

Architect-entrepreneurs in post-independence Pune (India)

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Abstract

With the purpose of expanding the built infrastructure in their colonial empire the British imparted technical training to Indians since the mid nineteenth century. These construction related courses initially focussed on assistant, supervisory and executive tasks but evolved into the training of civil engineers. Half a century later, in 1913, a handful of British architects in Bombay took the initiative to develop an existing drafting school for architectural assistants into India's first school of architecture. Through such schools, and the gradual employment of Indians at higher ranks in Indo-British firms or the Public Works Department (PWD), Indian architects and engineers acquired British methods of working and construction. While construction practice during the British Raj (1858-1947) has gained scholarly attention recently, less is known of how construction was practiced after India's independence in 1947. Analysis of the profiles of professional firms has shown to be a fruitful means of gaining insight in the workings of the construction field. In order to understand how construction practice was carried forward, this paper will therefore study the first Indian architect-entrepreneurs, who established their firms after Independence.

The study is built on data collected from interviews and office archives of three Indian architectural and entrepreneurial offices, which were based in Pune and active in the period 1947-1982. The paper analyses the type of projects these firms were working on, the procedures and organisation of design and construction, and the prevailing construction techniques of the period. As such this contribution will shed light on how, in a post-colonial situation, western models of construction practice were translated into the Indian context.

KEYWORDS

Construction practice, architects, post-independence, India, Pune

Introduction

At the time of Independence in 1947, India counted 200 to 300 qualified architects¹ and about 5000 degree-level engineers and thousands of technically trained construction assistants.² These British-trained professionals carried forward the western building practice, which by then had largely replaced traditional native construction practice.

The disproportionate number of architects to engineers bears witness to the larger influence of engineers in British India and the preferred educational and work opportunities for Indians under colonial rule. Major nation-wide infrastructure works had required technical skills and natives were trained as early as the 1840s at various institutes for working as overseers, clerks of work, and technical and executing assistants. These institutes rapidly evolved into engineering schools offering licentiate courses in civil engineering. There existed 36 such schools at the time of Independence³.

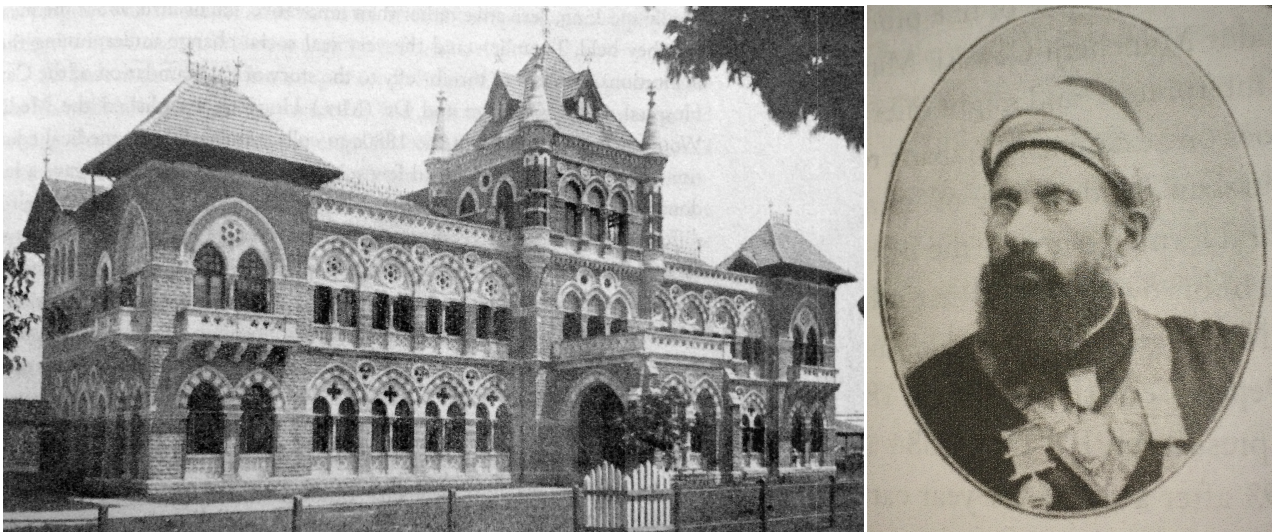


Fig.1: Some native engineers obtained influential positions in the colonial PWD. K.B.M.C. Murzban (1839-1917) designed and oversaw the construction of several public buildings in Bombay (a.o. the Cama hospital for women and children pictured on the left). However, these native engineers of India brought little that was native from their tradition to their work. Source: Preeti Chopra, A Joint enterprise: Indian elites and the making of British Bombay, Minneapolis: University of Minnesota Press, 2011.

In comparison, the first and only diploma course of architecture in India was started at the Sir Jamsetjee Jeejeebhoy School of Art (J.J. School of Art) in 1913, merely four decades before Independence, in the economically flourishing city of Bombay. As opposed to the Indian engineers who obtained substantial work from the colonial government - either as employee or as government contractor - Indian architects since the 1930s more often catered to the

wealthy native business clientele emerging in cities like Bombay. In general, these native architects hailed from well-to-do and cultured backgrounds.



Fig. 2: Architecture graduates from J.J. School of Art formed the nationwide Indian Institute of Architects in 1929. Pioneering Indian architects G.B. Mhatre (top left) and C.M. Master (bottom, second from left) can be seen in this picture of the council members of the Indian Institute of Architects, Bombay, 1936-1937.

Few have written about the further development and spreading beyond the major colonial cities of construction practice in India after the independence in 1947. This paper forms part of a larger research project that aims to fill this lacuna by analysing Pune's post-independence building practice. The choice for Pune, a second tier city in which few architects were based pre-independence, is hence a conscious one in an attempt to gain knowledge on the production of everyday buildings.

Building involves a collaborative effort of patrons, designers, contractors and suppliers. Interviews with senior practitioners allowed listing the noteworthy Indian actors in these categories practicing in Pune between 1947 and 1982.⁴ This paper focuses on the role of architects in particular. From the group of 36 architects, the (family members of the) most senior architects were approached. The three practices of U.M Apte, V.V. Badawe and Architects United (a partnership between V.V. Ghotge and A.B. Sharma) provided study material for this paper.

This study is built on data of the period 1947-1982, collected from interviews with the architects themselves or their relatives (who took over the business) and on office archives. The archives contain hand drawings, communication in the form of letters and notes, library books and photographs. The first part of this paper analyses the academic and practical training of these architects, the type of projects the firms were working on and the procedures and organisation of design and construction. The second part discusses the defining characteristics of the buildings of the era, in terms of style and construction techniques.

Establishing a new profession: the path of three architectural practices

After independence, the newly founded socialist government became the main patron for building activity. An estimated 20 to 40 per cent of the architects were employed at the government's Public Works Department or public sector undertakings.⁵ Earlier research shows that independent architects found the average quality of design produced by architects at these government departments inferior. Secondly, private architects criticised engineer-contractors, surveyors and *mistris* (skilled craftsmen) offering design-and-build services, which they proclaimed hampered the recognition of their profession.⁶

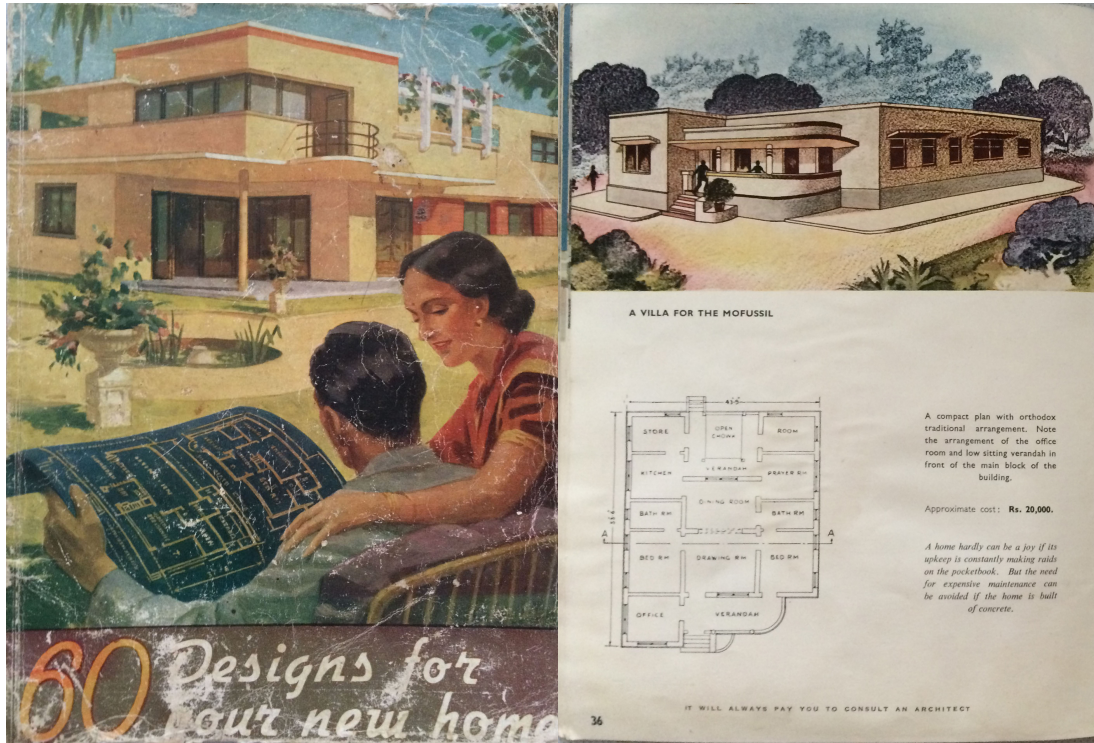


Fig. 3: Publications by the Cement Marketing Company of India promoted not only the use of cement products, but also the design services of architects (as opposed to engineers or contractors) for private residential projects. Source: private library.

An analysis of Pune Municipal Corporation's list of 'licensed surveyors' from the year 1952-53 confirms the precarious situation of the architect's profession outside the major cities.⁷ Only designers with a municipal surveyor's license were authorized to submit building permit applications. Out of 83 licensed surveyors included in Pune's list only five were holder of a graduate degree in architecture while the majority had a Bachelor degree in Engineering. One of the three Pune-based architects mentioned in this list, U.M.Apte (1913-1977), is studied in this paper.

The image shows an open book with two pages of a list of licensed surveyors from Pune Municipal Corporation in 1952. The pages are numbered 15 and 16. The text is in Marathi and English. The columns include name, qualification, and license details. The list includes names like U.M. Apte and others, with their respective qualifications and license numbers.

Fig. 4: Pune Municipal Corporation Surveyor's list 1952. Source: Pune Municipal gazette, Vol. 3, No. 21, 1952, pp. 13-16.

The father of architect U.M. Apte was an avid photographer and painter who worked as a drafting assistant in colonial service and had successfully passed an exam in 'Elementary Architecture' conducted at the Sir J.J. School of Art in Mumbai in 1899. His son, U.M. Apte, graduated in 1939 as an architect from the same J.J. School of Art, where by then architectural education had developed into a full time government recognised and RIBA accredited diploma course.⁸ He was a student of the British architect Claude Batley, a principal of the renowned firm Gregson Batley & King who practiced in Bombay and India-wide at that time. After his graduation U.M. Apte responded to a newspaper advertisement of a job offer at the office of architect Anderson in Lahore. He was offered the post and moved there together with his classmate from the J.J. School of Art Anand, who hailed from Lahore. While working full-time at the office of Anderson for about eight years, he and Anand founded the practice Anand & Apte. Through the connections of Anand they obtained important commissions like the design and construction of Lahore's prime movie theatres 'Rattan' and 'Odeon'. (Fig. 14) After India's Independence in 1947 and the subsequent partition that led to

the creation of India and Pakistan, both architects were forced to move back to India where their collaboration ended. On advice from his father U.M. Apte set up practice in Pune the same year and remained active there till the end of his career in 1974. U.M. Apte has designed a variety of projects from ‘bungalows’ (free-standing family-owned houses) to temples, industrial buildings, office buildings and hospitals. He became particularly famous for his specialization in the design of educational institutes, which proliferated in Pune.



Fig. 5: U.M Apte (second from left) in front of Rattan Theatre, 1940s, Lahore. Photo: unknown. Source: Private archives of Kiran Apte.

The founders of the two other practices studied, architect V.V. Badawe and Architects United, graduated more than two decades later and belong to Pune’s second-generation of architects. Architect V. V. Badawe was born in Pune in 1936 and has no family background in design or construction. He joined the Sir J.J. College of Architecture in 1953, the year after which the architecture department had separated from the Sir J.J. School of Art. There, he obtained his degree in Architecture in 1958. At that time the first generation of Indian (but British-trained) architects was teaching at the J.J School of Art. Mumbai architect G.B. Mhatre- one of the pioneers to re-interpret the International Style in an Indian context⁹- was his design professor. V.V. Badawe subsequently worked part time shifts with several Indian architects and engineers in Mumbai, which allowed him to collect savings for post-graduate education in London. Together with two other Indians, he studied Tropical Architecture at the AA School of Architecture in 1959-1960 under Otto Koenigsberger and Jane Drew. After briefly working with architect Michael Lyesle & Associates in London, he was employed for a year at the architecture studio of Mogens Black-Petersen in Copenhagen. He returned to India in 1962. For a few months he worked in the office of architect B.V. Doshi in Ahmadabad, then he

decided to start his own practice in Pune in 1963. The portfolio of architect V.V. Badawe includes a range of residential, industrial, commercial and cultural projects amongst which several movie theatres. His most famous buildings in Pune city are the public auditorium ‘*Tilak Smarak Mandir*’(**Error! Reference source not found.**) and the ‘*Lokmangal*’ building (headquarter for the Bank of Maharashtra,1977-78).

Architect V.V. Ghotge (1939-2003) and architect A.B. Sharma (1939-2004), partners of the firm Architects United, graduated together from the Sir J.J. School of Architecture in 1959. (Fig. 6) US-trained architect Charles Correa (1930-2015) had been one of their design teachers in Bombay. Both partners worked for one year with Santh-Gothing-Dongre, a first generation architectural practice where many Pune-based architecture graduates have gained initial job experience. In 1961 they founded Architects United and started their career with the design of bungalows. At the end of the 1960s the first commissions for apartment-schemes and a private hospital assignment gave a boost to the practice. The 1960s-1980s portfolio consists of residential, industrial and commercial projects.



Fig. 6: A.B. Sharma (left) and V.V. Ghotge (right) on one of their construction sites, [place, year unknown], Photo: unknown. Source: Office archives of Architects United.

In the period 1947-1982, the majority of these architects’ clientele consisted of the urban elite of businessmen and white-collar workers. None of the studied architects pursued the design of public projects and the rare projects undertaken for government bodies were obtained through personal invitation rather than on a competitive basis. The public projects were generally

found to be more time-consuming and complex because of mandatory procedures and funding issues.¹⁰

Professional practice and circulation of knowledge in the architect's office

It is noteworthy that although the number and size of projects undertaken by architect U.M. Apte left a significant mark on the city, the firm mostly remained a one man's practice which only sporadically relied on one or two drafting assistants. Apte's maternal uncle, R.W. Nene, was an engineer and the structural consultant for most of his projects. General contractors were appointed on a cost competitive basis both for public and private clients and the firm did not have contractors they repetitively worked with. Interviews with contractors who worked with U.M. Apte reveal that the contractor on the construction site used the same drawings that were submitted to the municipality for obtaining the building permit. Since working drawings or construction details were not provided, the contractor had more say in the technical execution of the building.

Interviews and the correspondence in the archives of Architects United show that in the period 1947 - 1980s, if a self-employed architect was appointed, the architect would head and gather a construction team. He would be in charge of supplying drawings and specifications for tendering and supervise the work on site, in a few cases assisted by an independent clerk of works who would be paid by the client to monitor the construction site. In private practice the architect used to coordinate the entire process as opposed to usual practice at in-house government departments, where architects were often subordinate to engineers who were responsible for site supervision, specifications and cost management.¹¹

At Architects United's studio the first architect employees were hired at the end of the 1960s when larger projects were commissioned. Until then, both partners even did the structural design of smaller projects themselves. From the mid 1970s to the '80s the firm counted approximately ten architects and additional administrative staff. From that time they often collaborated with structural engineers Kanetkar-Kulkarni. As opposed to common architectural practice in India today, the making of bills of quantities, construction work planning, acoustic and services design and sanctioning were the architects' task. Professional interior designers were rare and some drawings of interior design and made to measure furniture in the archives of V.V. Badawe testify that for bespoke public projects (banks, movie theatres) architects designed the interiors as well. The house that U.M. Apte designed

for contractor B.G. Shirke (Fig. 7) also features intricately designed internal doors and staircases as well as fixed furniture designed by the architect.



Fig. 7: Shirke house, Pune. Architect, U.M. Apte. Year: 1957. Photo: Unknown. Source: Personal archives of Kiran Apte.

All studied architects combined professional practice with teaching at Pune's 'Abhinav Kala Vidyalaya', Pune's first college to start a full-time diploma course in architecture in 1954. While U.M. Apte started teaching after years of practical experience, Badawe, Sharma and Ghotge taught since the very beginning of their careers. From approximately 1963 to 1968, Architects United additionally ran an independent 'Institute of Architecture' at which they conducted evening courses that prepared students for the exam of Bachelor in Architecture at Sir J.J. College of Architecture. In total an estimated 80 to 90 students have followed these classes.¹²

V.V. Badawe and Architects United distinguished themselves from U.M. Apte in the organisation of their office work. The second-generation architects numbered their projects consistently (Fig. 8).

60 - 70			
G		H	
60-70/G-1	K.S. Gokhale	shops housing	60-70/H-1 V.S. Hejmadi bungalow
60-70/G-2	Y.S. Godbole	bungalow	60-70/H-2 C.R. Hardas bungalow
60-70/G-3	vasantlal k. Gandhi	bungalow shops	60-70/H-3 Hindustan tyres factory Nayyar
60-70/G-4	Ganesh Sahakari g.s. mdt.	housing	
60-70/G-5	Gestetner	interiors	
60-70/G-6	L. K. Galande	storehouse	
60-70/G-7	M.P. Ghule	bungalow	
60-70/G-8	Dr. A.B. Gune	hospital	
60-70/G-9	Dr. A.V. Gokhale	bungalow	
60-70/G-10	D.G. Gorhe	bungalow	

Fig. 8: Systemised project list of Architects United. Source: Office archives of Architects United.

Both offices also made intricate scale models (Fig. 9), whereas there is no indication of scale models having been made in U.M. Apte's practice. In addition, V.V. Badawe and Architects United possessed in-house reference libraries of professional books, which were numbered and classified. In Badawe's library the approximate 1000 books are numbered chronologically by date of procurement. In Architects United's library books are classified based on content categories. The library of Architects United was used by students at their Institute of Architecture and hence also served their teaching endeavours. At the time of this study the Architects United library was not entirely accessible.

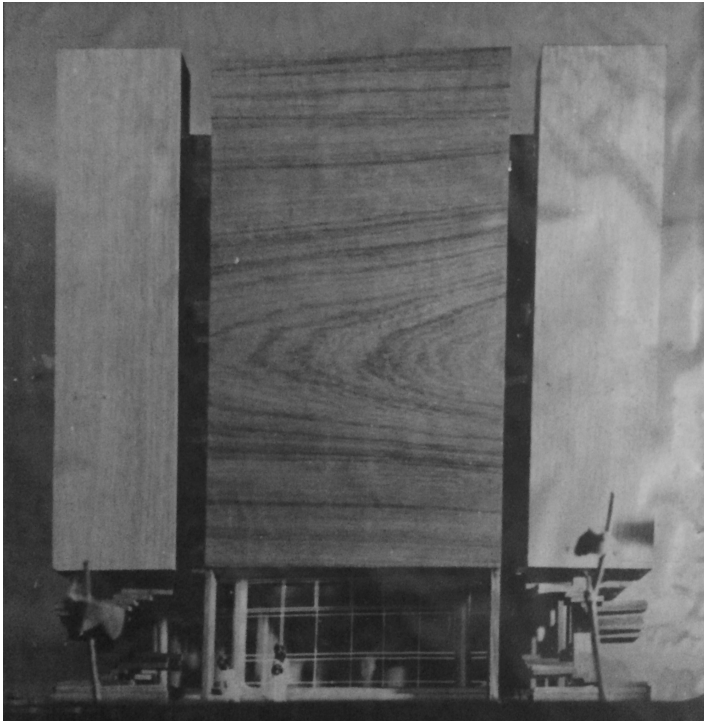


Fig. 9: Scale model of Tilak Smarak Mandir, Pune, Year: Unknown, Photo: Unknown. Source: Office archives of V.V. Badawe.

A detailed analysis of the office library of V.V. Badawe sheds light on the origin and content of the 349 books that were acquired before 1982. The topics of almost half of the books are design related. This category encompasses – in descending order of representation - architectural, interior, structural, urban and landscape design. About 26 per cent of the books concern professional practice, laws and regulations. Books on construction, containing text and/or construction details make out 13 per cent of the collection. The remaining books, gathered under the miscellaneous category include – in descending order of representation- books on art, drawing and model making skills, travel books and philosophy books. Almost equal shares of all books have been published in India and England (ca. 30 per cent each), whereas 19 percent was published in the U.S.A. and the remaining 16 per cent in continental Europe and Japan.

The figure below shows within each content category the proportionate shares of the countries of origin of the books. (Fig. 10) The large majority of books on construction were published in England and the 20 per cent of books published in India are mostly colonial P.W.D. handbooks written by British engineers, or derivatives thereof. The legacy of British colonial engineers hence proves influential until the 1980s. Indian books are poorly represented in the design category, in which more than 80 per cent of the books are published in the west (Europe and the U.S.A). As will be discussed later, western sources of inspiration reflect in

the designs of the architects. Out of Indian design books only nine books relate to architectural design, six to structural design, one to urban design and one to landscape design. On the other hand, books published in India make out the majority (74 per cent) of books on professional practice, laws and regulation.

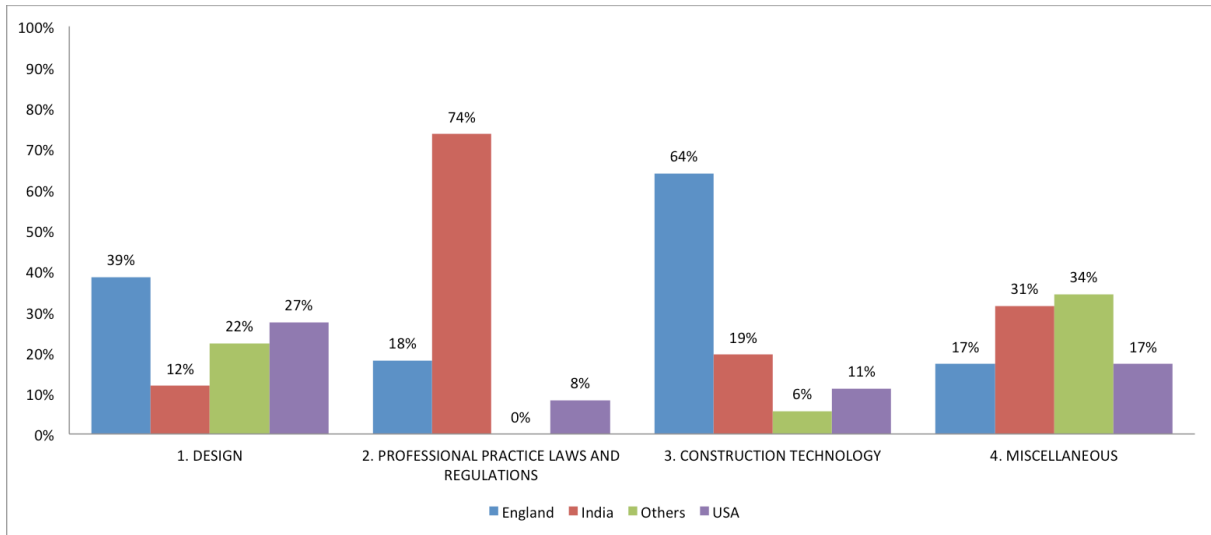


Fig. 10: Proportional provenance of the books in V.V. Badawe's office library per content category. Source: Produced by authors.

Iconic books by western architects who practiced in India after independence -such as Le Corbusier's *Modulor* (1948) and *Modulor 2* (1955) and *Tropical Architecture* by Maxwell Fry and Jane Drew- were found at the library, along with 10 books on Danish design and architecture. These reflect V.V. Badawe's continued affinity with the places where he studied and worked. The libraries did not contain journals but U.M. Apte and Architects United were familiar with the American magazines: *Progressive Architecture* (U.M. Apte, Architects United), *American Architecture* (U.M. Apte) and *Architectural Record* (Architects United).¹³ At the time, two particularly noteworthy Indian architectural design magazines existed, *Design* and *MARG*. (Fig. 11)¹⁴ These magazines did not have a large readers public however, and only V.V. Badawe remembers *MARG* from his student time in Mumbai.



Fig. 11: Indian Architectural Magazines in circulation during the first decades after Independence. Source: *The state of architecture, practices and processes in India. Catalogue of the exhibition curated by R. Mehrotra, R. Hoskote and K. Mehta. 06 January-20 March 2016, National gallery of modern art, Mumbai.*

The above indicates that the education, methods of practice and knowledge sources on which Pune's architects relied after independence were substantially western-based. This challenges the idea of a disruption in modes of building practice at the time of independence. Yet, the architects practiced in an Indian context. How did this translate in the buildings they designed?

Regional and modern design influences

U.M. Apte's early work indicates experimentation with styles. His versatile application of ornamental Art Deco, Indian revivalist and modernist facades in the same time period and for diverse functional programs is striking. The Western India House, built for an insurance company and his design for a biscuits factory derive their Art Deco character from similar elements: staggering facade planes, an accentuation of the entrance and coloured plaster bands with smaller windows (Fig. 12).



Fig. 12: Sathe Biscuits Factory, Yerawada, 1949 (left). Western India Building, Pune, 1953 (right). Rendered perspective drawings. Architect, U.M. Apte. Source: Private Archives of Kiran Apte.

His Bank of Maharashtra building (Fig. 13) however shows an eclectic blend of Art Deco and traditional Indian elements not unlike Ballardie, Thompson and Matthews' famous design of *Akshvanibhavan* (All India Radio building) in Calcutta (1957-58).



Fig. 13: Bank of Maharashtra building, Pune. Architect, U.M. Apte. Front facade, 1956. Photo: unknown. Source: Private archives of Kiran Apte.

Contrastingly, Lahore's *Rattan Theatre* and Pune's *Ayurved Mahavidyalaya Bhavan* (Fig. 14) are designed in a stripped-down modernist style. Only the sunshades add dynamics to their pragmatic and no-nonsense, uniformly plastered facades. This adaptation of international modernism met climatic conditions and more restricted building budgets.

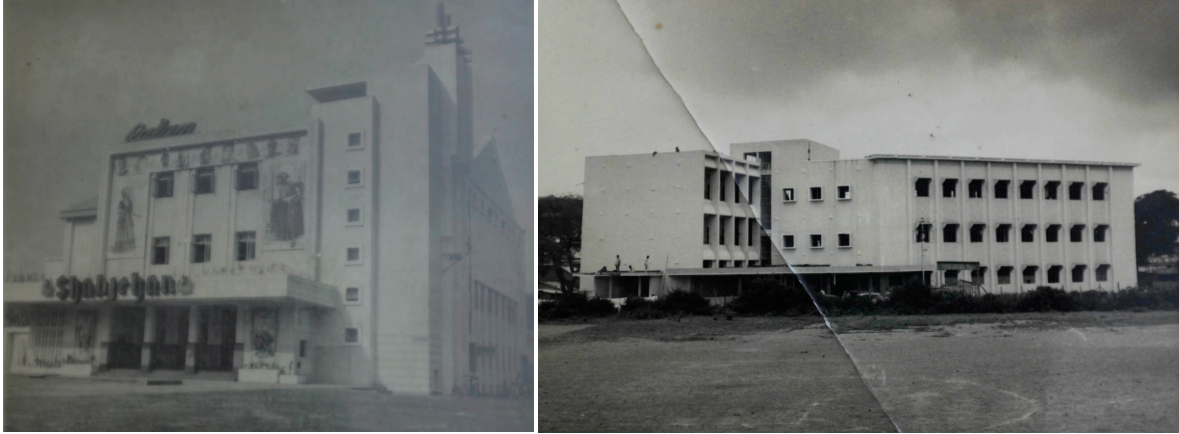


Fig. 14: Left: Rattan Theatre, Lahore, 1940s. Architects, Anand & Apte. Right: Ayurved Mahavidyalaya Bhavan, Pune, late 1950s. Architect, U.M. Apte. Photos: Unknown. Source: Private Archives of Kiran Apte.

V.V. Badawe and Architects United's work can largely be seen as a continuation of this 'utilitarian modernist'¹⁵ style, characterised by flat roofs, plainly plastered facades and concrete strips or screens to shade windows (*chajjas*). In Architect United's more elaborate versions of this design language, perforated concrete screen walls (*jaalis*) for ventilation, and cantilevering canopies and various decorative plaster finishes render sculptural and unique qualities to each building. (Fig. 15)

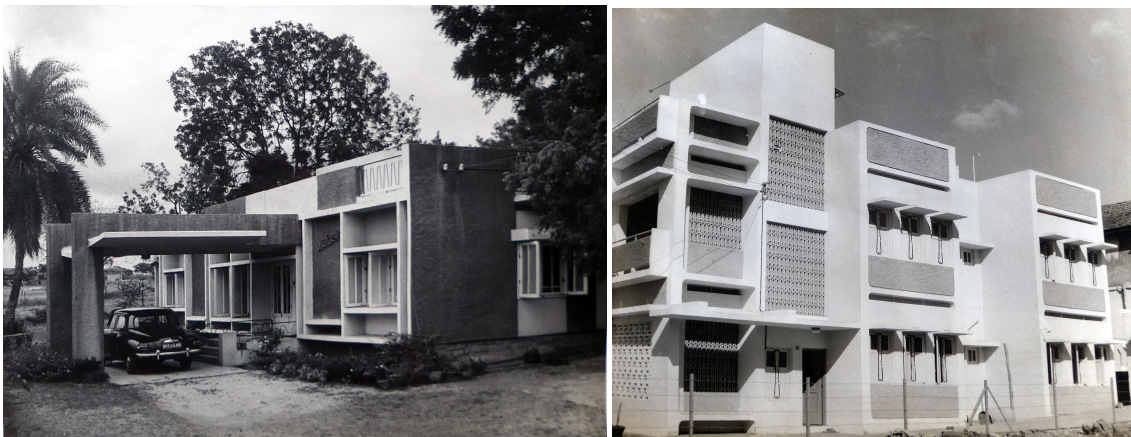


Fig. 15: Left: Bungalow for Dr.R.S. Rao, Pune, 1964. Right: Bungalow for Kalyani cloth merchants, Pune, 1965. Architects United. Source: Office Archives of Architects United.

Some works of V.V. Badawe have a Brutalist flair. His *Tilak Smarak* building (Fig. 9), Agashe house (Fig. 16) and *Lokmangal* building were some of the first buildings with exposed concrete in Pune. This supports Scriver's assertion that the Brutalist aesthetic resurfaced during the 1960s in India, in particular because the second generation of Indian architects at that time returned home from work and study experience in Europe.¹⁶

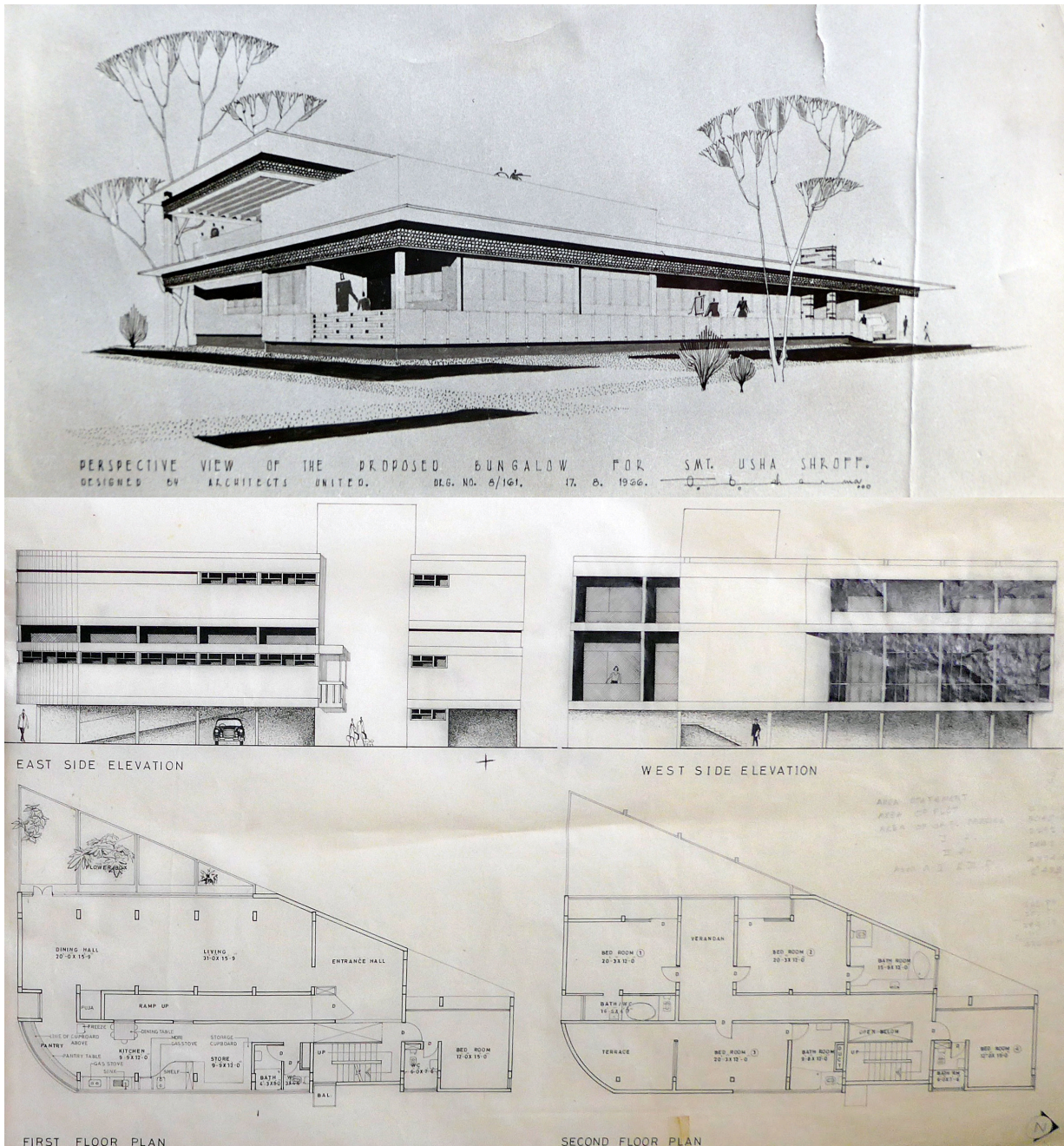


Fig. 16: Top: perspective view of Shroff Bungalow, Pune, Architects United, 1966. Source: Office archives of Architects United. Bottom: Drawings for Agashe House, Pune.V.V. Badawe,1964. Source: Office archives of V.V. Badawe.

The external appearance of Badawe's Agashe house, with its *pilotis*, sun-breakers and access ramp carries the signature style of Le Corbusier's India projects, yet the internal space built-up accommodates the Indian household. It provides for a *Puja* corner for religious worship, and has both a westernised kitchen (with raised counter) and an Indian kitchen with *mori* (wet area for washing and bathing) and gas stove at floor level.

In their Shroff bungalow, Architects United used Frank Lloyd Wright's Prairie style (**Error! Reference source not found.**) to carve out shaded verandas, which are similar to the places where traditionally the head of the Indian family would receive guests.

Hence, residential design of the 1960s and 1970s, were more characteristic of foreign influence in their facades than in the interiors. A functional space layout based on the local climate and Indian social customs prevailed. A staggered plan helped to improve cross-ventilation. The kitchen was usually separated from the dining space and often located at the back of the house. It often had a separate access for household personnel, which lead to an outdoor washing area. Other characteristic features are a lavatory basin in the entry hall or near the dining area for the washing of hands. Several houses by Architects United and V.V. Badawe were designed for joint families (parents and sons with their respective families traditionally share a house). This was accommodated in the designs by providing separate attached bathrooms to each bedroom or dividing the house in different quarters with their own kitchen and gathering spaces.

Prevalent building tectonics

While architectural aesthetics evolved rapidly between 1947-1982, developments in construction technology and tectonic detailing occurred at a slower pace.

In U.M. Apte's buildings stonework was common. Natural stone-faced brick walls make up the façade of his Bank of Maharashtra (Fig. 13) and Shirke house (Fig. 7). The entrances of plastered Art-Deco buildings like the Western India House are clad in polished natural stone. Stone masons were not readily available in Pune and had to be sourced from outside¹⁷. In projects of the 1960s and '70s by the second generation architects, entire facades in stone masonry were less common. Stone was used more often for accentuating a single exterior wall. In the projects by Architects United the combined use of different types of decorative plasters and finishes such as 'stonecrete' was popular.

Roof terraces of the early projects were sealed with a mosaic floor made up of broken pieces of household porcelain and later tiles known as 'china mosaic in crazy pattern'. Its glazing reduced surface porosity and reflected the heat. Since the 1960s cement screeds with waterproofing admixtures and without mosaic were more commonly used.

Of all studied projects, the Shirke house by U.M. Apte is the only one that had a structural system made up of load bearing masonry walls. Multi-storey buildings in the 1950s, and even

single and two-storey houses in the '60s and '70s were designed as 'concrete frame -masonry infill' structures with columns, beams and floor slabs in reinforced concrete. (Fig. 17) Since the 1920s and especially after independence in 1947, concrete became an economically viable construction material because the Indian cement industry had picked up production and because labour, working under the guidance of site engineers, was more abundantly available in cities than craftsmen.

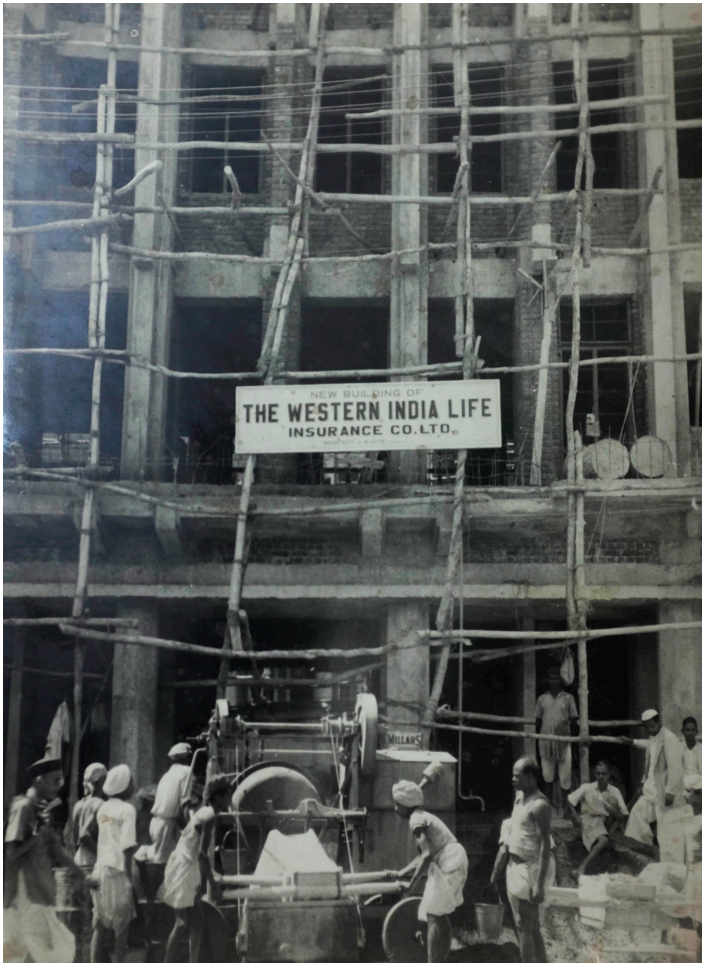


Fig. 17: Western India Life Insurance building, Pune. Architect, U.M. Apte. Building under construction, 1952. Photo: Unknown. Source: Private archives of Kiran Apte.

Until today labour intensive cast in-situ concrete remains a considerably cheaper option than prefabricated structural elements in concrete or steel.

Conclusions

The education, methods of practice and knowledge sources on which U.M. Apte, V.V. Badawe and Architects United relied after independence were substantially western-based. This was not only valid for the first-generation architect U.M. Apte, who practiced since the

1940s, but also for the second-generation architects, who started practice in the 1960s. The first-generation architects studied and worked under British architects present in India before Independence. The second generation architects -Badawe, Sharma and Ghotge- studied after 1947 yet their education was still foreign-influenced since teachers were foreign-trained or they pursued post-graduation degrees abroad. A study of the books acquired by V.V. Badawe between 1947 and 1982 sheds light on the architectural knowledge circulation of the time. Eighty per cent of the design books in V.V. Badawe's library are published in Europe or the U.S. The majority of books on construction are published in England. Only in the category of books on professional practice, laws and regulations do India-published books form the majority.

The upkeep of a classified office library and codification of their design projects suggests that the practice of the second-generation architects was more formally organised than that of the first generation. U.M. Apte possessed no personal library and his professional knowledge was presumably more based on his practical experience in Lahore and family network (his father was an architectural assistant and his uncle an engineer).

The Anglo-Indian educational, training and knowledge background of these offices is easily discerned in the stylistic characteristics of the buildings they designed and particularly in their facades. Inner spatial layouts were generally less susceptible to influence of foreign trends than the facades, and would consider climatic and Indian user patterns. U.M. Apte's projects of the 1950s show more diversity in terms of style, material use and structural systems than the projects by the second-generation architects. In the 1960s, what eventually became a typically Indian design language emerged: an indigenous modernism based on a utilitarian logic and adapted to climatic needs.

In the first decades after independence the architectural profession was still in its infancy stage in second tier cities like Pune. Architecture graduates formed a minority in municipal surveyor's lists, Indian books on architectural design were rare and architectural education was often obtained part-time in evening classes. Architects mostly catered to elite clients. Parallel models of building practice in which other building entrepreneurs like engineers or *mistris* were in charge of the design and production of buildings deserve further investigation.

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²*Pursuit and promotion of science: The Indian Experience*. New Delhi: Indian National Science Academy, 2001.

³*Report of the university education commission (December 1948-august 1949) Volume I* (report 1962). New Delhi: Ministry of Education and Culture, Government of India. 1963.

⁴ V.V. Badawe, G. Doshi, P. Deshmukh, U.Ghotge, D.Ghotge, H.M. Kadam, Peshwe, Pundalik, V. Sardesai, interviewed by authors, 2015.

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¹²Deven Ghotge, interview, (Note 10).

¹³Kiran Apte, son of U.M. Apte, interviewed by Sarah Melsens and Priyanka Mangaonkar-Vaiude, 2015.

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¹⁵Lang, *Architecture and independence*, (Note 1), p. 278.

¹⁶Scriver, *India*, (Note 10), p.226.

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