5. TECHNICAL UNIVERSITIES: PROMISES AND PERVERSIONS

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Origin of Technical Universities

The concept of technical universities originated from the Roorkee University, which was the first State funded technical university of India, established in 1949 by converting the Thomson College of Engineering, Roorkee. (On 21 September 2001, the University was declared an institute of national importance, by passing a bill in the parliament, changing its status from State University to *Indian Institute of Technology, Roorkee.)* The Roorkee University was a unitary university catering to a wide variety of disciplines from the undergraduate to doctoral level along with several advanced centres of teaching and research, such as Earthquake Engineering, a pioneering research and training centre having world wide acclaim; Institute of Paper Technology, the only institute offering higher education in paper technology in the country, Welding Research laboratory, the most modern testing and research facility in the area and Alternate Hydro-Energy Centre, exploiting micro-hydel power resources.

In adopting this concept for starting state level technical universities, whether unitary or affiliating, several key objectives were enunciated as seen from their legislations. It was explicitly recognized that the technical universities would provide for centres of excellence for evolving world-class technology, besides offering the existing and forthcoming affiliated engineering and technology colleges, badly needed support and guidance. A full-fledged centralized Technological University was considered essential for the growth and improvement of quality technological education. Such a university was also expected to organize post-graduate programs in basic and applied sciences, engineering, technology and in such other branches of knowledge as the University may deem fit, specially with a view to producing scientists, technologists and managers of a high calibre, capable of contributing towards the development of industries based on modern technologies to be achieved in collaboration with the industry, as well as, national and international research laboratories and academic institutions. Some of them also undertook to organize distance education programs, as well as continuing education programs, for updating the knowledge and skills of working professionals.

Andhra Pradesh

Following the model of Roorkee University, Andhra Pradesh established the Jawaharlal Nehru Technological University (JNTU) in October 1972, initially as the Hyderabad Polytechnic Institute by an act of State Legislature. At the time of its formation, JNTU was a unitary university with headquarters at Hyderabad with the Government Engineering Colleges at Anantapur, Kakinada and Hyderabad, along with the Government College of Fine Arts and Architecture at Hyderabad, as its constituent colleges. Later, its status was

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changed to an affiliating university. Most of the privately owned four-year colleges in the state offering programs in Engineering were affiliated to their regional universities such as Osmania University in Hyderabad and Andhra University in Visakhapatnam. However, a majority of such colleges founded in the state in the late 1990s and thereafter, now numbering more than 700 were affiliated to the JNTU.

To provide thrust for research and development in emerging areas, a nucleus was created at the JNTU Headquarters in the form of Institute for Post Graduate Studies and Research. It has 10 "Schools of Excellence," each one dedicated to a particular discipline of technical education. These schools offer programs leading to post-graduate degrees in addition to research and development activities.

Tamil Nadu

Following the example of Andhra Pradesh, Tamil Nadu established the Anna University in 1978 (initially named as Perarignar Anna University of Technology - PAUT) as a unitary university with head quarters at Guindy, Madras, with the following four constituent colleges, *College of Engineering, Guindy, Alagappa College of Technology, Madras Institute of Technology and School of Architecture and Planning,* which were earlier affiliated to the Madras University. The rest of the engineering colleges in the State were affiliated to different general universities.

As many of these colleges were owned by powerful politicians or their associates, and as the degree from Anna University gained greater prestige, a concerted move was launched to convert Anna University from unitary to affiliating university so that their students would get the degree of Anna University. The Anna University Amendment Act of 2001 brought all Engineering colleges in Tamil Nadu under the University. This included 6 Government Engineering colleges - *Government College of Technology, Coimbatore, Alagappa Chettiar College of Engineering and Technology,*

Karaikudi, Government College of Engineering, Salem, Government College of Engineering, Tirunelveli, Thanthai Periyar Government Institute of Technology, Vellore and Government College of Engineering, Bargur, 3 government-aided private institutions, PSG College of Technology, Coimbatore, CIT Coimbatire and Thygarajar College of Engineering, Madurai, and 225 Self-Financing Colleges then.

As the number of engineering colleges increased exponentially, the Anna University was first trifurcated and later into five regional universities with a vice-chancellor headquartered at Chennai, Coimbatore, Trichy, Tirunelveli and Madurai. The quality of teaching, research, consultancy and new innovations in science and technology rapidly declined at Anna University, Chennai, compared to the situation when it was a unitary university. The time and energy of the faculty were largely consumed by the problems of affiliated colleges running into hundreds. Sadly, the integrity of much of the faculty came under cloud in their interactions with the private colleges for affiliation, appointments and accreditation and so on. It has become an open secret in the State that huge payoffs are involved in the appointment of vice-chancellors and members of syndicates and faculty members, initiating a vicious cycle of such officials indulging in blatant demands for illegal payments running in lakhs and crores. Three such vice-chancellors came under vigilance enquiry and one vice-chancellor was booked for corruption charges.

At this stage last year, great deal of concern was raised by the academic community and civil society about the deterioration in the standards of technical education on the one hand and total loss of probity in the higher education system. The present government responded by restoring the unitary status to Anna University in Guindy (Chennai) in 2010 and re-designated all other five affiliating universities at Chennai, Coimbatore, Trichy, Madurai and Tirunelveli as Anna Technical

Universities.

Other Technical Universities

The apparent motivation for engineering colleges to become State technical universities or technical deemed universities was to gain autonomy from the general universities so as to have the freedom to increase the intake capacities and to establish new departments and programmes at the undergraduate and post graduate levels and to adopt innovative teaching methods. The characteristics of the major technological universities in India, are briefly outlined below:-

Maharashtra

Established by the Maharashtra Government in 1989, Dr. Babasaheb Ambedkar Technological University is located at Lonere, the place in the ranges of Western Ghat. It is autonomous in nature and unitary in its character.

Haryana

The Guru Jambheshwar University of Science & Technology, Hisar, was established in1995 by an Act of the Legislature of the State of Haryana. In addition to the regular courses on the campus, this unitary University offers several courses at the diploma, bachelor and post-graduate level in non-engineering subjects as well.

Punjab

Punjab Technical University (PTU), at Jalandhar was established by an act of State Legislature in 1997, to promote Technical, Management and Pharmaceutical education in the state at the Degree level and above. PTU under its affiliation, has 150 Engineering colleges, 156 Management colleges, 96 Pharmacy colleges, 68 architecture colleges, 41 B.Sc MLT colleges and 42 Hotel Management & Catering Technology Colleges, and 302 Learning centers under distance education. Of these, four are government-financed, one is Govt.-aided and the remaining are private.

In addition the Punjab Engineering College (PEC), University of Technology, Chandigarh was established as a deemed university in 2003 and as a unitary technical university in 2009 by converting the College with a long history of several decades.

Karnataka

Visvesvarayya Technological University, (VTU) was established in 1997 by the Government of Karnataka. It has 144 colleges affiliated to it with under graduate course in 27 disciplines and PG Programs in 66 disciplines. The intake at UG level is about 45000 students and at the PG level it is about 7500 students. The VTU has 14 affiliated Colleges with academic autonomy.

Madhya Pradesh

Rajiv Gandhi Technical University was established by the Government of Madhya Pradesh in 1998. This institution was established as a common university for all the technical institutes, including Engineering and Science colleges in the state of Madhya Pradesh. All the colleges of Engineering, Science and Technology as well as the Polytechnics attached to various Boards of Technical Education are affiliated to this university.

Uttar Pradesh

Uttar Pradesh Technical University (UPTU) was established by the Government of Uttar Pradesh on May 2000. UPTU has more than 650 affiliated colleges. Its headquarters was located in Lucknow. In order to reduce workload and to ensure proper management, U.P Government has ordered bifurcation of UPTU into 2 separate universities namely Gautam Buddha Technical University and Mahamaya Technical University with effect from July, 2010.

West Bengal

The West Bengal University of Technology, (WBUT) was established by Government of West Bengal in 2000 located in suburban satellite township of Salt Lake City, Kolkata. The university was created primarily to provide programs in multidisciplinary fields like science, technology and management. The University has been accorded the affiliating University status with its jurisdiction encompassing the entire state of West Bengal for the pursuit of degree and advanced-level course in management, paramedical and other professional areas.

Orissa

The Biju Patnaik University of Technology (BPUT) was created by an act of the Orissa state legislature in the year 2002 and located in Roukela, Orissa. Almost all the engineering, pharmacy, architecture and most of the colleges offering MBA degree programmes are either constituent or affiliated colleges of BPUT. Today, the university has 156 colleges, both constituent and affiliated. The disciplines include engineering and architecture, business management and hotel management, computer studies and pharmacy.

Rajasthan

Rajasthan Technical University (RTU) is located in Kota. The university was established in 2005. Formerly, it was Engineering College, Kota. Presently the university affiliates about 77 Engineering Colleges, 8 M.Tech Colleges, 28 MCA Colleges, more than 90 MBA Colleges and 3 Hotel Management and Catering Institute.

Gujarat

The Gujarat Technological University (GTU) was established in 2007 with 82 Engineering Colleges, 73 Diploma Engineering 84 a Pharm Degree Colleges, 19 Pharma Diploma institutions affiliated to it.

Perversions

While discussing the nature and functions of technical universities it is necessary to recognize the fact that many engineering colleges managed to obtain the status of Deemed Universities by fair and foul means and function as technical universities for the award of degrees. While a few of these receive public funds, many institutions generate their own resources and operate independently with academic and administration freedom within the broad guidelines set by the AICTE and UGC. These institutions have no affiliating privilege like technological universities. Of late, some of the deemed universities are expanding with centres outside the registered headquarters. A significant number of them are seen to flout all norms, standards and guidelines and function as family owned shops offering easy degrees. The discussion of the melodies of technical education under deemed universities, is beside the scope of this paper.

The initiative for forming Technical Universities were taken under a broad policy framework of providing new technological education required for the industrial growth of the country and the respective states. The primary purpose of establishing technical universities was to assist and mentor the colleges. As the number of students graduating increased progressively due to enhanced intake in existing branches and addition of new branches, it was expected that a veritable stream of highly talented young people should come out of these institutions, who can occupy key positions in Industry, Government and Education, both in India and abroad.

This aim was reasonably fulfilled as long as they remained unitary universities with freedom to innovate the curricula, teaching methods and research programmes. These were totally lost with the affiliating status. Some technical universities are attempting to establish advanced centres of teaching and research in their own campuses, in addition to their affiliation functions. This mixture does not seem to help in the deterioration of standards. Though they offer separate courses and research programmes different from the affiliated

colleges, and some even adopting different grading pattern, eventually all of them got the degree under the same university. Despite some technical universities attempting to improve the quality of performance of the affiliated engineering colleges through teacher training schemes, e- learning through special courses and similar efforts, the vast number of affiliated institutions spread, far and wide, could not show any improvement. This is evident from the high degree of failure rates, in disturbingly large number of colleges.

Many affiliating technical universities do not even bother to worry about these trends. So much so, that students from a large number of colleges seek the help of "tutorial academies in engineering" mushrooming all over, advertising to "coach" students for the examinations of different technical universities. This is a shocking symptom of the degree of deterioration. Imagine a society in which each year several lakhs of poorly qualified "coached" graduates with no real knowledge or understanding of the profession accumulate. It will be a time bomb of frustrated youngsters whose hopes have been raised and eventually duped.

When some of the early unitary technical universities were conceived they were supposed to emulate the Indian Institutes of Technology (IITs) functioning under the aegis of State Governments. It may be recalled that the key features of the programmes of IITs were non-specialized orientation and integrated curricula supported by institutional processes that would encourage students to think creatively. The products of these institutions were expected to be *'creative scientist-engineers'* and technical leaders with a broad human outlook and individuals with *'creative initiative in future situations'*. All students were expected to have strong core knowledge in basic sciences, engineering sciences, humanities, and technical arts besides the professional courses in chosen disciplines. The initiatives to conceive a grand design for technical education in India and implement the concept in true its spirit, in the form of IITs, was a hallmark development in independent India. The performance of the IITs during the last five decades has provided a sense of fulfillment. Their achievements, in producing high quality engineers and technologists and in undertaking advanced R&D in science and technology, have received worldwide recognition. Though their future directions may depart from the original design, they will hopefully continue to maintain their reputation and their brand image. Similar ambitious goals were possible under the unitary structure.

Remedies

Some of the technolgical universities performed remarkably well by emulating the desirable features of the IIT system. However, those who took the affiliating route, lost sight of these ideals and fell into the trap of commercial entities. In order to restore the original vision of the technological universities, it is necessary, firstly, to make them unitary with sufficient freedom to engage in interdisciplinary teaching and research. **Such unitary universities should be designated as "technological universities".**

The universities established for performing affiliation functions should be called "technical universities" and should solely be engaged in mentoring the affiliated colleges, devoted to quality enhancement functions besides conducting the examination and evaluation. They must not start their own departments and centres or teaching and research programmes. Their teaching and research should be related to up-gradation of the knowledge and skills of the teachers and students of the affiliated colleges. They should fund research activities in the affiliated colleges and help them in developing modern infrastructural facilities. They should help to establish synergy among the compatible affiliating institutions and incentivize them to share their resources and talents.

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