

In Search of Architectural Engineering Education in South Asia

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Abstract

Architectural Engineering is established in US as a separate discipline from civil engineering and architecture. However, that is not true in South Asia. This paper intends to explore the current state-of-the-art of architectural engineering education in south Asia. In South Asia the Sir J.J School of Architecture (originally called the Government College of Art) in Bombay was the first modern school to introduce a structured course in architecture. In its initial years the one architectural event to capture the imagination of the profession was the building of the Capital city of New Delhi by Lutyens. Many of the faculty, such as Claude Batley, while intellectually sympathetic to the need for an Indian identity but were grounded in the nineteenth century European Beaux Arts tradition. A thorough grounding in the art and craft of construction was always held to be a prerequisite for architectural training. This was reflected in the fact that the Bombay school had a strong technical component and all the schools that followed it, such as the Bengal Engineering College at Calcutta, Baroda's Kalabhavan, Delhi's Polytechnic, were primarily technical institutions with a department of architecture. Engineering and construction courses took up the lion's share of the curriculum.

Introduction

Architecture is the art and science of designing and erecting buildings. Architecture precedes architectural engineering by centuries in existence and leans more toward being an art than a science, although one must have knowledge of construction methods and materials to work successfully. Architectural engineering combines all aspects of the building design and construction, involving mechanical, electrical and structural and other notions of mathematical precision. It is a field that uses far more technology than its predecessor. Architecture focuses more on the aesthetic design and the functional and spatial layout of buildings as opposed to the engineering that architectural engineering incorporates. Architectural engineers apply engineering principles to the construction, planning and design of buildings and other structures. Architecture has been closely associated with engineering in the history of the building construction. The engineering for buildings was determined empirically in the early periods; later, scientific calculations for structures were developed in the 17th century, and engineering was taught as a separate course in the 18th century. Architectural Engineering was established as a discipline in the formal realm of engineering in United States in the late 19th century when the University of Illinois became the first of many universities to offer an architectural engineering program. The university with the longest ABET (Accreditation Board for Engineering and Technology, Inc.) accreditation is Pennsylvania State University, which received theirs in 1935

Architecture and Architectural Engineering Education in South Asia

Any attempt to survey the brief history and the present status of architecture and architectural engineering education in India must begin with a recognition that while the activity of architecture has been practiced in India for centuries, its education was the responsibility of master craftsmen and passed along from one generation to another. The evolution of architecture and architectural engineering as a profession is a relatively new phenomenon demanding a different educational approach and pedagogy. The problem is compounded by the fact that while the professional attitude is western import, the pedagogy requires integrating issues of a distinct cultural identity. Most schools have not come to grips with this problem and the pedagogical structure that arrived in south Asia from the West at the advent of the modern college level education has more or less remained even today.

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The nineteenth century academic tradition had a technical bias in addition to the formal.

Architectural form was a function of a resolution of forces acting upon it. August Choisy and Guadet of the Ecole de Beaux Arts in Paris had laid the foundation of this attitude. While Lutyens and his disciples paid lip- service to Indian motifs, a thorough grounding in the art and craft of construction was always held to be a prerequisite for architectural training. This was reflected in the fact that the Bombay school had a strong technical component and all the schools that followed it, such as the Bengal Engineering College at Calcutta, Baroda's Kalabhavan (House of Art), Delhi's Polytechnic, were primarily technical/engineering institutions with a department of architecture. Engineering and construction courses took up the lion's share of the curriculum making them de facto architectural engineering programs.

Celebration of Technology at Kharagpur

With this background, the Indian Institute of Technology was founded soon after independence (August, 1947) in collaboration with the Massachusetts Institute of Technology. Balance between classicism and technology which all schools were trying to maintain until then, tilted in favor of technology at Kharagpur. India's first Prime Minister Pandit Nehru's belief that a scientific temper and technology would transform India into a modern nation was in tune with MIT's own predisposition towards technology. Ever since the Second World War, MIT had been identified with a culture that held that given time, technology will solve all mankind's problems. Thus, under MIT's guidance Kharagpur gave little importance to courses such as the history of architecture and even less to a study of Indian society, for technology was universal and transcended cultural differences. It was not only the presence and importance given to technical courses that mattered in architecture, the study of design too was subjected to the same deterministic attitude and reduced to functional rationalism. A house was not only a machine to live in but its form was valid only to the extent of its capacity to answer to certain programmatic criteria. Paradoxically, this created an interesting situation; late Prof. Kurula Varkey, a Kharagpur alumnus was to remark that it was this absence of humanities and liberal arts component in their education that led some of the more sensitive students to search, on their own, for the values and ideas that inform architecture.

Modernism at Baroda

The School at Baroda was started before independence and was initially an affiliate of the School at Bombay. In 1949, the MS University of Baroda was established and the technical departments of Kalabhavan were converted to the faculty of Technology and Engineering. Interestingly, the Department of Architecture became a part of the newly established and unique Faculty of Fine Arts. The diploma course, originally offered as part of the Kalabhavan program, was upgraded a few years later to a full- fledged B.Arch. degree course under the able leadership of Professor M. B. Dave, a onetime associate of Claude Batley. Professor Dave ensured that the curriculum include courses in humanities (he himself taught history of architecture) and the Beaux Arts emphasis on the 'making of architecture', that is, one's ability to put together a building properly, the tectonics of architecture was incorporated in the pedagogy. Besides, the university had always had an excellent liberal arts program with a number of prominent personalities actively engaged in exploring ideas of modernity. In those early years when the university was relatively small and interaction between departments

was still possible, students of architecture would find themselves in the company of students from the literature, philosophy and social science departments. These lateral exposures made sure that the architecture faculty's preoccupation with classicism and technology was supplemented with at least some, albeit not well-formed, questions of relevance and ideology though they were still conceived in terms of neo-rationalism. History was chronological and modernity an inevitable state of being that was to be accepted without question. However, there was a conspicuous absence of anti-historicist monumentality in student projects done at that time, and this promised to be a significant departure and set the school apart from others [1].

Unfortunately, this phase lasted only a few years. Had the Department of Architecture remained with the Faculty of Fine Arts its history would probably have been different. The teachers of the Department, against the wishes of Professor Dave, voted to be a part of the Faculty of Technology and Engineering in the early '60s. And that arrangement has remained ever since. Successive deans of the larger faculty, who were themselves engineers, failed to understand the unique blend of technology, humanities, and aesthetics in architecture and successfully subjected the Department to the utilitarian, problem-solving culture of the technical disciplines with all its attendant problems. Successors to Professor Dave, unfortunately, were not able to resist this pressure nor have they been able to infuse a sense of direction and purpose to the School.

Council of Architecture

The Council of Architecture was established in the early seventies as a statutory body with a view to oversee both the profession and the education of architects. With the expansion of the profession and proliferation of schools of architecture, a regulatory mechanism was necessary. The Council laid down certain norms of minimum facilities, procedures and courses that each school has to follow and instituted periodic inspection to ensure adherence. Though primarily mandated to oversee and regulate the profession, the Council was also given responsibility to regulate the education at undergraduate level [2]. In early eighties, another statutory body came into being; the All India Council of Technical Education (AICTE) with a mandate to regulate all technical education systems in the country [3]. By this time the popular psyche had been conditioned to consider architecture as a technical discipline as opposed to a design discipline and it naturally came under the purview of AICTE. But this created a strange situation with two statutory bodies looking at architecture. This has now been resolved with a Memorandum of Understanding between the two Councils reached where by part of the responsibility of setting the minimum curricular standards has been given to the Council of Architecture, though the AICTE still retains a larger control and approval for graduate programs. A far more serious and larger issue though has been overlooked in this territorial tussle between the two Councils. No one questioned the branding of architecture as a technical discipline. It legitimized architecture primarily through its measurable, problem solving criteria. The council of architecture failed to assert the clear identity of architecture as primarily a design activity.

Critical Energy at Ahmedabad

The School of Architecture at Ahmedabad is an exception to the above trend. By deliberately and studiously avoiding the affiliation with a university, (recently the school has been forced by the Council to affiliate with the North Gujarat University) Ahmedabad has maintained academic and administrative autonomy and with an innovative program has emerged, in a short span of twenty five years, as a center of excellence with international recognition. The School started in 1962 under the aegis of the Ahmedabad Education Society [4] and was actively supported and encouraged by Kasturbhai Lalbhai, a leading industrialist and philanthropist of the city. The School's initial direction was set by the able troika of architect BV Doshi, Dr Rasvihari Vakil, a structural engineer and the present Dean of the school, and Bernard Kohn who, on the recommendation of Louis Kahn left a teaching position at Yale university to come to Ahmedabad. Ahmedabad was probably the

one city in India which combined a high degree of consciousness for traditional architecture

The School broke away from the conventional fixed course structure which was prevalent at the time and instead adapted a more open curriculum with many elective courses. It also incorporated two important components: a 'related study program' requiring students to measure-draw important historical buildings, and a 'thesis program' which requires that each undergraduate student write a research dissertation on a subject of his/her choice. Now a few schools have incorporated such programs but for a long time this was the only school with such a program for undergraduate students. With a tentative beginning the school has now built up an impressive collection of theses on a variety of subjects, as well as a portfolio of documentation on Indian architecture. Both these programs have the potential to ensure that students are sensitive to their heritage as well as the emerging directions and are also critical enough not to accept anything without scrutiny, an important obligation of academia. Interestingly, in the initial years, there was no program of teaching history and theory of architecture at Ahmedabad. Whatever history was taught was more akin to archeology than history. However, almost all the design faculty referred to historical examples while reviewing design projects. This not only whetted students' appetite for history, but the subject acquired an immediate relevance to the present. There is a lesson here for all the schools that include history in their official curriculum but leave out a 'sense of history' in their pedagogy. This can only be done by the design faculty within the studio format. The early graduates of Ahmedabad faced acute problems as they began to be absorbed within the profession. As much as they understood architecture, they were less able to put together a building. Paradoxically, while some of the best practicing architects in this country taught them design, they were unable to translate their own skills in resolution to a teaching tool. Students were more or less left to learn this by watching them work. Some did but most could not. Thus, Ahmedabad graduates acquired a rather unfair, but not always unjustified, impression of 'talkers rather than doers' in the profession. In the '70s a younger group of faculty members, who themselves were graduates of other schools such as Kharagpur and Baroda, began to change this situation and the last director, Professor Varkey made a concerted effort in this direction. However, in doing so the School seems to be losing the passion for architecture as an art which distinguished it in the early years. Over the years the School has grown into a full campus with several related institutions. The School of Architecture, though, continues to be its main identifying institution and is recognized as a cultural force in the city. It is a measure of its success that a number of European and American schools now seek exchange programs with Ahmedabad. A program has existed now for several years with ETH, Zurich and a similar program is being negotiated with RPI of the United States. A few other independent schools have been recently started. Notable among these are the Academy of Architecture at Bombay, the Habitat School at Delhi and the one at Hassanin Karnataka. It is too early to evaluate these schools but judging by their faculty and the programs, one senses that changes set by Ahmedabad may be taking root. These changes point to a re-evaluation of both the nature of the activity we call architecture as well as the training of architects. Architecture is the design of places for people; places that are appropriate to and supportive of their situation; places that respond to human need, stir the imagination and at their best, dignify human existence; and above all places that inform the discourse about what places are and what they should be. Thus, architecture is a value loaded activity (as opposed to merely technical or one concerned with being a reaction to client's demands). An architect has the obligation to put a building together well and, at the same time, question what might be appropriate or supportive of the situation and be aware of the implicit values of the society which might support (or be likely to oppose) a particular design decision.

Conclusion

Architectural Engineering is comparatively a new discipline. In United States Architectural Engineering education and Architectural education are distinctly different and organized under

different departments and most often under different colleges/schools. Although there are no officially titled Architectural Engineering programs, most of the programs follow architectural engineering curriculum and philosophy in South Asia. Architectural education there is primarily technology and engineering based and vast majority of the programs are housed in college of engineering. Many of the graduates from such programs also work as architectural engineer.

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