistic approach to engineering and the 1992 United Nations Conference on Environment and Development had suggested that “Sustainable Development will be impossible without the full input by the engineering profession”. This shift towards a more holistic approach, it is felt, would require a paradigmatic or *perspectival* shift that revises the objectives of engineering education from controlling nature to

participation with nature. In other words the new components of the engineering curricula will not just be the study of ecosystems and ecosystems sciences, but integrate equally complex ideas and sciences of preservation and restoration. Some thinking in the area has already been initiated in the interdisciplinary fields of genetics and biotechnology and we are likely to see a rapid evolution in the future. In addition to which then the societal goals of sustainable development become realizable through the rapid institutionalization of ecosystems thinking resulting hopefully in the mutual enhancement of nature and humans, exemplified in the emergence of fields such as Earth Systems Engineering, perhaps still in its infancy.

As a trans-disciplinary field earth systems engineering (ESE) would need to develop a curricular repertoire incorporating systemic tools to engage with the issues of complexity and the ability to address interactions between the atmosphere, ocean and other natural and socio-cultural systems. In that sense ESE could evolve into a field that brings together several sciences, more specifically, the natural sciences, engineering sciences and the social sciences. However, as field it could extend its geographical ambit when compared with fields such as Sustainable and Appropriate Technologies that for long have been seen to address the “engineering and developmental” problems of emerging economies by recognising the global scope of the problems confronted by a globalised society. The scientific part of this programme would entail understanding the complexity of the processes involved from several disciplinary perspectives, as well as acquiring a better understanding of the behaviour of non-linear systems. And in the second stage it would be necessary to develop the curriculum to transmit this understanding to the next generations.

(iii) The tension between Commercialisation and Sustainable Development

It is in this light that the National Science Foundation in the United States has been encouraging thinking on Engineering for the Future. Here too the present understanding is that in order to have a truly “creative and compassionate” culture of engineering it would be necessary to incorporate both technical and non-technical components and disciplines. This again seeks to orient the practice of engineering towards the goal of sustainable development. On the other hand there are philosophers of technology who are trying to conceptualise an economy and engineering which is oriented towards “no-growth”.

While speculating about the Utopian possibilities of engineering in the future guided by the idea of sustainable development; it must nevertheless also be recognised that changes in the paradigms of engineering education have also been prompted by a number of other factors, such as global competition and at the same time, as already discussed the genetic communication revolution. These technologies have inexorably triggered a race among both teachers and students to upgrade in the former case the quality of their courses and the standards of higher education and among students to participate in their own edification.

As a result there will be a creative tension between the drive towards greater commercialisation and the social agenda of sustainable development in turn sustained by a culture of open-ended research. It is likely that open-ended research will be under pressures generated by the current economic crisis and the agendas put in place by governments committed to neo-liberalism. In such an environment it would be absolutely essential to safe guard the possibility of open-ended research and not render the system entirely vulnerable to the dictates of social relevance however defined or product development as the only drivers of research in the future. As the late science policy analyst John Ziman once pointed out, it appears as if academic science is losing out on its institutional independence.

This raises the methodological question as to how to produce robust knowledge and reliable technologies at the sites of knowledge production such as the university and industrial research laboratories. We could take a lesson from historians who have found it more convenient to work with the concept of cultures and have revised our understanding of civilizations as deeply porous entities. In other words, the divide between knowledge forms as “radical alterity” is far more apparent than real. The active engagement with different knowledge forms reveals as much about what they share than just about what separates them. This has become increasingly evident in debates about indigenous knowledge forms and their underlying philosophical premises – being both empirical and dynamic. The new regimes of technology implemented within systems of education will go a long way in providing access to the diversity of local knowledges and in the course of engagement with local and global problems with highlight the global and local features of these knowledge systems.

References

- Bhattacharya, S. 2005. “Professionals and Innovators”, Current Science, 89, 9, p. 1453.
- Bindé, Jérôme (Eds.), Keys to the 21st Century, UNESCO and Berghahn Books, 2001.
- Burke, Peter. 2000. A Social History of Knowledge. Polity Press.
- Devdas, Mohan. 2005. “Pied Piper of IT”, Current Science, 90, 1, p.7
- Elkana, Yehuda, 2005. “Universities and Foundations”. Meeting of the Hague Club in Oslo, 8 September.
- Felt, Ulrike. University Autonomy in Europe: Changing Paradigms in Higher Education Policy.
- Felt, Ulrike. 2005. “Towards Knowledge/Society Economy in Higher Education: Rethinking the Teacher-Research Nexus from a European Perspective”, International Conference on Challenges to Innovation in Graduate Education, Toronto, Canada.
- Gibbons, Michael and Bjørn Wittrock. 1985. Science as a Commodity Threat to the Open Community of Scholars, Harlow: Longman.
- Gibbons, Michael and Camille Limoges, Helga Nowotony, Simon Schwartzman, Peter Scott, Martin Trow. 1994. The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies, London: Sage.
- Gupta, D.P. 2005. “Reinventing Indian universities”, Current Science, 89, 3, p.426
- Klein, J.Thompson and Grossenbacher-Mansuy, W. et. al. (Eds.). 2001. Transdisciplinarity: Joint Problem Solving among Science, Technology, and Society. Birkhauser Verlag.
- La Capra. Dominik. 1988. “The University in Crisis”. Critical Inquiry. 25, pp. 32-55.
- Lakhotia, S.C.. 2005. “Deemed Universities and Other universities”, Current Science, 89, 8, p. 1303-1304
- Mukund, N. 2005. “Industrial and Academic Science”, Current Science, 90, 1, 2005, p. 8
- Natarajan, R. And Anandkrishnan (Eds.), XXI Century Priorities in Engineering Education, ISTE and Macmillan, 2010.
- Pestre, Dominique. 2000. “The Production of Knowledge between Academies and Markets: A Historical reading of the Book The New Production of Knowledge”, Science, Technology & Society, 5, 2, pp. 169-181.
- Prathap, Gangan. 2005. “Where have our young ones gone? The coolieization of India”, Current Science, 89.7., p. 1063
- Raghuram, N. 2005. “Deemed University Status to National Laboratories: Need for a National Debate”; Current Science, 89, 1, p. 21-22.
- Raina, Dhruv and S.Irfan Habib. 2004. Domesticating Modern Science: A Social History of Science and Culture in Colonial India, Tulika Books.
- Readings, Bill. 1996. The University in Ruins.
- Reddy, A.K.N. 2006. “Reflections on Science and Technology for Rural Development”, Presented at a Planning workshop on Application of Science and technology for Social Development, IISc, Bangalore on July 6th.
- Roy, R. 2005. “Science Funding in India”, Current Science, 89, 3, p. 424
- Sangar, Sunita. 2005. “Institutional Learning and Change for National Laboratories”, Current Science, 89, 8, p. 1305.

- Siddhartha, V. 2005. Current Science, 89, 12, p. 1975
- Vidyasagar, M. 2006. Current Science, 89, 10, p. 1063 -64
- Ziman, John. 2000. Real Science: What it is, and What it Means, Cambridge University Press. Nowotony
- Ziman, John. 2000. Real Science: what it is, and what it Means, Cambridge University Press.
- Ziman, John. Science in Civil Society, Imprint Academic, 2007.

Discussion

Amalan: What is driving the orientation towards inter-disciplinarity? Is it that the margins of disciplines cannot form sub-disciplines on their own? Or that boundaries between disciplines are vanishing? Or is it because that the schools teaching disciplines are inadequate? How can we also avoid the megalomania towards a grand synthesis of disciplines which can lead to a loss of the local narrative?

Dhruv: To give you an example, the notion of sustainable development, cannot be addressed by modern science and technology alone. Local knowledge systems are also important to address this question. Hence there is recognition to mainstream all knowledge systems in the new discourse despite the risk that a lot could be lost in the process. So, there is recognition of the limitations of contemporary science. Alternately, it has been pointed out that social, intellectual or disciplinary differentiation goes together at one level and works splendidly, which is what specialization has done. But at some point this disciplinary differentiation collapses. It does not work optimally because the connections between disciplines are lost. At that point inter-disciplinarity or multi-disciplinarity or trans disciplinarity arises.

Vasavi: Do you wanted to qualify endorsement of Prof Beteille's stand that the Indian University is not really a clone. I suppose it is not, but it could also be seen that to the extent that there is a porosity between Indian Society and the University, it was a bad copy of a model.

Dhruv. I don't take the view of Beteille. I am more informed by Eric Ashby, historian of education, which says that the University in its transmission is not a clone. But as a sociologist I am not inclined to talk whether it a bad clone or a good clone. Social contexts shape how the university emerges or doesn't emerge. You don't want to take a very normative view on that. At the end of the 19th century the university globally was an elitist place. It was only in the post 1950s with the massification of the University that the University stops being an elitist place, not just in India but globally.

Student: Beteille's comment that Universities in Europe have been conservative when the society has been radical, and the reverse is the case of India. In the Indian context, are there any ways in which society can become more radical due to the university?

Dhruv: He was talking of the 19th century. He is not talking about the end of the 20th century. But there is also a problem in the model, which means that you have to look at the University as the source of the civilizing mission. Is that the role of the University?

Shambu. I would be a bit surprise if you said that Universities were ahead of society in terms of dissent or creating knowledge. For example: in agriculture and sustainable agriculture, so many ideas have been knocking at the door, and the agricultural universities have been extremely reluctant to engage with these ideas. The other example is on livelihoods: when we looked at the literature from Indian Universities, it is way below the kind of knowledge that exists among practitioners. So in some sense the source of ideas and dissent has also moved away from the universities to other kinds of spaces. We need to recognize this. We can't think that as 25 years back the Universities were considered the fountainheads of knowledge, as is seen in some mission statements, it is true today. I think society is doing much better in terms of raising questions, creating new possibilities of knowledge, and sometimes they have been trying very hard to engage with the Universities, with very limited success.

Dhruv Raina & Prakriti Bhargava

Rajni: Whether it was PPST or KSSP, from one end of the ideological spectrum to the other, how much of that agenda of peoples indigenous knowledge about science, entered into the formal domain. I don't think it did.

Dhruv: I have said that the University is no longer at the centre of knowledge production. The University has failed in incorporating other knowledges. But to bring in curricula reform in the university takes a very long time. The inertia comes from what Bourdieu calls the paradox of the University that the university must reproduce a tradition but at the same time it has to be innovative. It is not that the efforts of the PPST or the KSSP have gone awry within the university. Maybe within the regular University, but today you have a centre like Villgro or CSIE so it has in its own way accommodated this thing. I don't wish to be an apologist for the University and agree that new social movements that have joined the army of knowledge producers.

How do you perceive the role of the market as a driver for the future of the University?

Dhruv: In the 17th or 18th century, the traditional philosophy of science consisted of two programmes – to understand the world which is the instrumental role and to control the world which is the intrinsic role. Today we appear to have entered a phase where the instrumental role is being led largely by market concerns.

Sujit: In the late 80s, Prof Amulya Reddy would say that IIT Kanpur has produced very different kinds of students in larger numbers because it took the humanities very seriously. Dhruv: Yes and several people who have been inspired in the social science programme have moved out of engineering and moved to the social sciences.

Joseph: Only recently, we had a discussion with institutions teaching rural management about what ails the discipline, and interestingly both Dr Kurien of Anand and Fr Bogard of XIMB said they envisioned the discipline as a harmonious blend of social science and management expertise. Unfortunately students of rural management don't speak the language of the social sciences and social scientist look down upon management professionals, as if they all compromised to the capitalist regime. So, how do we get these two voices to think together? Can we visualize a university structure which can encourage students of these two spectrums to think together?

Student: You said that research is moving out of universities to specialised institutions. Even before independence there was an impatience with the structure of the University. Those close to Nehru kept pushing him to set up those specialized institutions. Why did the same thing start getting replicated in the social sciences? One of the initial indicators would be the establishment of the CSDS, then CSSS in Calcutta, and the ICSSR network of research institutions,

Student: In the vision statement we see social inclusion as one of the ideals of Indian University, but I find that explicitly the University practices social exclusion. For example the block that stands at the gate of the university is the english language. Being from a rural India, I find that my level of knowing english has been the yardstick of my intelligence. So an overwhelmingly large pool of intelligence in India remains untapped.

Fozia: In terms of exclusion, we have to acknowledge that the University admits only good test takers because of the entrance exams. The system is design to exclude bright students who may not be good test takers.

Remarks by the chair: In addition to the issues, I would like to highlight only three

1. There is often pressure from the university administration on the scientist to generate more revenue. At the same time, knowledge is getting the status of a public good because of IT and open science. In this context the question is to what extend do scientists and the faculty relies on patenting as the source of revenue?

2. The economist obsession with efficiency has become infused into the overall administration of the University resulting in the changing governance structure of the University. While accountability is important within the university, to what extent should it be accountable to the global market?
3. We also need to look at how universities are trying to conform to the International ranking system. To what extent is the mission and the vision of the university being altered, modified or redefined purely because of global pressure and the pressure of ranking. Is it within the context of the global market that the universities are now playing an increasing role?