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EDITORIAL

Universities and Avalanches

Authors of correspondence items in this journal, sometimes, raise the flag of concern on issues that appear to be important. A recent letter that crossed my desk drew attention to errors in the classification of ‘institutional members’ of *Current Science*, a growing group of permanent subscribers who provide this journal with some measure of financial stability. An ‘open access’, not-for-profit journal like *Current Science*, which does not charge authors a publication fee, must necessarily develop alternative strategies for raising resources in order to maintain regular production. Institutional members are one important component in ensuring that income and expenditure are matched, year after year. The correspondent lauded this initiative, but seemed disturbed by the classification of some member institutions as ‘universities’; his ire directed (probably justifiably so) at ‘deemed universities’, a status conferred by the University Grants Commission on institutions that are not created as ‘Universities’ by Acts of Parliament or State Legislatures. My editors’ instincts might have allowed this to pass if it had not been for an emphatic assertion that seemed uncomfortably aimed: ‘One would not call Indian Institute of Science a University!’ (Murugesan, T., this issue, p. 1466). Having spent my entire professional career at this institution (also the birthplace of this journal; see *Current Science*, 2007, **92**, 5) the barb struck close to home. How does one classify the Indian Institute of Science (IISc)? Is it a national research laboratory or is it an academic institution like other universities? What, indeed, is a university – deemed or otherwise? To understand IISc’s origins and evolution going back into the past is necessary. History has many lessons if one cares to learn them, although the quickening pace of modern life may allow little time for the luxuries of reflection.

The British created the universities at Madras, Calcutta and Bombay by the mid-19th century; the precise birthdate of 1857 is undoubtedly significant in India’s colonial history. The universities, as conceived, consisted of a set of affiliated colleges, some of which were distributed over the large ‘Presidencies’, the principal units of colonial governance. The primary aim of the colleges then was to provide an education, inevitably leading to certification in the form of diplomas and degrees; training grounds for creating the generations who would help the British govern and administer a sprawling country.

Research and advanced scholarship was never a predominant factor in determining the agenda of a university in the 19th century. The system of affiliated colleges with a ‘university’ as a connecting node was borrowed from the centuries old models of Cambridge and Oxford. Jamsetji Tata’s original conception of IISc was a clear departure from this model. The blueprints for the institution drawn up in the 1890s discuss a ‘University of Research’ or a ‘Research Institute’; an idea outlined with remarkable precision and clarity in documents that bear testimony to the foresight of dedicated individuals who envisioned the future (*Current Science*, 2008, **94**, 5; *ibid*, 2008, **95**, 1651). The formal birth of IISc in 1909, announced with a Vesting Order by the then British Government, marked the launch of an institution intended to train students in subjects that were then badly needed for India’s future development. The first departments created – chemistry and electrical technology – clearly recognized the two key catalysts of the industrial revolution in India, anticipated by J. N. Tata; chemicals and electrical power. IISc was among the first two institutions to be accorded the status of a ‘deemed university’ by the UGC in 1958, shortly after the regulatory body came into being by an Act of Parliament in 1956. For a long time thereafter, relatively few institutions were added to this list; the floodgates were opened more recently as both private institutions and public organizations with mandates far removed from higher education were deemed to be universities. The word ‘deemed’ appears to have been somewhat tarnished over the years, leading to many discussions on what constitutes a ‘university’. IISc has over the past five and a half decades awarded degrees at Bachelor’s, Master’s and Ph D levels. A largely forgotten course, but one well remembered by the alumni, is the three year B E program in engineering disciplines which admitted students after a Bachelor’s degree in science; creating a generation of scientist–engineers distinctly different in their outlook from those trained in conventional courses in engineering. The program ended in the 1980s, as reforms in engineering education altered the duration of undergraduate courses. More recently, the introduction of a four year Bachelor’s degree in science, using the widely discussed but rarely implemented flexible course structure, with the primary aim of providing research exposure at undergraduate level, is an experiment that

reiterates an institutional commitment to fostering a link between teaching and research at all levels.

The development of higher education in India in the recent past has been rapid; turbulent growth is indeed hard to regulate. Many institutions now legitimately call themselves universities; but are they truly 'universities' in the traditional academic sense, or is it a title defined in a narrow legalistic sense on the website of the UGC? Specialized universities which serve only to affiliate engineering or medical colleges can, at times, be predominantly administrative and examining bodies. Others, like the law universities are highly focused institutions. Indeed, even India's oldest universities have slowly transformed into a shadow of their former selves in the decades after Independence. The growing number of central and state universities find it a hard struggle to establish themselves and expand, in an arena where private competition is growing. While the problems of resources and faculty shortages are subjects of widespread discussion, new species of universities are being willed into existence. Policy makers have been seduced by terms like 'world class universities' or 'innovation universities', in the fond hope that the prefix would immediately transform the institution to match the best in the world. The public perception of academic institutions in India is also clouded by the constant lament that no Indian institution (or university) appears in the global rankings in the top 200 in the world. There is little understanding of the nature of the ranking schemes which are not necessarily weighted in the favour of institutions in many parts of the world.

What constitutes a university today? What will the universities of the future look like? Should institutions across the world look to western models like Cambridge and Harvard or will the century ahead witness another revolution in higher education? These are questions which spring to mind, especially when one considers strategies for coping with global competition, while achieving national objectives. Coincidentally, even while I thought about the letter to *Current Science*, I received a copy of a long essay produced by the Institute for Public Policy Research in London entitled 'An Avalanche is Coming'. The authors, Michael Barber an educationist and UK policy maker and his colleagues Katelyn Donnelly and Saad Rizvi, discuss 'higher education and the revolution ahead' (Pearson, March 2013). The publishers, Pearson, advertise themselves as 'the world's leading learning company'; a private, commercial provider of education in Britain. Pearson, a large publisher which owns Penguin and the *Financial Times*, has even launched a foray into awarding academic degrees, appropriately enough in the area of 'business and enterprise', with validation (a new form of affiliation) being provided by colleges which are a part of the University of London. The Barber *et al.* essay carries a foreword by Lawrence Summers, former President of Harvard University. Summers notes that the

'forces of technology and globalization' which have transformed 'sectors such as media and communications or banking and finance may now transform higher education'. He strikes an ominous note: 'The solid classical buildings of great universities may look permanent but the storms of change now threaten them'. In their preface, Barber and his colleagues argue that 'radical and urgent transformation is required in higher education', but worry that 'perhaps as a result of complacency, caution or anxiety, or a combination of all three, the pace of change is too slow and the nature of change too incremental'. The authors foresee threats 'to traditional 20th century universities if key institutions don't change radically'. They borrow the 'avalanche' metaphor from the historian Norman Davies: 'Historical change is like an avalanche. The starting point is a snow covered mountainside that is solid. All changes take place under the surface and are invisible. But something is coming. What is impossible is to say when.' Barber *et al.* note that 'the one certainty for anyone in the path of an avalanche is that standing still is not an option. Indeed, it is a classic error of strategy to calculate the risks of action but fail to calculate the (often greater) risks of doing nothing'. Sudden change is always difficult to come to terms with and compelling arguments are always advanced to maintain the status quo in academic institutions across the world. Recent debates in the arena of higher education in India are testimony to the enormous resistance to change. Barber *et al.* advance an interesting argument that 'the traditional university is being unbundled'. They suggest that several new species may emerge: 'the elite university, the mass university, the niche university, the local university and the lifelong learning mechanism'. I suspect many of these species may be identified, by taxonomists specializing in education, in the large body of institutions across India that have been recognized by the UGC or other authorities. The technological driver of the impending revolution in education may be the 'Massive Open Online Courses (MOOCs)' which are now available from the best universities in the world. The need to reevaluate the nature and scope of classroom lectures is being widely recognized. A new field, 'learning science' appears to be emerging, which will help to blend the right mix of online courses and classroom interactions (Singer, S. R. and Bonvillian, W. B., *Science*, 2013, **339**, 1359). A *Nature* news feature acknowledges that 'fundamental reform in on-campus teaching is a much tougher proposition' than beaming online courses (Waldrop, M. M., *Nature*, 2013, **495**, 160). The essay by Barber *et al.* is provocative. Bundling, unbundling and rebundling, words familiar to publishers, may acquire a new meaning in the context of universities. Their conclusion should stimulate reflection: 'Just as an avalanche shapes the mountain, so the changes ahead will fundamentally alter the landscape for universities.'

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