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EDITORIAL

Research Universities: Learning from Experience

For much of my career, spent in the confines of a research laboratory, the problems that confronted me and many of my colleagues seemed amenable to solution, even if they eventually turned out to be intractable. Unsuccessful lines of research often yielded byways into which one could wander, many times with little accomplishment, but the experience seemed to be always useful in the investigation of apparently unrelated problems. The dimensions of a research problem are invariably determined by the investigators; pragmatic researchers work towards attainable goals, practising the 'art of the solvable'. In contrast, dreamers and those who are endlessly ambitious set the bar very high. Some remain optimistic, cheerful and committed to their goals, while the endless quest leaves others embittered and disappointed by failure. The realm of governance of academic institutions and the arena of research and educational policy at institutional and national levels seem far more complex, with many recent discussions leaving observers like me both puzzled and uneasy. Problems are plentiful, solutions offered by a wide spectrum of interested individuals are abundant and progress is painfully slow. Good ideas can usually be implemented with relative ease in laboratories, but make little headway in the sphere of public policy. The cacophony of debate and discussion inhibits even incremental changes of approach to long standing issues. The public discussion of higher education and the state of universities in India has now reached a crescendo. There appears to be a consensus on only one issue; the need to enhance the academic quality of our old institutions and to create new ones, to expand the opportunities for college and university education on a broad front. The calls for creating 'centers of excellence' and 'world class universities' are mildly unsettling; if the protocols and procedures (terms that I borrow from the laboratory) for their creation are self-evident, why have they not been implemented so far? Can excellence and world class status be brought into being by legislation? In a slightly more cautiously worded strategy, institutions are identified as having 'potential for excellence'; the expectation here is that the catalyst for transformation, into truly high quality academic centres, will be the infusion of central or state funding. Even as we lurch inexorably into a phase of major expansion of the system of higher education and research in India, an examination of the results of experiments

conducted around the world may be of more than academic interest.

Coincidentally, as the debate on higher education and state of research in India heats up, I suddenly received a clutch of books and reports, all of which seemed to have a bearing on the subject. A slim volume entitled *The American Research University from World War II to World Wide Web* by Charles Vest (University of California Press, Berkeley and Los Angeles, 2007) is a wonderfully readable account of the American university system, arguably the world's largest and most successful experiment in higher education. The author, a former President of the Massachusetts Institute of Technology (MIT) and a mechanical engineer of great distinction, presents a fascinating view of the evolution of the American research university, on which many institutions in the developing world have been modelled. The book is based on the Clark Kerr Lectures delivered at the University of California, in 2005. As Vest notes: 'Kerr was a doer and builder, not just an observer and theoretician. Kerr's shadow looms large over the American educational landscape. His understanding of the emergence of the *multiversity*—as he famously termed it in his 1963 Godkin Lectures at Harvard—crystallized our view of the tectonic changes that occurred in US research universities at the middle of the twentieth century'. There are two words in the quote reproduced from Vest which deserve our attention. The first is the term 'multiversity'. I will not define it but merely borrow more of Vest's text, where he describes his education at the University of Michigan in the 1960s: 'The corner of the emerging multiversity was very attractive and exciting. What a joy it was to pursue my engineering education in this heady environment and also to have friends who were students of medicine, law, history, chemistry, mathematics, social work, education and philosophy'. Vest emphasizes that he 'learned and worked at the new boundaries of academic engineering, and yet still felt very much a part of the great centuries-old tradition and values of academia'. Even as the debate on the Indian university intensifies we might do well to think about the 'multiversity', which Vest describes as a 'noble and enabling place'. He is clear in his assessment decades later: 'What appeared to many to be sources of tension, cross-purposes, and potential conflicts of values and interests were for me a great web or mosaic to be

savored and celebrated. This was what I expected a university to be. And, despite the passage of over forty years, it still is’.

A second word that seemed particularly apt in Vest’s description of the changes in the American university system in the mid-20th century was the term ‘tectonic’. Even as we await tectonic changes in our own university system, half a century later, we might ask what was Vest referring to. He was describing ‘what has been termed the engineering sciences revolution’, which flowered after World War II, with MIT’s Radiation Laboratory producing a generation of scientists and engineers who developed ‘the new engineering science which relied on intense research and required an entirely new panoply of textbooks and laboratories, drove change in a broad range of fields, among them the space program, defence, transportation, telecommunications, computing and medicine’. Vest notes proudly, justifiably so, that in ‘study after study, ranking after ranking, and through that greatest of all compliments—emulation—we really are the proverbial “envy of the world”’. He narrates an interesting story in which the rector of the Humboldt University at Berlin asks Vest ‘in all seriousness’ as to ‘how the US research university model could be successfully transplanted to Germany’. The delicious irony, as Vest points out, ‘is that in the nineteenth century the United States, and specifically the Johns Hopkins University, imported the concept of the research university from Humboldt!’ Curiously, in the late 1890s Johns Hopkins was a model on which Indian Institute of Science, Bangalore, was conceived as a ‘university of research’.

In his compellingly readable narrative, Vest surveys on a very broad range of topics, many of which are most relevant to the current concerns in Indian higher education and research. He notes that ‘other nations could profitably consider’ the factors responsible for the successes of the US system and ‘integrate them into their own cultural and political context, and perhaps improve upon them’. I suspect it is our understanding of our own ‘cultural and political contexts’ and our ability to adapt and modify successful models elsewhere, that may eventually stimulate the tectonic upheaval that is needed in our system of higher education. Diversity of funding sources, improved governance structures, faculty responsibility, maximizing diversity amongst faculty and students and the promotion of interdisciplinary activity in both teaching and research are some issues that merit attention. Vest remarks that ‘intelligence, curiosity and creativity have no national boundaries’. In sentences that must please all of us in India, Vest adds: ‘Great universities based on this residential, research-intensive model can and do arise anywhere in the world. As demonstrated by the enormous success and impact of the Indian Institutes of Technology, which were established in the 1960s, higher education can leap forward very rapidly’. We must, however, view this praise dispassionately and ask whether the IIT model needs replication or modification and whether the fresh thrust to create purely science focused institutions

like the Indian Institutes of Science Education and Research (IISERs) will lead us even further away from an ideal ‘multiversity’. Whether the ‘multiversity’ is a desirable, or even achievable model in today’s India may also need to be considered.

In his wide ranging essays, Vest touches upon almost all the issues that must concern academic administrators. He discusses the role of diversity and race in student admissions in the United States, adding that ‘nothing in our times has been so bitterly contested . . . and it has not been resolved through orderly political and administrative processes. Rather, it has frequently led to acrimonious conflicts and has followed multiple pathways including public referenda and Supreme Court cases. It has torn at the heart and soul of our populations and institutions’. The issues of race and gender that are discussed in America find echoes in India where the problems are larger and need constant and sympathetic attention. Vest argues for admission procedures that enhance diversity, arguing that the nation’s future is well served by building ‘a future scientific and engineering workforce and leadership that reasonably reflects our population and its spectrum of cultures’. There are key issues of concern to academia that Vest addresses: philanthropy, finance, interactions with industry and the role of institutions in promoting progress of local communities. His analysis, of the role of research in universities and its relevance, will please most of us in academia: ‘Ultimately, long-term basic research is what universities do best and should not be sacrificed. That said, in this age of increasingly cooperative innovation and fast-paced change, there are many opportunities to serve through “relevant” research and development that will complement, not distort, our core academic mission and bring new intellectual challenges to our faculty and students’. The role of philanthropy in building the US university system has been significant. Fund raising and maintaining endowments are central to the well being of these institutions. The rationale for private support of higher education is simply put in a quote that Vest uses, attributed to Milton Eisenhower, a president of Johns Hopkins in the 1950s and 60s: ‘Higher education and business are basically inter-dependent. One needs money to produce educated people, and the other needs educated people to produce money’.

In his concluding essay, Vest asks if in the age of globalization and the Internet and ‘what lies beyond’ higher education will be fundamentally reshaped. He asks: ‘Are residential universities dying dinosaurs or models to be propagated further?’. His personal assessment is reassuring: ‘First, I remain hopelessly in love with the residential universities – with Clark Kerr’s multiversity’. He argues that ‘teaching is a fundamentally human activity’ and points out ‘that the rate of technological progress is almost always dramatically underpredicted, and the rate of social progress is almost always dramatically overpredicted’. In reinventing the university in India, we might learn from experience elsewhere.

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