



Francisco Castro Rodrigues, Lobito High School (former Almirante Lopes Alves High School), Lobito, Angola, 1960-1969. © EWW, Ana Tostões, 2010.

Tropical Architecture, South of Cancer in the Modern Diaspora

The cover of this **docomomo** Journal 63, showing the sun path diagram from 12°S, Lobito, Angola, 1969, is an homage to Francisco Castro Rodrigues (1920–2015) one of the modern diaspora's architects who believed in a new world. Having Le Corbusier (1887–1965) and modern Brazilian architecture as role models, he struggled for be a truly modern architect, which meant contributing, through urbanism and architecture, to a democratic, healthy, and happy way of living. Through his architecture, he explored the principles of the Modern Movement, combined with local concerns, in social, economic, and climatic terms. Besides urbanism and architecture, he organized exhibitions, created an Anthropology Museum, actively published in journals and magazines, was head of radio and cine-clubs, and a Professor at various levels of education, continuously contributing to the cultural evolution of the city of Lobito and its people.

Seven years after our issue on Modern architecture in Africa, *DJ* 48 (2013), the theme of this **docomomo** Journal 63 is “Tropical Architecture in the Modern Diaspora”, gathering from the Global South, from Australia to Singapore, the thoughts of a range of skilled researchers on this subject, with the aim of updating the discussion to “fill the gaps” identified by Jane Drew (1911–1996), Maxwell Fry (1899–1987) and Otto Königsberger (1908–1999), within a reflection on its broader diaspora. Getting back to the point of “Tropical architecture,” “architecture in the humid tropics is collaboration with nature to establish a new order in which human beings may live in harmony with their surroundings.”¹ As publications at the time concentrated on French and British colonies,² to achieve a comprehensive understanding of the Modern Movement *diaspora*,³ it is essential to revisit, analyse, and document the important heritage built south of the Tropic of Cancer, where the debate took place and architectonic models were reproduced, and in many cases subjected to metamorphoses stemming from their antipodal geography. Notable for the modernity of its social, urban, and architectonic programmes, and also its formally and technologically sustained research, the modern architecture of these latitudes below the tropics constitutes a distinctive heritage.

As the editors argue, the “fresh new ideas from the periphery began to question the limited vocabulary of tropical architecture”, and this issue presents unexplored examples of groups who settled in different countries – from Thailand, Philippines, Mexico, Indonesia, Hong Kong, Macau, and across the Pearl River Delta, to Angola, Australia, Brazil, India, Congo, and Hawaii. The approach of the architects to

the ecology, environment, and culture of the countries below the Tropic of Cancer revealed their ability to adapt to new worlds. This was further demonstrated in their efforts to deal with health problems related to tropical diseases, and their recognition of the importance of traditional and vernacular building in a new context. **docomomo** Journal 63 shows how the cross-fertilization of subjects generated by tropical architecture combine with echoes of the Modern Diaspora to provoke new narratives: Lourdes Cruz's essay bring us this vision through Kenzo Tange's (1913–2005) Japanese Embassy in Mexico (1973–1976), developed with Pedro Ramirez Vasquez (1919–2013) and Manuel Rosen Morrison (1926–2018); Setiadi Sopandi analyses the work of Indonesian architects on tropical climate and environmental design. Jean-Claude Girard presents the fascinating work of Leandro V. Locsin (1928–1994); Pongkwan Lassus celebrates the 110th anniversary of the Makkasan Train Factory opening in Thailand, as well as the efforts to protect the complex; Moritz Henning, Sally Below, Christian Hiller, and Eduard Kögel, report on Encounters with Southeast Asian Modernism against the backdrop of the Bauhaus centenary (1919–2019), celebrated in **docomomo** Journal 61 – Education and Reuse (2019).

Due to the ongoing COVID-19 pandemic, the launching of **docomomo** Journal 63, which was scheduled to be presented during the 16th International **docomomo** Conference in Tokyo in 2020, has had to be postponed to 2021. In fact, the theme of the Tokyo Conference, “Inheritable Resilience: Sharing Values of Global Modernities”, is clearly linked with the overall concept of South of Cancer and of Tropical Architecture, and formerly outmoded ideas of physical isolation and natural ventilation are now re-emerging as more important than air-conditioned spaces, in the context of dealing with COVID-19.

Lastly, **docomomo** International is grateful to Pedro Guedes and Johannes Widodo who accepted the demanding role of guest editors for this **docomomo** Journal. Thanks to their perseverance, allied with the contribution and commitment, of the professionals, scholars and researchers who generously collaborated with their knowledge, it is with great pleasure that we are launching this journal.

Notes

- 1 Maxwell Fry, Jane Drew, *Tropical Architecture in the Dry and Humid Zones*, London, BT Batsford Limited, 1964.
- 2 *L'Architecture d'Aujourd'hui*: “France d'Outre-Mer”, No. 3, 1945; “Tunisie”, No. 20, 1948; “Maroc”, No. 35, 1950; “Afrique du Nord”, No. 6, 1955; “Afrique Noire”, No. 7, 1957; *Architectural Review*: “Commonwealth 1”, Vol. 126, No. 752 (1959); “Commonwealth 2”, Vol. 128, No. 761, 1960.
- 3 Dennis Sharp, Catherine Cooke (ed.), **docomomo**: *The Modern Movement in Architecture*, Rotterdam, 010 Publishers, 2000.

South of Cancer: Modern Architecture's Tropical Diasporas

BY PEDRO GUEDES AND JOHANNES WIDODO

Over twenty years ago in the shadows of an architectural conference in the USA several of us from outside the American/European axis left early, finding the mainstream presentations and discussions boring, predictable and stuck in the ruts of well-worn paths. We were aware that in the wider world genuinely new ideas were emerging with rich traditions at play, altogether less constrained by self-conscious architectural production. We were keen to find a name for these new approaches emerging across latitudes below the Tropic of Cancer and settled on “South of Cancer” as a suitable catch-all for these diverse tendencies.

Sometime before 2010, Fernando Lara, one of our group of conference dissidents, took a world map and plotted locations of “seminal buildings” identified in “Global” overviews of architecture. The map was very telling, it showed dense clusters of these buildings in North America, parts of Europe and Japan with the rest of the world mostly untouched, a *terra incognita*, except for small enclaves like Brasilia, Chandigarh and Sydney's Opera House. Things have changed since then but the vast majority of buildings and architects providing benchmarks and canonical exemplars remain on their lofty perches supported by well-known, unchallenged narratives that easily blend into fables.

We felt that we needed to bring attention to the unnoticed architectures developing in the blank, uncharted areas of this “Global” map. Consequently, in Australia, during our Antipodean summer of December 2019, some of us at the University of Queensland in Brisbane, decided to host the 7th conference of the International Network of Tropical Architecture (iNTA),¹ inviting participants from many tropical and subtropical countries in Asia, Africa, and the Americas. Our debates and discussions ranged across a broad spectrum of issues informed by markedly different local experience and visions for diverse futures.²

For this issue of *docomomo Journal* we invited contributions with a focus on the architecture of warm countries during pivotal periods in the 20th century. We felt that this less trodden area of discourse and scholarship might question what was already “known” and that these contributions from outside the mainstream might provide new and unique solutions for a global architectural culture. A small start perhaps to our lofty ambitions!

Our many discussions circled around aspects of modernism and its diaspora across cultural boundaries.

Modernism was not developed in a vacuum but evolved through sustained development of its ideas along a historical timeline. We agreed that our broad umbrella would cover the ideals of Modern architecture disseminated to remote places by displaced yet talented individuals bringing with them fresh ideas. Often these were Europeans exiled for their beliefs, their race or as victims of conflict who interacted with local architects keen to make their cultures resonate with present change and future difference.

Far from metropolitan centers, these semi-autonomous manifestations of modernism could be seen as another form of displacement not only of individuals but also of ideas and emphasis. However, instead of repeating the limited, orthodox vocabulary of European modernist architecture in its pre-WWII and post-war reconstruction periods, new vigorous strains of modern architecture were emerging overseas transcending “the modernist transplant” by becoming autonomous modernisms rooted in different cultures.

The truth of the matter may now be very different, with the peripheries of any such center contributing to its revitalization. New ideas with less circumscribed expectations are being forged in these environments. Perhaps the real future of our planet is being made not in collapsing post-industrial rustbelts but in the rapidly urbanizing warmer countries with unchecked population growth and the explosive dynamism of Asian industry.

In commissioning the essays for this issue of *docomomo International* we focused on architectural themes from that “periphery.” We made our selection based on historical accounts and speculations spanning from about the late 1920s to the 1970s when architectural ideas, developed in times of uncertainty and rapid change, hoped to improve life in the tropics.

In his paper Pedro Guedes chooses examples that fall outside any narrow definition of modernity, bringing together two themes often intertwined in the diasporas of modernism. In combining the celebration of local identity with tempering of the sun's heat architectures evolved that resonated with local culture, fully adapted to harsh physical environment. Other, very different examples, demonstrate how European colonial architects and engineers saw the tropics as environments that only needed their “advanced” technical solutions.

Margarida Quintá's essay studies the role of climate research in Angola, focusing on the post WWII period when the main climate types of the country were characterized based on empirical data. The study tracks the development of this research and the individuals involved in setting up institutions, educating technical personnel and producing publications, arguing that this work was contemporaneous with that of well-known English language authors. The work and influence of Vasco Vieira da Costa (1911-1982) in setting up the Engineering Laboratory of Angola (LEA) and Henrique Novais Ferreira (1922-2016) in building research are highlighted.

Vandana Baweja tracks Otto Königsberger's serial relocations and multifaceted career across several continents disciplines and practices. From Germany to Egypt and Switzerland, he then became the chief architect of Mysore, India. There his work expressed a commitment to modernism alongside his adaptations to local expectations and the use of local building techniques. After an ill-fated mass-housing project in India, Otto Königsberger went to London to undertake several consultancies and founded the Architectural Association's (AA) School of Tropical Architecture training architects and planners for nations emerging from their colonial pasts.

Tom Avermaete's essay follows several projects of Michel Écochard (1905-1985) working in post-colonial Africa where the architect designed buildings to suit local aspirations and climates. In university projects, new nations sought buildings embodying identity linked to ideas of progress. An approach Écochard explored at the University of Yaoundé was for buildings with a firm order of framing elements with infill of more ephemeral local materials and craftsmanship.

Elizabeth Musgrave's essay looks at architectural responses in tropical Northern Australia, where the sparsely populated warm tropics were perceived as another world separate from the more temperate south of the continent. After WWII, pressures for development combined with the modernist ideas of émigré architects helped create responses that broke the mold inherited from British colonial paradigms for building in climatically hostile regions. This produced an expanded modernist architectural vocabulary.

Laura McGuire focuses on the domestic interiors of Alfred Preis (1911-1993) who brought his Viennese design sensibilities to Hawai'i, where he arrived in 1938 soon after graduating and escaping from Nazi-occupied Austria. McGuire traces Preis' blending of Viennese tendencies with the tropical climate's need for openness. He created spatially vibrant and colorful environments suited to the islands he had made his home. His designs thus became Hawaiian, combining careful attention to natural ventilation and the creation of comfortable environments in harmony with the landscape.

Rui Leão and Charles Lai focus on Hong Kong and Macau, former British and Portuguese colonies in the estuary of the Pearl River Delta in China. They study parallel developments in post WWII architecture in these tropical cities, where architects prioritized the deployment of solar control devices such as the *brise-soleil* and

perforated blocks to temper the sun and facilitate cross ventilation to craft comfort in hot, humid environments. The authors track local and international influences as well as the educational backgrounds of key architects practicing in these cities.

With the smoke of Australian bushfires still on the horizon the iNTA conference closed in December 2019 and, only a month or so later, our entire world was turned over by the COVID-19 pandemic. All our futures were further threatened and completely unpredictable.

Upon reflection, similar disasters that had changed the lives and careers of the people and places in our essays had also opened up new beginnings and opportunities for them.

It is likely that any future for our Anthropocene will be played out South of Cancer for the simple reason predicted by the Swedish/American inventor Captain John Ericsson in *Scribener's Monthly* of 1879. He did not foresee the oil age that took us from then to now but he did imagine an end to our dependence on fossil fuels:

Due consideration (...) cannot fail to convince us that the rapid exhaustion of the European coalfields will soon cause great changes with reference to international relations, in favour of those countries which are in possession of continuous sun-power. (...) The time will come when Europe must stop its mills for want of coal. Upper Egypt then, with her unceasing sun-power, will invite the European manufacturer to remove his machinery and erect his mills on the firm ground along the sides of the alluvial plain of the Nile, where an amount of motive power may be obtained many times greater than that now employed by all the manufactories of Europe.³

Notes

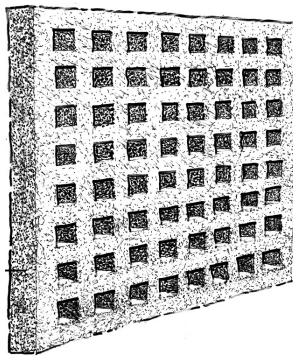
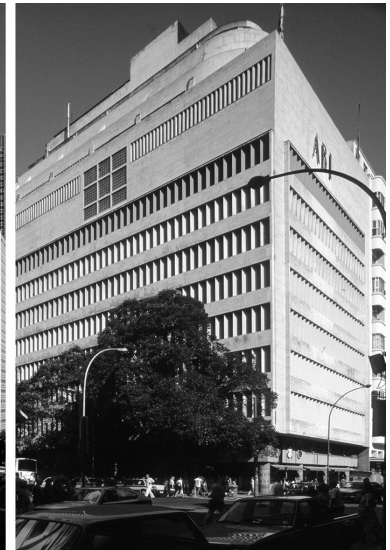
- 1 The previous iNTA 2017 conference took place in Florida soon after Hurricane Maria had ravaged Puerto Rico and, in many parallel ways, we were again in an extreme situation aware that time was running out, leaving us with ever-narrowing options for equitable or even viable futures.
- 2 As a background for readers of this *docomomo Journal*, iNTA was founded in Singapore in 2004 by academic staff from the Departments of Architecture and Building Sciences at NUS with the aim of establishing a networking platform for international students, academics, practices, and policymakers, so they can collaborate and learn from each other about problems and solutions pertaining to architecture, regional planning, urban design, and building technology in tropical (and sub-tropical) regions of the Tropical Belt.
- 3 William C. Church, "John Ericsson", *Scribners Monthly*, Vol. 17, 1879, 844.

Pedro Guedes

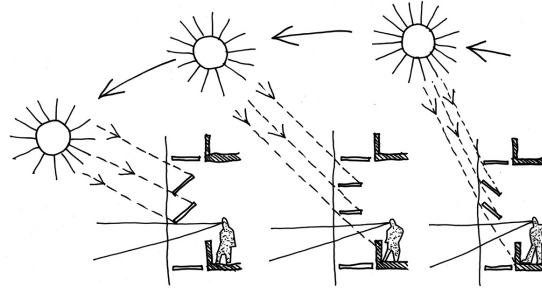
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Johannes Widodo

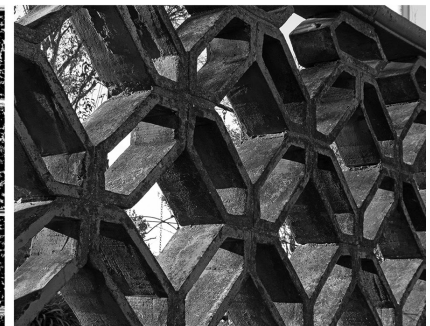
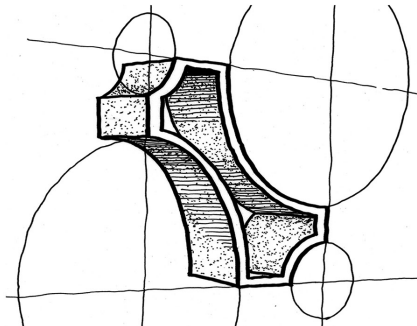
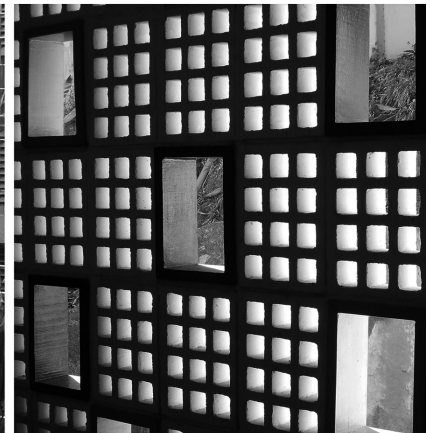
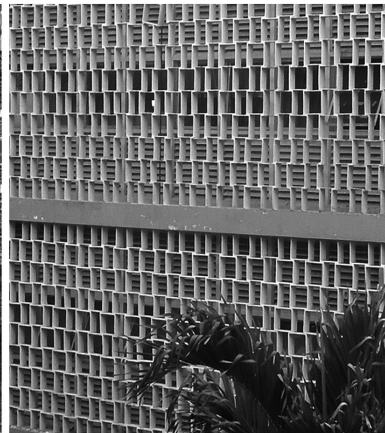
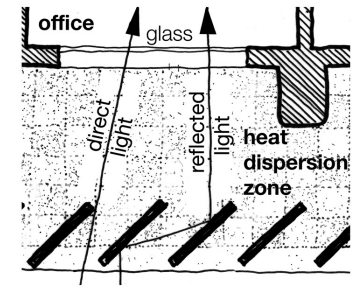
Professor (National University of Singapore). Affiliations: *docomomo* (Macau and Singapore), Singapore Institute of Architects, mAAN (modern Asian Architecture Network), Asian Academy for Heritage Management, UNESCO Asia Pacific Awards for Cultural Heritage Conservation jury, ICOMOS ISC, ICOMOS National Committee (Indonesia and Singapore) and iNTA.



sections: operable brise-soleil



plan: vertical brise-soleil



Top row and corresponding diagrams below – from left: Luiz Nunes, Caixa D'Água, Olinda, Pernambuco, Brazil, 1934: First use of *cobogós* in a public building. Middle: Lúcio Costa, Oscar Niemeyer et al., Ministry of Education and Health (MES), Rio de Janeiro, Brazil, 1936: Horizontal adjustable external *quebra-sol* elements (*brise-soleil*). Right: Brothers Roberto, Brazilian Press Association (ABI), Rio de Janeiro, Brazil, 1936: Vertical *quebra-sol* elements. Lower images with diagrams below, from left to right: Lúcio Costa, Parque Guinlé housing, Rio de Janeiro, 1948: Ceramic *Claustra* elements as sun and privacy screening allowing free air movement. Middle: Diógenes Rebouças, Escola Politécnica – UFBA, Federação, Salvador da Bahia, 1953: honeycomb screens similar to those used in the 1939 Brazil Pavilion, New York World's Fair. Right, top and bottom: open concrete *cobogós* and *claustra* used in popular building.

Behind the Veils of Modern Tropical Architecture

BY PEDRO GUEDES

While orthodoxy was consolidating its hold on modern architecture in the 1930s, fresh new ideas from the periphery began to widen and question its limiting vocabulary. This study looks at projects emerging before the end of that decade that paralleled the much publicized work of Le Corbusier and Brazilian innovators in developing ideas for taming the sun in warm climates. The story focuses on a forgotten speech given in Rangoon which enthused about a soon to be forgotten but effective method of solar control and triggered a yearning for architecture widening its scope to engage with attributes of national identity.

At the Rangoon Rotary Club – January 1930

In early January 1930, Basil Ward (1902-1976) addressed the Rotary Club of Rangoon on the subject of “Architecture in Burma”. A New Zealander, recently appointed Managing Partner with Thomas Oliphant Foster (1881-1942), the Burmese Government’s Consulting Architect, he was new to this Asian boom town.¹

His journey had been circuitous; the young architect worked his passage to England as a stoker in 1924 with Amyas Connell (1901-1980) in search of wider horizons. From London they visited Paris in 1925, where Le Corbusier’s *Pavillon de l’Esprit Nouveau* fired their enthusiasm for the freshness of the Modern Movement.

Inspired, they set their sights on the highest prizes available in Britain to young architects embarking on their careers. They were both successful, with Amyas Connell taking the Rome Scholarship and Basil Ward the Jarvis traveling studentship.

The Rotary Club speech, reported in extenso in *The New Burma*, was an exhortation for a new architecture with quotations from Bruno Taut (1880-1938) and Le Corbusier.² Basil Ward made a plea for modern materials, better planning at various scales and an abandonment of “the amazing encrustations of Architectural motifs of a dozen dead styles.” The only part of the talk referring to an actual building was one being built under his direction, the New Port Trust Office:

There is a difficult problem in this city, when a facade faces the monsoon weather verandahs take up most valuable space, they must be eliminated where possible, the life of venetians or louver is not long. The New Port Trust Office has a feature which appears to solve the problem admirably. A screen of terra cotta jalis of certain thickness forms a honeycomb pattern as a protection against the sun and monsoon. This was designed to obviate the wasteful verandah space.

The Rangoon audience included the Burmese elite, British expatriates, colonial officials and members of immigrant communities. His lecture had an immediate effect:

U Ba Pe, a leading political figure in colonial Burma, gave a rousing speech in the Burma Legislative Council proposing a design for the new City Hall by a Burmese architect that combined Art Deco minimalism with classical Burmese ornamentation. Along with examples from elsewhere, U Ba Pe drew on Ward’s lecture, (...) to highlight Burmese architecture’s compatibility with modern, civic architecture, and won the argument.³

The City Hall project to which he referred, had been designed by Arthur G. Bray in classically inspired, typically colonial style. It was interrupted by WWI, revived in 1925 and was well on its way to completion by 1930:⁴

All the offices, with the exception of those facing north, have verandahs on both sides (...) No concessions whatsoever appear to have been made to the native style of architecture, for this is the Classical style (...) The columnar style (...) has proved itself on this occasion to be quite capable of being adapted for the architecture of a tropical climate.⁵

However, U Tin (1890-1972), designer of the much-admired Burmese pavilion at the 1924 *Empire Exhibition* in London, proceeded to replace Arthur G. Bray’s workaday classical facades with a treatment inspired by the ancient buildings of Pagan. In particular, he adapted traditional tiered *pyatthat* roof forms to crown the prominent towers of his composition and dispensed with verandahs and colonnades. When completed in 1935, U Tin’s building was acclaimed as a “striking success (...) inaugurating a new era in secular Burmese architecture.”⁶

Basil Ward’s Port Trust Office building, also mentioned in his lecture, was considered important enough to be featured in *Country Life* under the title “An Architectural Innovation in the Tropics.”

The innovation [...] (is) [...] of the greatest importance to Europeans in the tropics.

Owing to the necessity of using the maximum floor space for offices, the space that is usually sacrificed for veranda on the western front was not available (...) the window surface has been brought almost flush with the columns. It was here that invention was called into play.

The solution of this problem – of preventing the direct rays from penetrating to the interior while still assuring the maximum of light – was found in the use of honeycomb porcelain jalis manufactured by the Royal Doulton Potteries, Lambeth. A simple jali is made by setting a number of convex tiles one above the other. These Doulton jalis are of stone terra-cotta, with a jade green glaze, and are nine inches deep. The first experiment was made with the tiles only eight inches deep, but this was found insufficient to exclude all direct rays and the depth was therefore increased. By this simple yet extremely effective expedient, the building receives the maximum of ventilation and lighting, but is kept cool.⁷

While Basil Ward was still in London in 1926, T. O. Foster and E. W. Armstrong exhibited a perspective of his design at the Royal Academy.⁸ By February 1929, after details of the Port Trust building appeared in *The Builder*, use of terracotta jali screens had been accepted.⁹

Back in Rangoon, in the same street as the Port Offices, the National Bank of India, probably built to Basil Ward's design, used the same terracotta jalis:

a (...) building that compels one's attention, by virtue of the vigor of its composition (...) The columns, being fluted cylinders without capitals or bases, are in the "modernist" style.¹⁰

The Bank, a confident art deco composition, makes a clean break with classical and gothic precedents. Basil Ward characterized in his Rotary Club lecture as "the amazing encrustations of Architectural motifs of a dozen dead styles."¹¹

The terracotta screens at Rangoon's Port Authority and Bank buildings never entered the vocabulary of tropical building. Basil Ward described them as *jalis*, honoring Indian precedent. Similar terracotta forms were illustrated in numerous 19th century architectural manuals to be employed, as previously in Europe and China, for parapets and garden wall screens.¹² In textile drying sheds and other industries such ceramic elements were often used to facilitate cross ventilation while excluding rain.

Basil Ward returned to London sometime before 1932, joining his friend and brother-in-law Amyas Connell in a practice that added Colin Lucas (1906-1984) in 1934 to form Amyas Connell, Basil Ward and Colin Lucas. Their practice was acknowledged as a pioneer of England's Modern Movement. During the period until 1939 the firm flourished, its work focused almost exclusively on domestic buildings for enlightened clients. The outbreak of WWII saw its abrupt dissolution.¹³

Taming the sun in the 1930s

Le Corbusier's claims in the development of the *brise-soleil* are well known as is Brazil's contribution to a modern

response to building in the tropics.¹⁴ There, an inventive range of practical moveable or static, horizontal or vertical *quebra-sol* [Portuguese for *brise-soleil*] shading devices as well as smaller scale cellular *cobogó*, *claustra* and other elements in precast concrete, ceramics or other materials augmented modern architecture's austere facades with flexible armaments to temper the sun.¹⁵ Combining these with imaginative planning, openness and an expanded formal vocabulary, a small group of immensely talented architects supported by politicians such as the Minister of Education and Health, Gustavo Capanema (1900-1985), matured a distinctive Brazilian architecture in a remarkably short time. First appearing outside Brazil at the 1939 New York World's Fair in the country's pavilion by Lúcio Costa (1902-1998) and Oscar Niemeyer (1907-2012), the solar control grille on its southern facade was misinterpreted by critics as an enigmatic decorative conceit.¹⁶ Four years later, when the Museum of Modern Art's (MoMA) exhibition *Brazil Builds* brought Brazilian architecture to worldwide attention, its catalog stated explicitly that a major focus demonstrated how Brazilian architects dealt with the sun.¹⁷ After great success in New York, parts of the exhibition went to London while Britain was still at war and a special celebratory issue of the *Architectural Review* was published with extensive coverage, featuring many of Kidder Smith's (1913-1997) evocative photographs taken from the MoMA show.¹⁸ Brazil's Ministry of Education and Health building with its first use of a *brise-soleil* on a monumental scale was highlighted.¹⁹ Le Corbusier's role as consultant there probably helped him condense his ideas about sun control from the early 1930s.²⁰

An architect developing similar thoughts on sun control as Le Corbusier in his Barcelona and Algerian projects was Paul Nelson (1895-1979), an American trained in France, who had established a reputation in hospital design.²¹ In 1933, based upon that work, he was commissioned by the Suez Canal Company to design a surgery pavilion for Ismailia.²² The sealed and air conditioned accommodation was contained in a glazed volume surrounded by an "Enveloppe Parasolaire Mobile". Here, independent of the accommodation, an insulated roof acted as a large umbrella:

Vertically, (the accommodation is protected) by louvre blades, spaced away from the facade. The louvres, held between vertical guides are mobile so that they can be retracted to roof level to allow entry of sunlight during the temperate months.

The metal louvre blades are inclined and shaped not only to impede reflection of solar rays on the facade, but to encourage upward convectional air movement. They are smooth and white facing out to reflect heat and darker on the building side to cut glare.²³

And perhaps the most unique characteristic was the result caused by this rising movement of warm air free of the facade which would then draw (...) cooler air over the facade, as would the phenomenon of an exterior chimney.

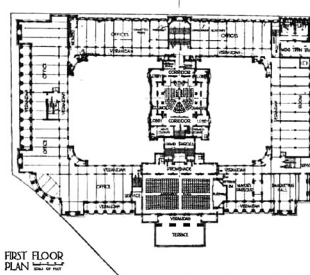
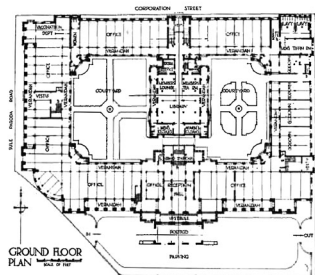
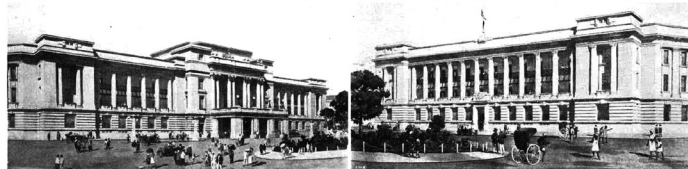
Whereas on the west side there are three screens per floor only 1 meter wide, on the Canal side to the east the screen would be large (...) 3 meters 40 cm (...)

(...) allowing all patients to have an unimpeded view of the Canal where majestic ships slide through the Arabian desert.²⁴



01 Rangoon *Jalis*. Top right: T. O. Foster, Port Trust Offices, Rangoon, Burma, 1926-1930 – described in Basil Ward's Rotary Club speech. First use in 1930 of innovative glazed terracotta sun-screening. Left and bottom right: Basil Ward for T. O. Foster, National Bank of India, Rangoon, Burma, 1929-1932, probably designed and completed by Basil Ward. Photographs © Pedro Guedes.

02 Rangoon City Hall. Bottom left: Arthur G. Bray's design for Municipal offices, Rangoon, Burma, 1928, plans and perspectives show the unbuilt classical scheme, published in the *Architects' Journal*. Top left and right: U Tin, Rangoon City Hall, 1930-1935, incorporating features of a Modern Burmese architecture with distinctive *pyatbat* roof forms. Photographs © Pedro Guedes. Plans & perspectives – public domain: *Architects' Journal*, 68, 1928, 919.



Paul Nelson's intricate descriptions of all parts of his building demonstrate a masterful understanding of intelligently crafted climate control for a hostile environment. He orchestrated his design to suit a particular place and complex medical functions. In the first publication of the proposal in *Cahiers d'Art* (1935), a seductive diagram encapsulated the essence of the idea which Paul Nelson later explained had been triggered by ancient Egyptian houses:

The painting illustrated in the book showed an outside columnar structure going without interruption from the ground to the roof of the 2nd floor terrace; behind these columns was the wall structure supporting the two floors and roof. The upper terrace supported on a series of small columns was open on all sides so as to act as a protection from the sun's zenithal heat. But in between the columns standing free in front of the facade walls could be seen a screen partially lowered between the columns which then acted as guides. Yet nobody seems to have thought that this might constitute a parasolar envelope leaving the house itself on the inside sheltered by this protective screen around the outside. This experience proved to me that by such an approach of studying the basic climatic conditions of an environment, one can relate architectural design to genuine tradition.²⁵

Perhaps his inductive reverie enabled Paul Nelson to translate his interpretations of ancient Egyptian climatic response and combine them with the most advanced technologies of his time, unencumbered by formal preconceptions.

In contrast, the orthodoxy that had taken hold by the early 1930s was best characterised by Alfred H. Barr Jr's (1902-1981) guiding principles for modern architects extracted from MoMA's *Modern Architecture International Exhibition* of 1932:

He thinks in terms of volume – of space enclosed by planes or surfaces – as opposed to mass and solidity. This principle of volume leads him to make his walls seem thin flat surfaces by eliminating mouldings and by making his windows and doors flush with the surface.²⁶

Such ideas held sway in metropolitan journals excluding many devices developed in the equally modern art-deco style.²⁷ Art-deco buildings from warmer climates made it into journals such as *Les Chantiers Nord-Africains*, published in Algiers in the 1930s with a more inclusive policy, never losing sight of more radical developments in Europe.²⁸ Later, in their 1943 special issue on "Le Soleil," *Techniques et Architecture* provided illustrations of a maternity hospital in Beirut by L. Cavro, deploying blinkers, hoods and other elements, breaking with the planar strictures of more orthodox Modernism.²⁹

Where their European colleagues might have deployed planes or curves of glass bricks, these adepts of art-deco tamed the sun by casting shade with an extensive vocabulary of forms such as hoods, blinkers, broad overhangs and balconies combined with smaller windows, deep reveals, retractable blinds and "stores." They would also use pre-cast

claustra to filter light and encourage air movement.³⁰ In Bombay (Mumbai), Tel-Aviv, Singapore, Asmara and many South American capitals eager to convey their engagement with "progress," facile art-deco compositions emphasizing verticals, horizontals and streamlined curves were sometimes used to great advantage.³¹

In 1936, *Les Chantiers Nord-Africains* published a design for a large tuberculosis sanatorium in Rivet near Algiers, by the Algiers based architect François Bienvenu. The model clearly shows horizontal *brise-soleils* on its three-level high elevations, the idea was described thus:

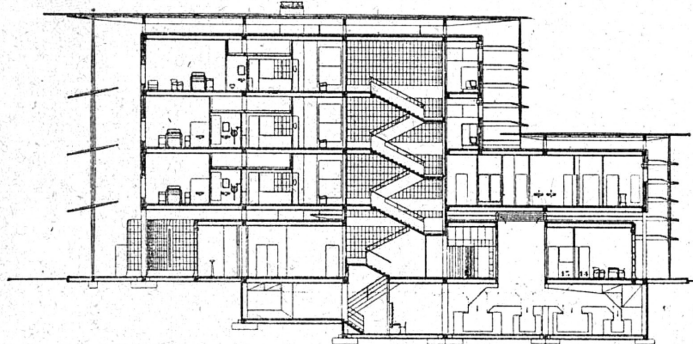
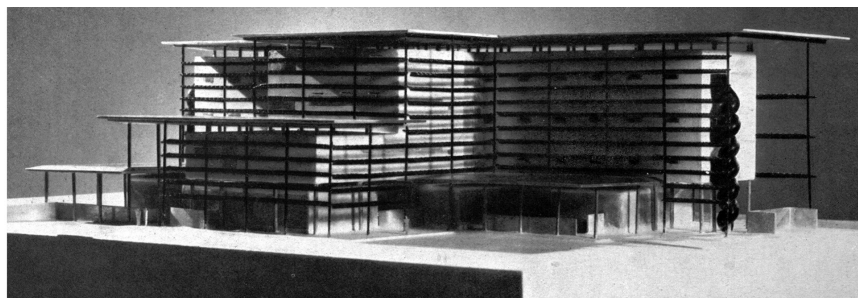
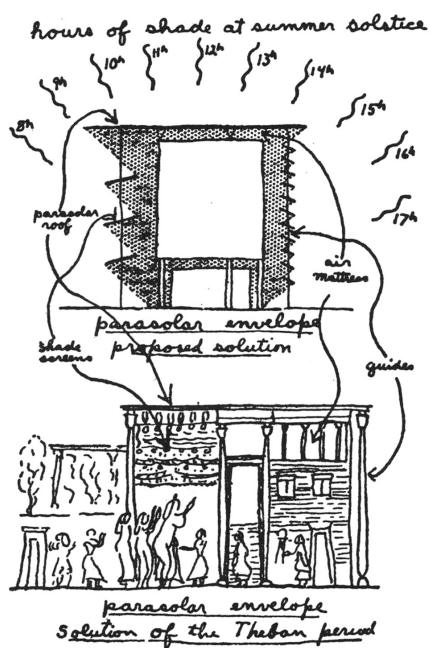
To avoid excessive insolation, the architect developed a system of permanent screens that automatically come into play depending on the season and the height of the sun.³²

A photograph of the completed building, with the screens or louvers clearly shown, was published in *L'Architecture d'Aujourd'hui* in 1945 with little more than a laconic caption.³³

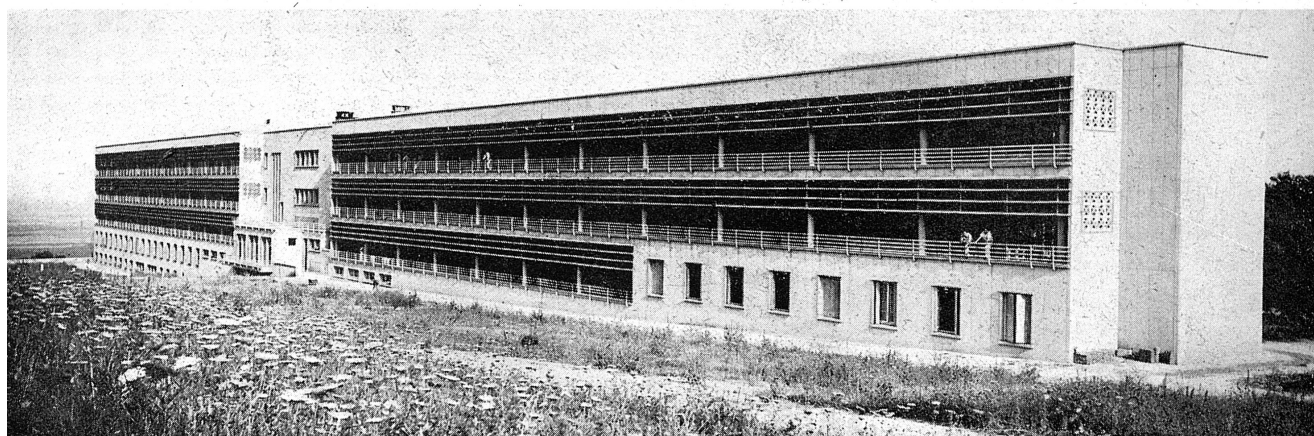
Certainly ahead of its time, it was being built while the Ministry of Education in Rio was being planned. François Bienvenu, a prominent architect in Algiers before the war, designed, schools, speculative housing and commercial projects as well as low-rise social housing for native Algerians respecting courtyard forms.³⁴

Emmanuel de Thubert (1878-1947), a regular contributor to *La Construction Moderne* and former editor of *L'Art de France*, had been impressed by François Bienvenu's work displayed at *La Cité Moderne* exhibition in Algiers in 1936 and paraphrased an ambition voiced in François Bienvenu's speech about the architecture that would emerge in North Africa: "... 'Modern', based upon rational ideas that seek to adapt to the African sun – an architecture gaining inspiration from France, but taking on a regional character."³⁵

Also in 1936, Antonin Raymond (1888-1976) began developing the design for Golconda dormitory at the Sri Aurobindo Ashram in Pondicherry on the East Coast of India. Antonin Raymond, a Czech, had moved to the USA in 1910 where he had worked for Cass Gilbert (1859-1934) before joining Frank Lloyd Wright (1867-1959) at Taliesin. In 1919, he went with Frank Lloyd Wright to work on the Imperial Hotel in Tokyo and stayed on until 1937 having sent his collaborator Nakashima (1905-1990) ahead to begin work on site. Pondicherry, a French enclave in India was relatively isolated and building skills and materials difficult to procure, particularly during the War, so building was slow with the dormitory only being finished in 1948. A remarkable building in its unassuming austerity, it abandons Western notions of closed rooms entirely. A thin building on three floors and a semi-basement, its long elevations face North and South. There are no windows in the rooms and corridor, with both elevations entirely composed of operable louvers, specially made for the project in asbestos cement. Sliding doors to each room are carefully designed to facilitate ventilation across the building. Above the concrete slab of the third floor, a ventilated void is provided under curved concrete "tiles" spanning 1.5 meters.



L'ARCHITECTURE D'AUJOURD'HUI SANATORIUM DE RIVET. BIENVENU, ARCHITECTE



- 03** Paul Nelson and François Bienvenu. Top left: Paul Nelson, Ismailia surgery pavilion, Suez, Egypt, 1935. Diagram of "parasolar" idea for the pavilion based upon his interpretation of an ancient Egyptian tomb painting. Top right: Model of the pavilion showing horizontal sun screening with section below. Source, gallica.bnf.fr / Bibliothèque nationale de France (*Cahiers d'Art*, 1935, 262 & 272). Section of hospital: Source, Bibliothèque d'architecture contemporaine / Cité de l'architecture et du patrimoine (*L'Architecture Française* 1936-1943, 12). Bottom image: François Bienvenu, Sanatorium, Rivet, Algeria, 1936, published in 1945 clearly showing the system of horizontal *brise-soleil* screening. Source, Bibliothèque d'architecture contemporaine / Cité de l'architecture et du patrimoine: *L'Architecture d'Aujourd'hui*, (September-October) 1945, 37.

Great care was taken to reduce everything to essentials in an extremely measured response to the hot-humid climate.³⁶

Post 1945: Decolonization and Tropical Architecture

Modern architecture, hatched in Europe in the 1920s and 1930s, was spread worldwide by talented individuals, often refugees fleeing Europe's fascist regimes or the social and economic disasters following WWI as well as those in the wake of Russia's revolutionary convulsions. France was seen as a creative center with Paris as the avant-garde melting-pot where exhibitions and publications communicated new ideas. The city, in 1925, hosted Le Corbusier's *Esprit Nouveau* at the *Exposition des Arts Décoratifs*. It was the major eye-opener for Basil Ward and Amyas Connell's visit, kindling their enthusiasm for the Modern Movement: "It stood out in all its purity and strength of expression in a post-war rag-bag of resurrected 'movements' and styles."³⁷

In 1930 André Bloc's (1896-1966) *L'Architecture d'Aujourd'hui* started with a print run of 1,600. By 1940, just before it interrupted publication because of the German occupation, it was printing over 10,000 copies, with 1,600 in Latin America – "more than all the Argentinian and Brazilian journals combined."³⁸ *L'Architecture d'Aujourd'hui* really caught up with English language publications when it produced a comprehensive review of Brazilian architecture in 1948.³⁹

Before 1945, neither English nor French journals had much coverage of architecture in warm climates apart from the catalog of MoMA's *Brazil Builds* exhibition of 1943. A rare exception was *L'Architecture d'Aujourd'hui*'s 1936 special on "L'Outremer" in which French colonial buildings in North Africa and the Caribbean were featured together with articles on aspects of design appropriate for hot climates.⁴⁰ Only in 1945, when a major Paris exhibition opened on *La France d'Outre-Mer dans la Guerre* did *L'Architecture d'Aujourd'hui* produce another special issue, this time with wider coverage to include Sub-Saharan Africa, Madagascar and Indochina. In addition to articles on climatology and indigenous architectures, the major focus was on planning, but the issue did include a feature on the *brise-soleil*.⁴¹ In a similar vein, in 1952, *Techniques et Architecture* published over 80 pages on "Architecture Intertropicale" in the Francophone sphere, covering technical issues related to building in the tropics together with articles on important projects.⁴² After the war, in 1948, *L'Architecture d'Aujourd'hui* published a major issue on Tunisia. There, retreating Germans and Italians had destroyed what they could on their way out and shortage of materials stimulated architects and engineers to fall back on traditional Maghrebian building techniques, resulting in inventive and photogenic buildings taking full advantage of age-old vernacular devices such as courtyards, *claustra* screens and more open planning arrangements to aid ventilation and subdue the sun.⁴³

For architectural solutions to life in warm climates most European journals, up to and beyond 1950, continued looking to Brazil for articles on new developments.⁴⁴ After 1955 their focus widened to include a smattering of buildings in other Latin American countries prompted by the

MoMA exhibition *Latin American Architecture since 1945*.⁴⁵

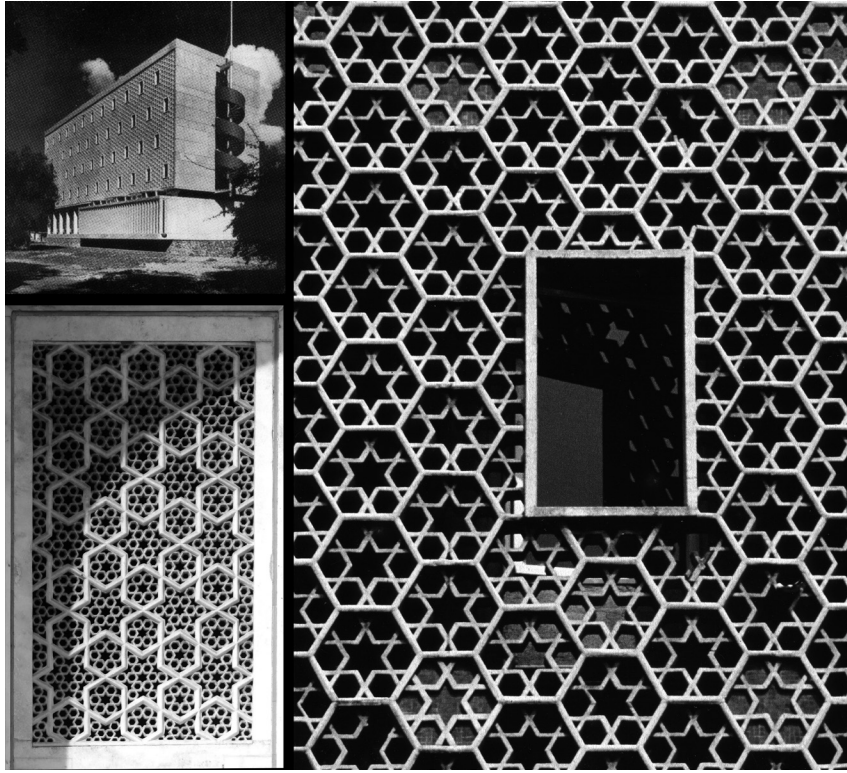
These publications communicated directly to architects working in metropolitan practices or in relevant countries needing inspiration for designs in tropical settings. They provided models for emulation. Needless to say articles about the *brise-soleil* and other solar control devices were much sought after.⁴⁶ In parallel, communiques and official publications from training programs and establishing Schools of Architecture in tropical, soon to be independent countries, gathered pace.⁴⁷ The utility of these endeavors was attached to longer timescales and wider political agendas and probably had less impact than the journals on current building.⁴⁸

However, by the 1950s, the *Architectural Review* began to publish British architectural efforts in West Africa with Maxwell Fry and Jane Drew's work in the Gold Coast (Ghana) and Togo.⁴⁹ Several of the buildings have *jali*-like screens as verandah balustrades and only Prempeh College at Kumasi inaugurates the use of a gridded *brise-soleil*.⁵⁰ In style the architecture followed a reticent embodiment of "the new empiricism" with little Brazilian verve and made only very minor concessions to local culture.⁵¹ Then, in 1960, the *Architectural Review* published a special issue on buildings across the "Tropical Commonwealth" in which selected authors wrote articles on each territory or region covering technical issues relating to warm climates.⁵² The Editorial was frank about the designers of the buildings featured:

*Most of the buildings illustrated here were either designed in England by English architects (as in the case of many of those in West Africa) or designed by architects of English origin, largely trained in England or America, who practice locally.*⁵³

Inevitably, the results were more in tune with the expectations of colleagues at "home" than with the contexts in which they struggled. Descriptions and solutions in this publication concerned material problems at the expense of engagement with subtler local demands. Maxwell Fry and Jane Drew produced two handbooks in 1956 and 1964, for designers working in similar contexts to their West African experience.⁵⁴ By the mid-1950s shading facades had entered the architectural mainstream not only for buildings in the tropics but elsewhere when architects were keen to deploy large areas of glass.⁵⁵

Some architects went beyond looking at Brazilian solutions filtered through journals or handbooks. Barrie Bierman (1924-1991) practicing in South Africa's sub-tropical region, in Durban, won a scholarship in 1950 to study sun-shading in Brazil at first hand. In his report, it is clear that personal observation gave him unique perspectives on screening and shading devices, many of which he applied in his own buildings and shared with colleagues.⁵⁶ A similar impulse motivated Stephen Trotter (1931-2015) practicing in Brisbane, a sub-tropical Australian city on the same latitude as Durban. He too, on a scholarship, traveled across four continents to record diverse architectural solutions to life in warm climates.⁵⁷



- 04** Amyas Connell in Nairobi, Kenya. Top left: Amyas Connell, Crown Law Building (now State Law Office), Nairobi, Kenya, 1951-1955. Long view soon after completion. Right: detail of the building's delicate pre-cast concrete sun-screen. © Dennis Sharp. By kind permission of Yasmin Shariff, Dennis Sharp Architects. Bottom left: Tomb of I'timād-ud-Daulah, 1622-1628, near Agra, India. These jaali screens inspired the sun-screens on the long facade of the Crown Law Building. Reproduced with grateful thanks to: Royroydeb / CC BY-SA (https://upload.wikimedia.org/wikipedia/commons/5/5d/Grills_of_the_masoleum_of_I'timad-ud-Daulah%27s_tomb_2.jpg).

- 05** Geoffrey Bawa, Parliament, Sri Jayawardenepura Kotte, (1979-1982). The building's prominent Kandyan roof form pays homage to Sri Lankan architectural traditions, such as those of the open Royal Audience Hall (Magul Maduwa) in Kandy, the last capital of the ancient kings of Sri Lanka. By kind permission © Sebastian Posingis.



From 1955 several numbers of the *Architectural Review* featured the Engineering College of Rangoon University designed by Raglan Squires (1912–2004), a British architect and entrepreneur with offices in London and Singapore. The building broke from any expected mold to engage with color and adventurous form. It had an open assembly hall covered in a teak timber dome and a library with colorful *jali* – like elevations:

*This grille consists of 3,000 precast hexagonal concrete units, each weighing 3 hundredweight (152 kg), fabricated on the site. The interstices are filled in with coloured glass ply based on traditional folk patterns of the Shan States of Northern Burma. Permanent cross-ventilation is provided by smaller unglazed openings.*⁵⁸

This project was clearly beyond the expectations of officially endorsed tropical architecture based on a sanitized modernism. Its fate was to be excluded from the Commonwealth roundup in the *Architectural Review's* issue of July 1960.⁵⁹ The editors probably faulted Squires' engagement with monumentally scaled "decorative" elements and his attempts to incorporate ethnic ornament.⁶⁰

The momentum for acceptance of this style of building probably began when U Ba Pe, stimulated by Basil Ward's 1930 Rotary Club lecture, placed a motion before the Burmese Legislative Council, demanding: "That this council recommends that the policy of Government should be to incorporate features of Burmese architecture in all important public buildings in future."⁶¹

He circulated a proposal for the Rangoon City Hall among the legislators, a design by U Tin, employing elements of Burmese architecture. The resulting discussion predictably centered on expense, including the likely extravagance of *pyathat* roofs. When questioned, he quoted from the letter of "a leading architect and Member of the Royal Institute of British Architects," presumably Basil Ward:

(...) to my question whether it would be possible to incorporate features of Burmese architecture in modern buildings, and whether they could be incorporated to meet the scientific requirements of modern times. The answer is very encouraging. This is what he wrote to me:

"My opinion is that it is possible to incorporate features of Burmese architecture:

*It may interest you to have my reasons for saying this. The assertion that Burmese architecture exists only in temples, kyaungs, palaces, and the like; has, no bearing on the matter. To qualify my statement, we have examples of modern architecture with the Greek Doric order applied. This Greek Doric order existed only in temples (...) There is undoubted beauty in good examples of Burmese architecture; the Bawdipaya and Thappayinnya, Pagan; are, buildings, of extreme beauty and character."*⁶²

Following Burmese independence from Britain, Myanmar's new decision makers would have been proud of a prominent City Hall, celebrating their national identity. Even Squires did his best to make his university building honor

those sentiments. But in the same city "neutral" modern architectural solutions persisted, as demonstrated in James Cubitt and Partners' design for a pharmaceutical company.⁶³

During construction of Rangoon University's buildings, Basil Ward's former partner and brother-in-law Amyas Connell was designing important Government buildings in Nairobi, Kenya.⁶⁴ That country was still a British colony struggling, in the throes of Mau-Mau rebellion, towards independence. His work was divided into two phases, the first, built between 1951–1955 were Kenya's Legislative Council Building and its Crown Law Office.⁶⁵ At a later stage, before independence in 1963, these were transformed with substantial additions into Kenya's Parliament.

In much the same way as Basil Ward's buildings in Rangoon, the five-storied Crown Law Office had its upper four floors shaded on both sides by intricately designed *jali* screens composed of delicate precast elements. The design honors the Mughal *jalis* of the Tomb of I'timād-ud-Daulah near Agra.⁶⁶ Exactly why Amyas Connell chose to base his design on the high architecture of a different civilization has been debated, but it seems likely that, in the absence of an indigenous tradition of permanent monumental building and the fact that these government buildings were constructed during a period of internal conflict, opting for a solution from an architecture that had perfected sun control to a high art may have seemed reasonable.⁶⁷

Amyas Connell's ability to engage with such sensitive interpretations of precedent had been honed during his early training and talent recognized by his Rome Scholarship award.⁶⁸ Having skillfully deployed the abbreviated language of modern architecture in his celebrated domestic buildings of the 1930s, he found it unsuitable for monumental representative buildings, a problem taxing contemporaries since the mid-1940s.⁶⁹ In the 1930s Amyas Connell, in articulate debates, engaged established authorities like Sir Reginald Blomfield (1856–1942) in well-publicized skirmishes as a vociferous defender of modern architecture.⁷⁰ However, when entering competitions for civic buildings in Hereford and Newport, he could produce designs in the decorous modes of Public Architecture as testament to his classical training.⁷¹ This facility, irritating to hard-line, doctrinaire fellow members of the MARS Group, caused them to look suspiciously on Amyas Connell, Basil Ward and Colin Lucas.⁷²

In India the creation of Chandigarh, the new capital of a divided Punjab, brought similar issues of style and representation into question.⁷³ As a new nation emerging from a colonial past, India had a multifaceted architectural agenda needing deft navigation. Fortunately, Jawaharlal Nehru (1889–1964), the country's astute first Prime Minister, understood architecture's symbolic potential. He intended the city to embody a break with a colonial past, represent a commitment to a secular and democratic future and embrace the promise of modernity. Creation of a complex architecture to exemplify all these ideas was given to Le Corbusier.

In sharp contrast to the imagery portrayed in Lutyens and Baker's Imperial Delhi, his Capitol grouping in Chandigarh

gives eloquent form to these ideas. None of the formulae for building in warm climates that had become ingrained in India's colonial Public Works Department were followed. Something more uplifting was expected, something capable of holding identity. Eight years into the building program, Jawaharlal Nehru reflected:

Now I have welcomed very greatly one great experiment in India, (...) Chandigarh (...) I do not like every building in Chandigarh. I like a few very much, (...) but what I like above all is this creative approach (...) but thinking out in new terms (...) not in terms of rules and regulations laid down by our ancestors. Therefore, Chandigarh is of enormous importance regardless of whether something in it succeeds or something in it does not succeed (...) There is no doubt that Le Corbusier is a man with a powerful creative type of mind (...) He can produce extravaganzas occasionally, but it is better to have that than to have a swelled head with no mind at all.⁷⁴

Basil Ward's Rotary Club speech suggested that there were alternatives to colonial verandahs when designing tropical architecture. One could learn from the architectures of local people who had lived comfortably for centuries in the sun's heat. Solutions such as the *jali* screen demonstrated a reinterpretation that expanded the vocabulary of modern architecture.⁷⁵

After WWII, as European powers retreated from their tropical colonies, architects in these emerging nations searching for new forms to reflect a proud cultural identity, have used genuine, imaginative interpretations from their pre-colonial past along with inventive responses to material circumstances and aspirations. Geoffrey Bawa (1919-2003) in Sri Lanka and Vann Molyvann (1926-2017) in Cambodia come to mind.⁷⁶ During that post-war period when new countries saw great prospects in Non-Aligned Movement (1961) and were galvanized by the spirit of the Bandung Conference and by promise of the Organization of African Unity (1963), the Indonesian artist Basoeki Abdullah (1915-1993) was inspired to paint a monumental work, *Building of the New World*, a vision for the future of Asia. In gigantic renderings of Asia's architecture of the future, he depicted a hub of industrial activity involved in the most advanced technologies of the time. This huge painting was given to Singapore's Foreign Minister by his Indonesian counterpart in 1965, soon after Singapore gained independence.⁷⁷

By the 1960's Brazil had established its architectural identity through a bold expansion of modern architecture, adapting and extending its existing vocabularies to tame the Southern sun and enhance lifestyles made possible in a more benign climate. In doing so they freed buildings from the limitations of closed, contained spaces that characterized European precedents. Taking similar yet subtly different approaches for building in Africa and Asia's warm climates, the architects Paul Nelson, François Bienvenu and Antonin Raymond were contemporaries of the Brazilians Lúcio Costa, Oscar Niemeyer, Affonso Eduardo Reidy, and the brothers Roberto. But, unlike their Brazilian colleagues

who built for the future of their own country, these were wandering expatriates or colonials. Often capable of finding brilliant solutions to technical problems and sometimes also dreaming of regionally relevant architecture, they were not the ones to create an architecture that holds meaning for a particular culture. That task is most likely only possible for those who work from within.⁷⁸

Acknowledgements

I am indebted to Su Lin Lewis, who generously made photographs of *The New Burma* page available, from which transcripts were made. Errors in the spelling of the original have been corrected. I was alerted to the existence of this article from a description in her book:

Su Lin Lewis, *Cities in Motion: Urban Life and Cosmopolitanism in Southeast Asia, 1920-1940*, Cambridge, Cambridge University Press, 2016, 89-91.

I am also indebted to Sally Rendel who with Dennis Sharp co-authored *Connell, Ward and Lucas: Modern movement architects in England 1929-1939*, London, Frances Lincoln, 2008.

Yasmin Sharif, Dennis Sharp's partner as a Kenyan, clarified many issues about Amyas Connell's work in Nairobi and gave me permission to use the image of the State Law Office Jaali Screen.

Thanks also to Hugo Segawa whose insightful observations about *Cobogós*, the *quebra-sol* and Lúcio Costa's Ceramic *Claustra* helped me understand the Brazil's architectural engagement with the sun. He was also generous in allowing me to use three of his images.

Notes

- 1 Basil Ward in Dennis Sharp Archive, Paul Mellon Centre; Ben Bansal, Elliott Fox, *Architectural Guide: Yangon*, Berlin, DOM, 2016, "Myanmar Port Authority"; L. W. Spate, O. H. K., "Trueblood, Rangoon: A Study in Urban Geography", *Geographical Review*, No. 32, 1942, 56-73.
- 2 Basil Ward, "Architecture in Burma", *The New Burma*, Sunday, January 1930.
- 3 Su Lin Lewis, "Rotary International's 'acid test': multi-ethnic associational life in 1930s Southeast Asia", *Journal of Global History*, 2012, Vol. 7, 302-324.
- 4 Arthur G. Bray, "Municipal Offices, Rangoon, Burma...", *Architects' Journal*, No. 68, 1928, 919.
- 5 Arthur G. Bray, "New Municipal Offices at Rangoon", *Architect and Building News*, No. 121, 1929, 864-866.
- 6 Su Lin Lewis, *Cities in Motion: Urban Life and Cosmopolitanism in Southeast Asia, 1920-1940*, Cambridge, Cambridge University Press, 2016, 89-91.
- 7 *Country Life*, No. 68 (1930), 327.
- 8 *The Architect and Building News*, No. 115 (1926), 556.
- 9 *The Builder*, No. 136 (1929), 293.
- 10 *Architect and Building News*, No. 121, (1929), 895.
- 11 Basil Ward, op. cit.
- 12 Loudon, John Claudius, *An Encyclopedia of Cottage Farm and Villa Architecture and Furniture* [...], London, Longman, Rees, Orme, Brown, Green and Longman, 1835, 83.
- 13 Dennis Sharp, Sally Rendel, *Connell, Ward and Lucas: Modern movement architects in England 1929-1939*, London, Frances Lincoln, 2008; A. F. Shannon (ed.), "Connell, Ward and Lucas 1927-1939", *Architectural Association Journal*, 1956, 94-115. This article contains essays by Henry Russell Hitchcock, "England and the Outside World", 96-97; Thomas Stevens, "Connell, Ward and Lucas 1927-1939", 112-115.
- 14 W. Boesiger, O. Stonorov (eds.), *Le Corbusier et Pierre Jeanneret: Oeuvre complète 1910-1929* and *Le Corbusier et Pierre Jeanneret: Oeuvre complète 1929-1934*, Basle, Birkhäuser, 2013; Drawings at Fondation Le Corbusier catalogued under "Lotissement, Barcelone, Espagne, 1931" and "Lotissement Durand, Oued Ouchaia, Alger, Algérie, 1933"; *L'Architecture d'Aujourd'hui*, No. 10, 1933, 115. See also: *Architecture Vivante*, Hiver (1933), 55-56 and Autumn/Winter (1933), 56; *Techniques et Architecture*, Vol. 01-02 (1946), 25-28.
- 15 Philip L. Goodwin, G. E. Kidder Smith, *Brazil Builds: architecture new and old 1652-1942*, New York, MoMA, 1943, 81-89, 106-111, 112-115, 130-133, 136-139, 158 and 194-195; Yenny Campusano Santos, *El Cobogó en la Arquitectura Moderna: Evolución, Materiales y Tecnología* (Masters' Thesis), Universitat Politècnica De Catalunya, 2014, 16-17; *Architectural Review*, Rio, Vol. 108 (1950), 88-94.

- 16 *Architectural Review*, Vol. 86 (1939), 513.
- 17 Philip L. Goodwin, G. E. Kidder Smith, op. cit.; Hugo Segawa, *Architecture of Brazil 1900-1990*, New York, Springer, 2013. See also: *Ambiente Construido*, Vol. 3 (2003), 37-46; *AA Files*, Vol. 17 (1989), 24-30; and Vol. 36 (1998), 3-13.
- 18 *Architectural Review*, Vol. 95 (1944), 58-84.
- 19 *Ibid.*, 76.
- 20 See note 14.
- 21 Paul Nelson, *La Cité Hospitalière de Lille*, Paris, Editions Cahiers d'Art, 1933; "La Cité Hospitalière de Lille: Étude d'un projet publié en 1933", *L'Architecture Française*, 1945.
- 22 *The Princeton Alumni Weekly*, Vol. 37, No. 16 (1937), 351-352. After graduating from Princeton and serving as an aviator in France during WWI, Paul Nelson returned briefly for a short stint in Wall Street, and then back to Paris. He found the rigidity of the École des Beaux-Arts stultifying but, stimulated by Georges Braque, he pursued his own style of drawing under the guidance Auguste Perret who ran a dissident studio. Back in the USA in 1929, Paul Nelson directed movies in Hollywood before returning to Paris where he undertook the design of the Cité Hospitalière de Lille. Paul Nelson, "A Method of Procedure In Architectural Design", *Architectural Record*, June 1937, 52-57; *L'Architecture d'Aujourd'hui*, Vol. 9 (November-December 1933), 9; *Perspecta*, Vol. 13-14 (1971), 74-129.
- 23 Paul Nelson, Jean Hélon, *Cahiers d'Art*, 10th year, Vol. 1-4, 1935.
- 24 Paul Nelson, op. cit.
- 25 *Perspecta*, Vol. 13-14 (1971), 74-129. Paul Nelson's influence on the work of Jean Prouvé, particularly in relation to the Tropical House, has not been adequately explored. The louver systems and the metallic construction seem to suggest an affinity. Charlotte Perriand and Jean Prouvé, worked closely together and moved in the same circles as Paul Nelson and his friend Fernand Leger. Jean Prouvé, *Jean Prouvé; prefabrication: Structures and Elements*, New York, Praeger, 1971; Carmen Espegel, "Charlotte Perriand", Chapter 7 in *Women Architects in the Modern Movement*, Abingdon, Routledge, 2018, 199-240. See also: *Architectural Review*, Vol. 111 (1952), 171-174; *Módulo*, Vol. for 1960, 38-41 and *International Journal of Heritage Studies*, Vol. 24 (2018), 83-100.
- 26 Henry Russell Hitchcock, Philip Johnson, *Modern Architecture: International Exhibition*, New York, MoMA, February-March 1932, Catalog.
- 27 *L'Architecture d'Aujourd'hui*, Vol. 3 (1932), 61-63.
- 28 *Les Chantiers Nord-Africains...* was a monthly published in Algiers from 1928 to mid 1937. In 1933, it changed its name to *Chantiers*. It covered a wide range from individual houses to large infrastructure projects. Focused on North Africa from Morocco to Tunisia, it had feature articles on modern architecture in France with quite regular features on Le Corbusier. Through its pages it is possible to see a progression from classically inspired buildings, flirtations with Maghrebian "orientalism", through preponderance of art-deco, to doctrinaire modernism. There are many discussions about the need for a "Mediterranean" architecture.
- 29 *Techniques et Architecture*, Vol. 07-08 (1943), 207.
- 30 *Claustra*, a Latin term, are common in North African vernacular building. They are normally formed in walls to create gaps for ventilation. August Perret used the term to describe the precast concrete elements that are a striking feature at his church at Notre-Dame du Raincy. He had first used them when, as a contractor, he had built the Cathedral at Oran in 1910. In both cases the *claustra* are filled with glass. Perret later used open *claustra* at the Musée des Travaux Publics. Lúcio Costa insisted that his honeycomb walls of ceramic elements in the Guinlé housing scheme were *claustra* and not in any way *cobogós*. Hugo Segawa, "Lúcio Costa: a vanguarda permeada com a tradição – entrevista a Hugo Segawa", *Projeto*, São Paulo, No. 104, 1987, 150; *Le Genie Civil*, Vol. 83, 1923, 1-4.
- 31 *Architectural Review*, Vol. 208 (2000), 44; *Cultural Anthropology*, Vol. 3 (1988), 455-487; *Muqarnas*, Vol. 19 (2002), 164-192; *Journal of the Society of Architectural Historians*, Vol. 70 (2011), 492-511; *Architectural History*, Vol. 52 (2009), 201-232; Michael Windover, "Exchanging Looks: 'Art Dekho' Movie Theatres in Bombay", *Art Deco: A mode of mobility*, Quebec, Presses de l'Université, 2012, 159-188; Sharada Dwivedi, Rahul Mehrotra, *Bombay Deco*, Mumbai, Eminence Designs Pvt. Ltd., 2008; Navin Ramani, Laura Cerwinske, *Bombay Art Deco Architecture, A Visual Journey (1930-1953)*, New Delhi, Lustre Press, Roli Books, 2007.
- 32 *Chantiers*, Vol. 09 (1936), 461-465.
- 33 *L'Architecture d'Aujourd'hui*, Vol. 3 (1945), 37.
- 34 François Bienvenu: Born in Algiers 1897. Orphaned. École des Beaux-Arts in Paris, from which he graduated with the Diploma of Architect D. P. L. G. Returned to Algeria 1925. By 1933 – had already built 15 Schools – nominated to Société des Architectes Modernes. See: *Les Chantiers Nord-Africains*, January 1933, 81-84, March 1933, 245-246, September, 461-465 and November 1936, 567-568; *L'Architecture d'Aujourd'hui*, Vol. 03 (1933), 104 and Vol. 05 (1936), 82-86; *La Construction Moderne*, 1933, 502-509 and 1936, 859-870. François Bienvenu schemes mentioned: Sanatorium Rivet, page 860. Cité indigène de la Boucle, page 862. In 1938, the Fédération Nord-Africaine des Architectes was formed with François Bienvenu as President.
- 35 *La Construction Moderne*, 1936, 859-870.
- 36 *AA Files*, No. 44 (2001), 3-5; Bhatt, Aditya, "Golconde: Architecture, Climate and Comfort", *Undergraduate Thesis*, Ahmedabad: School of Architecture, Cept University, 2011.
- 37 Robert Jonathan Esau, "Connell, Ward and Lucas and the emergence of the British Modern Movement in Architecture", *Bryn Mawr College*, PhD Thesis, 1994, 27.
- 38 *Revue de l'Art*, No. 89 (1990), 77-81.
- 39 *L'Architecture d'Aujourd'hui*, Vol. 13-14 (1947), 1-97.
- 40 Perre Vago (ed.), "France d'Outremer", *L'Architecture d'Aujourd'hui*, 1936, No. 3. Vago had been associated with the journal from its inception in 1930. For this issue he drew upon the latest expertise available. Most of the buildings and projects featured were in North Africa (Algeria and Morocco). Also featured were buildings from Lebanon and Syria as well as Guadeloupe. There were general articles on climate, indigenous architectures in Sub-Saharan Africa. Tunisia, Indochina and Madagascar were not covered.
- 41 *L'Architecture d'Aujourd'hui*, Vol. 3 (1945), whole issue.
- 42 *Techniques et Architecture*, Vol. 5-6, 1952, 34-117; Jacques Soullillou (ed.), *Rives Coloniales: Architectures, de Saint-Louis à Douala*, Marseille, Editions Parenthèses, 1993; *Perspective*, Vol. 1 (2011), 580-586; *International Journal of Heritage Studies*, Vol. 24 (2018), 83-100 and *ABE Journal*, Vol. 4 (2013).
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- 44 *The Architects' Journal*, Vol. 103 (1946), 105-113; *The Architectural Review*, Vol. 101 (March 1947), 83-88; Vol. 101 (May 1947), 165-172; Vol. 102 (August 1947), 58-59; Vol. 102 (October 1947), 138-139; Vol. 102 (November 1947), 171-172; Vol. 102 (December 1947), 185-188; Vol. 103 (January 1948), 7-8; Vol. 104 (December 1948), 264, 295 and 298; Vol. 105 (January 1949), 33-34; Vol. 107 (February 1950), 123-130; Vol. 107 (April 1950), 221-223 and 229-230; Vol. 108 (August 1950), 88-92; Vol. 108 (October 1950), 221-232 and 249-258 and Vol. 108 (November 1950), 303-306.
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- 46 *Architectural Review*, Vol. 111 (January 1952), 16-22.
- 47 Jiat-Hwee Chang, *A Genealogy of Tropical Architecture: Colonial networks, nature and technoscience*, Abingdon, Routledge, 2016.
- 48 See: *Habitat International*, Vol. 7 (1983), 337-346.
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- 50 *Architectural Review*, Vol. 113 (1953), 288-289 and 298-310; *Architectural Association Journal*, Vol. 62 (1946), 53-60 and Vol. 69 (1953), 7-21; *Architects' Journal*, Vol. 120 (July 1954), 68; *ABE Journal*, Vol. 4 (2013); *Journal of the Royal Society of Arts*, Vol. 103 (1955), 315-333; Ra – *Revista de arquitetura*, Vol. 12 (2010), 17-24; Vandana Baweja, "Otto Königsberger and the Tropicalization of British Architectural Culture", in Duanfang Lu (ed.), *Third World Modernism*, Abingdon, Routledge, 2010, 236-254.
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- 53 *Ibid.*, 5-6.
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- 66 *The Journal of Indian Art*, Vol. 6 (1896), 91-94; E. B. Havell, *A handbook to Agra and the Taj, Sikandra, Fatehpur-Sikri and the neighbourhood*, London, Longmans, 1903, 85-90; *Indian Architecture*, London, John Murray, 1913, 206-207.
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- 69 Siegfried Giedion, "The need for a new monumentality", in Paul Zucker (ed.), *New Architecture and City Planning*, New York, Philosophical Library, 1944, 549-568; J. L. Sert, F. Leger, "S. Giedion, Nine Points of Monumentality", in Joan Ockman, Edward Eigen (eds.), *Architecture Culture 1943-1968: A Documentary Anthology*, New York, Rizzoli, 1993, 27-31; *Architectural Review*, Vol. 108 (1950), 307-314.
- 70 *The Listener*, Vol. xii (1934), 885-888; *Architects' Journal*, May 1934, 785.
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- 72 *Architectural History*, Vol. 55 (2012), 299-320.
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- 74 Jawaharlal Nehru, "Inaugural Address by Shri Jawaharlal Nehru, Prime Minister", in Achyut Kanvinde (ed), *Seminar on architecture*, New Delhi, Lalit Kala Akademi, 1959, 8-9 (5-9).
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- 78 Lawrence J. Vale, *Architecture, Power and National Identity*, Abingdon, Routledge, 2008; *Modernism/Modernity*, Vol. 12 (2005), 253-272; *ABE Journal*, Vol. 4 and Vol. 9-10 (2016).

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Vasco Vieira da Costa, LEA, Luanda, Angola, 1965. © Margarida Quintã, 2013.

Tropical Building Research: the Angolan Case¹

BY MARGARIDA QUINTÁ

This paper investigates how the notion of “tropical architecture” was established in Angola by looking at the local development of scientific knowledge on climate during the 20th century. It focuses on the processes that gave rise to a growing understanding of the geography and climate of the country, namely through the creation of local research institutes.

Between the 1950s and the 1970s, increasingly more climatic data was collected in the country. This data was later combined with studies in building physics, giving rise to original research developed by the IEA. Local institutions, such as the Public Works Department of Angola (DSOPA), disseminated this knowledge, eventually influencing not only the design methods of local architects but also the development of specific products in the construction sector. The IEA became a research and education organization of great relevance in Angola during the 1960s and the 1970s, as well as a symbol of modernity and the quest for scientific knowledge.

The first Western discourses on the climate of Angola emerged in the late 19th century through the records of the expeditions of Portuguese explorers – such as Brito Capelo (1841-1917), Roberto Ivens (1850-1898), and Henrique Carvalho (1843-1909) – who presented early descriptions of adverse weather conditions, putting forward various prejudices and ambiguities regarding the tropical nature of the country.² However, the colonialist exoticism of the first reports on the landscape and climate of Angola yielded to a more in-depth understanding of the territory in the mid-20th century. It was only in the aftermath of WWII, and particularly during the Angolan War of Independence (1961-1975), that an effective, analytical, and interpretative knowledge of the various local climates started to emerge.

Recent scholarship has often framed the architecture produced in Angola in the second half of the 20th century as “modern and tropical”.³ Yet “tropical architecture” suggests that the climate responsiveness of a building is one of the main characteristics binding a vast body of work that involves different authors, periods, and territories. Furthermore, the label “tropical”, as some authors have argued,⁴ suggests that this architectural legacy resulted mostly from a process of Western otherness in regard to local realities.

However, in the Angolan case, local architects and engineers often drove the progressive investigation of the country’s climatic conditions. In fact, the majority of the small group of architects living in Angola in the 1960s and the 1970s shared the same concerns regarding environmental comfort and argued for an architectural practice adapted to local climates. Together with modern methods of construction resulting from new building materials and techniques,

architects also demanded that building activity would take specific Angolan conditions into account.

In 1958, the architect José Pinto da Cunha (1921-1985) wrote an article in the magazine *Cultura*⁵ on the housing shortage in Luanda, the city where he was based. Besides addressing his social concerns and drawing attention to the dichotomy between the formal and informal city, the architect argued that a new method for architectural practice should be invented in Angola. He stated that everything needed to be recast, starting with a different legal code and a new way of building adjusted to Angolan conditions:

*A new technique, resulting from new materials and construction processes, must respond to a suitable body of legislation (...) that allows freedom of design and the possibility of providing the city with technically certain solutions and better architecture. (...) From ventilation and aeration, to sewage systems, to thermal insulation, to standard ceiling heights, to construction systems, etc.; everything should be re-established based on new models that could fit Luanda’s tropical character.*⁶

At the time, in the late 1950s, building regulations and technical systems were mostly imported from Portugal, and knowledge of the climatic characteristics of Angola was still just beginning to be gathered. Even if the first meteorological observations had been performed at the Observatory of Luanda in 1879, it was only in 1950 that the Weather Service of Angola was established and became part of the Portuguese Meteorological Service.⁷ The first comprehensive reports on the country’s climatic characteristics were then published in 1955 by Fernando Leal and in 1962 by Mário Silveira.⁸ It was from the climate classifications of Köppen-Geiger (1931, 1936)

and Thornthwaite (1948) that local meteorologists developed a more accurate description of the climates of Angola, dividing the country into three main areas: a tropical region in the north of the country (Aw); an arid area to the south and along the coast (Bsn); and a temperate region in the inland plateau (Cwb).

Later, in the mid-1960s, other studies provided more specific descriptions of each region based on information collected at multiple meteorological stations throughout the country. António Faria published studies on the prevailing winds in Luanda (1966) and Namibe (1969), and offered interpretations for temperature reports in Luanda, Lobito, and Dundo (1963).⁹ Studies on solar radiation and solar charts were also developed for the first time during this period.¹⁰

These meteorological studies on Angola's sub-climates allowed, at a later stage, for the interpretation of this specific knowledge to be disseminated throughout the construction sector by the LEA. In a paper presented in Kenya in 1959, Frederico Colaço¹¹ pointed out that the laboratory, at that time, was only dealing with the problems of roads, soil mechanics, and building materials. Simultaneously, he argued that the LEA ought to develop a section for the study of building physics right away, in order to focus on issues of thermal comfort, air conditioning, and lighting, as a result of what he called "practical developments of applied climatology". In his view, the laboratory should use the climate data collected by the Angolan Meteorological Service (SMA) to develop scientific studies and form an analytical approach to climate management in the country. Furthermore, he even suggested,

The modern scientific trend dictates that the problems concerning the discipline of architecture need to be addressed together with the purely scientific and technical ones.¹²

Hence, in his view, climatology, building physics, and architecture should join together within a new field of research at the Angolan laboratory.

Vasco Vieira da Costa and the LEA

The origins of the LEA date back to 1946, when a material testing laboratory was established in Luanda as a section of the Public Works Department. At that time, the Angolan laboratory's only assignment was to collect soil samples from all regions as part of a countrywide soil survey, and to send this information to the National Civil Engineering Laboratory (LNEC) in Lisbon.

However, ten years later, the volume of construction work per year in Luanda had tripled.¹³ As the public laboratory was the only organization equipped to carry out geotechnical investigations, it also began to provide services to private entities. As a result of this lucrative funding system, the institution became more ambitious; expanded its staff, hiring the first two engineers in 1955; and began sponsoring research, enriching its library, and providing technical training to high-school students. From 1955 to 1961, the laboratory underwent a period of exceptional

growth that was mainly driven by road and dam construction, reaching 200 employees in 1961.

In 1961, at the beginning of the Angolan War of Independence, the LEA finally became an autonomous research institute, and the architectural project for its permanent facilities commenced. Vasco Vieira da Costa was then hired by the laboratory not only to design the new building but also to bring architectural topics into the research unit, finally realizing the aspirations that Frederico Colaço had put forward two years earlier.

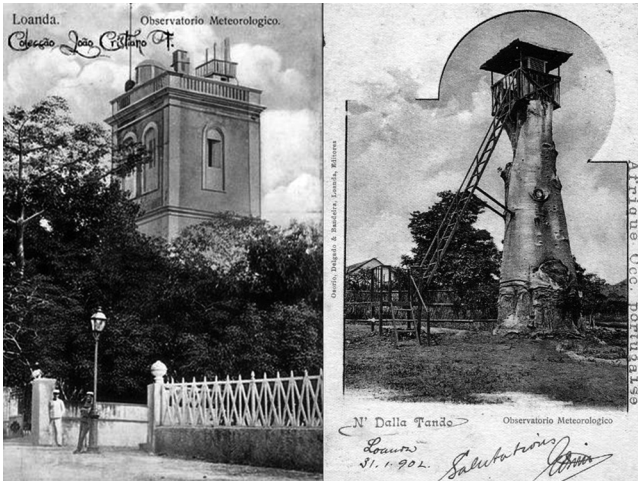
Vasco Vieira da Costa had recently resigned his position as a consultant architect for Luanda's town council (1949-1959), shortly after completing his first project, the grandiose Quinaxixe Market (1950-1958) in Luanda's downtown. Even though he lived in Luanda most of his early life, he left Angola to study architecture in Porto (College of Fine Arts of Porto, ESBAP, 1940-1949) and urbanism in Paris (University of Paris, 1946-1948). During the years he lived in Paris, he was part of the founding group of the ATBAT, *Atelier des Bâtisseurs*, an interdisciplinary team organized by Le Corbusier in 1947 for the Marseille Unité d'Habitation commission. In 1949, he finished his degree in Porto with a master plan for a satellite-city on the outskirts of Luanda as his graduation project,¹⁴ and then moved back to Angola the same year.

At that time, the design limitations imposed by climate were already at the top of Vasco Vieira da Costa's concerns, and so he carefully examined Luanda's weather data in order to inform his urban planning and architectural design. Therefore, the LEA project was no exception. In the project description, Vasco Vieira da Costa wrote about the "captivating but challenging task" of developing a building adapted to such "specific functions as observing, studying, discovering, creating, and controlling."¹⁵ He quoted Pierre Chevenard (1888-1946), who had described the ideal scientific workplace as aseptic, methodical, and calm. Consequently, environmental comfort was a major concern of the project due to its influence on productivity and efficiency. The natural constraints of the site were carefully considered and "the architectural design essentially became the consequence of the local climate."¹⁶ The hot and humid climate of Luanda was controlled solely by passive methods, such as the building's orientation, natural ventilation, and sun shading. Hence, the architectural form resulted from the combination of these features, and was described by the architect as a purely scientific result.

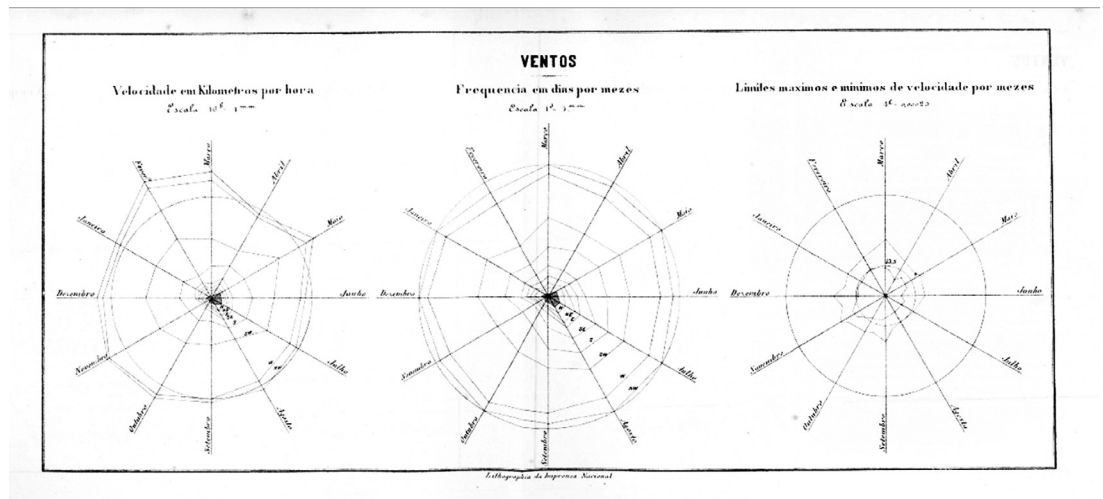
Vasco Vieira da Costa stated: "A laboratory is, indisputably, the most typical functional building, so it must be (...) a precise and effective tool." Furthermore, he claimed that the architectural design of a laboratory should be "alien to monumental or ornamental concerns" because the "the nature of a laboratory determines such strong constraints that (...) necessarily lead the architect to pure expressions." Therefore, the architectural solution epitomized "sobriety and accuracy (...), which are the attributes of the useful and the scientific."¹⁷

Reading the architect's texts, we may therefore conclude that he intended that this building would somehow

01 Postcards of meteorological observatories in Luanda and N'dalatando, Angola, 1902.



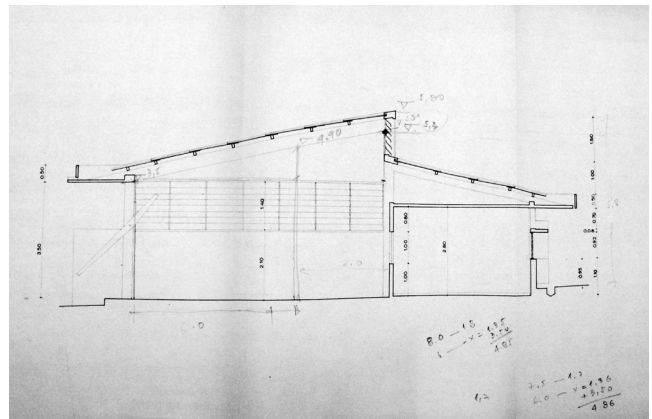
02 Vasco Vieira da Costa, IEA, Luanda, Angola, 1968, aerial view. © IEA archive.



03 Wind charts, Luanda, Angola, 1892. © Henrique Carvalho, *Expedição Portuguesa ao Muatiãnvua – Metereologia, Climatologia e Colonização: método práctico de fazer colonisar com vantagem as terras de Angola*, Lisboa, Typographia do Jornal As Colónias Portuguezas, 1892.



04 Vasco Vieira da Costa, IEA, Luanda, Angola, 1965, pivot doors as shading system. © IEA archive.



05 Vasco Vieira da Costa, IEA, Luanda, Angola, 1963, pavilion A, section. © IEA archive.

represent the doctrine of the institution, in its theoretical and formal aspects: accurate, scientific, sober, and rigorous. At the same time, and perhaps more importantly, the building should also adapt to local constraints, and its climate responsiveness should be taken as an essential condition of its functioning.

Yet, that same year, the LEA bought a property near the airport and Vasco Vieira da Costa was forced to develop a new project to fit rather different circumstances. The plot was located in a peripheral area of the city and was much larger than the first, which led to an entirely different organization of the plan. In the first solution, a set of pavilions was oriented in an east-west direction which, according to the architect, was the ideal orientation “confirmed by theory and experience.” He stated that

in hot and humid climates like Luanda, the correct orientation of buildings is one of the factors that can surely contribute to diminishing the feeling of discomfort caused by high temperatures combined with high levels of humidity.¹⁸

At the site near the airport, a different building orientation was necessary to adjust to the contrasting plot configuration, and the limited budget determined that the buildings could not have artificial systems for environmental control. As a result, instead of designing calm, methodical, and controlled environments, the architect conceived laboratories that were completely open to the outside weather. Thus, despite Vasco Vieira da Costa’s cultured understanding of modern science as aseptic and sterile, he had developed an architectural solution that was quite permeable and adapted to local circumstances. This choice was, however, an absolutely rational decision and consistent with his pragmatic approach.

In 1963, the first three pavilions – A, B, and C – were built. Each was destined to house one of the main sub-sections of the LEA: geotechnical engineering, roads and aerodromes, and structures and buildings. The identical pavilions are parallel to the dominant axis, 30 meters apart, and located at the north end of the site:

Its positioning depended mainly on the judicious study of cross-sections, where an attempt was made, by simple and economic means, to alleviate the inconveniences resulting from the incorrect orientation to which the topography of the plot led.¹⁹

Looking at the building’s section, one can easily understand that the smaller offices were placed along the east facade, while a large double-height open-plan space was on the west. Consequently, this large room takes advantage of the prevailing southwest winds, and works as a cooling system for the whole building. Moreover, the openings on the west facade are covered with large pivot doors that are manually operated and open horizontally to create a shadowed area.

In the years that followed, the building campaign continued. A new set of blocks – D, E, F, G – was built to house more offices and stockrooms in 1965, and the pavilions of the Faculty of Civil Engineering (J, L, M, O) were

inaugurated in 1966. Civil Engineering had been one of the first degrees offered in Angola, beginning in 1962,²⁰ despite the great shortage of teaching staff in the country. For this reason, the LEA collaborated with the University of Luanda from the beginning, and classes were held at the LEA premises from 1966 onwards. University students were hired as part-time employees, which established a direct link between teaching and practice. Henrique Novais Ferreira, the director of the LEA, stated in 1967 that the students were being “trained at an excellent technical level and prepared for the reality of the country, in its social and physical aspects.”²¹ In the academic year 1969/1970, the first eight engineers graduated from the University of Luanda, and in the years that followed, several new graduates joined the faculty, making up for the lack of technical staff.

The LEA facilities were still expanding in 1975 when the Angolan Civil War (1975–2002) broke out after the country’s independence. As a result, the largest building in the complex, 120 meters long and three floors high, destined for administrative functions and the library, was never fully completed. Likewise, the hydraulic pavilion project, developed by Vasco Vieira da Costa in 1969, was never built.²²

Building research

At the same time that the LEA facilities were being developed, the results of engineering research were also being disseminated via publications that percolated through the colonial society of Angola. Between 1957 and 1974, the LEA published many original papers and also released translations of technical information from other languages. Throughout this time, the papers focused on the most pressing subjects concerning the country’s development, starting with geotechnical studies in the late 1950s and then focusing mostly on issues related to building physics in the 1970s. At the same time that these topics expanded, architecture progressively assumed greater prominence, not only in the publications, but also at the conferences in which the laboratory took part in Angola (1957, 1969), Portugal (1965), Mozambique (1965, 1971), and Brazil (1967).²³

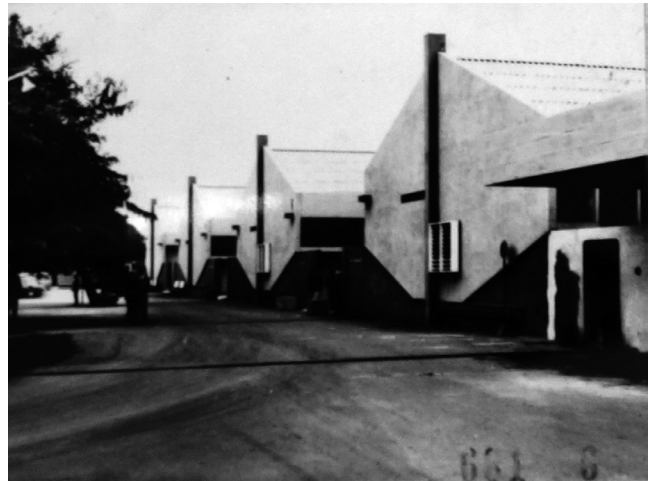
Yet the first wide-ranging article concerning climate and building design in Angola would only be released in 1965. Henrique Novais Ferreira, a civil engineer who had been the director of the LEA since 1955, authored the paper, “Thermal environment concept applied to the design of dwellings.” For the first time, weather data from the various Angolan sub-climates was presented and examined, along with a discussion of thermal comfort and its desirable influence on architectural design. The article was released in Luanda by the LEA and also in Lisbon by the national magazine *Fomento*, which disseminated scientific contributions to economic and technical development from the Portuguese colonies.²⁴

The paper had actually been written in 1963 and was the result of the LEA’s cooperation with the SMA, which provided the weather data and supported the climatic classifications presented in the article. The cooperation between the two local institutions had already been established in other previous studies, namely on wind reports and on the rainfall regime of Luanda, which occasionally caused

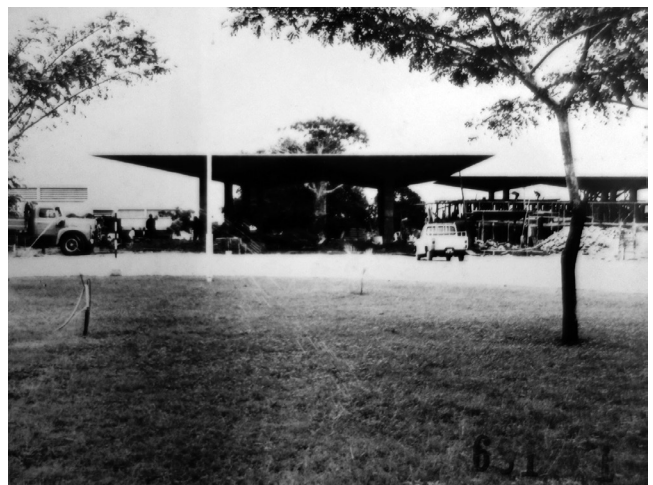
06 Vasco Vieira da Costa, IEA, Luanda, Angola, 1968, pavilion A, double-height open-plan space. © IEA archive.



07 Vasco Vieira da Costa, IEA, Luanda, Angola, 1965, pavilions D, E, F, G. © IEA archive.



08 Vasco Vieira da Costa, IEA, Luanda, Angola, 1965, campus. © IEA archive.



09 Vasco Vieira da Costa, IEA, Luanda, Angola, 1965, materials pavilion. © IEA archive.

landslides resulting in great damage to roads and buildings.²⁵

From 1965 onwards, bioclimatic design was a topic of concern to the LEA with the publication of several foreign studies on the subject. Selected contributions from the United Nations' Housing and Town and Country Planning, the RILEM, and the South African National Building Research Institute were translated and issued in the LEA's monthly bulletins.²⁶ However, the only broad study focusing on Angolan conditions and offering practical solutions was the one developed by Henrique Novais Ferreira. His long scientific article aimed both at providing an academic reading of the topic and a handbook for architectural practitioners in the country.

Henrique Novais Ferreira considered that "knowledge of local climatic conditions was the first step in defining, on a scientific basis, the conditioning requirements for the construction of residential buildings."²⁷ As engineering research was an exclusive preserve of the laboratory, he stressed that defining the essential technical knowledge applicable in Angola in the fields of structures, building materials, building systems, building physics, and also bioclimatology was the task of the LEA.

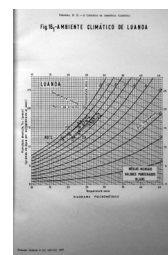
A table with the volume of construction work in the country started the article: an average of 200,000 m²/year had been built during the last ten years, and there was a common belief that the number would rise in the years that followed. Henrique Novais Ferreira therefore advocated the need to develop a specific knowledge of the local construction industry:

*The construction of residential buildings follows very naturally the local and regional experience, but is also influenced by fads from all territories, including those of temperate and cold climates. Housing standards are based to a large extent on studies and technical work carried out in Europe and North America, and for their climates and regions. And some of these regulations are not suited to tropical climates. Architectural trends, regulations, building habits, and even developments that ignore the site, may result in useless expenses and solutions compromising the comfort of housing.*²⁸

Despite this consideration, the author resorts mainly to European authors and cites technical studies by Stone (1941), Blanc (1952), Dreyfus (1960), and Missenard (1960) on the evaluation of thermo-hygrometric parameters and environmental comfort. He also mentions authors such as Raymond Ayoub (1960), David Oakley (1961), and the Portuguese Gomes (1962) to defend the necessity and relevance of the thermo-hygrometric study method for the design of buildings in different regions of the world. Finally, Griffith Taylor's climograph, designed for Australia in 1916, serves as a guide for the psychrometric charts presented by Henrique Novais Ferreira for each of the Angolan sub-climates.

Henrique Novais Ferreira labelled three eco-climatic types in Angola: the dry iso-hygrometric, the isothermal, and the humid iso-hygrometric. In addition to presenting psychrometric diagrams for different cities in the country,

- 10 Psychrometric chart of Luanda, 1965. © Henrique Novais Ferreira, *O conceito de ambiência climática aplicável aos estudos de edifícios para habitação*, Memória LEA, No.101, Luanda, LEA, 1965.



he proposed an analytical method for climate-responsive architectural design. Hence, he put forward a graphic table that, when overlaid with the psychrometric diagram of a given place, displays architectural design requirements, such as those for direct or indirect ventilation, thermal inertia, insolation, and air conditioning.

Unsurprisingly, this report became influential for architectural practice in Angola in the years that followed. Although the document did not provide specific design guidelines, the recommendations were detailed enough to determine the exact needs for shading and natural ventilation in each region. Since this study was published both in Angola and in Portugal, its reach was broad in the community of architects developing projects for Angola at that time.

Climatological data was passed on to architects by the Public Works Department and by municipalities.²⁹ The climographs of Angolan cities were often used in project descriptions, and even served as evidence in various disputes between architects and institutions.³⁰ However, as this information was only made available in 1965, it seems fair to think that prior to that time, local architects had already developed an empirical understanding of Angolan climatic conditions, as well as of passive environmental control systems.

Even though the literature produced by the LEA remains largely unexplored to this day, Henrique Novais Ferreira's article was contemporary to some of the most groundbreaking books on climate-responsive design methods in tropical regions, including Maxwell Fry and Jane Drew's *Tropical Architecture in the Dry and Humid Zones* (1964) and *Design with Climate: Bioclimatic Approach to Architectural Regionalism* by the Olgyay brothers (1963). Henrique Novais Ferreira's article was also representative of the laboratory's quest for scientific knowledge on the climate of Angola in order to establish the basis of an analytical approach to architectural design methods in the mid-1960s. This increasing knowledge of different Angolan geographical environments enabled architects, institutions, brands, and all other sorts of agents to master climatic data, and its integration into architectural design.³¹ In so doing, the LEA allowed the modern architecture of Angola to become more responsive and less theoretical, more precise and less generic.

Notes

- 1 This text is an abbreviated version of the chapter "Design with climate in Angola" from: Margarida Quintã, *Modern Schools in Angola, 1961-1975: Design with Climate and Heritage*, Thesis (PhD), École Polytechnique

- Fédérale de Lausanne/Instituto Superior Técnico, Universidade de Lisboa, 2019.
- 2 Hermenegildo Brito Capelo, Roberto Ivens, *De Angola à contra-costa*, Lisboa, Imprensa Nacional, 1886; Henrique Carvalho, *Expedição Portuguesa ao Muatiãnyua – Meteorologia, Climatologia e Colonização: método prático de fazer colonizar com vantagem as terras de Angola*, Lisboa, Typographia do Jornal As Colónias Portuguezas, 1892.
 - 3 See, for instance: Ana Tostões (ed.), *Modern Architecture in Africa: Angola and Mozambique*, Lisbon, ICIST/Técnico, 2013.
 - 4 On this subject: David Arnold, *The Problem of Nature: Environment, Culture and European Expansion*, Oxford, Blackwell Publishers, 1995.
 - 5 The Magazine *Cultura* was published by the Cultural Society of Angola between 1957 and 1960. This cultural institution was established in Luanda in 1942 and extinguished by the Portuguese security agency PIDE/DGS in 1966.
 - 6 Free translation: José Pinto da Cunha in “O problema da habitação em Luanda. É preciso construir casas para todos...”, *Cultura*, No. 2 and 3, Year 1, Luanda, January/March 1958, 12.
 - 7 Presidência da República Portuguesa, *Instituição de Serviços Meteorológicos nas Colónias*, Lei 2042, 17 June 1950.
 - 8 Fernando Leal (coord.), *O Clima de Angola*, Luanda, Serviço Meteorológico de Angola, 1955; Mário Silveira, *Climas de Angola*, Luanda, Serviço Meteorológico de Angola, 1962.
 - 9 António Faria, *Temperaturas equivalentes de Luanda, Lobito e Dundo com vista ao estudo de habitações*, Memória LEA 99, Luanda, LEA, 1963; António Faria, *Direcção e intensidade média dos ventos predominantes em Luanda*, Memória LEA 115, Luanda, LEA, 1966; António Faria, *Direcção e intensidade média dos ventos predominantes em Moçamedes*, Memória LEA 152, Luanda, LEA, 1969.
 - 10 Alexandre Gama Vieira, *A radiação solar sobre planos verticais orientados em Luanda*, Serviço Meteorológico de Angola, in Boletim Informativo 2 (14), Luanda, LEA, 1964; Armando Cavaleiro Silva, João José Malato, *Geometria da Insolação de Edifícios*, Lisboa, LNEC, 1969.
 - 11 Frederico Colaço was an engineer and the director of the Section of Buildings and National Monuments of the Public Works Department of Angola.
 - 12 Frederico Colaço, *Melhoramentos de habitação tradicional em Angola*, Memória LEA, No. 52, Luanda, LEA, 1959. Lecture presented at the Inter-African Conference of Town-planning and Housing – CCTA/CSA held in Nairobi, Kenya, 19–30 January 1959.
 - 13 See the table: “Civil Construction in Luanda”, from: Henrique Novais Ferreira, *Evolução demográfica de Luanda – subsídios para a sua urbanização*, Memória LEA, No. 59, Luanda, LEA, 1959, 174.
 - 14 Vasco Vieira da Costa, *Cidade Satélite nº3 Concurso para a obtenção do diploma de arquitecto 1948*, Porto, ESBAP, 1984.
 - 15 Free translation: Vasco Vieira da Costa, “Instalações do Laboratório de Engenharia da DSOPA”, Luanda, Fevereiro 1960.
 - 16 Free translation: Idem, 1.
 - 17 Free translation: Idem, 2.
 - 18 Free translation: Idem, 3.
 - 19 Vasco Vieira Da Costa, “Instalações definitivas do Laboratório de Engenharia de Angola - memória descritiva dos pavilhões A, B e C”, Luanda, Abril 1963, 1.
 - 20 Ministério Do Ultramar, *Criação dos Estudos Gerais Universitários em Angola e Moçambique*, Decreto-lei 44530, 21 August 1962.
 - 21 Free translation: “Engenheiros formados com excelente nível técnico e sensibilizados para as realidades do país, quer de natureza social, quer de especificidades naturais” in Henrique Novais Ferreira, *Os tipos de investigação e a actividade dos Laboratórios de Engenharia*, Memória LEA, No. 125, Luanda, LEA, 1967, 4.
 - 22 Vasco Vieira Da Costa, “Memória descritiva do Pavilhão de Hidráulica”, Luanda, Setembro 1969.
 - 23 *Jornadas Luso-Brasileiras de Engenharia Civil*, Lisbon, 1965, Rio de Janeiro, 1967, Lourenço Marques, 1971; *Primeiras Jornadas de Engenharia de Moçambique*, Lourenço Marques, 1965; *Segundas Jornadas de Engenharia e Arquitectura do Ultramar*, Luanda, 1969.
 - 24 Henrique Novais Ferreira, *O conceito de ambiência climática aplicável aos estudos de edifícios para habitação*, Memória LEA, No. 101, Luanda, LEA, 1965; Henrique Novais Ferreira, “O conceito de ambiência climática aplicável aos estudos de edifícios para habitação”, *Fomento – Técnica e Economia Ultramarinas*, Lisboa, Vol. 3, No. 2, Second Quarter, 1965, 145–222.
 - 25 Henrique Novais Ferreira, *Avaliação de caudais pluviais*, Memória LEA, No. 48, Luanda, LEA, 1959; Henrique Novais Ferreira, *Precipitações pluviométricas excepcionais em Luanda*, Memória LEA, No. 53, Luanda, LEA, 1959; Henrique Novais Ferreira, *O método dos valores extremos no cálculo de chuvas excepcionais em Luanda*, Memória LEA, No. 54, Luanda, LEA, 1959.
 - 26 See, for instance, J. F. Van Straaten, *A construção nos climas quentes*, National Building Research Institute (South Africa), DT 99, Luanda, LEA, 1966; E. N. Van Deventer, J. F. Van Straaten, *Uma base racional para determinar dados climáticos para utilização nos projectos de edifícios*, National Building Research Institute (South Africa), DT 106, Luanda, LEA, 1966; RILEM, *O comportamento e durabilidade dos materiais de construção em climas quentes*, Réunion Internationale des Laboratoires et Experts des Matériaux, Boletim Informativo 3 (28), April 1965, DT 66, Luanda, LEA, 1965; Adrian Atkinson, *A habitação nos trópicos*, Housing and Town and Country Planning, United Nations, Bulletin 6, DT 62, Luanda, LEA, 1965.
 - 27 Free translation: Henrique Novais Ferreira, “O conceito de ambiência climática aplicável aos estudos de edifícios para habitação”, *Fomento – Técnica e Economia Ultramarinas*, Lisboa, Vol. 3, No. 2, Second Quarter, 1965, 146.
 - 28 Ibidem.
 - 29 See, for instance: Escola Comercial e Industrial do Lobito, Jorge Moreira, 1967–1970 (AHN/Fundo Obras Públicas/Benguela/Ministério da Educação/17.3.1). “Chamamos a atenção para a importância que no local reveste a percentagem dos ventos dominantes diurnos. Os do sul são nocturnos. Há que atender à humidade relativa diária que é praticamente constante e de 80 %.” in “Condicionamentos urbanísticos”, Câmara Municipal do Lobito, 26 May 1962.
 - 30 E. g., Francisco Castro Rodrigues sent Lobito’s climograph to the Education Department in 1967 in a dispute concerning the Lobito’s lyceum works.
 - 31 Namely the Public Works Department and the LEA, but also advertisements by Lupral and articles by Campina, Bernardes, Cunha, Rodrigues, etc.

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- VIEIRA DA COSTA, Vasco, “Instalações definitivas do Laboratório de Engenharia de Angola - memória descritiva dos pavilhões A, B e C”, unpublished notes, Luanda, 1963.

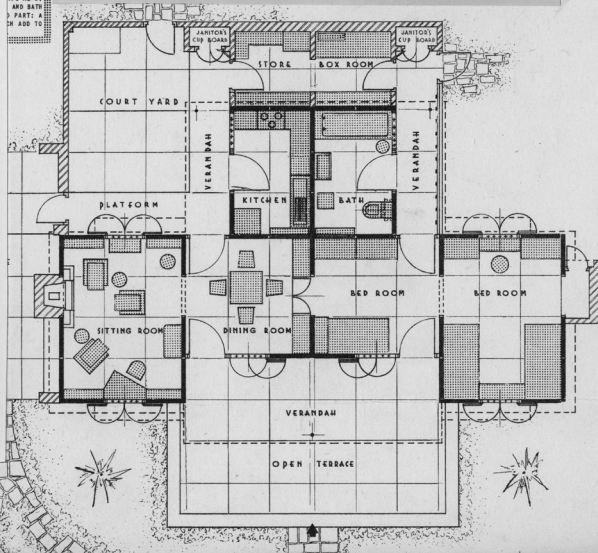
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Otto Königsberger and Global Architectural Histories

BY VANDANA BAWEJA

Otto Königsberger was a German émigré architect who worked as the state architect in princely Mysore in British India in the 1940s. Upon emigration to London in 1951, he subsequently became an educator of Tropical Architecture (1954-1971) at the AA School of Architecture. This paper examines how Otto Königsberger's career can illuminate "global" as a paradigm in Modernist historiography.

Organizations such as **docomomo** International, GAHTC (Global Architectural History Teaching Collaborative), IASTE (International Association for the Study of Traditional Environments), and INTA (International Network of Tropical Architecture) are actively engaged with "global" histories of Modernist architecture and its preservation. How do we theorize global as paradigm with respect to architectural histories, particularly the history of Modern Architecture? Architectural historians have engaged with global as paradigm through the histories of "non-western" architecture – a problematic Eurocentric term which defines regions outside Europe and North-America with respect to lack of the "West." As a geographic meta-category "non-western architecture," comprises geographic, political, and cultural categories such as – tropical architecture, colonial architecture, Asian architecture, South-Asian architecture, Chinese architecture, Middle Eastern architecture, African architecture, Latin American architecture, and Islamic architecture – each of which have entangled historical, socio-political, and geographic trajectories. With respect to Modernism, it became obvious that "non-western" as a paradigm simply reinforces the diffusionist narrative of Modern architecture, which is founded on the teleological trajectory of modernization of the "non-western" or the formerly colonized, under-developed world. Sebastian Conrad in his book, *What Is Global History?* enlists the paradigmatic methods of global history – one, global histories do not exclusively constitute macro-narratives; two, global histories reject political units, such as nation-states or empires as their spatial units of analyses; three, global histories are "inherently relational," that is they are based on the premise that any civilization, Empire or a nation-state never develops in isolation; four, global histories eschew the notion of endogenous chronicles and instead rely on narratives of networks of circulation and exchanges; five, global historians place emphasis on synchronic events across political territories and ideological divides; and six, global historians recognize that networks

of exchange are fluid – that is the networks are constantly transformed in time and space – as their geographic boundaries change with time and shift in centers of power, older networks overlap and intermingle with newer networks.¹ As a paradigm, global architectural histories of Modernism are not bound to a place as a spatial unit of analysis based on political boundaries, such as a nation-state. Further, these histories uncover how Europe was entangled in a highly globalized milieu that relied on the colonial mobility of goods, raw-materials, people, ideas, and aesthetics – therefore, architectural Modernism emerged in this context ought to be influenced by the cultural encounters with colonial territories and intercolonial networks across Empires. A multilateral flow of ideas and mobility are crucial to understating the global paradigm in Modernist histories.

Émigré and Immigrant Architects as Agents of Global Narratives of Modernism

As agents of globalization and the mobility of Modernism, émigré and immigrant architects have played a significant role in cross-pollination of ideas, experiments with new forms, emergence of novel ideas and hybrid discourses. Émigré and immigrant architects who moved to the USA such as Walter Gropius (1883-1969), Josef Frank (1885-1967), Mies Van der Rohe (1886-1969), Marcel Breuer (1902-1981), Josep Lluís Sert (1902-1983), Rudolph Schindler (1887-1953), Richard Neutra (1892-1970), and Julius Posener (1904-1996) are credited with transforming American Modernism. However, the life-experiences and transformation of émigré architects such as – Bruno Taut, Bernard Rudofsky (1905-1988), Ernst May (1886-1970), Erich Mendelsohn (1887-1953), and Otto Königsberger – who emigrated numerous times offer a unique lens into how travel, multiple sequential exiles, and sustained culture-contact with different societies exposed these architects to the limits and polemics of Modernism and modernization. Bruno Taut initially emigrated from Germany to the Soviet Union

in 1932, then sought refuge in Japan in 1933, and finally, lived in Turkey from 1937 onwards, where he worked on numerous architectural commissions. In 1932, the Viennese architect Bernard Rudofsky emigrated to Capri in Italy, where he studied Mediterranean vernacular. In 1938 he sought refuge in Latin America to live in Buenos Aires in Argentina, and subsequently in Rio de Janeiro and to São Paulo in Brazil. He eventually arrived in the USA in 1941, where his most significant contribution was the MoMA's 1964 exhibit *Architecture without Architects* – an archive of Bernard Rudofsky's photographs in exile of vernacular and folk architecture. The exhibit was viewed as a critique of Modernist architecture and urbanism. The German architect Ernst May, initially emigrated to the Soviet Union in 1930, where worked on the planning of new towns. Subsequently, in 1934 he emigrated to East Africa, where he farmed on a coffee estate in Tanganyika (now part of Tanzania) and later moved to Nairobi in the neighboring nation of Kenya to work as an architect and a planner. He returned to Germany in 1953 and worked in Hamburg. Erich Mendelsohn emigrated to the USA in 1941, after a brief interlude in England in 1933 and working in Palestine in the late 1930s. These architects offer an interesting lens into Modernism's global trajectory and the postwar critiques of Modernism based on placelessness.

Otto Königsberger and his Many Exiles

Otto Königsberger was a Berlin-trained modernist German émigré architect who arrived in Mysore State (now part of the Indian state of Karnataka) in British India. Sir Mirza Ismail (1883–1959), the *Dewan* [Prime Minister] of Mysore from 1926 to 1941, invited Otto Königsberger. Mysore was a South Indian princely state under indirect British rule from 1799 to 1831 and subsequently, from 1881 to 1947. After independence from British rule in 1947, Otto Königsberger was appointed as a planner and architect to the Indian Federal government in 1948. The Partition of the Indian sub-continent in 1947 created a huge demand for housing for the refugees that emigrated into India from East Pakistan (now Bangladesh) and West Pakistan (Pakistan). Otto Königsberger proposed prefabricated housing units to produce high quality shelter quickly, which failed due to a poor case of technology transfer. In 1951, he emigrated from India to London and in 1954, founded the Department of Tropical Architecture at the AA School of Architecture. Tropical Architecture in the 1950s was rapidly emerging as a particular type of modern architecture that was suited for sultry climates in the decolonizing tropics and was a clear departure from older strains of tropical architecture, which comprised revivalist buildings adapted to the tropics. Otto Königsberger headed the Department of Tropical Architecture from 1957 until its closure in 1971. Subsequently, he established an academic home for the discipline of urban planning – the Development Planning Unit – at the University College London in 1971, which he led until he retired in 1988. He died in London in 1999.

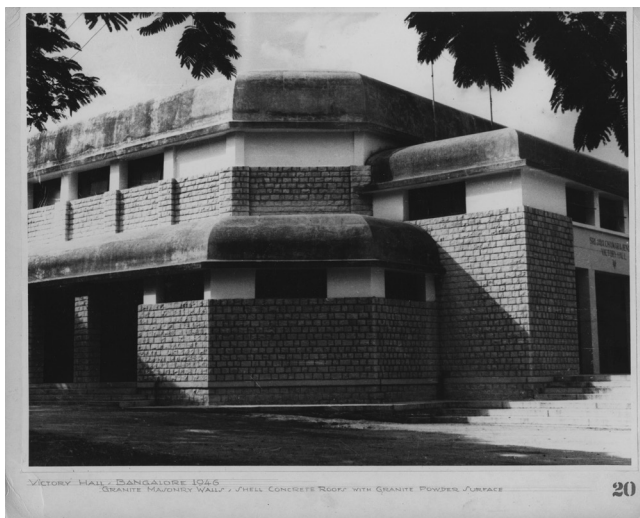
From Berlin to Cairo and Davos

Otto Königsberger's complex career included five broad phases. The first phase of his career comprised his training as a modernist architect from interwar Germany. From October 1927 to December 1931, he studied at the Department of Architecture and Town Planning in the *Technische Hochschule* [Technical College] in Berlin (renamed in 1946, as the *Technische Universität Berlin*) to acquire a Diploma of Engineering with a specialization in Architecture and Town Planning. From 1932 to 1933 he worked as an architect in the University Building Department, Prussian State Government in Berlin. On April 7, 1933 the Third Reich implemented the *The Law for the Restoration of the Professional Civil Service*, which required civil servants of “non-Aryan” descent to be dismissed from civil service. Being of Jewish ancestry, Otto Königsberger was fired from his job. The second phase of his career began in 1934, when he joined the German-Jewish Egyptologist Ludwig Borchardt (1863–1938) in Cairo at his archeological institute *Ludwig Borchardt Institute*, which is now the Swiss Research Institute on Egyptian Architecture and Archaeology in Cairo [*Das Schweizerische Institut für Ägyptische Bauforschung und Altertumskunde in Kairo*]. Borchardt studied structural engineering at the *Technische Hochschule* in Berlin, and was the director of the Imperial German Institute for the Study of Egyptian Antiquities in Cairo [*Kaiserlich ägyptische Altertumskunde in Kairo*] from which he retired in 1929 to establish his own private institute. Based on his work with Borchardt in Upper Egypt on the building history of the 18th Dynasty, Otto Königsberger completed a PhD Thesis titled *Die Konstruktion der ägyptischen Tür* [The Construction of the Egyptian Door] and earned a Doctorate of Engineering in February 1935 from the *Technische Hochschule* in Berlin. He developed Tuberculosis and came to recuperate in St. Josephs-Haus in Davos from 1936 to 1938. While in Davos, he also worked as an architect for J. Grasshoff in Germany and Switzerland.

From Europe to India

The third phase of his work in India as an architect and planner, was shaped by the Mysorean Regime which demanded that he build with restrictions on industrially produced materials, which he theorized in terms of how to produce Modern architecture without industrial modernization. In 1939, Otto Königsberger arrived in Mysore State as an émigré architect at the invitation of Sir Mirza Ismail, the *Dewan* of the State from 1926 to 1941. Otto Königsberger started working for the Government of Mysore on April 13, 1939. Otto Königsberger was appointed as a consulting architect in 1939 and later Chief Architect (1940–1948) in the Mysore Public Works. He began his career during the reign of Maharaja Krishnaraja Wodeyar IV (1884–1940), who ruled Mysore from 1894 to 1940. After Krishnaraja Wodeyar IV's death, Otto Königsberger continued working for his successor Maharaja Jayachamaraja Wodeyar (1919–1974), who ruled Mysore from 1940 to 1950.

01 Otto Königsberger, Victory Hall (now Bal Bhavan), Bangalore (renamed Bengaluru), Karnataka, India, 1945. © Otto Königsberger Archive, aa Archives, London.



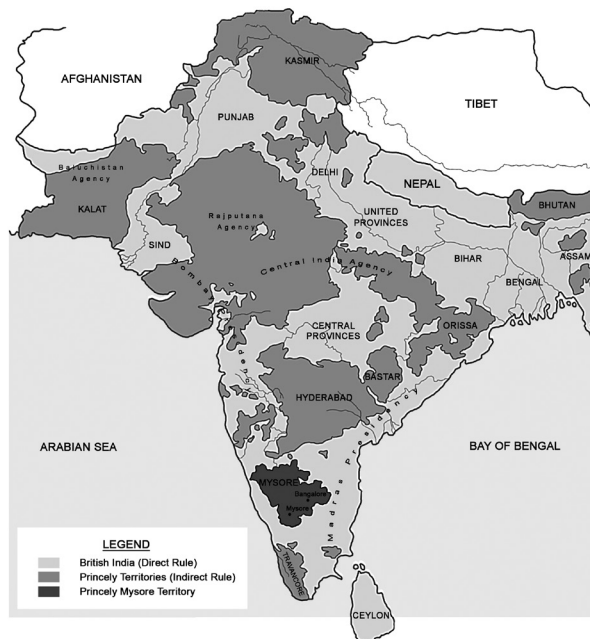
On September 3, 1939, the day Britain declared war on Germany, Otto Königsberger was interned as an enemy subject in the Bangalore Internment Camp and was released by the orders of the President of the Interrogation Committee issued on October 17, 1939. While in the Internment Camp, Otto Königsberger continued to work for the Mysore Government and receive his regular salary. As the state architect in Mysore (1939-1948), he designed large-scale projects such as factories, educational institutions, car showrooms, and hospitals. But a significant part of his *oeuvre* was numerous small-scale, low-end, simplistic buildings on frugal budgets – small schools, clinics, offices, police stations, palace extensions, garages, pavilions, and bus shelters. I use one project that best represents his work during his time in Mysore. In 1945, Otto Königsberger designed the Victory Hall (now Bal Bhavan) in Cubbon Park, Bangalore. He noted that the driving force in his design was the response to the shortage of cement and steel. He used locally abundant granite masonry for load-bearing walls and concrete vault shells for roofs over the lobby and the verandas.²

While serving as the chief architect of the Public Works Department in Mysore, Otto Königsberger also worked as an architect for private clients, which were often other Maharajahs, and as a planner for industrial entrepreneurs. In 1945, Otto Königsberger prepared plans for the industrial town of Jamshedpur for the Tata industrial group – a Parsi entrepreneurial family that established industries in British India. In 1948, he served as a planner for Bhubaneswar, the capital of Orissa (now Odisha) to create a master plan based on neighborhood unit planning. Later that same year, Otto Königsberger moved to New Delhi and became the Federal Director of Housing (1948-1951) for the Ministry of Health in the newly formed Union of India.

Indian independence was accompanied by the brutal Partition of British India into two nation-states – India and Pakistan. A total of seven and a half million non-Muslims

emigrated – five million people fled from West Pakistan (mostly Punjab), and two and a half million came from East Pakistan (Bengal) into India. Otto Königsberger's work in New Delhi involved both planning and architectural projects to resettle Partition refugees. He created the plans for the New Town of Gandhidham (1950) in Gujarat. In addition, he worked as a consultant for the plan of Faridabad in Haryana (planner: P. L. Varma, 1949) and Rajpura in Punjab (planner: Dharam Khler, 1950).

Jawaharlal Nehru, the first Prime Minister of India, was under immense pressure to rehabilitate Partition refugees and he sought Otto Königsberger's expertise for an expeditious housing project to resettle the displaced population. In 1949, Otto Königsberger set up a prefabricated housing factory in Jungpura, New Delhi, to mass-produce houses for Partition refugees. As the Federal Director of Housing, which was part of the ministry of health headed by Rajkumari Amrit Kaur (1889-1964), this project was part of the Nehruvian welfare state apparatus in which the state would provide housing to rehabilitate refugees who had emigrated to India to become citizens. Otto Königsberger designed an Alcrete prototype in collaboration with A. F. Hare, a British architect.³ The British Alcrete house was a two-story prefabricated semi-detached residential unit assembled from factory-manufactured modular components for walls, roofs, doors, windows, floors, and dividers.⁴ Based on the British Alcrete model, an Indian single-storied version was made with autoclaved foamed concrete panels. Foamed concrete is a kind of concrete that is made with aggregates, cement, and a foaming agent that causes the concrete mix to capture numerous small bubbles of air



02 Map of India in the early 20th century showing princely states and Mysore State. Drawing by Christopher M. Hostettler on the basis of a map of India from Sir Adolphus William Ward, G. W. Prothero, Sir Stanley Mordaunt Leathes and E. A. Benians, *The Cambridge Modern History Atlas*, London, Cambridge University Press, 1912.

or gas. Thus, it consumes less material and, with air or gas entrapped, provides excellent insulation. The prefabricated units were produced in collaboration with Structural and Mechanical Development Engineers (SMDE) Limited and the Building Research Station at Watford, UK. This project was meant to be the utopian embodiment of Otto Königsberger's notions of universal Modernism – a mass-produced, prefabricated, modular house with industrially manufactured modern materials. Unfortunately, the prefabricated units failed because the foamed concrete panels cracked. The episode resulted in a huge uproar in the Indian parliament, which led to Otto Königsberger's resignation in August 1951 and his subsequent move to London. His repertoire of buildings in Mysore shaped his ability to work with available materials and technologies. Through his career in India, he learnt to work with the limited availability of modern materials such as cement, steel, concrete, and glass. He studied how to design buildings that could function without fossil-fuel-generated mechanical air-conditioning in hot climates.

Tropical Architecture as a Global Discourse

The fourth phase was his career in London as an architectural educator through which he actively theorized climatic design and planning paradigms for the tropics. In 1953 the AA School of Architecture formed an advisory committee comprising Otto Königsberger, George Anthony Atkinson, and Leo De Syllas to prepare a detailed curriculum plan for the Department of Tropical Architecture.⁵ In its initial stages of operation, the Department of Tropical Architecture was heavily focused on quantifying climatic design architectural components such as – sunshades, ceiling heights, windows, wall thickness, and plan-types that would create maximum comfort in hot and humid, and hot and dry climates. The department went through several programmatic transformations which were reflected in its name change to Department of Tropical Studies in 1961, signifying its shift to training educators in the tropics, and by 1969 the department leaned heavily towards developmental issues of tropical urban planning was therefore named Department of Development and Tropical Studies.⁶ For the purposes of this article it will be referred to it as the Department of Tropical Architecture. Apart from Otto Königsberger, the other teachers at the AA Tropical Department were – George Anthony Atkinson, Fello Atkinson (1919-1982), Hope Bagenal, T. Bedford, G. P. Crowden, Leo De Syllas, Jane Drew, D. Forde, Maxwell Fry, Alfred Harries, and J. McKay Spence.

Fello Atkinson graduated from the AA in 1936 and joined James Cubitt and Partners (founded 1948) – an architecture firm that accomplished several projects in Ghana, Sierra Leone, Nigeria, Libya, Iraq, Burma, Malaysia, Singapore, Brunei and Sabah. James Cubitt and Partners' work included the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana (1953), built in collaboration with Kenneth Scott, which used natural conditioning techniques for cross-ventilation, shallow building plans, and lattice-wall structures that worked well without air-conditioning.⁷ Ghana, the first sub-Saharan

African colony to achieve independence, embarked upon an extensive tropical modernist building program in the service of nation-building. Ghana's first president, Kwame Nkrumah (1909-1972), embraced tropical architecture and welcomed British architects. Maxwell Fry, Jane Drew, James Cubitt, and Kenneth Scott, who had already built in Ghana since the end of the WWII, continued working on institutional projects with the new nation-state as their client. These architects often imported British manufactured construction materials – such as acoustic boards, adhesives, aluminum products, asbestos cement products, hardware, building paper, chemical products, cement finishes, cast-iron pipes and fittings, copper piping and brassware, patent ceilings, roofing felt, glass products, galvanized pipes, sanitary fittings, glazed wall tiles, water heaters, and insulating materials.⁸ In addition, they often imported mechanical equipment such as air-conditioning plants, electrical equipment, mechanical fittings, and firefighting equipment. As a consequence, their work stood in stark contrast to the existing building stock.

The career trajectories of the architect educators at the AA's Department of Tropical Architecture reveals the heightened intellectual mobility between the tropics and London in the development of tropical architecture as a discourse. Like Otto Königsberger, these architects were agents who brought the knowledge acquired through building in the tropics back to London, to be then disseminated along the networks of the Empire. However, Otto Königsberger's career trajectory differed from the British AA architects in Africa on three counts. One, the AA architects in Africa were based in the UK and treated the tropics as an extension of their practice at *home*, while Otto Königsberger was based in India during his architectural career. Two, they had been recruited for large-scale institutional projects and high-end residences that were *intended* to be modernist, while Otto Königsberger had worked on large-scale projects that were both revivalist and modernist, some where he had free reign to implement the tenets of Modernism, and several low-end, small-scale, and simplified projects that were built on frugal budgets. Three, while the AA architects often used British-made industrial construction materials in Africa, Otto Königsberger acquired hands-on experience by using local materials and low-end technologies. Except in the prefabricated housing project in New Delhi in which he used British-made products, in Mysore he was required to use state-manufactured materials. He also left India with the ability to work with a range of clients – including semi-sovereign actors such as *Maharajabs* with a notion of monarchical nationalism, independent entrepreneurs, and finally the newly formed Indian nation-state, where Jawaharlal Nehru, the first Prime Minister, embraced architectural Modernism with the intent of homogenizing the nation. Otto Königsberger operated in a small autonomous sphere at the margins of the colonial building enterprise, where he had to negotiate a vast range of ideological agendas that were associated with diverse ideas of Modern architecture and planning.

In addition to teaching at the AA, he worked as a planner on United Nations housing missions with the American

planner Charles Abrams (1901-1970) to advise new governments on planning in tropical cities. His collaborations with Charles Abrams on United Nations Housing missions included Ghana (1956), Pakistan (1957), The Philippines (1959 and 1978), Singapore (1963), Zambia (1964), Lagos (1964), Ceylon (1966), Brazil (1968), and Penang (1970). Based on his planning assignments, Otto Königsberger theorized the planning paradigm called “Action Planning”, which acknowledged the limits of the British master-plan-based planning methods in the tropics and the need to develop more nimble, fast-changing action plans that were more suited for cities that were exploding in population.⁹ Theoretically speaking, Action Planning was a critique of a global top-down planning paradigm. The fifth phase of his professional life comprises his career as a planning educator at the Development Planning Unit at the University College London. It is based on his Indian experience and his UN housing missions with Charles Abrams that Otto Königsberger would eventually declare that universal architectural and planning paradigms do not work, which formed the intellectual foundation of the *Manual of Tropical Housing and Building* (1974).

Manual of Tropical Housing and Building

Otto Königsberger's career resulted in a treatise on tropical architecture, *Manual of Tropical Housing and Building*, which was written in collaboration with his AA colleagues T. G. Ingersoll, Alan Mayhew, and Steven Szokolay; and published after the closure of the Department of Tropical Architecture in London.¹⁰ The *Manual* is based on the key problems that shaped Otto Königsberger's career – questions of urban housing delivery, climatic design, and vernacular architecture – which continue to be heavily contested in contemporary debates. The *Manual's* key questions were: one, how to solve the unrelenting demand for housing in the rapidly urbanizing cities of Asia and Africa that required quickly mass-produced houses, without an industrial infrastructure and a large capital; two, how to build urban housing within energy and material limitations; and three, how can vernacular architecture, if at all, be used in solving the housing problem in the tropics. The *Manual* starts with the notion that “western” ideas of welfare-state housing and masterplan-based planning have not produced the intended results in the Asian and African regions, which is something that Otto Königsberger and international planning experts acknowledged widely in the 1960s. The treatise is focused on architectural solutions for urban housing and a large part of the book is devoted to climatic design. *Manual of Tropical Housing and Building* offers an interesting lens to examine the global histories of Modern architecture. It is a palimpsest of, not only Otto Königsberger's career, but, an archive of the changing contours of the relationship between Modernism and globalization of technologies.

Otto Königsberger's career trajectory is a consequence of macro-historic global events such as the ideological transformations of Germany, WWII, Indian independence, the disintegration of the British Empire and the formation of the Commonwealth, the end of *Pax Britannica* and

beginning of *Pax Americana*, the establishment of transnational organizations such as the United Nations, and the Cold War.

As an agent of globalization, Otto Königsberger's architecture and planning paradigms were constantly shaped and reshaped through his interactions and work with a variety of global actors – Egyptologists; Public Works engineers, and architects under Maharajahs; entrepreneurs; nation-states; his students at the AA, and the inhabitants of the cities – who eventually provided constant critiques of the global top-down planning and architecture paradigms.

Notes

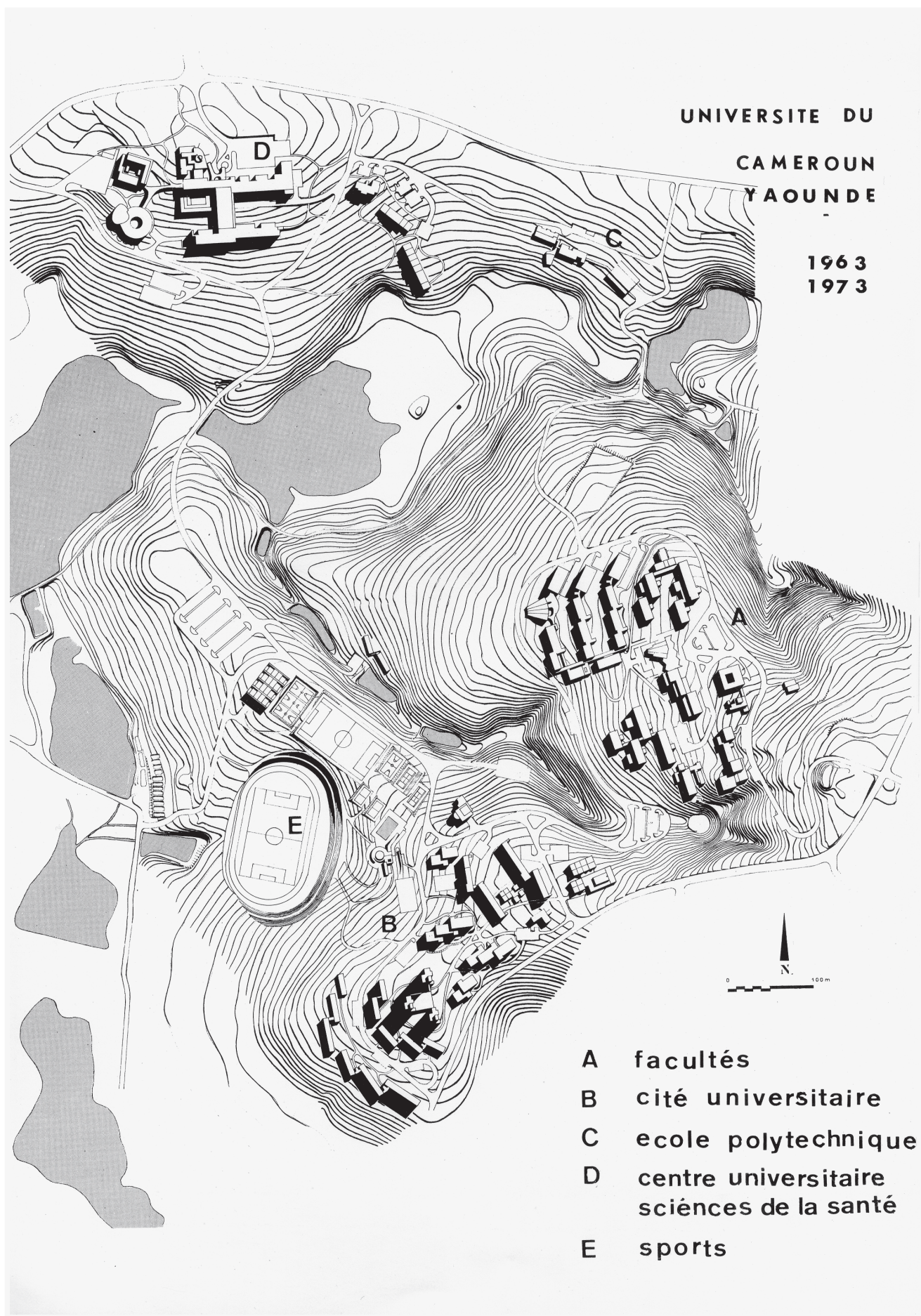
- 1 Sebastian Conrad, *What Is Global History?*, Princeton, Princeton University Press, 2016.
- 2 Otto Königsberger, “The Victory Hall at Bangalore”, *Marg*, Vol. 4, No. 3, Bombay, The Marg Foundation, 1950, 25-26.
- 3 Anon., “Factory Produced Housing in India”, *Architect and Building News*, Vol. 197, No. 24, London, Building and Contract Journals Ltd., 24th February 1950, 217-218.
- 4 Anon., “The Alcrete, Permanent, Prefabricated, Two-Storey House”, *Architect and Building News*, Vol. 190, London, Building and Contract Journals Ltd., June 1947, 210-215.
- 5 J. McKay Spence, “The New Role of the Architect in the Tropics,” *Architectural Association Journal*, Vol. 71, London, AA, July-August 1955, 56-50.
- 6 Patrick I. Wakely, “The Development of a School: An Account of the Department of Development and Tropical Studies of the Architectural Association”, *Habitat International*, Vol. 7, No. 5, Elsevier, 1983, 337-346.
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Monuments of Country, Climate and Culture: Michel Écochard and the Design of the Postcolonial Tropolis

BY TOM AVERMAETE

The French architect and urban designer Écochard, was one of the numerous architects that designed buildings and cities for newly independent nations in the post-war era of decolonization. Many of these young nation states were in search for urban and architectural projects that would explicitate a “proper” model of modernization that differed from that of the former colonizer. This essay argues that the principles of tropical architecture would play a key role in representing and monumentalizing such an alternative model of modernization.

Although the architecture of the buildings will express modern teaching and scientific requirements, the university will reflect the influence of traditional and local environmental conditions.¹

These words by French architect and urban designer Écochard, written in 1962 at the occasion of the presentation of his project for the University of Karachi, illustrate the paradoxical condition in which many architectural professionals were working during the post-war era of decolonization. Numerous architects and urban designers started to perform under the flag of “development aid.”² Commissioned by national governments or international organizations such as the United Nations, but also in “cooperation” with the governments of young nation states, they designed buildings, neighborhoods and cities that reflected the local aspirations of modernization.

However, many of the young nation states were explicitly in search for urban and architectural projects that would represent a “proper” model of modernization that differed from that of the colonizer. They were seconded by designers like Écochard, for instance, who argued on the new city of Karachi:

Pakistan being a young State should construct a town that will be in the forefront of progress and take account of the errors made by the West in the beginning of the machine age.³

Finding, time and time again, an architectural and urban expression for an indigenous idea of modernity would become one of the main challenges for international expert architects and urban designers as Écochard.

Against this background, the knowledge field of tropical architecture, which was originally articulated by architects and urban planners in the French colonial context of the

1930s, would gain a renewed importance in the decolonizing condition of the 1950s and 1960s.⁴ The insistence of the theories of tropical architecture on the responsiveness to local conditions, offered the opportunity to be reinterpreted: not as a matter of hygiene or comfort, but rather as the prime expression of local logics and identity. This would also become the case in the work of Écochard who in the late 1950s and the early 1960s practiced simultaneously in such different decolonized contexts as Pakistan, Guinea, Ivory Coast, Congo, Senegal and Cameroon.

Though not heavily theorized, the principles of tropical architecture would become an integral part of Écochard’s urban design approach, which was based on such parameters as the “direction of wind”, “the provision of shade” and the relation to “topographical conditions.”⁵ In the city of Karachi, for instance, Écochard insisted that

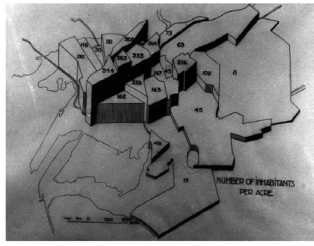
In a country where the wind plays such an import part in the comfort of the inhabitants, the right orientation of houses will be the principle factor in the arrangement of the urban district.⁶

In order to deploy this knowledge on tropical architecture within his urban design projects in various countries, Écochard worked with a specific set of tools. He gradually developed a toolbox for urban analysis and intervention that allowed him to mediate between the generalizing character of his transnational practice and the specific tropical properties of the various cities in which he worked.

Diagramming the Local

The first tool that relentlessly appears in Écochard’s practice is the diagram. When arriving in a new context Écochard always drafted diagrammatic representations of the encountered condition. From the late 1940s he developed

01 Michel Écochard, *First UN report: Note on Refugee Work*, Karachi, 1953, diagram of urban densities. © Aga Khan Trust for Culture (AKTC).



(fig 1) Density in the present city
There are in the city very crowded wards - 200.000 people must be removed from these places - With the 350.000 refugees without houses, that gives a total of 550.000 people who need house, about half of the city's population

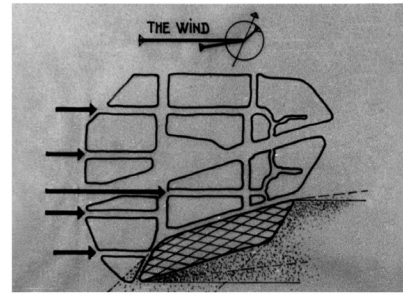
an elaborate system of black-and-white representations in which he could identify the climatological, economic, social and geographical logic that were underlying the various urban and territorial conditions that he encountered. Sometimes these infographics dealt with larger national or geographic logic, in other instances – they traced small-scale material rationales in the built environment. This is for instance visible in the study that Écochard undertook off the refugee problem in Karachi, where a large analysis of urban densities is combined with an intricate reading of the directions of winds.

The diagrams of Écochard were not only directed at his own collaborators and offered a rational basis for further planning interventions, but also graphically articulated a *lingua franca* to discuss the urban issues with the different involved actors. Together with photographs they acted as a knowledge base for the discussion on the existing condition with local politicians, administrators, constructors, architects and urban planners. Beyond their role as common ground for discussion, the diagrams also provided evidence to deconstruct pre-established conceptions. Écochard was extremely critical about the preconceptions that were held in the discipline of urbanism and held that a rational survey was an appropriate vehicle to deconstruct these. At several occasions he would use his diagrams to go critically disentangle the standard, often Western, solutions to urban design.

For Écochard this graphical survey of the existing conditions was the *conditio sine qua non* of transcultural practice. He criticized the blindness of urban planners, who did not take into account variances in culture, climate, economy and geography in their plans. For instance when he was, in the late 1950s, advising on Karachi he claimed that too much of the planning proposal was:

*a theoretical plan which (...) does not take account of either the character of the housing or kind of inhabitants or the topographical plan of the land... (...) without a study of the existing buildings (...) without any study of the economy of the city, its social conditions, its refugee problem, its physical features.*⁷

02 Michel Écochard, *First UN report: Note on Refugee Work*, Karachi, 1953, diagram of wind directions. © Aga Khan Trust for Culture (AKTC).



(fig 7) The town is planned in such a manner that all open spaces provided in the city are favourable to main wind direction—

Against this background, Écochard made a plea for more detailed surveys that would take into account

*geographic balances, the development of certain cultural zones, the longstanding relation of people and territories, (...) surveys that follow the dynamism of urban development.*⁸

The graphical survey acted for Écochard as an analytical tool that paradoxically established a relation of proximity between the – by definition – distanced practice of the transcultural urban designer and the particularities and exigencies of the local condition.

The question of the Tropolis

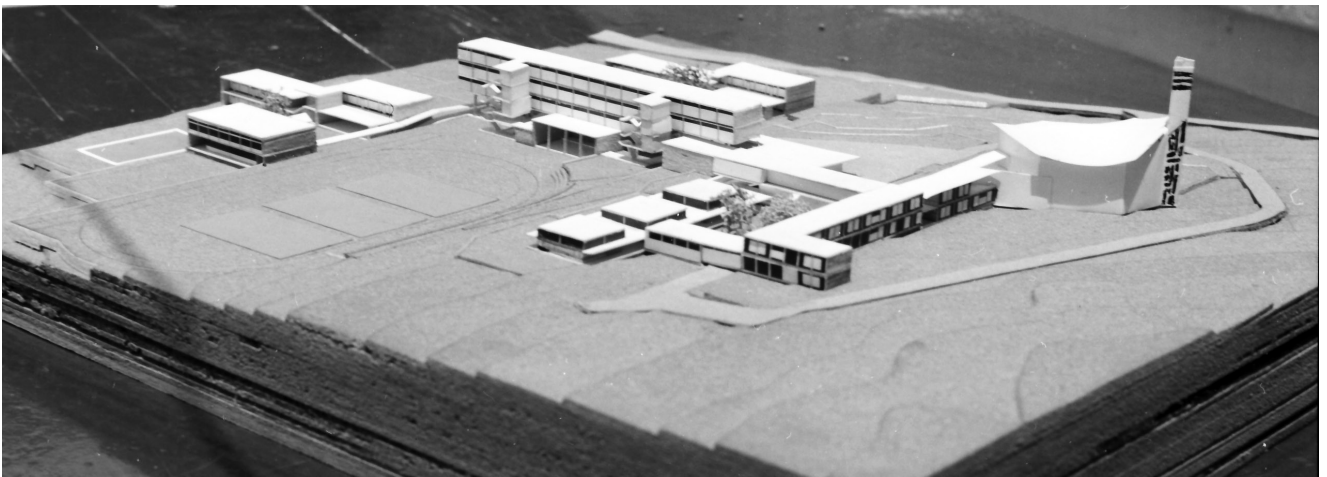
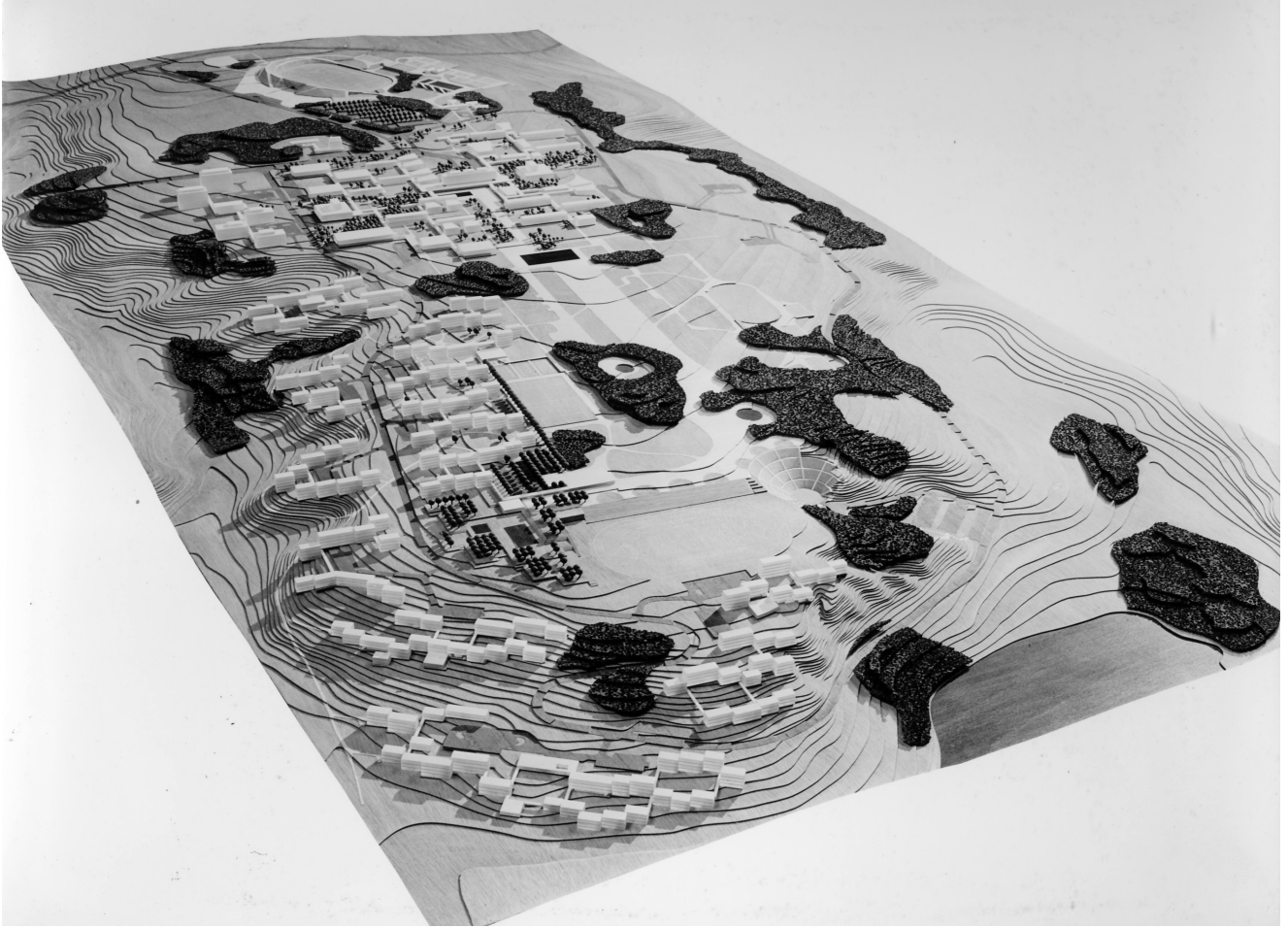
Transcultural practice had not only an effect on the way of analyzing the existing environment, but also on Écochard's definition of what an architectural and urban design entailed. Working in a postcolonial context, Écochard was confronted with two big challenges. The first challenge that Écochard had to face was related to the rapidly developing context in which he was working. For Écochard working in different cultures and in decolonizing contexts also implied working with various unknown logics and temporalities in the built environment:

*the notion of time will always be there. It needs to be considered as one of the most important factors, because even when the work is perfect and fully adapted to man at this instance, it will be nothing if it will not be able to be there for him in the following instances.*⁹

Hence, much of Écochard's work can be understood as a search for an architecture that could anticipate these unknown parameters in the built environment:

*The closer you come to man as a social being, that is to a human group, and the larger this human group, the more the fluctuations of time are sensible, and the more they are delicate and difficult to define – it requires thus a suppleness, a flexibility of all the elements that you juxtapose.*¹⁰

03 Michel Écochard, University of Ivory Coast, Abidjan, 1961-1964, model of the way that the various buildings are located in the territory. © Aga Khan Trust for Culture (AKTC).



04 Michel Écochard, University of Yaoundé, Cameroun, 1963-1967, general urban plan. © Aga Khan Trust for Culture (AKTC).

A second challenge that Écochard faced was the result of his professional engagement with specific postcolonial contexts. Very often, the governments that were commissioning Écochard were in search of a new architectural and urban expression that would fit and amplify the specific ambitions and the identity of the young nation state. In order to confirm their independence, many of these governments started to invest in important building programs such as universities, schools, and hospitals, which would manifest the progress and development of the young nation state. New cities and housing neighborhoods were also considered as expressions of a thriving independent country.

Realizing these programs, but also finding an adequate architectural and urban expression for them, would become a main issue in many African countries from the late 1950s. Paradoxically, very often the newly independent countries relied upon expertise from the Metropole, and thus from the previous colonizer, to pursue this task. For an architect and urban designer such as Écochard, who was, from the beginning of his career, firmly embedded in the colonial venture, working both in the Levant and in Morocco, this must have represented a profound challenge. However, as late as the 1950s we see a modification emerging in his work – particularly in his education projects – which clearly testifies to his engagement with postcolonial contexts and nation states.

Education was a very important program for many young nation states. It illustrated progress, but it also encompassed the ambition to educate an “own” national technical and political elite which could govern the country. Hence, it is not by coincidence that for Écochard the program of higher education would become an important field of experimentation. In the beginning of the 1960s Écochard received commissions for no less than three large African university campuses: the University of Ivory Coast (Abidjan, 1961–1964), the University of Congo (Brazzaville, 1963) and the University of Yaoundé (Cameroon, 1963–1967).

Abidjan: The Country's Territory as Structuring Device

The campus of the University of Abidjan was initiated – as a cooperation between the Government of Ivory Coast and the French Ministry of Foreign Affairs – in the beginning of the 1960s to become a new institute of higher education for no less than 12,000 students. The urban and architectural strategy was developed by Écochard in cooperation with Bernard Huet (1932–2001), Philipp Langley and Ali Afkhami Sardar (1929–).¹¹ It was managed and realized by the Société Centrale d'Équipement du Territoire-Coopération, the international development aid branch of the French *Caisse des Dépôts et Consignations* (CDC).¹² The university was to be planned on a vacant hilly terrain of 130 hectares which bordered the Ebrie lagoon.

The starting point for the design of the university campus was a reading of the territory. As was often the case, Écochard's team commenced with a fine-grain survey of the terrain, which involved recording by photography and drawing. This would offer the team a detailed understanding of the topographical and material qualities of the site.

05 Michel Écochard, University of Ivory Coast, Abidjan, 1961–1964, aerial view of Science Faculty and the research buildings in the territory of Abidjan. © Aga Khan Trust for Culture (AKTC).



In the theories of tropical architecture, the characteristics of the terrain were often discussed as important parameters in the choice for a building site that was resistant to floods or storms. For Écochard, however, the features of the terrain would become the decisive foundations for the urban design of the campus. Écochard's project is typified by strong and precisely designed infrastructural elements such as roads, covered walkways and terraces. In their interplay with the existing natural features of the terrain, these elements rearticulate the landscape into a precisely defined topography of cultural and natural elements. This man-made topography does not only articulate a set of new collective spaces on the campus but, more importantly, also introduces a strong frame of spatial definitions that delineate the outlines for future development. In Écochard's view, this topographical frame would act as the perennial element for the future alterations and extensions of the campus. He maintained that the local landscape provided a perennial infrastructure on which the university campus could grow and develop, as well as transform.

Above all, the landscape of Abidjan offered Écochard the possibility to provide a monumental outlook to the university which would adequately express the importance of the new national center of research and education. Écochard carefully situated the main public functions, such as the rectorate, meeting spaces and sports infrastructure on the highest point of the site. As a linear agora, they dominate the site and offer a monumental expression to the new national public institution. In between this public spine and the main road which describes the contours of the site, the different faculties and student housing branch off into the valleys of the landscape. Landscape and architecture jointly contribute to the monumentality of the university.

06 Michel Écochard, University of Congo, Brazzaville, 1963, Nain university building with concrete barrel vaults that function as a climatic roof that are offer monumental expression. © Aga Khan Trust for Culture (AKTC).



07 Michel Écochard, University of Yaoundé, Cameroon, 1963-1967, view of the main buildings. © Aga Khan Trust for Culture (AKTC).

Brazzaville: Climate as Marker

Another example of a higher education institute that played an important role for a newly independent nation state was the Centre d'Enseignement Supérieur in Congo-Brazzaville. After French Equatorial Africa had been dissolved in 1958, Congo-Brazzaville became the Republic of the Congo, an autonomous colony within the so-called French Community. It was only in 1960 that the country became independent with Fulbert Youlou as President.

In the Congo-Brazzaville of 1960, education was still largely in the hands of religious Catholic and Protestant schools and there was no university. One of the first programs that the independent government initiated to confirm its sovereignty was to instigate higher education.¹³ Paradoxically such a gesture of independence was made in cooperation with the former colonizer. On 15 August 1960, the very day of the Congo-Brazzaville's independence, an agreement was signed between France and the states of equatorial Africa – with the exception of Gabon – to construct a Centre of Higher Studies in Brazzaville.¹⁴

Together with the French Ministry of Cooperation Écochard and his team,¹⁵ developed a new *Cité Universitaire* in the form of a large campus. The project involved student residences, as well as faculties of science, arts and law, a library, an administration building, an amphitheater and a restaurant. These various components of the university program were designed as independent buildings. With a maximum height of three floors, these buildings were articulated in a modern idiom and carefully situated in the landscape – echoing the approach of the University of Abidjan. The character of the buildings, I would argue, emerged from the way that they engaged with the issue of climate.

In the theories of tropical architecture architectural elements – such as shade, perforated walls and *brise-soleils* – were seen as important factors in the improvement of the climatic comfort of buildings. In Ecochard's projects, these elements would continue to temper the interior environment, but would also receive another role: to monumentalize the new buildings. Though the buildings of the university of Brazzaville might at first glance be perceived as conventional modernist structures, at closer look the buildings engaged with climatological issues in quite outspoken and particular ways. The different faculties and administration buildings were given extreme deep facades, with galleries, canopies and other elements cantilevering far beyond the envelope of the building. These cantilevering elements provided shade to the buildings that had otherwise largely open facades, but also offered them a solid presence on the campus. The thick facades of the modern buildings appeared in the landscape as recognizable frames that spoke of the relation to the local climate. As such, these thick facades introduced a very modern and indigenous idea of monumentality.

In some of the buildings on the campus this monumental effect was heightened by adding extra elements. Engineer Jean Prouvé (1901-1984) developed a system of *brise-soleils* for the main university building, but it was especially the concrete barrel vaults, which functioned primarily as a

climatic roof that provided shade, that manifested its monumental presence on the campus.

Yaoundé: The Test of Time and Building Culture

The University of Yaoundé also emerged as a response to the independence of Cameroon in 1960. Since its inception in 1961, the mission of the University was to make a contribution to the specific needs related to the governance of the young nation State, by teaching public administration, education, security, diplomacy and law.¹⁶ The Cameroonian government and the French Ministry of Foreign Affairs cooperated for the realization of the university. The Cameroonian government provided the land of a splendid palm grove of 80 hectares which had been developed into fish ponds, and the French government was responsible for funding the design studies and the construction.

The university was composed of three faculties – science, law and humanities – and aimed to accommodate, in a first instance, 2,000 students, within a period of 10 years to be expanded to 4,000 students. The campus also included a foyer and restaurant, an athletics stadium with international dimensions, training grounds for tennis, volleyball and basketball, an indoor gymnasium, a swimming pool and a student club.

At the University of Yaoundé campus we see that Écochard and his team use some of the same principles as we have encountered in the other African university campuses. In this project, the landscape plays a structuring role. The various buildings are carefully situated on the highest point of the landscape and the topographic characteristics create several sub-divisions in the larger university campus. Just as in Brazzaville, climatological elements are used to give the buildings a certain presence in the landscape and on the campus. Thick facades, cantilevering elements, the *brise-soleils* of Jean Prouvé and covered walkways determine the outlook of the various clusters of buildings on the university campus.

What is most apparent on the University of Yaoundé campus is, however, the use of local materials and building techniques, in addition to concrete elements. To be more precise, the campus buildings are conceived as sturdy concrete infrastructure with an infill of natural stone and local wood work. Reinforced concrete with a rough finish is used for the load-bearing walls or for the large retaining walls in the landscape, while the natural stone and wood is applied for infill and non-retaining landscape elements.

For Écochard this double architectural language was not by coincidence. Quite on the contrary, he maintained that this double code offered a suggestion for future adaptation and development: "A strong frame with a lighter infill. The announcement of future changes."¹⁷ Echoing his approach on the level of the entire campus Écochard maintained that the role of the international architect had to be restricted to the provision of a strong and qualitative frame that could adapt to the changing aspirations and needs of the local citizens. His idea was that the transnational expert would provide a robust frame in which the

local cultures of building could unfold; a monumental infrastructure that could perform throughout time.

Architecture and Architects of the Tropolis

In his university projects, Écochard was time and time again confronted with the question of how to offer dignity and monumentality to the educational programs of young nation states, who had just thrown off the yoke of colonialism. The theories and perspectives of tropical architecture would play a central role in this venture, be it in a re-interpreted fashion. Connecting urban design and architecture to the local landscape, climate and building culture were for Écochard ways to give the new university campuses an expression that symbolized the identity of the nation state and reflected particular aspiration of higher education within the context of these independent countries. The principles of tropical architecture were brought to urban design, not only to improve comfort but also as a way to monumentalize – in an indigenous fashion – the modernization of the young nation states.

This idea of relating urban design to the tropical specificities of country, climate and culture – in other words of designing a tropolis – made Écochard also reflect upon his own role as transnational practitioner. Écochard saw his practice as a transcultural expert as complementary to the work of architects and urban designers that were working in a more local and situated fashion. The transcultural practitioner had to develop specific approaches and instruments to penetrate the specificities of the tropics, he maintained. Instruments like the diagrams allowed him to move rather smoothly between different cultural and climatic contexts and to act in all of these different contexts as an expert.

However, Écochard also made throughout his career a plea to have architects and urban designers “live with” the cities that they were planning and designing. He championed a “vigilant urbanism” in which architects and urban planners would be constantly on the lookout for cultural and climatic changes and react to them.¹⁸ This plea for a “vigilant urbanism” can be considered a paradox in the thinking of the transnational urban designer. It can, however, also be understood as Écochard’s recognition of the complexity of the task to define a proper architecture of modernization for the independent nation states – which by definition was related to the modernization models of the former Western colonizers, yet ultimately depended upon a refined knowledge of tropical climates and cultures.

Notes

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- 2 For an introduction into these architectural practices as development aid, see: Tom Avermaete and Maristella Casciato, *Casablanca Chandigarh: A Report on Modernization*, Zurich, Park Books, 2014.
- 3 Michel Écochard, *First report: Note on Refugee Work*, November 1953, 1.
- 4 For an introduction to tropical architecture in 1930s France, see: Jean Royer and S. E. Vivier, *L’Urbanisme Aux Colonies Et Dans Les Pays Tropicaux: 1*, La Charité-sur-Loire, Delayance, 1932. A critical discussion of the post-war networks of tropical architecture can be found in: Hannah Le Roux “The networks of tropical architecture”, *The Journal of Architecture*, 8:3, 2003, 337–354.
- 5 Michel Écochard, *First report: Note on Refugee Work*, November 1953, 1.

- 6 Ibid., 2–3.
- 7 Michel Écochard, *Casablanca: Le Roman D’une Ville*, Paris, Éditions de Paris, 1955, 44.
- 8 Michel Écochard, “Urbanisme dans les pays en voie de développement”, in *Cahiers du centre de formation des experts de la coopération technique internationale*, 5th session, November 1959, 11.
- 9 Michel Écochard, *Casablanca: Le Roman D’une Ville*, Paris, Éditions de Paris, 1955, 137.
- 10 Ibid.
- 11 The actual detailing of the different buildings was in the hands of architects Ducharme and Minost (Science Faculty), M. Boy (student housing), Renard and Semichon (Pharmacy, Law and Economy Faculties).
- 12 The SCET Coopération financed, developed and functioned as a local project manager. For the role of the SCET Coopération in Ivory Coast, see Lucie Haguenaer-Caceres, “Construire à l’étranger. Le rôle de la SCET Coopération en Côte d’Ivoire de 1959 à 1976”, *Histoire urbaine*, Vol. 23, No. 3, 2008, 145–159.
- 13 Claude-Ernest Kiamba, *Construction de l’Etat et Politiques de l’Enseignement au Congo-Brazzaville, de 1911 à 1997. Une contribution à l’analyse de l’Action publique en Afrique noire*, Histoire, Philosophie et Sociologie des sciences, Institut d’études politiques de Bordeaux; Université Montesquieu – Bordeaux IV, 2007.
- 14 When the African states, like Congo-Brazzaville acceded to full sovereignty between 1960 and 1961, Community programs such as higher education were devolved to each of the States, albeit within a context of cooperation with France. As a general rule, cooperation agreements placed the material and moral development of the institutions and their management more or less directly under the responsibility of France.
- 15 The team consisted of Jean Écochard, Jean-Louis Boubert, Joanna Hertz, Philipp Langley, Ali Afkhami Sardar, Eigy Shibuya.
- 16 Alexandrine Bouopda, *La genèse de l’enseignement supérieur au Cameroun, 1945–1965*, Histoire, 2016; Luc Ngwé, Hilaire De Prince Pokam, Albert Mandjack et Ernest Folefack, “L’université et les universitaires dans les mutations politiques et éducatives au Cameroun”, *Cahiers de la recherche sur l’éducation et les savoirs*, 5 | 2006, 169–191.
- 17 Preparatory notes for Michel Écochard, “Urbanisme dans les pays en voie de développement”, in *Cahiers du centre de formation des experts de la coopération technique internationale*, 5th session, November 1959, sp.
- 18 See for instance his final plea in Michel Écochard, *Casablanca: Le Roman D’une Ville*, Paris, Éditions de Paris, 1955.

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Hall Philips & Wilson, Project Architect, Ray Smith, Townsville Courts of Law, 1974. © Philip Smith Conwell, interior photographed by Richard Sringer.

“Our Cinderella North”¹ **The Modern Diaspora’s long reach into** **Australia’s tropical zones**

BY ELIZABETH MUSGRAVE

Modernism in tropical in Australia is testimony to the tenacity and optimism of individuals and communities in the vast, “empty north” of the continent, but also reflects a young nation’s strategic and commercial need to develop and make viable this region in the years following WWII. As practitioners, academics and public servants, the Modern Diaspora, introduced and promoted Modernism as a climate responsive solution to building in the tropics. The result is work that is inventive, frequently of modest material means and expressive of its tropical circumstances.

Émigré architects from Continental Europe were not attracted to settle in the vast, and from a European settler perspective, “empty north” of Australia preferring instead the cosmopolitan cities of Sydney and Melbourne in the southern states.² Equally, the tropical north is not where the young nation chose to erect iconic works representative of its emerging identity. It is, however, where to find a Modern architecture often of very modest means, often original in its response to climate and materials scarcity, aesthetically and structurally inventive. It is through commissions from forward thinking individuals and communities and as conduits, advocating for and promoting modern ways of thinking and working that émigré and migrant architects, usually located in cities to the south of the Tropic of Capricorn, impacted architecture in the tropical north.

The first and most notable of these individuals was Karl Langer (1903-1969), the Viennese émigré who arrived in Brisbane, Queensland in 1939, and was pivotal in the development of tropical Modernism. Also important is Ukrainian, Roman Pavlyshyn (1922-2019), who arrived in 1949 and, as Director of the Queensland Department of Public Works, commissioned public works in north Queensland. Most influential is Harry Seidler (1923-2006) who was educated at Harvard by émigré architects from Continental Europe and who after travelling to Australia to design his parents’ house decided to stay. The list might also include a number of graduates of Australian programs who left to further their education overseas, and who fell into the orbit of the Modern Diaspora elsewhere. Into this category fits Balwant Singh Saini (1930-), who worked in the office of Le Corbusier in Chandigarh and after returning to Australia made influential contributions as an educator and researcher.

North of the Tropic of Capricorn

Various referred to in government reports as the “Forgotten North”, the “Neglected North” and “Our Cinderella North”, tropical Australia comprises a vast area across several state jurisdictions including the northern portions of the states of Queensland and Western Australia and the Northern Territory, and is administered from cities located in the south; north Queensland from Brisbane, north Western Australia from Perth and the Northern Territory, which until 1978 when the powers of self-government were transferred, was administered by bureaucrats located in Canberra. Remoteness and the prioritizing of projects in more populous areas meant that government funding for projects in the north was limited.

The tropical region is not homogenous in climate or character.³ In the post-war era, the socially and culturally segregated north was characterized by a higher proportion of Aboriginal and Torres Strait Islander peoples than southern states, with Pacific Islander workers in Queensland centers, the descendants of the Macassan traders in Darwin and Broome and established Chinese communities throughout.⁴ Apart from the Top End of the Northern Territory (Darwin and Katherine) and the Queensland coastline east of the Great Dividing Range, most of tropical Australia is arid and sparsely populated, beset over the period of European colonization by problems of distance and isolation. The most densely settled coastline of Queensland is conditioned by hot humid and warm humid climates, whilst the Top End is a tropical savannah with marked Wet and Dry seasons. Narratives of Australian mid-century tropical architecture overlook the Top End and are illustrated with work located in the narrow strip of Queensland’s populated coastline; much is actually located in Brisbane, well south of the Tropic of Capricorn. Narratives also under-represent the

unusual circumstances of time and place that condition Modern architecture in the tropical zones of Australia.

This essay outlines the manner by which Modern Diaspora intersects with the nation's strategic and commercial activities in the north, albeit operating from centers far to the south of the tropics themselves, and influences the reception of Modernism.

Karl Langer & Roman Pavlyshyn in Brisbane: Modernism in Australia's hot humid tropics

The most influential European émigré architect to settle in the city of Brisbane, was Karl Langer, PhD (Vienna), who arrived with his wife, Gertrude Langer (1908-1984), also PhD (Vienna), in 1939. Karl Langer quickly secured contractual appointments in design, town planning and landscape architecture at the University of Queensland. In 1942 Karl Langer's credentials were recognized through his appointment to a Queensland Government committee tasked to address issues of housing in the hot humid and arid tropics. The committee, comprising government department heads, academics and practitioners in the fields of physiology, medicine, engineering and architecture,⁵ reflected the government's anxiety to increase the population of, and make economically viable, north Queensland but its 1943 "Report on Tropical Housing" was never tabled.⁶ Instead in 1944, Karl Langer published *Sub-tropical Housing* in which he identified "the avoidance of fatigue and the elimination of glare" as being primary objectives of design.⁷ Whilst the initial focus of research had been housing in northern Queensland, Karl Langer reframed the committee's findings to address sub-tropical housing more generally. The impact on Queensland architectural trajectory was profound.

Sub-tropical Housing contained a number of plates illustrating arrangements for slab-on ground, pavilion style houses and an entire town, the template for the unrealized Mackay Town Plan of 1945. At the end of WWII, resources were not available to implement visionary proposals, and of plans commissioned for Ingham, Toowoomba, Yeppoon, Kingaroy and Mt Isa, the Kingaroy Plan alone was only partially realized. Karl Langer, renowned for Lennon's Hotel, Broadbeach (1957, demolished), south of Brisbane, realized few buildings in north Queensland; the Sugar Institute and Director's residence in Mackay (1953) were built. In time he was commissioned by Bundaberg's progressive Lutheran congregation to design the impressive St John's Lutheran Church (1960). However, *Sub-tropical Housing* underpinned local debate about climate responsive architecture for decades and Karl Langer's influence is clearly evident in many climate responsive projects by graduates of his teaching, built not only in the tropical north, but also in sub-tropical regions in Queensland's south.

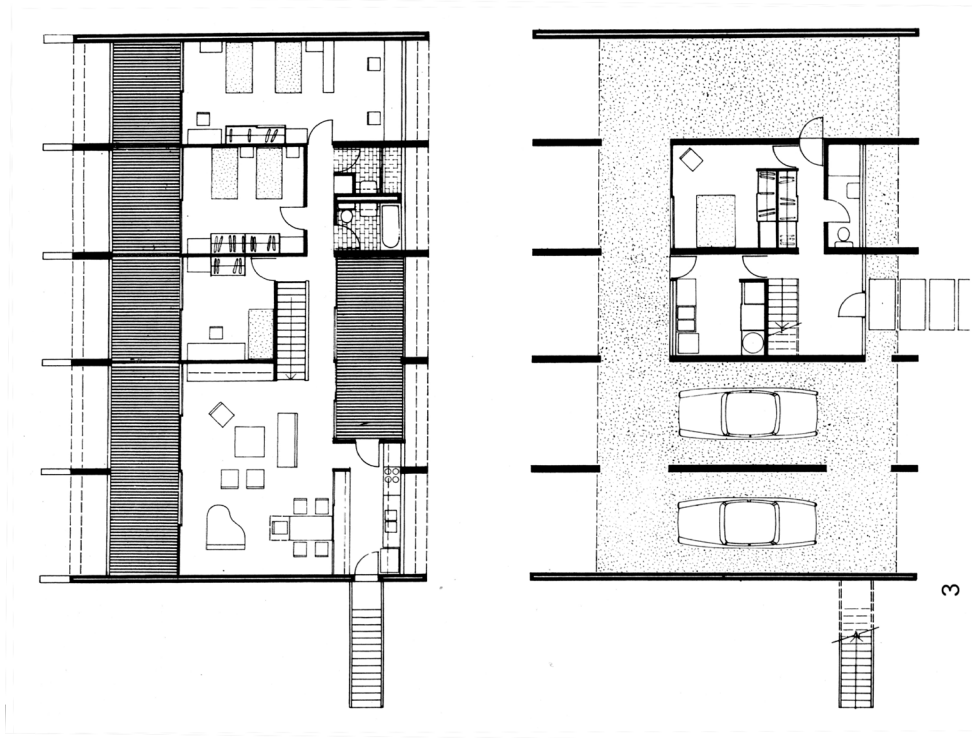
The post post-war period saw an increased migration of architects to Brisbane, many to work in the Queensland Department of Public Works, the bureaucratic entity charged with construction projects across the state. Migrant architects joining the Department in the 1950s included Heinz Jacobson from Poland, Peter Prystupa (1920- 1989) from the Ukraine and John (AJ) Wheeler and John Hitch

(1915-2010) from the UK. Also arriving from the UK in the 1950s was Maurice Hurst (1929-2003) and John Morton, both of whom joined the practice, Lund Hutton Newell Black & Paulsen, where they immediately impacted the work of this otherwise conservative firm.⁸

Possibly the émigré to Brisbane to have the most impact on architecture in the tropical north in the post-war era was the Ukrainian-born, Viennese educated, Roman Pavlyshyn, who arrived in 1948. After working with Karl Langer and the Commonwealth, he joined the Queensland Department of Public Works in 1958, where after completing two exceptional design proposals for unrealized projects in Brisbane he was appointed to the position of Chief Architect.⁹ But it was in his subsequent role, as Director of Building, that he had a more profound impact, transforming the staid department but also changing the character of Queensland through his patronage of young architects. Projects completed by architects in north Queensland in association with the Department, including schools, institutes of advanced education and teachers training colleges were invariably modern and informed by climate design.¹⁰

The establishment in 1957 of University College, Townsville, a regional campus of the University of Queensland (since 1970, James Cook University) confirmed Townsville as the cultural and educational hub of North Queensland. In 1963 James Birrell (1928-2019) was commissioned in association with Gordon Stephenson (1908-1997) to provide a Master Plan.¹¹ James Birrell, a graduate the University of Melbourne who had travelled to North America on a scholarship to study the town planning schemes of Walter Burley Griffin, was also commissioned to design the residential colleges and the Library and Humanities buildings for the new campus. As Chief Architect in the Brisbane City Council Works and later as University of Queensland Architect he had already completed a number of significant buildings in sub-tropical Brisbane, expressive of tropicality, including Centenary Pool (1959), which clearly references the work of Breuer. The most remarkable of James Birrell's buildings in Townsville is the Library opened 1968, now known as the Eddie Koiki Mabo Library. The Library is a brutalist, three-storey off-form concrete building with an over-sailing steel framed roof inspired by Breuer's Whitney Museum of American Art in New York, but also by Le Corbusier's Legislative Assembly High Court in Chandigarh and closer to home, by Roy Ground's National Gallery in Melbourne.¹² Another project illustrative of the maturing of a Queensland tropical architecture is the Townsville Court of Law Edmund Sheppard Building by Hall Philips & Wilson in association with Queensland Department of Works.¹³ Completed in 1975, it demonstrates the influence of Metabolism on its design architect, Ray Smith, after his visit to Osaka Expo in 1970.¹⁴

There are many more remarkable instances of tropical Modernism in North Queensland. However, such is the persuasiveness of the diaspora's influence that a climate-responsive architecture expressive of tropicality is found not only in north Queensland but throughout the state.



Sub-tropical Housing.

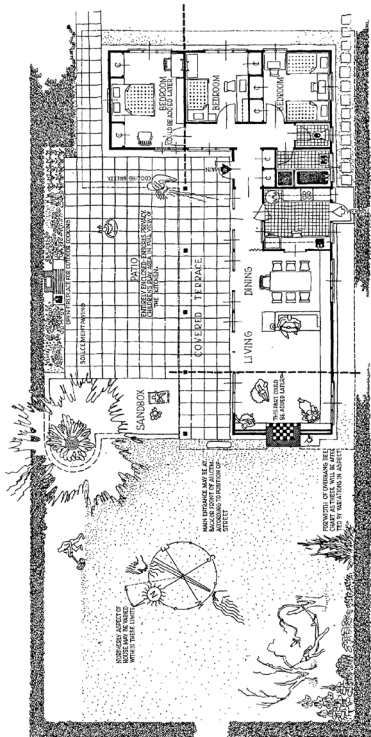


PLATE 5.

- 02 Karl Langer, Plate 5, Sub-Tropical Housing, Brisbane, University of Queensland, 1944. The Miesian style pavilion Karl Langer advocated as ideal for living in the sub-tropics.

Sub-tropical Housing.

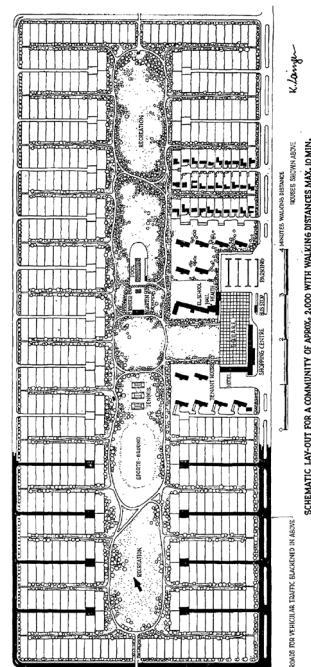


PLATE 8.

- 03 Karl Langer, Plate 8, Sub-Tropical Housing, Brisbane, University of Queensland, 1944. Demonstrates Karl Langer's design to prevent problems of fatigue from the scale of the house to the scale of the neighborhood.



Harry Seidler in Darwin: Australia's wet-dry tropics

The means by which Australia's most famous émigré architect, Harry Seidler, was commissioned to design a bespoke house in Australia's remaining frontier town is revealing of life in the Top End. The Northern Territory was administered until 1978 by the Department of the Territories within the Commonwealth public service, with control divided between Darwin and Canberra, a 3,200 km flight away. Its administrative center, Darwin was dominated by public service and defense force personnel. Yet underneath the itinerant public service layer, was a unique character that reflected Aboriginal, Pacific, Islander and Asian influences.¹⁵

Much of Darwin was destroyed by bombing during WWII.¹⁶

For many years, an acute post-war housing shortage and lack of civic institutions was addressed through sheds and prefabricated constructions. Even the Supreme Court sat for a time in the post-war era in a Sidney Williams corrugated steel shed. From the 1950s the Commonwealth Department of Works tested a series of prefabricated house types, gradually modifying them over time to be more responsive to climate.¹⁷ Contracts were awarded for a number of civic projects, adapting functional Modernism to Darwin's tropical conditions, including the Darwin Post Office (1959) and the Supreme Court Building (1965).¹⁸ Congregations built places of worship worthy of a modern tropical city. Most notable is St Mary's Star of the Sea Cathedral (1957-1962) designed by Ian Ferrier (1928-2000) whilst at Donoghue & Fulton. Ferrier studied architecture at McGill University, Montreal designed numerous churches in Queensland's tropical north for the Roman Catholic Church.¹⁹ St Mary's Star of the Sea Cathedral deploys a parabolic arch construction, as does the later St Mary's Cathedral (1969), in Port Moresby, Papua New Guinea.²⁰ Both share similarities with churches in Germany by Dominikus Böhm dating from the 1920s.²¹

Other institutions advertised their presence in Darwin

with modern new buildings. Noteworthy is the ES&A Bank in Palmerston, Darwin (1957) designed by company architect, Stuart McIntosh (1924-2007) and built in conjunction with a now-demolished house for its manager.²² Both demonstrate Oscar Niemeyer's influence and both were listed in *The Australian Journal of Architecture and Arts House & Building of the Year Awards* for 1957.

However, as an egalitarian, public service town, the private commissioning of an architect for a project in Darwin was unheard of. Nicholas Paspaley, pioneer of the pearling industry, and his Sydney born wife, Vivienne, commissioned Harry Seidler in 1957, to design a house for a prominent site on Myilly point.²³ Sydney based Harry Seidler, a graduate of Harvard Graduate School, who had worked with Breuer in US and Oscar Niemeyer in Brazil, before arriving in Australia in 1948.²⁴

The Paspaley House, completed in 1959 to Harry Seidler's uncompromising standards, was awarded an *Australian Journal of Architecture and Arts Award* of 1962.²⁵ It is considered an exceptional instance of Harry Seidler's work,²⁶ but is not typical of Harry Seidler's celebrated houses of the 1950s in Sydney. Its heavy construction, was designed specifically for the tropical conditions of Darwin with respect to sun shading, cross ventilation, insulation, and cyclone resistance. The house is ordered into five bays by regularly spaced concrete block pier fins shaped for wind resisting stability. Roof construction is double layered forming a deep, hollow, ventilated and insulated space. North and south elevations are shaded by large louvres which, together with infill walls, are of galvanized sheet steel sections, insulated and painted white for reflection.²⁷ The Paspaley House survived the devastating 1974 Cyclone Tracy intact, when many other lightweight post-war modern structures did not.

In 1982, Nicholas and Vivienne Paspaley's daughter Marilynne Paspaley and her husband Russel Hanigan, commissioned Harry Seidler & Associates to design a house for a nearby allotment. The house was nearing completion when the land was resumed by the Northern Territory government for a casino and the house, demolished.²⁸ Seidler's portfolio of work includes one other project in the tropical north; an unbuilt resort hotel scheme for Fitzroy Island off Cairns in Far North Queensland, from 1969.²⁹

Balwant Singh Saini and the arid tropics: Western and Central Australia

Balwant Singh Saini bolstered the notion of tropicality as a productive mind-set concerned not just with the humid sub-tropics but also the hot-arid zones, from 1961 in a series of papers and reports.³⁰ He was one of the first scholars to raise Aboriginal housing as a serious issue. Balwant Singh Saini, who had a Bachelor of Arts from the University of Punjab, graduated from architecture at the University of Melbourne in 1954. However, it was a period spent during his study in the office of Le Corbusier with Jane Drew, Maxwell Fry and Pierre Jeanneret (1896-1967) working on the High Court Buildings in Chandigarh that Balwant Singh Saini identifies as his most consequential experience.

05 Hall Philips & Wilson, Project Architect, Ray Smith, Townsville Courts of Law, 1974. © Philip Smith Conwell. Photographer, Richard Stringer.



docomomo 63 – 2020/2

Essays



06 Harry Seidler, Paspaley House, Darwin, Australia, 1957-1959. © Photo Max Dupain 1959. Penelope Seidler.

On graduating Balwant Singh Saini worked for a while in India before accepting a position at the University of Melbourne. His early research work for the Commonwealth Government Department of Works, based in Papua New Guinea, prompted the establishment of a Graduate Program at the University of Melbourne in Tropical Architecture, a similar program to that established by Otto Königsberger at the AA in London a few years earlier. Later in 1974, as a Professor of Architecture at the University of Queensland, Balwant Singh Saini on the advice of Otto Königsberger, appointed another émigré, Hungarian Steven Szokolay (1927–) as Reader. Steven Szokolay had studied at the AA under Otto Königsberger and co-authored *Manual of Tropical Housing and Building* with Otto Königsberger, Alan Mayhew and T. G. Ingersoll.

Balwant Singh Saini's 1961 paper, "Housing in the Hot and Arid Tropics", coincided with the widespread exploration for minerals throughout northern Australia and initiation of the Ord River Project in north-west Western Australia, resulting in purpose-built mess and quarters for workers in remote places. His paper promotes a type of settlement pattern entirely opposed to the ill-conceived grid-iron layout adopted by mining companies, agricultural research stations and defense departments.³¹

For Balwant Singh Saini, establishing stable communities in fragile arid environments requires well-designed climate responsive housing supported by social and cultural infrastructure. He advocated the use of courtyards incorporating water and vegetation, compact planning and the manipulation of sections for shade, the use of cooling and heat sinks, sun-shading for walls and roofs and cites as exemplary Amiram Harlap's housing project in Negeb, and a project known as Western Baghdad Development by Doxiadis Associates of Athens.³² His reports also addressed the efficacy of different modes of artificial climate control including air-circulating fans, underground tunnels, evaporative coolers, and solar air-conditions.

Balwant Singh Saini's advice was recognized as environmentally sound in subsequent reports on housing in the hot arid north, but his recommendations were not always adopted. A 1976 report by the Western Australian Government Housing Study Group for the Government of Western Australia notes that the "outdoor lifestyle" preferred by Australians "reinforces the Australian dream of a home on your own quarter acre (1,000 m²) block, space for a boat, a caravan, kids (sic) swimming pool and a barbeque with friends" and that this made "direct translation" of the forms advocated by Balwant Singh Saini "impracticable."³³ Rather in its long-winded explanations the Housing Study Group report is revelatory of a lack of political will and/or public funding to commit to exploring ways to make communities viable in the remotest parts of Australia.

Conclusions

The diaspora impacted the reception of Modernism in Australia's tropical regions in two ways. Firstly, and most profoundly via their roles as academics in Universities and

Technical Institutes, primarily in Brisbane and Melbourne, through research and advice to government and through their public service roles they irrevocably altered the debate around architecture, bringing global perspectives to some of the remotest parts of Australia. Secondly, and less frequently, through commissions from enlightened clients and client bodies.

Sibyl Moholy-Nagy's (1903–1971) reflection on the diaspora in the US was that "the astonishing impact of a handful of refugee designers" was not evident in "the testimony of an essential evolution."³⁴ In comparison, the impact of an even smaller handful of "refugee designers" on the architecture of tropical Australia whilst undervalued, is sustained in a culture of climate responsive modern architecture. The diaspora's reach into the top end was rigorous, underpinned by empiricism and characterised by pragmatic and innovative responses. It established benchmarks that changed the trajectory of practice not only in the tropical north, but also in regions well south of the Tropic of Capricorn.

Acknowledgement

The author would like to thank Polly Seidler for information and advice relating to the Paspaley House and work by Harry Seidler in the tropical north.

Notes

- 1 Richard Gavin Gardiner Casey, the 16th Governor General of Australia and a distinguished army officer, long-serving cabinet minister, Ambassador to the USA, member of Churchill's War Cabinet, used the term "Our Cinderella North". The phrase confirms northern Australia's limited bearing on the national consciousness. Cited in "Land of Opportunity: Australia's post-war reconstruction National Archives of Australia". <http://guides.naa.gov.au/land-of-opportunity/chapter17/>.
- 2 Philip Goad and Julie Willis (eds.), *The Encyclopedia of Australian Architecture* contains more than thirty entries on individual émigré architects who settled mostly in Sydney and Melbourne but identifies only Karl Langer and John Hitch in Queensland and Beni Burnett who worked in Darwin for a short time after 1935. Refer Philip Goad's entry on "Modernism" in Philip Goad and Julie Willis (eds.), *The Encyclopedia of Australian Architecture*, Melbourne, Cambridge University Press, 2012, 466. David Beynon et al., do not discuss émigrés to the tropical north. David Beynon et al., "An issues paper: the roots/routes of Australian architecture: elements of an alternative architectural history", in *Translation: Proceedings of the Society of Architectural Historians Australia and New Zealand*, Unitec New Zealand, Auckland, New Zealand, 2014, 646. John Macarthur et al. discuss emigres to Queensland only. John Macarthur, Deborah Van der Plaats, Janina Gosseye, Andrew Wilson, *Hot Modernism: Queensland Architecture 1945–1975*, London, Artifice, 2015.
- 3 What constitutes the tropical north in is loosely defined in conventional accounts of Australian architecture and is most frequently illustrated using work located in Brisbane. Neither Karl Langer, *Sub-tropical Housing* (St Lucia, Qld., Faculty of Engineering, University of Queensland, 1944) nor *Buildings of Queensland* (Brisbane, Jacaranda, 1959) nor Balwant Singh Saini, *Architecture in Tropical Australia* (Carlton, Vic., Melbourne University Press, 1970) distinguish between the equatorial and hot humid zones North of Capricorn and sub-tropical zones to its south. In conventional accounts, the architecture of the arid tropics is ignored altogether.
- 4 Henry Reynolds, *Why Weren't we told?: A personal search for the truth about our history*, Maryborough, Vic., Penguin Random House, 1999, 28–29; Mickey Dewar, *Darwin: No place like home: Australia's northern capital in the 1950s through a social history of housing*, Darwin, NT, Charles Darwin University and the Historical Society of the Northern Territory, 2010, 4–5.
- 5 Committee appointed in 1942 by Frank Cooper, Director of the Bureau of Industry comprised: Douglas HK Lee, Professor of

- Physiology at the University of Queensland; Dr Raphael Cilento, Director General of Health in Queensland, Colin Clark Director of Bureau of Industry and Home Affairs; Edward James Archibald Weller, Queensland Chapter of the Royal Australian Institute of Architects; Robert Cummings of the Board of Architectural Studies at the University of Queensland; Leo O'Connor, Manager of State Advances Corporation, EJA Weller Representative of the Royal Australian Institute of Architects and Karl Langer. Research culminated in the 1943 "Report on Tropical Housing" but was never tabled. Deborah Van der Plaats, Andrew Wilson, Elizabeth Musgrave, "20th century (Sub) Tropical Housing: Framing Climate, Culture and Civilisation in Post-War Queensland", in John Macarthur, Deborah Van der Plaats, Janina Gosseye and Andrea Wilson, *Hot Modernism: Queensland Architecture 1945-1975*, London, Artifice, 2015, 77-78.
- 6 Ibid.
 - 7 Karl Langer, *Sub-tropical Housing*, St Lucia, Qld., Faculty of Engineering, University of Queensland, 1944, 2. See also Douglas Neale, "The 'Essentials' of the Sub-tropical House: an Exegesis of the 'Modernistic' Town Planning Principles", in *Limits: Proceedings from the 21st annual conference of the Society of Architectural Historians of Australia and New Zealand*, Vol. 2, Melbourne, the Society, 2004, 349.
 - 8 Silvia Micheli and Andrew Wilson, "International influences in Post-War Queensland: Protagonists, Destinations and Models", in Macarthur et al, 119-123.
 - 9 Don Watson, *Vale Roman Pavlyshyn, 1922-2019*, 20 January 2020. <https://architectureau.com/articles/vale-roman-pavlyshyn/>.
 - 10 Janina Gosseye and Donald Watson, "Architectural Practice in Post-War Queensland", in Macarthur et al, 176.
 - 11 Ibid.
 - 12 Ibid.
 - 13 Ibid., 181.
 - 14 <https://phillipssmithconwell.com.au/projects/townsville-courts-of-law-edmund-sheppard-building/>.
 - 15 Ibid.
 - 16 <http://guides.naa.gov.au/land-of-opportunity/chapter17/>. David Bridgman "Beni Burnett and the Verandah-Houses of the Australian Tropics", *Ume* 13, 2-7. <http://www.umemagazine.com/>. Also Goad et al., op cit., 505-506. Amongst buildings destroyed were a series of elegant colonial houses designed by government architect, Beni-Carr Glynn Burnett (1889-1955) between 1936 and 1941. These houses, based on the Anglo-Indian bungalow and built for the defence force and Commonwealth public service elite, conflated the verandah with the house core and pioneered the expression of asbestos-cement louvers and casement windows. They remain a touchstone for tropical design in the Top End.
 - 17 Dewar op cit., 130-131.
 - 18 <http://www.environment.gov.au/cgi-bin/ahdb/search.pl>; http://www.ntlis.nt.gov.au/heritageregister/?p=103:301::NO::P301_SPATIAL:N.
 - 19 Lisa-Marie Daunt, "Quoting Ian Ferrier (1928-2000) Contributing to Queensland's Post-war Modern Church Architecture", *What does history have in store for architecture today? Proceedings from the annual conference of the Society of Architectural Historians of Australia and New Zealand*, Canberra, the Society, 2017, 101-111. Ferrier Baudet practice files reveal that more than thirty churches were completed.
 - 20 Ibid., 102. Daunt citing Gardiner, Hampson, Interview with Ian Ferrier, St Lucia, 30 May 1999.
 - 21 Notable precedents by Dominikus Böhm include the Christkönig in Bischofsheim (1925) and St. Engelbert in Cologne (1928-1932). Also deploying a parabolic arch is St Pauls Church of England Proserpine (1959) designed by Cairns based architect Eddie Oribin. Oribin designed the vaulted Mareeba Shire Hall (1956), which it is claimed reference the laminated timber arched igloos build by American armed forces in north Queensland during WWII. Macarthur et al, 143.
 - 22 Igea Troiani, "Deserved Exposure: Stuart McIntosh's Architecture, 1953-63", in *Fabrications* 16, No. 2, 2016, 28-43, DOI: 10.1080/10331867.2016.10539586.
 - 23 Paspaley Pearls was established by the Paspalis family, "who migrated from Greece to Australia in 1919, and were among the few Europeans living in the area with Aboriginal inhabitants and Asian pearl fishermen." <http://www.paspaleypgroup.com/about>.
 - 24 Register of the National Estate (Non-statutory archive), Registered (26 October 1999), Place ID 16354, Place File No. 7/03/004/0063. Report Produced Thursday 2 April 2020 (21:11:18). <http://www.environment.gov.au/cgi-bin/ahdb/search>. Due to the COVID-19 lockdown of libraries, key documents were unable to be accessed including: Welke, AC, and Wilson, HJ, "Darwin Central Area Heritage Study, a report for the Conservation Commission NT", Darwin, 1993.
 - 25 *Arts and Architecture*, Vol. 79, No. 5, May 1962. "House by Harry Seidler, architect", 14-15.
 - 26 <http://www.environment.gov.au/cgi-bin/ahdb/search>. Entry statement on the Register of the National Estate notes: "In 1996 the house was recommended by the NT Heritage Advisory Council for declaration as a Heritage Place. However, this recommendation was refused by the NT Minister but explicitly not for heritage reasons. In January 1999 the NT Government released, for purchase and development, the land at Myilly Point surrounding the properties held by the Paspaley family. The Paspaley Pearls Group are the preferred developers for Site A (Lot 5180) that adjoins 26 Myilly Terrace."
 - 27 Ibid.
 - 28 Email correspondence with Polly Seidler, 1/05/2020.
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Alfred Preis, L'au Residence, Honolulu, Hawaii, 1951. Dining room. © Photo: David Franzen, 2011.

Alfred Preis and Viennese Modernism in Hawai'i

BY LAURA MCGUIRE

Preis, who was a Viennese émigré and refugee architect with no early experience designing for tropical climates, went on to become one of the most prolific mid-century regionalist and modernist Hawai'i designers. Although he is best known for his award-winning design for the *USS Arizona* Memorial (1962) – one of the ships infamously sunk in the Japanese attack on Pearl Harbor, Preis's earlier institutional and residential commissions are arguably his most compelling.

His Viennese roots directly influenced Preis's approach to design in Hawai'i. By engaging numerous precedents from Vienna, he eventually forged a novel idiom for Hawai'i domestic design. This article will examine the interiors of two of Preis's more than 100 single-family houses – the Scudder Residence (now the Scudder-Gillmar Residence) (1939-1940) and the Dr. Edward and Elsie Lau Residence (1951) – in order to highlight some of the ways in which Preis transported Viennese modern design ideas of the first three decades of the 20th century some 7,616 miles from Austria into the middle of the Pacific Ocean. His interior designs for these houses evidence strong relationships with the ideas of earlier Viennese modernists about spatial planning, the aesthetic uses of materials, furnishings, and color. Perhaps more than any other influence, Preis's Vienna experience culminated in modern architecture that was as sensorially pleasurable as Hawai'i itself.

The Influence of Vienna Modern Design

Alfred Preis's (1911-1993) years as a young man in Vienna laid the groundwork for a rich career in Honolulu. The 1910s-1930s in Vienna were critical years for the development of a particularly Viennese Modernism, which balanced some of the more austere interior designs of German Modernism with traditional Viennese domestic comfort. Vienna developed its own, indigenous form of modern design that significantly differed from other idioms on the continent. The work of architects like Frank, Adolf Loos (1870-1933), and many others, forged a *Wiener Wohnkultur*. This was a mitigated modernism that generally rejected the more severe and functionalist form languages prevalent among the German avant-garde, and instead embraced a modernism of domestic comfort and livability.¹ Some key examples of Wiener Wohnkultur design – typified in expositions like the *Vienna Werkbund Housing Exhibition of 1932* – were the boldly colored and playful textile designs of Frank and others. Also significant to this idiom was Loos's earlier invention of the *Raumplan* – a spatially composed interior architecture of complex spaces with the use of rich materials, bold colors, changes in levels, and processional sequences that embraced spatial expansion and contraction along with a highly curated series of interior views.²

In his recent book, *The New Space: Movement and Experience in Viennese Modern Architecture* (2016), Christopher Long demonstrates this distinctly Viennese approach to modern design.³ He argues that 1910s-1930s Vienna modernists explored processional, tactile, and visual interactions with

architectural interiors specifically for their experiential effects. Viennese designers like Loos, Frank, Oskar Strnad (1879-1935), and Jacques Groag (1892-1962),⁴ for example, composed spaces that were not always strictly “functional.” Instead, they created innovative processional paths and interactive moments with features like built-in furnishings, staircases, bold colors, and materials. They achieved interior compositions that purposefully created spatial complexities, such as interior views from multiple levels, functionally ambiguous twists and turns, and moments of haptic compression and release. There was, indeed, a theatrical quality to Viennese Modernism of this period, in which



01 Alfred Preis, Scudder Residence, Honolulu, Hawai'i, c. 1940. Collection of Jack Gillmar.



02 Alfred Preis, Scudder house interior, 1939-1940. Now preserved in the Scudder-Gillmar Residence, Honolulu, Hawai'i. © Photo: David Franzen, 2017.



03 Alfred Preis, Lau Residence, Honolulu, Hawai'i, 1951. Exterior with formal entry sequence and living room window. © Photo: David Franzen, 2011.

interior space, geometry, and décor unfolded dramatically as one moved through a building.

Pries likely absorbed his design values from these practitioners, whose work was readily accessible in both public buildings and major exhibitions, in many publications, and during his training at the Vienna *Technische Hochschule* (TH). From 1932 to 1938, Preis studied architecture at the TH,⁵ a key training ground for some of Vienna's most influential pre-WWII modernists.⁶ Preis was also enamored of Vienna's theater and opera, which he regularly attended, and his passion for theater – its narratives and sensory envelopments – would later reappear in his residential designs.⁷ Prior to starting his architectural training, he had originally planned a career in scenic design.⁸

Escape from Vienna

When Adolf Hitler annexed Austria in 1938, Preis, who was ethnically Jewish, quickly recognized that any hoped-for livelihood as an architect was in peril. Through 1938, in his final year at the TH, he witnessed all of his Jewish classmates and professors expelled.⁹ Probably because he had converted to Catholicism in 1936 and had been removed from the Jewish registry, Preis was allowed to remain and obtain his degree. But because of the Nazis' increasingly brutal restrictions on Vienna's Jewish civilians – and following the horrific violence of *Kristallnacht* in October – he soon realized that his best chance for a normal life would be to flee his home.¹⁰

Preis wrote desperate letters to over one hundred US architectural firms in search of a job. He received only one response – from the small, Honolulu-based architecture firm of Dahl & Conrad.¹¹ With others' help, he and his wife were able to orchestrate an extremely difficult escape Vienna. They arrived in Honolulu during the spring of 1940. But most of his family – including his mother, father, uncle, aunt, and a cousin – would perish in Nazi concentration camps.

The Scudder Residence and Apartments

In his first year with Dahl & Conrad, Preis worked as their key designer. With his arrival, their work took an

increasingly European modernist cast. While many of their buildings embraced the contemporary American *streamline moderne*, Preis injected many Viennese modernist idioms, including boxy, white envelopes, planar surfaces, and glass block, with decorative effects achieved through the use of modern materials and lighting.

His own first residential design was the Scudder Apartments and Residence, commissioned in 1939 by a wealthy Honolulu woman. The eight-unit, two-story apartments mostly followed the earlier precedent set by other Dahl & Conrad apartment buildings. The rectilinear apartment building was constructed of reinforced concrete and hollow concrete tile and painted white, with a simplicity that gave the bright colors of the vegetation and landscape precedence. The custom furniture within highlighted Preis's impressive furniture design skills and his preference for horizontal lines and subtle details in contrasting colors of woods, derived from modern Viennese furniture design of the 1920s and 1930s.

The simple, white box of the Scudder house vividly echoed examples displayed at the 1932 Vienna Werkbund housing exhibition. Also in the spirit of such houses were Loos's earlier Villa Müller (1930) and Villa Möller (1927). Like these examples, Preis's varied fenestration patterns were asymmetrically composed and were oriented in order to light key areas of the interior spaces. A large, street-facing portal opened with sliding panels, which not only aided ventilation, but also an opportunity for indoor-outdoor tropical living. A more private entrance was located on the side, towards the rear of the building.

Preis's box-like exterior envelope for the Scudder residence shows that in these early years, he was still strongly wedded to his Vienna design experience and did not yet fully grasp the possibilities for seamless architectural transitions between indoor and outdoor spaces in Hawai'i's tropical climate. But Preis would eventually embrace a heavily indoor-outdoor mode of design after WWII.

Unfortunately, neither the apartments nor the original Scudder house have survived. But the home's interiors were saved and perfectly reconstructed in a new envelope on

a new site, now renamed the Scudder-Gillmar residence. With meticulous restoration work by architect Janet Gillmar and her husband, Jack, the interiors maintain close fidelity to Preis's original interior design, and using his original materials. However, due to reasons of site, among other concerns, the new envelope necessitated some alterations to Preis's original house. The sliding front door and upper window were reconstructed as a large window without mullions. However, the rest of the interior the original furnishings remain unaltered.

The reconstruction of the Scudder floor plan evidence Preis's effort to bring Viennese spatial planning ideas to Hawai'i. The two-story plan was a version of Loos's Raumplan idea. The Raumplan, along with its primary goal of spatial economy, often created a complex experience of interior architecture. With twists and turns and changes in levels, it directed interior lines of sight and bodily movement in novel ways.¹² The plan was loosely similar not only to Le Corbusier's *Maison Citrohan* (1920) but the overall interior treatments more strongly evoked Loos's duplex design for the 1932 Werkbund exhibition, which Preis undoubtedly visited as an aspiring architecture student. Heinrich Kulka's widely read *Adolf Loos* (1930) – with its many detailed photographs of Loos's residential interiors – likely served as an inspiration for Preis, not only as a student, but in his later Hawai'i career.¹³

Changes in ceiling levels, colors, and material details were key elements of the interior spatial experience at the Scudder house. The first-floor plan consisted of a rectangular space. The rear entry opened into a dining room, with a built-in cabinet and reflective mirror that made a rather tight space seem more open and expansive. The dining area was visually divided from the living room with a novel tubular steel screen, whose mechanical aesthetic contrasted sharply with other softer, natural materials. But the strong vertical lines of the screen were complemented by a nearby dining table on three legs, which perhaps owed its distinctive character to Wiener Werkstätte furniture design. A gray-blue painted ceiling over the dining room area created an intimate sense of rear enclosure, which was dramatically expanded into the brightly lit double-height space of the living room. The colored ceiling was one of the first of many such ceilings and fascias in Preis's later houses.

A hearth, executed in Diamond Head sandstone with built-in bookcases and a rear staircase, acted as the anchoring point of the open living room and a vertical axis for the house. The staircase and hearth combination were expressly Viennese in their details. The hearth's horizontal courses of stone were somewhat similar to Frank Lloyd Wright's designs – which were already well known across 1930s Europe – but the use of built-in cabinetry in two-toned wood was a common language in Viennese modernist domestic design. The subtly curving base of the staircase ascended behind the chimney to a bedroom loft. Preis's sumptuous attention to wood, using both angular and curving forms, included an exquisitely crafted handrail that directly reflected not only Loos's domestic designs, but

also evoked Loos's aesthetic preoccupation with the haptic qualities of vertical ascent.

In Raumplan fashion, the ascending hallway was extremely narrow in order to give more space to the living area below. But this also had a clear aesthetic intention; subtly lit by a porthole window, and following upwards through a tight ascent, inhabitants arrived onto a wide open and exceptionally well-illuminated second floor bedroom with a dramatic vista of the living room and large window openings. Here, Preis's affinity for theatrical design and narrative may have played a role in his concept for a spatially tight upward procession with a bold revelation of the light and open space in the loft. Turning to the right from the top of the stair, Preis also built out a small art gallery directly over the fireplace, which was unexpected in its slim proportions.

The built-in furniture incorporated imaginative door pulls and hidden compartments concealed by sliding doors, promoting a playful, visual, and tactile interaction with the units. The balcony railing, painted a gray-blue, was another ornamental touch that also echoed Loos's use of colored balcony railings in the *Khuner Villa* (1930), near Vienna. Preis's stark white and cubic exterior gave over to an interior of material richness with plays of procession, color, light, and volume that echoed the comfortable and livable modernism of the *Wiener Wohnkultur* – precisely in the fashion of the many examples at the 1932 Werkbund exhibition that Preis likely witnessed firsthand.

Toward Regionalism

After the Japanese attack on Pearl Harbor and the entry of the USA into WWII, building in Hawai'i ground to a halt. Because they were refugees from a Nazi-occupied country, Preis and his wife were arrested and interned for several months at the Sand Island detention camp. This was a traumatic experience for Preis and may have had some impact on his choice, after the war, to forge a tropical aesthetic that more closely connected him to the islands in an architectural way, despite his status as a recent immigrant.¹⁴ After the war's end, his designs became markedly "local." Through their material and aesthetic connections with the landscape and the climate, his buildings forged a regional idiom for modernism.

In his many public projects like the Laupahoehoe School (1947-1952), the International Longshore and Warehouse Union (ILWU) building (1951/1952), and the First United Methodist Church (1953) Preis embraced the ornamental qualities of locally available materials, such as lava rock, native ohia trees, brick, and locally fabricated concrete.¹⁵ It was often costly to import mainland building materials and while some architects might have seen this as a limitation, Preis used it as an opportunity to enrich his growing, regionalist stance.

Preis also became an architect for whom materials largely guided the aesthetic character of his building envelopes and surfaces. Like early Vienna modernists, such as Otto Wagner (1841-1918) at his *Postsparkasse* (1905) and the *Kirche am Steinhof* (1907), Preis relished articulating his

constructional systems as a form of ornamentation. He readily explored the decorative possibilities of construction, such as in his use of exposed volcanic aggregate at Laupahoehoe School and the First Methodist Church. His creative courses of brick at the ILWU building produced a textile-like quality the exterior surfaces. None of these flourishes were “necessary” in a functionalist sense – strict International Style modernists would probably have regarded Preis’s strongly tactile and decorative use of materials as bordering on bourgeois indulgence.

Through the 1950s, Preis also began to better understand ways in which he could integrate the Hawaiian climate into his designs. By using wide overhanging eaves to protect from heavy rains and strong sunlight, clerestory ventilation, and walls which could be opened wide to outdoor spaces, Preis became an expert at designing buildings with little need for mechanical climate control.

Preis’s embrace of local materials, climate, and the landscape’s natural beauty, along with his implicit rejection of doctrinaire versions of functionalism and the International Style were especially evident in his residential designs and interiors of the 1950s. In these many houses, the influence of his Vienna sensibilities favoring spatial complexity, architecture’s processional qualities, and the aesthetic delights of color and materials – as both ornamentation and a way to create viscerally engaging experiences – also coalesced into veritable symphonies of delightful complexity.

The Lau Residence

By the early 1950s, Preis completely abandoned the European and modernist white boxes of his earlier residential designs, exemplified in the Scudder Residence. As he became more familiar with Hawai’i’s climate and topography, he understood that irregular plans spread out over a site would not only provide clients the best views of the striking landscapes, they would also foster better lighting, cooling, and privacy. The plan of the Dr. Edward and Elsie Lau residence is complex, angular, and cannot be discerned from the street. The street-facing, frontal volume is composed of an irregular, six-sided form of acute or obtuse angles. This volume, which encloses some of the main living areas, is sliced through with a longer, wedge-shaped rear volume that has a slightly higher roof. The intersection of the two creates a secluded, trapezoidal patio and garden in the rear. Together, these volumes create a house with a full *ten* exterior walls. Some of the walls have both straight and strikingly angled vertical projections in masonry. Projecting glass windows on the frontal volume, including on a north and street-facing kitchen and a northwest-facing living room, emerge from the wall at a dramatic cant. Details such as these optimized daytime lighting along with privacy and shading.

Decorative patterning in both color and material also played a crucial role in the exterior expression; white-painted masonry formed into sculptural courses gave texture and contrast to the vivid colors of black and Chinese Red under broad, overhanging eaves. Rectilinear patterns of fenestration were highlighted with black and

white surrounds. Indeed, each element of the exterior architecture was called out with its own special treatment.

Following Viennese precedents, Preis evoked the idea that movement through a house – much like the unfolding of a theatrical drama – should provoke moments of anticipation, surprise, discovery, and delight. A complex route of procession into the formal entry of the house was typical of many Preis’s residential designs. The house was entered via a sequence of turns, forcing the body to move in different directions. In this case, the visitor was directed up a set of stairs bounded with white brick walls with a narrow opening at the top to an open landing (*lanai*), finally revealing the door at one end. The ceiling of the *lanai* was painted in a rich red, with a red-tiled floor below; the white masonry *lanai* walls were also punctuated with vertical and horizontal lines of black trim.

The whole expression had an abstracted Asian sensibility, which not only spoke of the large Asian-American population of Hawai’i itself, but also of the Laus’ own ethnicity. Preis would repeatedly use Asian-styled motifs and colors in his residences, not only for his many Asian-American clients, but also as a way to make his modernism regionally relevant. His liberal use of these colors, especially reds, jades, and bluish-greens, also encapsulated the idea that a house should evoke visual pleasure.

Preis’s circuitous entry procession and bright colors continued throughout the home’s interior, with a clear, horizontal directionality. While earlier in Vienna, Loos had developed the *Raumplan* with circuitous passages and bold spatial revelations primarily achieved with vertical procession, Preis’s houses kept with US residential trends that spread out one, primary living story over the site. While some of his houses have multiple living “stories,” he typically made transits between them with height changes of a half-story or less. At his Hudson House (1955), for example, a stunningly crafted wooden staircase acted as the central axis for the house and divided the second floor from the first. But it was short, and provided enticing – yet slightly obscured – views onto the second floor living area, encased in glass windows. His many residences have an overall sense of horizontality that is achieved with changes in *levels*, rather than in full stories.

Much of Preis’s one-living-floor strategy had to do with the topographies of the houses themselves – elevated single-floor, but variously leveled houses provided not only better views of the landscapes, but they also protected the foundations and the living areas from moisture and Hawai’i’s myriad insect pests. Preis thus continued to use Vienna-derived spatial complexity at the Lau house, but he developed it in a *horizontalizing* of Loos’s *Raumplan*.

Like the street view, there is no moment at which the Lau’s plan is fully disclosed while standing in any position on the interior. Clear views between the rooms are suppressed with walls in various contrasting materials and at angles that provide a glimpse of what is beyond – without fully revealing what is there. From each vantage point, he revealed strategically framed vistas, punctuated with changes in materials and colors. Other Vienna



04 Alfred Preis, Lau Residence, Honolulu, Hawai'i, 1951. Living room.
© Photo: David Franzen, 2011.



05 Alfred Preis, Lau Residence, Honolulu, Hawai'i, 1951. View from dining room toward the living room. © Photo: David Franzen, 2011.



06 Alfred Preis, Lau Residence, Honolulu, Hawai'i, 1951. Stair to bedroom wing.
© Photo: David Franzen, 2011.

modernists used similar strategies in their buildings¹⁶ and Preis used those precedents to boldly explore the visual and haptic potentials of concealment and revelation. Using colors, materials, unusual turns, and areas of compression and release throughout the house, Preis created a dramatic interior procession of new discoveries. Views to the outside were similarly composed, such as through wide, glass doors that framed the compelling trapezoidal geometry of the home's rear patio (*lanai*) and exterior walls.

Around the rear *lanai*, the living room and dining room spaces were composed with a slightly angled L-shape. This organization resoundingly subverted the modernist open-plan by partially obscuring views between the rooms, but invited an exploration what the various spaces might reveal. Adding to the spatial complexity, devices like a tile floor from the rear *lanai*, which undulated organically under the glass doors disoriented the boundaries between indoor and outdoor worlds. These curving lines were also echoed by a black, amoeboid-shaped dining table.

Changes in ceiling heights were emphasized by changes in color – such as a deep red paired with dark, horizontal lines – and created a haptic sense of compression in passage between the rooms. The dining room ceiling (located in the rear volume of the house) was taller and covered with light, robin's egg blue acoustic tiles. But it was clearly separated from the lower, red ceiling by a dramatic band of clerestory windows. Moving from the lighter and higher ceilinged dining room space through a physically and chromatically “tighter” point of transition into the living room, the visitor was released into a space that revealed a dramatically canted picture window with views to the lush, outside vegetation. The window was framed with horizontal and vertical lines, modulating the exterior vistas, with clerestory openings for ventilation.

The material contrasts and geometries of the built-in living room furniture defied the elegant minimalism of mainland modernists like Pierre Koenig or Richard Neutra, for example. Instead, Preis created a sumptuous feast for the eyes, hands, and body. For example, the exterior walls of white brick projected into the living room, abruptly interrupting the smooth, dark built in window seat and cabinet. A light green band of color just under the deep red ceiling relieved its chromatic weight. Perpendicular lines set at irregular intervals in the two-toned, wood shelving broke up their horizontality.

Preis also used built-ins in contrasting colors and materials as opportunities to sculpturally interrupt flat walls. These were sometimes mirrored so that reflection would enrich visual experiences and make smaller spaces appear to have more volume. These pieces also functioned as moments for tactile contemplation through the opening or closing of their various compartments. In these ways, Preis's frequent use of built-in cabinetry was strongly reminiscent of Loos's earlier residential furnishings, as well as his use of mirrors to expand tight spaces, most notably applied at the American Bar (1908) in Vienna.

Preis's use of such complexities, including his angled walls, and obscured views continued into the entry sequence

to the bedroom wing and in the bedrooms themselves. These were located in the rear wedge-shaped volume of the house. A small flight of black-painted wooden steps (abutted by an angled wall with a hidden, timber paneled storage cabinet), ascended from the dining room with a leftward twist to a hall containing doors to the bedrooms. Even the masonry wall intersecting with the base of the stairs tilted at a slight angle. From the base of the stairs, the angle of the stair and the rightward swing of the upper hallway blocked a clear line of sight to this private wing. Some bedroom doors too, were set into angled walls, rather than as a series of doors along a straight wall.

The bedrooms and family common areas in this wing used rich in colors like green and turquoise, variations in material textures, alternating between colored acoustic ceiling tiles, various shades of timber paneling, some black painted floors, sliding shoji doors for closets and flexible spatial divisions, and ubiquitous built-in cabinetry stained in various shades. A guest bedroom was accessed through inset door in an angled wall, giving the room six walls, one of them mirrored. An undulating fascia in shocking lime green broke the levels of a dual-height, reddish-brown plywood ceiling.

Preis devoted attention to each space in the house, making each its own poignant work of architectural art. Yet he knitted them together by exploring the experiential possibilities of spatial, chromatic, material, and geometrical complexities. Moving through the house and experiencing its perfectly orchestrated views, its unexpected twists and turns, the playful beauty of its built-in furniture, bold colors, and materials evoked an ultimately joyful interaction with architecture.

As of 2011, when it was designated a state historic landmark, the Lau House fully retained its exterior and interior architectural integrity, apart from the addition of solar panels to the roof and some small interior alterations.¹⁷ Today, the exterior of the house remains intact. However, new owners have removed and paved over the front lawn and the side gardens along its rear wing for additional parking. The destruction of these landscape features has negatively impacted the exterior integrity of the house, as well as the interior views to the yards, to which Preis paid careful attention with the placements and dimensions of his windows. Whether its fine interiors have been preserved since the building's 2011 designation is currently unknown at may be at risk.

Conclusion

In Hawai'i, Preis embraced Vienna-inspired explorations of space and created compelling complexities through changes in levels, diameters, ceiling heights, and window articulation. Rather than eschewing ornamentation, Preis used materials, furnishings, and colors for unabashedly decorative effects. His residential buildings were not only sophisticated architectural compositions, they were also decidedly *fun* – and fitted deftly with popular ideas about Hawai'i's tropical leisure after WWII.

In contrast to the growing influence of the International Style in Hawai'i in the 1940s and 1950s (which was

historically derived from regions outside of Austria), Preis's residential designs owe a strong debt to Vienna's own indigenous forms of modernism before WWII. As described earlier, many Viennese architects' approaches to space, procession, and ornamentation were markedly different than what have generally been considered the "tenets" of Modernist design, such as spatial clarity, rationality, functionalism, and the rejection of ornament.

Although Preis ultimately developed a Hawai'i regionalism, his time in Vienna never left him. Indeed, he developed these sensibilities in novel directions compatible with his adopted tropical home. In both public and private buildings, he embraced the varied forms, materials, colors, and textures, and cultural traditions that characterized the breathtaking diversity of the Hawaiian landscape and its peoples. He distilled these into buildings that were lively, pleasurable, and suited to the tropical climate. Perhaps most importantly, as architecture and design historians re-evaluate the historical meanings and forms of "modernism," Preis's Hawai'i work aptly demonstrates the rich diversity of approaches to modern architecture at mid-century. His designs also highlight the fortuitous impact on Hawai'i architecture by a refugee who emigrated from Vienna only by force of tragic historical circumstance.

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José Lei, Rainha Dona Leonor Housing Block, Macau, China, 1961.

Tropical Modernity: a Hybrid-Construct in South China

BY RUI LEÃO AND CHARLES LAI

Parallel to the discourse of Tropical Architecture and the work of UK architects in the British colonial territories in the Middle East, Africa, and India after the WWII, climate adaptation designs or devices such as *brise-soleil*, perforated cement bricks, sun shading screens, courtyards, etc., started to emerge in modernist buildings in Asia. This article is a preliminary survey of these cases in Hong Kong and Macau since the 1950s. It discusses how tropicality was used in response to the post-war revisionism of Modern Movement that placed emphasis on local identity and culture.

The adoption of Modernism in European Colonial Territories had a multiple layered agenda. From the perspective of the state, it was understood as a method for optimizing the exploitation of these places for more profit. The introduction of the lift, the high-rise, the *brise-soleil*, the fan, the air-conditioner and other climate control devices throughout the 20th century, were all seen as urgent innovations to boost the economy and the speeding up the means of production. To understand the role of architects in spinning the ambivalence of cultural production through architecture, the technological innovations of passive energy are of particular interest to us, such as the *brise-soleil*, the perforated cement bricks and shading screens, and the use made of these technologies to explore the “vernacular” and “regionalism” to signify both the environmental functionality of a building and express cultural meaning.

In places like Indonesia, Malaysia, Singapore, and Thailand, the advent of Modernism and the access to new construction technology led many architects to look back at their traditional techniques and environmental control, to develop new approaches to cultural discourses, aiding the buildup of identity politics on the post-colonial globalized world. With their projects, these architects were re-accessing their local design culture, and testing how Tropical Architecture could be used to assert regional differences. In the case of Hong Kong and Macau, the introduction of Modernist architecture didn't give rise to a re-visitation of the vernacular and proto-tropical traditions, due to the strictly urban and colonial conditions in both places.

In 1958, Hong Kong-born, London-trained, Shanghai-practiced, migrant architect Luke Him Sau (1904-1991) designed the Saint Ignatius Chapel for the Kowloon Wah Yan College with in-fill screens made of perforated cement bricks as a *brise-soleil* facade. It synthesizes both Christian symbolism and modern “Chineseness” with the rectilinear

geometry of architectural modernism. Rather than defining it as an isolated architectural event, Luke's use of *brise-soleil* bears certain resemblance to British architects Maxwell Fry and Jane Drew's designs in Ghana since the late 1940s. Their use of perforated cement screens or balustrade as *brise-soleil* devices was quintessential to Tropical Architecture, an architectural discourse reinforced by the 1953 Tropical Architecture Conference, and the establishment of the Department of Development and Tropical Studies in the AA led by Otto Königsberger. Devices of Tropical Architecture such as *brise-soleil* and perforated cement blocks became a design culture that had made its mark across the entire British Commonwealth from Ghana to Singapore to Hong Kong.

Across the Pearl River Delta, in the same year in Macau, the design for the Rainha Dona Leonor Housing Block (RDL) was underway, led by architect José Lei (1930-), a Hong Kong-trained architect from Macau. The block adopts a modernist vision for dwelling, with a stacking of the duplex typology, the use of *brise-soleil*, ventilated concrete blocks and naturally ventilated circulation. The RDL block represents the first intentional effort to signify local modernism relating to the sub-tropical climate of the region and producing a localized cultural artifact to respond to a large scale modern commission. Lei applies to this tower project several of the innovations on solar protection systems from Le Corbusier's research for the Marseille Unité d'Habitation of 1952, adapting it to a more compact urban situation.

Background, Knowledge Gap, and Initial Findings

When examined against the framework of the Tropical Architecture discourse, the work of Luke and Lei can be seen not only as devices of the function-driven “environmental design”, but a branch of modern architecture that

aimed to materialize the sub-tropical climate of the region into an architectural representation that could simultaneously respond and embody local contexts and identities, through the uses of *brise-soleil* and perforated cement bricks.

The frequent use of perforated cement bricks in Hong Kong's modern architecture had turned it into an urban milieu and anchor of local identity. The recent resurgence of the material also mystifies the link between such material culture and the international discourse of Tropical Architecture, leaving behind potentials to compare and dialogue with emerging studies on the same topic in Singapore, Thailand, Indonesia, India, etc. Hence this research aims at discovering, documenting and historicizing the cases and potential links between Hong Kong and Macau's architectural design and the international discourse of Tropical Architecture. In other words, this research defines the perforated cement bricks and *brise-soleil* in the Pearl River Delta's modern architecture not only as a local, isolated vernacular adaptation, but also as a design culture conditioned by a larger international modern architectural discourse. The overlap of Tropical Architecture and the post-colonial processes in Southeast Asia produced a category of architecture not only responding to the emerging science of climatic adaptations in modern architecture, but an architectural genre that was inextricably tied with (post) colonial politics as well. This research put Hong Kong and Macau's Tropical Architecture under the same trajectory: it signifies the production of a localized version of an international architectural culture, as architects saw it not only as a scientific apparatus to cope with the challenges of heat and rain, but as a potential to localize the modern movement in architecture under the asymmetrical power-relation in colonial context.

For instance, the theme of emerging design methods and material to cope with tropical and sub-tropical climate had been the main focus of the *Colonial Building Notes* (1950-1958) and *Overseas Building Notes* (1958 onwards) published by the Building Research Station of the UK Government. The circulation of images and solutions created a transnational design culture. This highlights the role of such networks and is of particular interest in the work of Cantonese-speaking architects of the Pearl River Delta region and their role in the larger discourse of Tropical Architecture.

The paper will assess how such design culture influenced the emergence of the "South China Architectural Faction" (or "Lingnan Architectural School"). One of its founding members, Chinese architect Xia Chang-shi (1903-1996) published an article "Lowering Temperature in Sub-Tropical Architecture", in Vol. 10, 1958. Xia's affiliation with the Sun Yat-sen University (or Zhongshan University) and the influence of the teaching staff members like Lin Ka-ming and Lau Sun-fo, as well as other Cantonese-speaking architects who had received education overseas such as Robert Fan (1893-1979), Szeto Wai (1913-1991), Luke, among others.

Lingnan Architecture is the umbrella term for the local architecture of Guangdong, Guangxi, Hunan, and Jiangxi

provinces in South China. *Lingnan Architecture*, within the regional architecture of the Changsha area, the Pearl River area and Hakka culture can be distinguished by distinct architecture and unique features. Architect Xia thoroughly studied the local houses and their climate-responsive systems and elements which presented a vernacular response of architecture to the hot and humid subtropical climate in many ways, such as with large porches and archways, natural cross ventilation systems with special perforated bricks and roof structures to let air move through the building, and mobile shading systems of bamboo wickerwork.

A Hybrid-Construct in South China

We have identified several cases that continued the exploration of this approach of tropical adaptation of architectural typologies in Hong Kong, like the public housing estates such as Model Housing Estate, Choi Hung Estate, Wah Fu Estate, St Joseph's Primary School, CUHK Chung Chi College Chapel, HKU Robert Black college, Tang Lung Chau Market, Ward Memorial Methodist Church, Star Ferry Car Park, etc. In Macau, some public buildings from the 1950s, designed by the architect Aureliano Guterres Jorge, João Canavarro Nolasco, Lam Fai Teng and by other local engineers and draftsmen had made incursions into this new science of climate response, namely in the São Lourenço Market, the Mitra Market, the Long Va Tea House, the Liceu Nacional Infante D. Henrique (demolished) and the main block of the São Januário Hospital (demolished), the two latter designed by the GUC, the Planning Office of the *Ministério do Ultramar*.¹

An analysis of the above will deepen our understanding and contextualize a design culture that we have assumed to be local, fulfilling a rather neglected and urgent chapter of Hong Kong and Macau's post-war modern architecture that heavily interacted with the international scene in both direct exchanges of knowledge and indirect, unintended diffusions across national boundaries in the shifting political landscapes of post-war decolonization in the region.

In 1962, a group of young architects arrived in Macau, to set up an Urban Planning department to substitute the urbanization role of the GUC. In Macau they built projects exploring the climatic, cultural and contextual site-specific concerns, using a modernist lexicon with distinct architectural renderings. Their Portuguese background and the opportunity to observe the daily life of Macau allowed for a whole new level of experimentation applied to their design.

These young professionals were Manuel Vicente (1934-2013), José Celestino Maneiras (1935-), Natália Gomes, and Jorge Silva. They brought with them the experience of Portuguese Modernism and the lessons learned with the Survey on Popular Architecture,² a nationwide survey tasked by groups of architects, who, in a direct counter-action against the nationalist revival of the Estado-Novo Regime, organized a systematic mapping of the autochthonous architecture built without architects all over Portugal. This survey had a big impact on the younger generation of modernist architects, leading them to question the context,

the pre-existence and the dimension of the autochthonous in their projects.

José Maneiras, the only Macau-born architect of this group, designed in the 1960s and 1970s several housing projects for private clients. In all of his interviews José Maneiras states that he was solely concerned with the insertion of the building on the site to minimize soil works, on natural ventilation and on solar penetration, but it is obvious that there was a deep humanist contribution to the plastic and cultural expression of Macau Architecture in his built work. His 1966 Fong Wong housing block close to the St. Paul's Ruins,³ explores very plastic expressions for integrating shading devices into the facade design, based on very functionalist principles. His buildings enhance the use of natural ventilation and are all looking for an expression for modernist principles in the tropics. The Government Staff housing block opposite the Military Club,⁴ looks at the same type of solutions as the Fong Wong housing to address climate control to the building, but at a larger scale, designing a piazza in-between the blocks and articulating the scale of the traditional city with a high-rise typology. His project for the *Belle Court* building on Guia Hill pursues the use of projecting roofs and a Brutalist language to deal with climate control, achieving other aesthetic solutions to the same premise of tropical response to architecture.

On a crest of Penha Hill, the elegant Adjoin-Secretary residence stands heroically over Praia Grande Bay. Designed by Jorge Silva in 1962, this careful composition, transpiring Wrightian assimilations, reflects his concentrated exercise to deal with the heat and humidity of the sub-tropical climate and defines a strong urban statement for the dwelling. It makes use of shading screens, projected slabs, high horizontal windows and narrow vertical openings to address the climatic conditions and defines the argument for a sophisticated composition along the street perimeter.

Architect Natália Gomes, had worked as a designer in the public works department and as a partner in Manuel Vicente's practice, to whom she was then married. In 1970, she designed the public showers for Hac Sa Beach. This small piece of infrastructure is fully adapted to its tropical climate. Around the centrally ventilated shower core, a full outer ring of shaded space is placed to act as a receiver of users, and serves the ancillary function for people arriving at and leaving the beach.

Manuel Vicente was the most influential of the new-comers. Since 1963, he practiced in both Macau and Lisbon. Manuel Vicente kept an engagement with the local social context, translating how a Portuguese type of public engagement could be received in the Southeast Asian context. In Macau, he learned the freedom of inserting different realities into the realm of the project, which resulted in a freedom of form in his projects. His work reveals his ability to adapt to the local building practice and his interest in understanding the phenomenological difference of Chinese culture applied to the art of architecture, through the qualities of light, color, scale and spatial proportions.

Three of his projects from the 1960s contributed to the cultural discussion of Tropicality as a cultural

01 Xia Chang-shi, Sun Yat-sen University (or Zhongshan University, Medical School, Guangdong Province, China, published in his article "Lowering Temperature in Sub-Tropical Architecture", Vol. 10, 1958.



benchmarking for architecture. The CTT Housing Block from 1963 (built in 1965) at Avenida do Almirante Lacerda, designed around a low-rise stacking of duplex apartments, makes use of louvers, *brise-soleils* and sun screens to filter the sunlight to the apartments and the common areas, which evolve around an interior patio and the staircase that together generate a ventilated micro-climate for the block.

The Pa Ka Pio is a typical office building, built in 1964 on Avenida do Infante D. Henrique, to house the local Pa Ka Pio lottery staff premises. The ground floor is an open space, occupied by the Number Drawing machine placed ritualistically at its center. The design of the facade makes an interesting investigation of the proportion of the typified windows, intended to optimize climate control to the office spaces. Manuel Vicente details the facade with elements to reminisce bamboo structures and their structure articulations, a vague reference to bamboo structures which are used for scaffolding on civil works, and are still a common sight on Macau construction sites.

Along Rua da Praia do Bom Parto, in the Helen Liang Orphanage building, from 1966 (designed from 1963) we can find a myriad of climate control devices applied to the facade: the *brise-soleil*, the louver, the perforated cement bricks, raised ventilation windows and pergolas. These are used to produce a very complex object, out of a simple volumetric design, where each functional part is differentiated by use of different fenestration and shading devices. The mature plastic use of these elements, over a mixed use of concrete and brick, also meant to express the functional divide of the plan, results in a very novel architectural rendering that is both Brutalist and heterogeneous. Local South Chinese Architecture, or Lignan style tradition had developed valid responses to the subtropical climate of South China, reflected in the temples, mansions and other public buildings built in the local tradition by Chinese Interests. The experience of this architecture is well filtered into the projects of Manuel Vicente, with a clear intent on avoiding cultural appropriation.

Manuel Vicente returned to Macau in the late 1970s, after spending several years at the *Housing Development Fund* in Lisbon, where he headed the planning sector during the heated years of the SAAL⁶ process. That experience was very

02 Luke Him Sau, Saint Ignatius Chapel, Seattle, USA, 1958.



03 José Celestino Maneiras, FON WONG housing block close to the St. Paul's Ruins, Macau, China, 1966.



04 Natália Gomes, public showers for Hac Sa Beach, Macau, China, 1970.



05 The Helen Liang Orphanage, from 1966, Manuel Vicente's first project for Macau, designed from 1963 for the Praia Grande waterfront location.



06 Manuel Vicente's, Fai Chi Kei Social Housing Scheme, 1979-1980, his most celebrated building in Macau, demolished in 2010.



07 Raul Chorão Ramalho, Portuguese School of Macau, Macau, China, 1963-1966, architect Raul Chorão Ramalho's masterpiece.

formative for the role he took up in Macau, where he used social resettlement programs to produce consolidated and qualified stretches of city where nothing else was in place yet. Like the Kong Mou Un Resettlement Block in Toi San, the STDM Resettlement Housing block, both built in 1965 and the Fai Chi Kei Social Housing Scheme of 1979-1980 (demolished in 2010).

The Fai Chi Kei scheme revisits many of the themes that were initiated in his projects from the 1960s, but re-organized through an over-riding urban scheme that defined a hierarchy of monumental gates ordering a central public space. All the housing units were clustered around naturally ventilated patios, which were organized in a comprehensive system, where the central piazza was a useful cross ventilation device. The proportion of the central piazza's section made optimal use of the shadows produced over it by the two blocks during the day.

In the last part of the 1960s, there was another important agent in the Modernist narrative of Macau. In one of the last manifestations of the GUC, which was now known as GUU,⁷ the Portuguese architect Raul Chorão Ramalho (1914-2002), whose practice had been intensely involved with the SAAL process in Portugal, was directly commissioned for several public buildings for Macau, of which the Guia Kindergarden⁸ of 1964, the Leal Senado municipal staff housing tower of 1966 at Avenida Sidónio Pais, the semi-detached houses for higher ranking government servants at Avenida Coronel Mesquita of 1962 (built in 1965), and the Escola Portuguesa de Macau [Portuguese School of Macau] (former Escola Comercial Pedro Nolasco) of 1966, were important contributions to Macau's Modernist Tropicalism.

The semi-detached houses project, from 1963 (completed in 1966) proposed an integration of the *brise-soleils* into the geometry of the unit, using it to draw the shape of the patios around the dwelling. The houses make use of perforated cement bricks and shading screens to regulate the design of the exterior and semi-exterior spaces.

The Escola Portuguesa de Macau (1963-1966) is a sophisticated building, and architect Raul Chorão Ramalho's most important legacy to Modernism in Macau. It is organized as a system of pavilions connected through a network of pergolas and hallways. This scheme allows for a series of in-between gardens, passages and patios that draw a well-balanced articulation of interior and exterior spaces for the school's use. The building adopts *brise-soleils*, shading screens and louvers to articulate the complex spatial arrangement, and develops spatial solutions that relate to both the Chinese tradition and the Mediterranean.

The Escola Portuguesa de Macau building is probably the most sophisticated Modernist artifact built in Macau. It proposes a rich set of climate control devices and builds an architectural discourse around the use it makes of them. From the mid-1970s onwards, with the general adoption of the fan and later the air-conditioner, the focus on climatic adaptation concerns in the projects diminished, resulting in a reduction of the depth of the building's skin, a loss in the use of shadow and the abandonment of detailing on the filtering light into buildings.

Notes

- 1 The GUC, or *Gabinete de Urbanização Colonial*, was a department of the *Ministério do Ultramar* that had oversight of the Colonial territories, namely for management of resources and planning strategy.
- 2 *Inquérito à Arquitectura Popular*.
- 3 The St. Paul's Ruins on Monte Hill are the remains of the Mater Dei Church, a Jesuit temple that burned down in the early 19th century and is today the city's main touristic attraction.
- 4 An important secular Institution of Macau.
- 5 *Fundo de Fomento de Habitação*.
- 6 The SAAL operation (Local Ambulatory Support Service) promoted by the First Provisional Government in the aftermath of the 1974 revolution involved Architects and Residents' Associations in a unique process of joint production of collective housing with controlled costs.
- 7 The *Gabinete de Urbanização do Ultramar* [Overseas Urbanization Office].
- 8 Known as *Infantário da Guia*. Originally named *Infantário Avé Maria*.

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Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, view from Paseo de la Reforma.
© Photograph by Alberto Moreno Guzmán, March 2020.

The Japanese Embassy in Mexico: a Fortunate Association, a Threatened Heritage

BY LOURDES CRUZ

An examination of the architectural value of the Japanese Embassy in Mexico, designed by Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, which is in danger of being demolished. The context of mid-century Mexican architecture is addressed in order to situate this work within its historic moment, thus confirming its importance. This building was the result of an intellectual encounter between one Japanese and two Mexican architects, who exchanged ideas, concepts and criteria, resulting in a building with an innovative formal design, due to the use of reinforced concrete, and the flexibility of its structural concept, which allows it to be adapted to different uses. This article is essentially based on the archive of the architect Manuel Rosen Morrison, held by the Archive of Mexican Architects at the National Autonomous University of Mexico's Faculty of Architecture.

A brief look at the architectonic environment of mid-century Mexico City

Ever since the fourth decade of the 20th century, the Modern Movement had been patronized by the post-revolutionary Mexican government as a way to project an image of the power and progress that it consolidated following WWII; Mexico presented an image to the world of a prosperous country, full of opportunities that would not come twice.

The rationalism that accompanied this architecture was based on the myth of an orderly, scientific society that admired technology and the machine. In those years, architects believed in a universalist world, in which distances were shrinking and knowledge was expanding through the use of modern means of communication. This explains their convictions regarding the use and adaptation of technological systems and materials that were used abroad.

The global conflicts provoked by WWII were of decisive importance for the Mexican economy, which began to produce products that had previously been imported; Mexico slowly began to develop industrially, which led to the concentration of its population in its major cities. The growth of the cities required housing for all sectors of the population and health, educational, commercial, cultural and recreational infrastructure.

Towards the end of 1962, the foreign press began to discuss the "Mexican miracle," as the country enjoyed international prestige and an apparent internal stability. The desire to present an image of progress and modernity was manifested in Mexico's major cities through the use of an architecture in line with the avant-garde of developed countries. Functionalism underwent a transformation and the International Style, which made its first domestic

appearance in the 1940s, became practically a construction norm in the 1950s and 1960s in urban areas.

Mexican architecture was internationally renowned, thanks to foreign magazines that showed off the country's enormous urban-architectonic complexes as proof of the government's achievements. For example, the primary example of this in the field of education, remains to this day, University City (1950-1954). In the field of health, one outstanding project was the construction of the National Medical Center (1952-1962), led by Enrique Yáñez (1908-1990), in which, like University City and other government buildings, the concern with affirming Mexican nationalism was manifested by the presence of artistic interventions. There were also housing projects of considerable magnitude, such as the residential units designed by Mario Pani (1911-1993) and Alejandro Prieto (1924-1996). Likewise, it is worth emphasizing the series of museums designed by Pedro Ramírez Vázquez during the Adolfo López Mateos (1909-1969) administration (1958-1964), which formed an important part of the government's cultural program, which will be discussed in greater detail below.

The many athletic facilities built in Mexico for the 1968 Summer Olympics were the most important construction projects at the governmental level during the Gustavo Díaz Ordaz (1911-1979) administration (1964-1970), expressing the government's desire to show off its prosperous economy to the rest of the world. The design of these sports facilities revealed that Mexican architecture had entered another phase, in which certain concessions were made to the Modern Movement in terms of the search for technological innovations and experiments with reinforced concrete. In this sense, Manuel Rosen Morrison's

designs for the Olympic Swimming Pool and Gymnasium were especially outstanding.

The Importance of Reinforced Concrete in Mexico (1960-1975)

Ever since the 1950s, certain architects from around the world have been concerned with exploring and experimenting with the structural and plastic possibilities of reinforced concrete; each one of them approached this differently, from so-called Brutalism to refined, painstaking detail work, both in the structure itself as well as in the facade.

In Mexico, the use of reinforced concrete became popular due to its ability to reduce labor costs, as well as the expressive freedom it allowed. This formal exploration originated, above all, as a way to overcome the rationalist flat roof: here, it is necessary to mention the hyperbolic paraboloids that covered churches and chapels, an endless number of manufacturing spaces across the country and the markets built by Félix Candela's (1910-1997) company Cubiertas Ala, or by other outstanding architects, such as Enrique de la Mora (1907-1978), Fernando López Carmona (1921-2018), Alberto González Pozo (1934-) and Juan Antonio Tonda (1931-). At the same time, there began to appear a variety of prominent buildings around the country in which reinforced concrete revealed a concern for exploring the possibilities of this material, which offered improved everyday technical possibilities, including the Indigenous Institute (1963), by Alejandro Caso (1926-2004) and Margarita Chávez de Caso (1929-); the Grupo ICA building (1970), by Augusto H. Álvarez (1914-1995) and Jorge Flores Villasana; the IBM building (1972), by Augusto H. Álvarez, Enrique Carral (1914-1976) and Héctor Meza; the Cuauhtémoc Delegation (1972), by Teodoro González de León (1926-2016), Abraham Zabludovsky (1924-2003), Jaime Ortiz Monasterio (1928-2001) and Luis Antonio Zapiáin (1942-); the Heroic Military College (1971-1976), by Agustín Hernández (1924-) and Manuel González Rul (1923-1985); the Institute of the National Housing Fund for Workers (INFONAVIT) headquarters (1973-1975); the College of Mexico (1975) by Teodoro González de León and Abraham Zabludovsky; and the Japanese Embassy, the subject of this article.¹

A Fortunate Encounter: Pedro Ramírez Vázquez, Manuel Rosen Morrison and Kenzo Tange and the Japanese Embassy in Mexico

To understand the association of these three architects on this project, it is necessary to situate them in their time, understand the importance of their careers and explain how they met, as well as why this cultural exchange provided such positive results.

Pedro Ramírez Vázquez is considered to be one of the most important and varied Mexican architects of the 20th century. Since 1944, his firm designed emblematic architectural and urbanist projects at the national and international levels, as well as many graphic design and furniture projects for all types of companies. He saw architecture as a way to serve society and, within the precepts of the Modern Movement, designed countless schools, markets, offices and

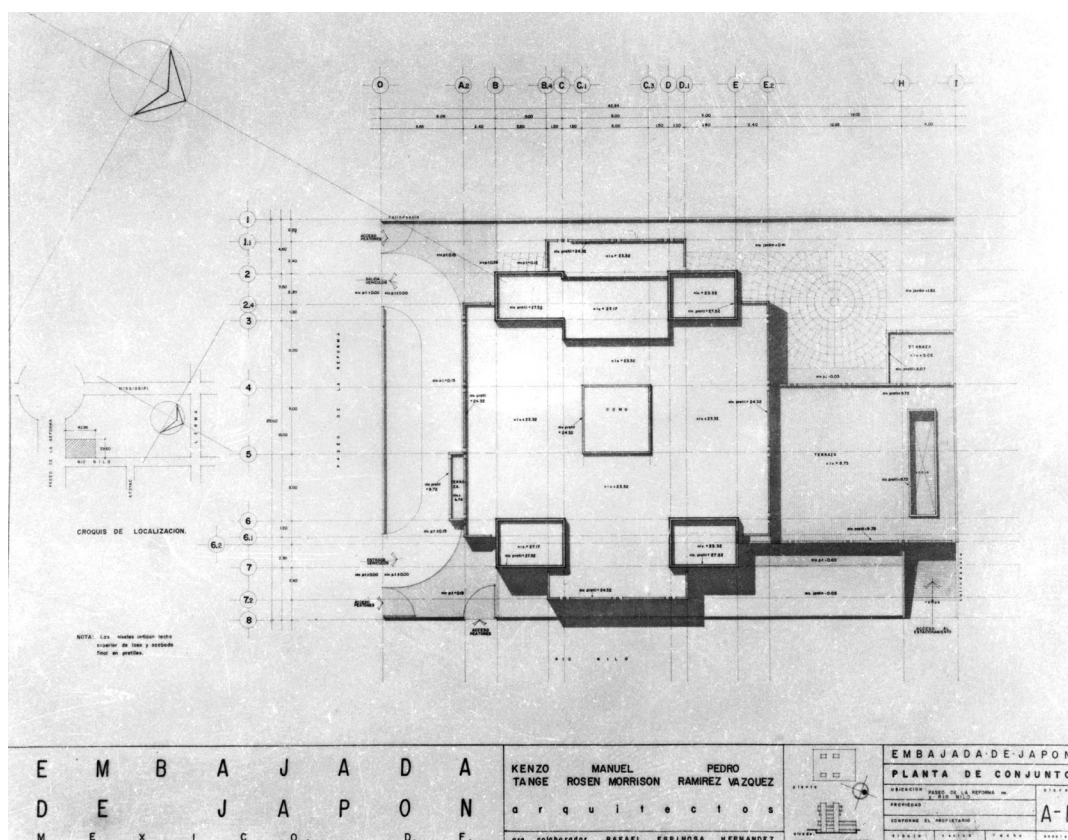
government buildings, museums, athletic facilities and exhibition pavilions, among other projects.²

Parallel to his professional work, he occupied a series of government positions, such as the General Director of the Federal School Construction Program's Administrative Committee from 1958 to 1964. During this time, he oversaw the construction of 35,000 prefabricated schools around the country, based on a prototype known as the Rural Schoolhouse, which won him the gold medal at the *Triennale di Milano*. In 1966, he built the monumental Estadio Azteca in reinforced concrete after winning the competition alongside Rafael Mijares (1924-2015) and Luis Martínez del Campo.³ The 1960s were an especially productive decade in Pedro Ramírez Vázquez's career, primarily because of the museums he designed and for his role presiding over the XIX Olympiad in 1968, which consolidated his international renown as one of Mexico's most important architects.⁴

Some years later, he began to collaborate with an architect seven years his junior, Manuel Rosen Morrison, who had always had an interest in foreign architects and architecture. At the young age of 26, he attended the *Panamerican Congress of Architects* held in Mexico City in 1952, at the brand-new University City built in Pedregal de San Ángel, primarily motivated by the desire to meet internationally-renowned foreign architects such as Frank Lloyd Wright, Alvar Alto (1898-1976) and Mies Van der Rohe. This desire or ability to make friendships was a constant in his life, and he was distinguished in the world of architecture for being a great host. He was a friend to writers, painters, actors and renowned Mexican architects. Thanks to his English fluency, his charisma, his interest in foreign cultures and the support of his family, his house was the site of countless gatherings featuring his friends from around the world. One friend, Dr. Víctor M. Pérez Valer, described him as follows: "His most sublime achievement as a person is to be a builder of bridges across religious, linguistic, cultural



01 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, first draft proposal, with finishes featuring warped surfaces that evoke pagodas. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM.



02 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, master plan of the complex. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM.

and national divides.”⁵ These relationships, along with his countless trips and his love of reading, gave him a broad sense of culture, leading the architect Mario Pani, editor of the magazine *Arquitectura/México*, to invite him to form part of the Crítica group, made up of Vladimir Kaspé (1910-1996), Félix Candela, Gianni Cosco and Mauricio Gómez Mayorga; he would later write for many other international magazines. This concern with reflecting on his profession and the built environment led him to be invited to speak at domestic and foreign universities on numerous occasions.

From the end of the 1940s, he designed many houses and apartment buildings in luxurious neighborhoods of Mexico City, as well as offices and government buildings. He’s undoubtedly most famous for the Olympic Swimming Pool and Gymnasium, built for the 1968 Olympic Games. Together with Eduardo Gutiérrez Bringas, Antonio Recamier and Juan Valverde, he won the competition, undoubtedly for his design and innovative constructive system, based on a hanging roof supported by cables, allowing him to cover an over 80 meter span, considered to be a difficult feat at the time.⁶

After this sports project, he associated with Pedro Ramírez Vázquez on the Japanese Embassy in Mexico, located on the corner of Paseo de la Reforma and Río Nilo in Mexico City’s Cuauhtémoc borough, in collaboration with the famed Japanese architect Kenzo Tange; the Japanese-Mexican Lyceum (1976); and the Children’s Psychiatric Institute (1977), located in the south of the city, designed with Rafael Espinoza, among others.⁷

At the beginning of the 1970s, Manuel Rosen Morrison, while continuing to work as an architect, launched a business venture in which he and his partners attempted to open a Mexico City franchise of a famed Japanese restaurant. This failed venture allowed him to visit Japan and, at the same time, build a close relationship with important people at the Japanese Embassy in Mexico. Influenced by Manuel Rosen Morrison, the Japanese diplomats became concerned with building a new embassy in Mexico that would properly represent their country’s importance. For this purpose, they hired Manuel Rosen Morrison and Pedro Ramírez Vázquez, who immediately sought out Japan’s most important architect at the time, Kenzo Tange. Pedro Ramírez Vázquez discussed this in an interview given during the construction process:

We already knew how the services of an embassy were used or needed in Mexico, and how Japan operates in Mexico. That gives us the program, and the Japanese embassy officials could tell us what they need. But the architectonic interpretation? We’ve never built in Japan. How do the Japanese feel a space? We’re not Japanese, and so we need a Japanese person to tell us, and it would be better if that Japanese person is someone used to creating spaces: an architect. And among them, of all the Japanese architects we’re familiar with and whose work we enjoy, there’s Kenzo Tange... He has built in many countries, and so is obviously used to working with technicians from different backgrounds, to working on a team.⁸



03 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, view from Paseo de la Reforma. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM. Photograph from 1976.



04 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, view from Río Nilo. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM. Photograph from 1976.

Kenzo Tange was then internationally renowned in the fields of architecture and urbanism. His style was revolutionary and innovative, combining the precepts of contemporary international architecture with the traditional construction techniques of his home country. He became famous after WWII, when he won the competition to rebuild the devastated city of Hiroshima with a new urban plan and the Peace Center, 1949. He built many government buildings, libraries, etc., but is particularly known for the facilities he designed for the 1964 Tokyo Olympics, which revealed a mastery of technique in the organic forms of the stadiums' suspended roofs. Ever since his earliest projects, he was distinguished by the use of reinforced concrete, as in the Kuwaiti Embassy in Tokyo (1970), a project that was influential on the Japanese Embassy in Tokyo, as we shall see below.

The Development of the Project

One of the important milestones of this embassy is the fact that, for the first time, the Japanese government invited architects from a different national background – in this case Mexicans – to design a building for one of their embassies. In an interview, Manuel Rosen Morrison said that, “For us, it was very satisfying to learn that, for the first time, the Japanese government has invited architects from another country to design one of their embassies.”⁹ Here it should be mentioned that Manuel Rosen Morrison's archive was donated to the Archive of Mexican Architects at the

National Autonomous University of Mexico's Faculty of Architecture in 2007. Studying this archive, several questions about the contracting and design process arise.

The first is that the contract, signed by the Japanese Embassy and the Mexican architects on 16th May 1973, specifically states that the drafts, executive project, blueprints and structural drawings for all of the embassy's facilities, along with any spreadsheets, must all be approved by the Japanese government by 30th July 1973. The architects would also have to establish the guidelines for the bidding process for construction.

Reviewing their correspondence, which contains letters and telegrams, it becomes clear that it was not easy to reach an agreement with Kenzo Tange regarding the issues of authorship and honoraria, although these matters were eventually resolved so that all three would share architectonic credit and the profits would be shared equally. Based on the archive, it seems that Kenzo Tange only came to Mexico once, which made Manuel Rosen Morrison uncomfortable. The latter went to Japan on at least two occasions, and also met with the Japanese architect in the USA. This can be explained by examining Kenzo Tange's career, which was quite busy during those years. The embassy was an important project, but a small one, and he surely trusted the professional skill of his partners.

Examining the archival documentation, there's no indication as to which architect had the initial idea or made the first sketch, but after analyzing Kenzo Tange's design

for the Kuwaiti Embassy in Tokyo (1970), it's evident that he provided the project's conceptual framework. There's a clear similarity between both embassies in terms of their spatial and structural conceptualization: in the nuclei of circulation and sanitary services contained in a reinforced concrete structural support that adjoins and connects spaces, the surface area expanding up to the highest levels and the use of reinforced concrete not just as a structural material, but as an expressive element.¹⁰

It could be argued that the design process occurred through an exchange of ideas, concepts, studio mock-ups, photographs and proposals between these three architects. There was a transfer of knowledge between two cultures, as can be seen in the eight drafts that exist in the archive. As Manuel Rosen Morrison said in an interview, "We made eight draft proposals. Finally, in my last visit to the Japanese capital, I brought with me a general idea, and it began to be developed here in our country."¹¹

The Japanese government selected a privileged site for its new embassy, on Paseo de la Reforma – the city's most important thoroughfare – surrounded by hotels, financial centers and other important embassies, and located just meters from important urban landmarks such as the Angel of Independence and the Diana the Huntress Fountain. It is located near Chapultepec Forest and not far from the historic downtown. In sum, a unique location.

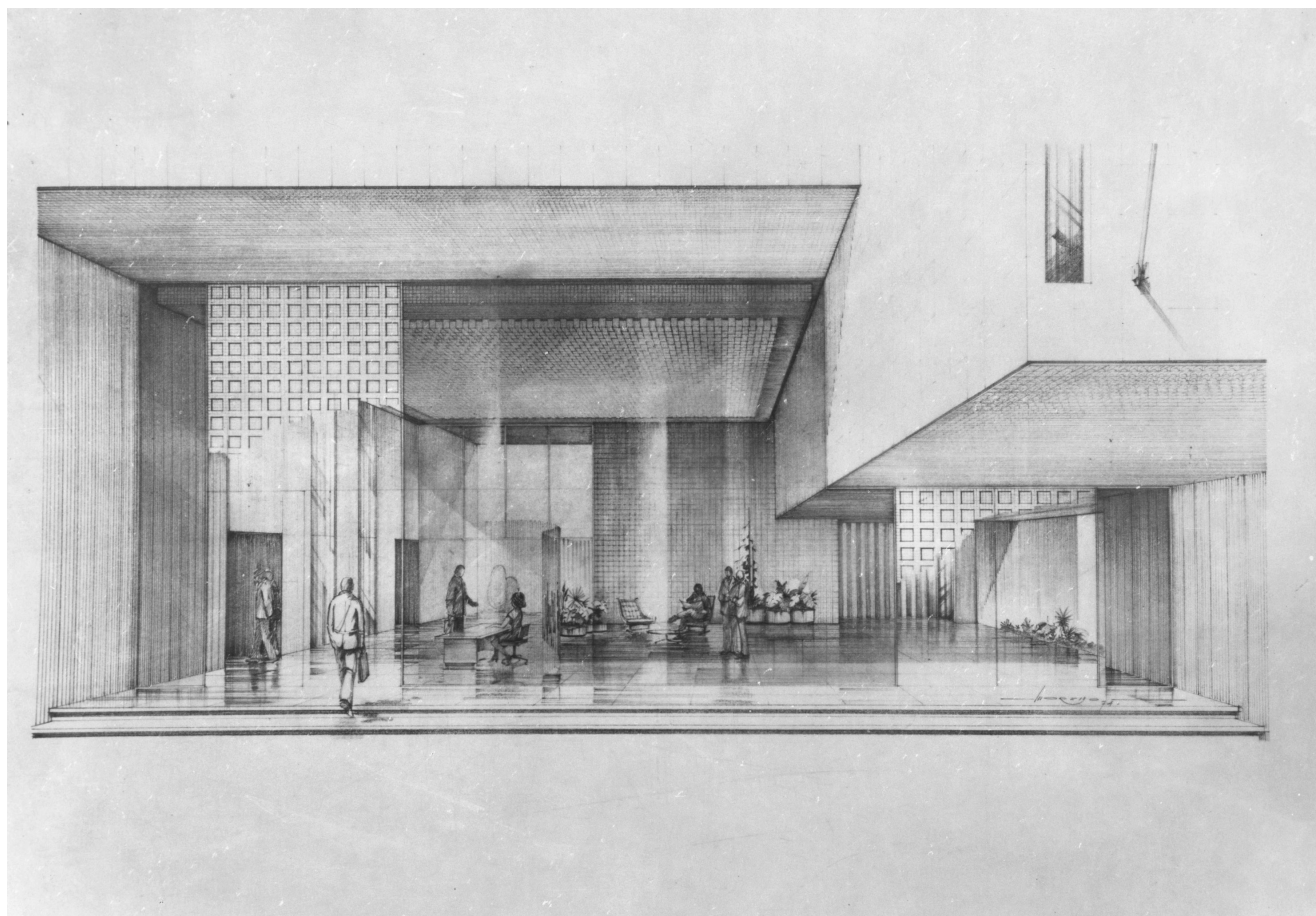
The Architectonic Solution

The project was built on a 1,270 m² rectangular lot on the corner, with a design involving two intercepted volumes – one, horizontal, that extends towards the back of the lot, and another, vertical, at the front of the lot, yet set back from the street and separated from its surrounding structures to draw attention to it.

The design was based on the everyday functions of an embassy, the movement of the public and East Asian customs, but its primary objective was to order the functions of each floor. For this reason, four massive support structures made of fluted reinforced concrete were used to support the progressively larger floors, creating the form of an inverted pyramid made of smooth reinforced concrete. The building was hierarchically organized from the bottom up, with the ambassador's office located on the final level.

The four structural supports placed at each extremity contain stairs, public and private elevators, sanitary services for each floor, ducts and storage areas, allowing for the full use of each floor. The layout of offices, conference rooms and other necessary spaces was therefore extremely flexible, as there was no structural grid that conditioned their distribution.

As has been mentioned above, there were at least eight draft proposals, which were all based on architectonic



05 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, perspective drawing of the lobby. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM.



06 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, interior view of the lobby. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM. Photograph from 1976.



07 Kenzo Tange, Pedro Ramírez Vázquez and Manuel Rosen Morrison, Japanese Embassy, Mexico, interior view of the lobby. © Fondo Manuel Rosen Morrison, Archivo de Arquitectos Mexicanos, Facultad de Arquitectura, UNAM. Photograph from 1976.

forms that evoked Japanese regionalism, utilizing structural elements with large, horizontally-extended surfaces. In the first, a warped surface can be seen that evokes the form of pagodas. As the project evolved, all ornament was stripped away, leaving only the contrast between glass and projecting platforms, creating a sort of chiaroscuro. This staggered, inverted structure functions as a natural sunshade that regulates the direct sunlight received by interior spaces. The play of light and shadow is emphasized by the building's gaps and the geometric composition formed by the intersection of the four vertical supports with each floor. The careful treatment of bare concrete was very original at the time, as an imported additive was used on both the smooth and fluted concrete, giving it a warm color.

Through the plaza on Paseo de la Reforma, the public was funneled towards the front entrance, while the underground parking garage was accessed via Río Nilo. The ground floor was used for dealing with the public, with waiting rooms, reception areas and multipurpose rooms, while consular and diplomatic functions were reserved for the upper floors. Inside, the architects sought to use modulated dividing elements that were in good taste, with fine finishes, because Japanese culture has always been associated with perfectionism. They took care to ensure the authenticity of the embassy's visible materials and its garden's design.

This diplomatic building continued to function for many years, aging gracefully. It remains standing at the same site, unoccupied and in danger of being demolished because the embassy has been moved elsewhere, due to the need to expand its facilities. Nevertheless, the embassy should be protected and conserved because of the domestic and international importance of its three architects, because it represents one of the first domestic partnerships between Mexican and foreign architects and because of its sober presence in the urban environment, in which it serves as a representative witness to its era, with an innovative, delicate formal design, expressed through impeccably executed glass and reinforced concrete. Inside, the flexibility of its architectonic design has allowed it to be adapted over time, and it was built to properly withstand Mexico City's frequent earthquakes.¹² We would be pleased if the Japanese government once again took advantage of these facilities, perhaps to give Mexico City a cultural center promoting the country's great culture.

Acknowledgements

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Notes

- 1 For more information, see: Juan Ignacio del Cueto Ruiz Funes, "La 'Piedra del siglo xx' en la arquitectura mexicana," in *Teoría e Historia de la Arquitectura. Pensar, hacer y conservar la arquitectura*, Iván San Martín, Mónica Cejudo (eds.), Mexico, Facultad de Arquitectura, UNAM, 143-160; Mónica Silva Contreras, "El concreto armado en México. Material plural del siglo xx," in *Historia de la Arquitectura y el Urbanismo Mexicanos. En la antesala del tercer milenio*, Vol. IV, No. 11, Lourdes Cruz González Franco (coord.), Mexico, Fondo de Cultura Económica, Facultad de Arquitectura, UNAM, 2015, 179-194.

- 2 To learn more about this architect's work, see the many articles contained in the book *Arquitectura/Pedro Ramírez Vázquez*, Mexico, Miguel Ángel Porrúa, 2013.
- 3 "Nuevo estadio de fútbol. Estadio de fútbol Azteca," in *Calli. Revista analítica de arquitectura*, No. 21, Mexico, May-June 1966, 17-20.
- 4 The most important was the National Museum of Anthropology and History, which involved a large group of specialists under his leadership, in collaboration with Rafael Mijares and Jorge Campuzano (1931-2018). The result was a magnificent, 45,000 m² building that, to this date, is considered to be Mexico's most important museum at the global level, thanks to its architectonic and artistic quality and the valuable pieces it exhibits. The other two museums are the Gallery of History, also known as the "Snail Museum" due to its spiral form; and the Museum of Modern Art, designed with Rafael Mijares and Carlos Cásares, a controversial project at the time because of its free, wavy forms, covered by large glass surfaces. See Ramón Vargas Salguero, *Pabellones y museos de Pedro Ramírez Vázquez*, Mexico, Noriega-Limusa, 1995.
- 5 Manuel Rosen Morrison. *Arquitectura*, Mexico, Editorial Limusa, 2005, 23.
- 6 See "Alberca 68" in *Calli, Revista analítica de Arquitectura Contemporánea*, No. 30, Mexico, November-December 1967, 32-35; "Alberca Olímpica," in *Secretaría de Obras Públicas. Obras Olímpicas*, Mexico, May 1968, 18-25; "Proyecto de piscina para los Juegos Olímpicos," in *Nuestra Arquitectura*, Buenos Aires, March 1967, 35-36.
- 7 The final, and perhaps most important, project that he did with Pedro Ramírez Vázquez was the Tijuana Cultural Center (CECUT), Baja California, Mexico. See "Centro Cultural y Turístico de Tijuana B. C. N. Fonapas," in *Arquitectura y Sociedad*, Mexico, Year xxxv, No. 12, 1981, 9-14.
- 8 Alberto Bonifaz V., "Un proyecto notable: la Embajada de Japón," in *Construcción Mexicana*, Vol. 15, No. 13, June 1975, 24.
- 9 "Embajada de Japón... 'Un edificio que canta,'" in *Constru-noticias*, No. 144, Mexico, January 1976, 73.
- 10 Habitual Taller de Arquitectura, "Arquitectura metabolista en México: la Embajada de Japón," <https://mxcity.mx/2016/06/arquitectura-metabolista-en-mexico-la-embajada-japon/>. Retrieved 28th March, 2020.
- 11 Manuel Rosen Morrison, "Embajada de Japón... 'Un edificio que canta,'" in *Constru-noticias*, No. 144, Mexico, January 1976, 73.
- 12 The embassy is registered in Louise Noelle and Carlos Tejeda, *Guía de Arquitectura Contemporánea de la Ciudad de México*, Mexico, Banamex, 1993, 96.

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The Nature of Tropical Architecture in Indonesian Modernism

BY SETIADI SOPANDI

The idea of environmental design – or loosely referred to as “tropical architecture” – is an ever-present but underlying discourse in modern Indonesian architectural history. Despite being tentative and, at times, overshadowed by other dominant issues, the quest for climate-related environmental tropical design is apparent in almost every generation of Indonesian architects.

Too often we come across the two-word phrase: “tropical architecture” to conjure up preconceived ideas illustrating a building or a complex of buildings dominated by the presence of the roof, frequently lacking walls, and surrounded by lush tropical gardens and water bodies. The term “tropical” is a synecdoche in Indonesian architectural history. It potentially addresses the complexity of the tropics – ecologically, environmentally, and culturally – and how it has been interrelated to architectural discourse. The term, despite being omnipotent in every historical period, tends to be only tentatively present in almost every architectural discourse throughout the 20th century.

Architects and engineers (as well as scientists) throughout the 20th century have been occupied with the prospect that architectural design and building mechanical services might help people to deal with undesirable climatic conditions, not only to overcome discomfort but also to provide better protection against growing unsanitary, pollution-infested, and hazardous environments. Architecture, it seemed, swung from an artistic discipline towards a scientific and technological domain. In the light of techno-scientific development in architecture, a fellow architect-researcher, Lai Chee Kien suggests, in the working paper that he wrote in 2002 entitled “Tropical Tropes”,¹ that “tropical architecture” was started as a colonial project, when infrastructure development in the tropics – where most colonial exploitation occurred – was a necessity for European enterprises and institutions to work. During the postwar decades, it became a fashion where technological transfers, aid, and business investments were delivered from the First and Second World countries to the rest of the world. This is not entirely new within the scholarship of the Modern Movement,

but it highlights the global extent of modern architecture, its various historical precedents in the former colonial states, and, more importantly, in post-colonial development.²

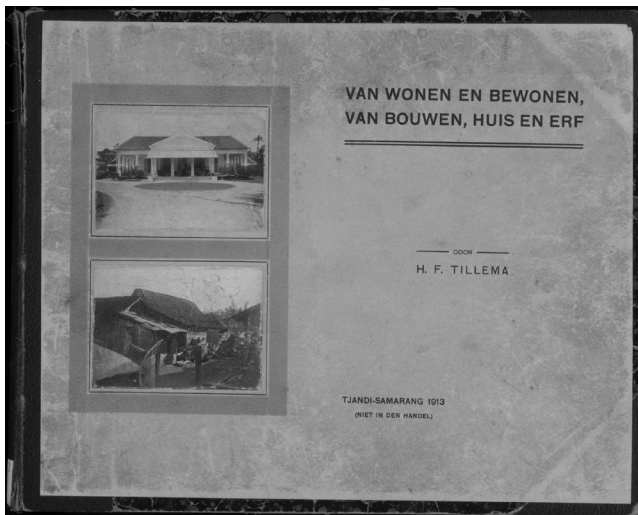
Along with the development of colonial cities and infrastructure in the Dutch East Indies, the earliest discussion concerning the tropics was related to the alarming health problems in towns and villages caused by hygiene-related “tropical” diseases. Interestingly, the earliest accounts on the issue did not come from architects, but from a retired Dutch army general and engineer, G. W. F. Vos. In 1890, he submitted the only entry in a competition held by the Royal Institute of Engineers and The Association for the Promotion of Medical Sciences on developing a hygienic living environment in the Dutch East Indies. His proposal, titled “Indonesian building hygiene, a test of an application of medical sciences to building in the Dutch East Indies”, addressed concerns, based on modern medical principles, on health-related hazards in traditional and vernacular building practices. One of Vos’s strongest comments on vernacular building practices was the use of excessive verandahs which caused dark and damp domestic space interiors.³

There were also medical concerns about the effect of tropical heat on the white population. An article written by a Dutch doctor published by *De Indische Gids*, 1891, reports that heat may harm the *geestkracht* [mental stamina] of the white people in the Indies.⁴ It said to endanger Europeans’ well-being and diminished their productivity. Engineers sought inspiration from abroad to overcome this problem; however, for many, the idea of mechanically air-conditioned spaces (in buildings and train carriages) was considered a ridiculous solution at that time.

By 1938, air-cooling installations were already quite common in institutional

buildings, such as hospitals.⁵ Several engineers based in Surabaya reported their implementation of mechanical air conditioning in the colony in a prestigious engineering journal, *De Ingenieur in Nederlandsch-Indie*. It was reported that air conditioning was a necessity in hospitals as it enabled desired conditions for operating, nursing, as well as other health care activities. Due to the increasing popularity of air-conditioning, electrical engineer P. Timmerman warned the electricity supply companies to promote and to anticipate the surge of electricity in the near future.⁶ The architect-engineer B. de Vistarini welcomed the use of air-conditioning in the country.⁷ He predicted that it would decrease the height of office spaces and consequently its volume; therefore more floors could be fitted into the same building height, making office spaces in the tropics not so different from the ones in Europe. The climate-controlled buildings would benefit from air-conditioning, since the windows would be closed all the time, which would reduce street noise. In a larger context, the air-conditioning of indoor spaces would reduce the distance between buildings. Vistarini, however, warned that the perimeters of buildings should be designed to protect users from the temperature difference between indoors and outdoors. He also asserted that the external skin of a modern air – conditioned building – walls, windows, and doors – should be strongly built, becoming more solid than usual.

Before air conditioning became the norm, engineers and architects had to rely on local vernacular practices and models, whilst, at the same time, creatively employing modern architectural elements to provide desirable conditions for habitation. C. J. de Bruijn, another retired general from the Dutch army corps of engineers, expanded and republished Vos’s 1891 book in 1926 as a 9 volume set. The first volume addressed 15 infectious tropical diseases and suggested ways to eradicate them. Diseases were considered to be closely related to environmental issues and were seen as avoidable through good planning measures. De Bruijn indicated seven aspects of environmental planning: air, natural sunlight, water, ground, water supply, drainage, and sewerage. In the second volume, he explored and reconsidered the common use of building materials and construction. He mentioned the hygienic and functional requirements demanded by various building types such as houses and housing, sports facilities, schools, factories, abattoirs, prisons, markets and stalls, and military buildings. The book provided instructions and models on how to design and build, not limited to health and hygiene but also to achieve comfort and avoiding problems specific to tropical conditions.



01 Hendrik Freerk Tillema, the book cover of *Van Wonen en Bewonen, Van Bouwen, Huis en Erf*, 1913. © TU Delft Library, retrieved from <http://colonialarchitecture.eu>.



02 F. J. L. Ghijsels, Koninklijke Paketvaart Maatschappij Hospital, Petamburan, Jakarta, Indonesia, 1914-1915. © Collectie Stichting Nationaal Museum van Wereldculturen.

Before de Bruijn's contribution, Hendrik Freerk Tillema (1870-1952), a Dutch pharmacist-entrepreneur living in Semarang, raised concerns about the living conditions of the common people in the colony. In 1913, he published *Van Wonen en Bewonen, Van Bouwen, Huis en Erf* [Of House and Home; Building, House and Site] discussing the layout of housing areas, water management, and good quality drinking water. Amongst the problems in general housing, highlighted by Tillema, was the insufficient protection against the sun, poor ventilation conditions, vegetation, un-separated water flows, blocked drains, and stagnant water. In 1915-1923 Tillema consistently advocated his cause for better urban planning and published his masterpiece *Kromoblada* – a series of publications on urban hygiene and infrastructure planning in the Dutch East-Indies.

In the first four volumes of *Kromoblada*, Tillema explored nature in the tropics, diseases, and colonial lifestyles at length. Moreover, the book showed the connections between infectious diseases and an unhealthy and disorderly environment. The publication featured street and sewerage normalization projects in towns, industrial facilities, and urban settlement improvement projects.

The concerns were shared among many engineers who were mostly associated with the Public Works Department specializing in improving hygiene and sanitation. Regarding the recently finished *Koninklijke Paketvaart Maatschappij* [Royal Shipping Society] Hospital in Petamburan, Batavia (designed by F. J. L. Ghijsels, 1914-1915) an article published in *Het Nieuws van de Dag van Nederlandsch-Indie* [The News of the Day of the Dutch East Indies] featured the project positively. The article mentioned the hospital project as

having a distinctive character that integrated the environmental control elements on the building with the architectural expression.⁸ The environmental control features – such as verandah galleries, large roof overhangs, deep openings – were becoming more and more common in institutional projects in the years leading up to the 1920s and 1930s, coupled with the introduction of simpler geometry, and asymmetrical architectural compositions.

Dutch engineers contributed by sharing their research and experience in the colony through journals, publications, and teaching as well by appropriating technological innovation from Europe and America. The association of Building Engineers (Vereeniging van Bouwkundigen in Nederlandsch-indie, or VvB) established *Indisch Bouwkundig Tijdschrift* (IBT) [Indies Architectural magazine] as its official journal, which disseminated modern ideas among the early generation of architects in the colony.⁹ The editorial content of the journal was associated with BOW's affairs until 1927. In 1933 IBT merged with another journal, *Locale Techniek* – which was the official journal of the Association of Local Interests (Vereeniging voor Locale Belangen). As a result, the new journal, *IBT Locale Techniek* orientated its editorial content more towards urban issues in the colony. In March 1935, a new “laboratory for technical hygiene and sanitation” was established in Bandung.¹⁰ By August 1938, the laboratory already served as an institute and hosted an international conference on air-conditioning. The conference specifically discussed the relationship of air-conditioning to comfort, air-conditioning and malaria, and the necessity of air-conditioning for the white population in the tropics. The issue was considered to be of grave importance.

Thanks to the immediate availability of modern construction materials and techniques from Europe and thanks to the prosperous colonial economy between the Wars, the architect-engineers in the early 20th century enjoyed vast building opportunities and the freedom of experimenting with new forms. The freedom brought by the new styles gave a fresh outlook on how modern architecture dealt with the tropics in terms of both the climate and the culture. Modern tropical architecture eventually developed a wider range of expression using new materials and engaging references both from the variety of vernacular architectural forms and the modernist architectural vocabulary.

The pivotal point in the technical discourse of the journal was when several prominent architects started discussing how the inevitable modern technical novelties associated with the European modern culture might diminish traditional indigenous aesthetics and crafts. Following the humanitarian pressure from the Dutch parliament, the Netherlands issued an “Ethical Policy” towards the colonies aiming to better attend to the welfare of her colonial subjects. The policy was followed by the Decentralization Act, 1922 that effectively created autonomous municipalities which led to modern town management and planning.

Several notable practicing architect-engineers were interested in the pre-existing indigenous traditions in the arts and building and even pioneered scholarship in their respective fields of interest. Some were engaged in studies and preservation of archaeological sites, especially the grand Javanese temples at Prambanan and Borobudur, others studied and were interested in the structural properties of vernacular timber construction. With

the growing sense of independence of the colonial nation-state, it was inevitable that a need arose for a “national architecture” that represented the Dutch East Indies as a synthesis of the “advanced” European-modern culture and the rich and diverse indigenous traditions.¹¹

The article “De tropisch-Nederlandsche bouwkunst in Indie” (1946) written by architect J. F. van Hoytema (1884-1955) attempted to “synthesize” two cultural architectural poles into a new, modern one.¹² On this occasion, Hoytema stressed the importance of climate science as a neutral ground. He asserted that buildings in the Indies should possess a harmony between the Dutch and native spirit, between Western technical capacities and tropical requirements. This “common ground” required architecture to handle the mechanism of adaptation to the tropical environment, such as protection against direct sunlight and strong winds, ventilation, the use of local materials, and the architectural expression resulting from these design considerations. “Tropical Dutch Architecture” derived its character from the play of light and shadow, the contrast between the white walls and the dark openings of galleries and windows. The discussion grew beyond the measure of hygiene and comfort in the tropics but engaged the wider question about the esthetic expression of the entire tropical colonial state.

An interesting prolonged debate in 1922-1924 between two prominent Dutch East Indies architects – Henri Maclaine Pont¹³ and C. P. Wolff Schoemaker¹⁴ – appeared in several newspapers. Starting in an article he wrote in 1922, Schoemaker harshly criticized what

he saw as growing overt sentimentality towards Javanese crafts and building tradition by some Dutch architects practicing in the colony.¹⁵ Schoemaker called for a more sensible appreciation for non-Javanese regional building traditions because they developed distinctive achievements in artistic expression as well as ingenuity in innovative structural and construction. Schoemaker thought that the simple Javanese roof structure system was inferior compared to the outer island traditions and deserves no special attention. In defense of the advanced indigenous roof structures, Maclaine Pont suggested that despite its relatively simple form, the Javanese roof structure has been refined through an evolved living tradition and was well-fitted to the culture it served.¹⁶ The debate over the fascination with Javanese Architecture peaked in 1924 when both architects demonstrated their engineering skills in testing whether the Javanese *joglo* roof type with its *tumpang sari* beam work was a well-built form and an effective measure in dealing with lateral forces. Underlying this argument, Maclaine Pont generally believed, despite being mostly timber-framed and terracotta-tile roofed, that the Javanese house roof form, in common with many other Indonesian indigenous roof forms, is essentially an advanced tensile structure instead of a rigid framework.¹⁷

Architect-planner, Thomas Karsten,¹⁸ staying at the periphery of the debate, was one among prominent intellectuals who was deeply inspired by Javanese architecture. Karsten was one of the founding members of the Java Instituut – an organization established in 1919 by the Dutch East Indies colonial government to study and to develop

Javanese culture. Commissioned by the institute, he designed Sobokartti (Semarang, 1930) – a modern theater dedicated to staging modern Javanese performing arts – in the form of a large *joglo* roof with modern non-traditional skylight gaps and bracing elements. When he worked for municipalities on town planning projects, he was also commissioned to design organized marketplaces. Before the early 20th century, marketplaces were occasions rather than institutions. Due to the rising urban population, marketplaces became a permanent daily necessity, therefore, they needed to be permanently housed. Karsten proposed a set of principles that catered to the vibrant exchange of commodities while enabling ease of maintenance, hygiene and sanitation control, and good ventilated and naturally lit spaces.¹⁹ In his masterpiece, Johar Market in Semarang, he employed reinforced concrete for mushroom columns and flat roofs to create a naturally-lit and naturally-cooled tropical market hall. The high ceiling and the ventilation shafts enable the interior to remain cool throughout the day despite the bustling market activities within. He also created an elevated counter for each peddler stall and an integrated drainage system to make the wet tropical market easy to clean.

The discourse of the tropics reached a pivotal point when it coincided with the success of modern architecture becoming global and adapting to suit all climates and cultures.²⁰ The relatively short period between 1945 and 1959 gave a window of opportunity for the first generation of Indonesian architects to work together with their Dutch counterparts. After independence some Dutch private corporations continued their operations in Indonesia. By then, the Indonesian government was commencing a long and difficult period of economic reform. In such a challenging and uncertain period, the Netherlands’ Ministry of Colonial Territories commissioned a new satellite town, Kebajoran Baroe (New Kebajoran), to tackle the housing crisis in Jakarta.²¹ Located 4.5 kilometers away from the old capital, the plan was designed by the first Indonesian town planner, Mohammad Soesilo (1955-), under the Dutch Central Planning Bureau. The design was centered on a few vital industrial and commercial cores surrounded by a winding web of streets creating clusters of residential blocks lined with green belts and parks. The design suggested a modern town plan that relied on motor vehicles for transportation through winding tree-lined boulevards and functional zoning. The plots were designed to cater to all income classes, with generous green areas around the housing plots. The satellite town was implemented in a relatively short time. Due to the



03 Albert Aalbers, Savoy-Homann Hotel, Bandung, Indonesia, 1939. © Het Nieuwe Instituut.

inability of the government to subsidize the lower-income class, by the early 1950s Dutch corporations stepped into *Kebijakan Baroe* and built apartments and houses for their employees. Architect-engineers and contractors were sought-after in this new development. The rising demand for private commissions to design and build houses enabled private practices to flourish. Many architect-engineers, both Dutch and Indonesian, were also acting as builders. Thanks to the *tabula rasa* provided by the new development, architects enjoyed increasing freedom to design the buildings in a new fashion, distanced from the prewar esthetics. Sheltering roof forms and straight lines were dominating domestic architectural projects.

Indonesia reestablished key essential colonial institutions during the transition period and managed to house them in new buildings. Among the prominent design-build firms from the colonial period, only a few survived the war. Among the very few, the architecture-engineering firm *Ingenieurs-Bureau Ingenegen-Vrijburg (IBIV)* emerged as one of the most productive practices in the 1950s.²² The firm was started in 1936 providing all-round design-build services. It began producing interesting architectural design projects after architect-engineer Albert Wilhelm Gmelig Meyling (1909-1991) served as the chief designer and architect.²³ Amongst the first in the country to do so, the firm employed distinct reinforced concrete sun shading devices, ventilation louvers, as well as rough cement finishes in many of its institutional projects in major Indonesian cities and started the surge of a new style. IBIV's most monumental work was arguably the headquarters for the State Center for Agriculture in Jakarta, 1955. The building is a four-story office building presented as a slightly curved box with a flat roof and perpendicular projecting wings, enveloped within an elaborate square-framed sun shading device. The project was once the tallest building in the capital.

The early 1950s was also an era where the first generation of Indonesian architects and engineers (and builders) surfaced as independent practices. Amongst the most prominent was Friedrich Silaban (1912-1984). His most important works were designed between 1954 and 1966 under the patronage of Indonesia's first president, Soekarno (1901-1970). After coming to notice by winning three consecutive prestigious architectural competitions, Silaban was entrusted by Soekarno to work on numerous symbolic architectural projects for Jakarta and was closely consulted by Soekarno for the urban development of the capital.

Silaban's architectural oeuvre is dominated by streamlined building masses, facades

adorned with sun-shading elements, topped with a straightforward roof. His buildings always provided generously spacious, well-sheltered verandahs and deeply situated interiors, completely avoiding the risk of splattering rainwater and excessive sun. These environmental features remained consistent throughout his career. They are even considered as an unmistakable characteristic of his designs, despite them now being very common and widely-used. He always rejected the use of mechanical air-conditioning or any kind of mechanical-electrical apparatuses. Silaban's emphasis on environmental design was self-justified as an expression of nationalism. In 1982, late in his career, he delivered a speech for a congress of the Indonesian Institute of Architects addressing how a national identity can be expressed by architectural design.²⁴ He asserted that modern Indonesian architectural design should relate to certain climate-related traditions and customs (and vernacular architectural spaces) within Indonesian societies. Silaban confidently suggested that being responsive to the hot-humid tropical climate was an essential feature of Indonesian architectural identity. Despite starting as a colonial and global discourse, it seems that Silaban still believed that designing "tropical architecture" was a patriotic act for an Indonesian architect.

Advantaged by the postwar global economy and flow of economic aid, technical innovations and applied science were also exchanged and transferred among nations.²⁵ Within this context the Indonesian Ministry of Public Works established the *Lembaga Penelitian Masalah Bangunan (LPMB)* [Research Institute for Building Problems] in 1953 to research infrastructure and housing problems. In 1963-1965, LPMB received significant support from the United Nations Special Fund for Developing Countries to set up a building material development laboratory. New techniques, materials, and methods were introduced to Indonesia along with workshops, surveys, research projects, conferences, and the exchange of scholarly literature and reports. From 1955, LPMB disseminated scientific articles and scholarly surveys through a periodical *Masalah Bangunan* [Building Problems]. More than half of the topics discussed in the journal concentrated on housing and general building affairs, including sanitation and hygiene infrastructure. About 30% of the publication was dedicated to building materials and construction methods. Unfortunately, the support and network were cut short in 1965 when Indonesia left the United Nations due to the confrontation between Indonesia and Malaysia. Despite the shortfall of funds, between 1965 and 1980, LPMB was integrated

into the Department of Public Works and remained an influential institution producing standards and textbooks which set curricula for architecture and civil engineering training in vocational schools and universities.

Some of LPMB researchers were not only productive scientists but also very active practitioners and professors who effectively disseminated "architectural science" and environmental design among the younger generation of Indonesian architects. Djauhari Sumintardja, one of the key figures in LPMB paid special scholarly attention towards Indonesian indigenous vernacular structures. He published "Kompedium Sejarah Arsitektur" [A Compendium of Architectural History, 1966] as the first Indonesian architectural history textbook that became the foundation for architectural history curricula for almost all architecture schools in the country. In the textbook, Sumintardja included the vast range of regional architectural typologies along with global architectural history. Some of the LPMB researchers dedicated their research to local climatic issues and established standards for thermal comfort in the region. The first textbook on climatic design for Indonesia, *Iklim dan Arsitektur di Indonesia* [Climate and Architecture in Indonesia, 1966], was written by Saleh Amiruddin. Kartahardja published *Hygiene Bangunan dalam Usaba Pembangunan Perusabaan dan Perumahan* [Building Hygiene in Commercial and Housing Projects, 1971] that provided practical instructions and principles on designing healthy and comfortable housing.

By the 1980s, architecture students were immersed in architectural sciences and environmental design from the textbooks produced by their professors as well as translated from abroad. Manuals such as Maxwell Fry and Jane Drew's *Tropical Architecture in the Dry and Humid Zones*, Georg Lippsmeier's (1923-) *Tropenbau: Building in The Tropics* (1969), Otto Königsberger's *Manual of Tropical Housing and Building*, and G. Z. Brown's (1942-) *Sun, Wind, Light: Climatic Design Strategies* (1985) were readily available as textbooks. A respected Indonesian architect-priest, Yusuf Mangunwijaya (1929-1999), added another important volume to the long list of environmental design books by publishing his textbook *Pasal-Pasal Pengantar Fisika Bangunan* [Introduction to Building Physics, 1980]. Mangunwijaya's modules on environmental design principles were not only teaching the basics but also mentioning local contexts and vernacular building materials and practices.

The history of dealing with the climate and the respect of the influential practitioners like Silaban and Mangunwijaya set very strong continuing moral values among younger generations of Indonesian architects. Despite



04 Thomas Karsten, Sobokartti Theater, Semarang, Indonesia, 1930.
© Setiadi Sopandi.



05 Thomas Karsten, Djohar Market, Semarang, Indonesia, 1936.
© Collectie Stichting Nationaal Museum van Wereldculturen.



06 Geert Boom for Job & Sprey, Bataafsche Petroleum Maatschappij/ BPM Shell company housing (now private houses), Kebayoran Baru, Jakarta, Indonesia, 1955. © KITLV, public domain.



07 A. W. Gmelig Meyling for Ingenieurs-Bureau Ingenegenen-Vrijburg (IBIV), Pusat Perkebunan Negara/ State Center for Agriculture (now Indonesian Election Commission), Jakarta, 1955 © Het Nieuwe Instituut, reproduction by Setiadi Sopandi.



08 Friedrich Silaban, Bank Nasional Indonesia 1946, Jakarta, 1963. © F. Silaban Archive

contemporary practices no longer strictly adhering to the “conservative” view, architects are reluctant to admit that their projects are dependent on the use of air-conditioning or anti-UV coated glass curtain walls. They are more willing to be known for their buildings that are covered by sun-shading devices or extensive roofs, as inspired by vernacular and mid-century modernist architecture.

Notes

- 1 Chee-Kien Lai, “Tropical Tropes: The Architectural Politics of Building in Hot and Humid Climates”, Working Paper presented at *(Un)bounding Tradition: The Tensions of borders and regions*, 8th IASTE International Conference, Hongkong, 12-15 December 2002.
- 2 Jiat-Hwee Chang, pursued the discourse on tropical architecture within the sphere of the British colonial network and published *A Genealogy of Tropical Architecture: Colonial networks, nature and technoscience*, Routledge, Oxon, 2016. Vandana Baweja writes about Otto Königsberger and British architectural role in tropical architecture research. Vandana Baweja, “Otto Königsberger and the Tropicalization of British Architecture” in Duanfang Lu (ed.), *Third World Modernism: Architecture, Development and Identity*, Routledge, London, 2010.
- 3 C. J. De Bruijn, *Indische Bouwhygiene*, Landsrukkerij, Weltevreden, 1926 is essentially an expanded version of G. W. F. Vos, *Indische Bouwhygiene* published in 1891. The publication consists of several volumes.
- 4 Dr. Sluijs, “P.J.A., ‘Over Acclimatisatie’ 627 in *De Indische Gids*, 1891, quoted from Rudolf Mrazek, *Engineers of Happy Land: Technology and Nationalism in a Colony*, New Jersey, Princeton University Press, 2002.
- 5 H. A. Thornburg, “Air-Conditioning in Hospitals”, *De Ingenieur in Nederlandsch-Indie*, Vol. 5, No. 11, November 1938, vi, 39.
- 6 P. Timmerman, “De bevordering van lucht-conditioneering door de electriciteitsmaatschappijen en het verbruik van electrischen stroom in Nederlandsch-Indie”, *De Ingenieur in Nederlandsch-Indie*, Vol. 5, No. 11, November 1938, vi, 46.
- 7 B. de Vistarini, “Luchtconditioneering en bouwkunde”, *De Ingenieur in Nederlandsch-Indie*, Vol. 5, No. 11, November 1938, vi, 43.
- 8 Akihary, Huib. Ir. E. J. L., *Gbijsels: Architect in Indonesia (1910-1929)*, Amsterdam, Seram Press, 2006, 38.
- 9 Mahatmanto, “Role of the Journal of Building Engineers in Dutch East India In Discussing the Emergence of Indonesian Modern Architecture”, in *Journal of Asian Architecture and Building Engineering*, Vol. 14, No. 3, September 2015.
- 10 Mrazek, 78-79.
- 11 Architect-planner Thomas Karsten believed that the new future “Indies Architecture” needed to revive its own culture and architecture. Karsten was probably the first architect in the Indies to acknowledge the political relevance of “new architecture”. This vision would eventually serve the establishment of a new nation. This view was expressed in words and works between 1919 and 1935. Karsten insisted Europeans working in the colony (1) recognize the right of the Indies to its art form as well as the right of native art to its development, (2) give up Western architectural ideals which were undoubtedly out of place in the Indies, and instead strive for the formation of a tropical ideal through deliberate subjection to factual requirements imposed by local conditions, such as climate, light, and scale, (3) move one step further in this direction by training the native to become full-fledged architects. See footnote 19.

- 12 C. J. van Dullemen, *Tropical Modernity: Life and Work of C.P. Wolff Schoemaker*, Amsterdam, SUN, 2010.
- 13 Henri Maclaine Pont (b. 1884, Batavia – d. 1971, The Hague) studied civil engineering in Delft and moved back to the Dutch East Indies after graduation where he received his first major work to design the Semarang-Cheribon Stroomtrammatschappij Headquarters in Tegal. Apart from being a very prolific master builder, he was also a very dedicated and enthusiastic amateur archaeologist focusing on the Javanese Hindu-Buddhist period monuments. His best-known works are the Technische Hoogeschool Bandoeng, 1919-1921 (now Aula Barat Institut Teknologi Bandung, Bandung, Indonesia) and Puhsarang Catholic Church and pilgrimage site, 1937 (Trowulan, East Java, Indonesia).
- 14 Charles Proper Wolff Schoemaker (b. 1882, Semarang – d. 1949, Bandung) was a very famous architect in the Dutch East Indies. He studied at the Royal Military Academy in Breda and worked consecutively as a military engineer in the Royal Dutch East Indies Army and headed the Public Works Department in Batavia. He established his practice in 1918 and designed notable buildings in Bandung where he was appointed as professor of architecture in the Technische Hoogeschool Bandoeng.
- 15 C. P. W. Schoemaker, “Kunst en Wetenschap Indonesische Bouwkunst”, in *Bataviaasch Nieuwsblad*, 20 November 1922.
- 16 Henri Maclaine Pont, “Javaansche Architectuur, Het Inlandsche bouwambacht”, in *De Indische Courant*, 1 November 1923.
- 17 Henri Maclaine Pont, “Beginnelen der Javaansche Bouwconstructie”, in *187 Locale Techniek*, 1924.
- 18 Architect and planner Herman Thomas Karsten was born in Amsterdam in 1884 and became a friend of Henri Maclaine Pont during his education in Delft. In 1914, he arrived in Java and immediately began working in Maclaine Pont’s office in Semarang. In 1916 he was appointed as an advisor for the Semarang municipality and started his career as a prominent town planning advisor for many municipalities between 1916-1924.
- 19 In an article published in the *187 Locale Techniek* (No. 2, March-April 1938), Karsten explained the development of market hall designs commissioned by the Dutch East Indies municipalities since 1929. The market designs featured in the article included Pasar Gede (Solo, 1929), Pasar Djatingaleh (Semarang, 1930), Pasar Central (Semarang, 1930), Pasar Ilir (Palembang, 1933-37), and Pasar Tjepoe (1937). The designs were intended to provide shelter safe from fire hazards as well as to ensure health and hygiene. They included an effective use of raised concrete platforms for ease of maintenance and logistic purposes, drainage systems, and roof openings for ventilation. The high volume under the roof enabled the indoor air to remain cool; while the roof ventilation permitted the escape of hot air and provided indirect natural illumination to the deep part of the indoor space. Karsten elaborated on the varied uses of materials and construction systems related to the cost of construction.
- 20 Henry Russel-Hitchcock Jr. delivered a paper “The Acclimatization of Modern Architecture in Different Countries” at the AA in London, 1946. In his paper, Russel-Hitchcock concluded that “international modern architecture” might be expected as “a new language not to be merely a vehicle for common international platitudes, but a vehicle of expression for regional and national particularities.” Lai, 5.
- 21 The city then was still ruled by two opposing governments; half was run by the colonial municipality, the other was by the republican.
- 22 Pauline van Roosmalen, Maarten Hercules, “Bouwen in Turbulente Tijden: Het Werk van Ingenieurs-Bureau Ingenegeren-Vrijburg (IBIV) (1936-1957)”, in *Bulletin Koninklijke Nederlandse*

- Oudheidkundige Bind*, 2016, Jaargang 115, 2016, No. 1, 34-50.
- 23 Maarten. Ir. A. W. Hercules, Gmelig Meyling: *Prominent architect in Nederland, Nederlands-Indie en Indonesie (1932-1974)*, Unpublished Thesis, TU Delft Bouwkunde, 2014.
- 24 Friedrich Silaban, “Idealisme Arsitektur dan Kenyataannya di Indonesia”, in *Budihardjo, Eko* (ed.), “Menuju Arsitektur Indonesia”, Alumni, Bandung, 1996, 75-89.
- 25 Kevin Bone (ed.), *Lessons from Modernism: Environmental Design Strategies in Architecture, 1925-1970*, New York, The Monacelli Press, 2014.

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Religious Tropical Architecture: the churches of Leandro V. Locsin in the Philippines

BY JEAN-CLAUDE GIRARD

The focus of this contribution is on the importance of tropical architecture in the work of Leandro V. Locsin, in the context of post-wwii in Asia. Based in the Philippines, Locsin is immersed in the Christian tradition – the main religion of a country that was dominated by the Spanish crown from the mid 16th-century to 1898, and where the Catholic Church remains powerful across much of the archipelago today. Attention is focused on Locsin's religious buildings and projects, where he succeeded in giving a new treatment to the tropical architecture of faith-based structures, through the integration of climate considerations and the reinterpretation of vernacular architecture of the Philippines.

Leandro V. Locsin is a Philippine architect who has produced a rich catalog of more than 240 projects located mainly in his country, of which half were completed. He started his career in 1953, in a post-colonial context that had left the country faced with fundamental questions of identity in all fields, and in particular, in architecture. If his entire production is associated with the attempt to define a new Philippine architecture,¹ we propose in this article to focus more specifically on the question of religious buildings because they demonstrate Locsin's formidable capacity to adapt a model, by definition established according to rigorous and inflexible rules, to the local cultural and climatic conditions of his country.

The Philippines: climate, history and religion

The Republic of the Philippines, located north of the equator and south of the Tropic of Cancer, is subject to a tropical climate of two main seasons, the dry season from December to May and the rainy season from June to November. Comprising more than 7,000 islands, the archipelago is part of Southeast Asia, the history of which is characterized by a series of colonizations and commercial exchanges that have left their mark on local cultures.

The Philippines underwent two major periods of colonization, the first by the Spanish who governed the Philippines for more than 350 years (1565-1898), to make way for the Americans who settled in the early 20th century (1898-1942).² While the Americans focused on questions of political, infrastructural and educational organization, the Spaniards, for

their part, introduced and imposed Catholicism in a lasting way,³ making the country an exception in the region.

Thus, it is interesting regarding the question of religious architecture and, more particularly, of the churches in the post-colonial context, when the Filipinos maintained their adherence to the rule of the Vatican, and to what extent these sacred spaces were reinterpreted and redesigned to meet local conditions.

The arrival of Locsin on the architectural scene

In 1964, an edition of the "Exchange" journal sought to take stock of the question of Philippine identity in all art forms, by giving voice to various actors in the archipelago's cultural scene. Philippine architect Locsin, then 36, was asked to write the chapter on the built environment. Establishing a historical panorama of the country, he introduced, from the outset, the question of cultural mixing that took place in his country. The chapter then returned to the environmental question to refute the merits of importing structures unsuitable for local climatic conditions, as the Americans had done by trying to impose a neoclassical model based on a formal historicism.⁴ Despite his age, Locsin had already constructed numerous buildings whose central question was the search for a new Philippine identity.⁵ For him,

(...) the first consideration of the Filipino builder and certainly the most evident in his architecture, which is after all an outgrowth of man's desire to protect himself from the elements, is the climate and resulting flora. (...) The fact that the Philippines is in the tropical belt and therefore

subject to humidity, have not only moulded the development of architecture, but also have limited our knowledge of its history by leaving little if no vestiges of the past.⁶

He thus put forward an approach, for him fundamental, which had previously tended to be ignored.

Church renewal in the aftermath of wwii

At the beginning of the Spanish period, existing buildings were repurposed and enlarged, in order to provide sufficient space for the gathering of the faithful. However, the successive destruction caused by typhoons and earthquakes leads to the re-evaluation of the construction method. Church structures, still arranged on a basilica plan, were built of stone and stabilized by lateral buttresses. If the plan reflected a form of organization imposed by the Eucharist, the profile was stockier, and the bell tower separated, in order to resist telluric movements.⁷

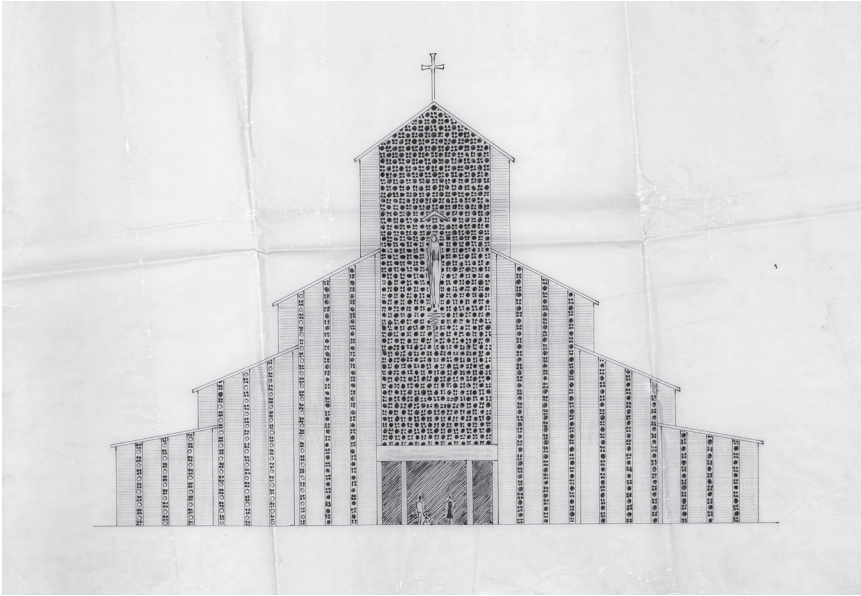
After independence in 1946 new religious construction proposals arose due, in particular, to the energy of Father Couturier (1897-1954)⁸ whose desire to integrate modern art in religious construction was illustrated in the realization of the Saint-Ouvrier Chapel by American architect Antonin Raymond in 1950, in Victorias (Negros island).⁹ This is considered to be the first modern church in the Philippines. Although the plan remains traditional, with the altar positioned at the end of the nave, light falls from the ceiling through an expressive structure of re-inforced concrete beams covered with a mosaic by the artist Ade Béthune (1914-2002). The side walls are made of movable wooden panels which allow cross ventilation.

Locsin and his vision of the Church

Locsin was a pious man who chose the theme of the church for his diploma work, obtained in 1953 at the University of Santo Tomas in Manila.¹⁰ That same year, even before graduation, he began designing a chapel in Victorias, adjacent to that of Antonin Raymond, but which was eventually built in Manila. The theme inspired him so much that he went on to design some twenty religious buildings, ranging from churches to mausoleums, and memorial parks.¹¹ His first production was the Holy Sacrifice Chapel (1955) and his last, the Monastery of Transfiguration¹² (1994).

The typological choices are radically different in these projects, ranging from a basilica plan for the church of Cadiz (1963) to a central and radial organisation for the chapel located in Paranaque (1964). These different conceptions show how Locsin's interest in the liturgical question led him to seek

01 Leandro V. Locsin, Prelatial Church of the Immaculate Conception, Ozamis, 1958, elevation.
© Locsin and partners's archives, Neal Oshima Photograph.



02 Leandro V. Locsin, Church of the Immaculate Heart of Mary, Quezon, 1970, original plan. © Jean-Claude Girard Photograph.



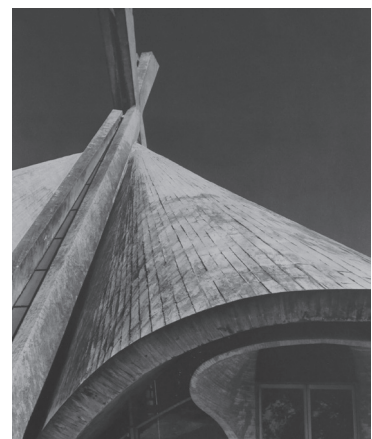
03 Antonin Raymond, Saint-Joseph Ouvrier Chapel, Victoria, 1950, exterior view. © GoogleEarth.



04 Leandro V. Locsin, Holy Sacrifice Chapel, Diliman, 1955, view of the interior.
© Akio Kawasumi Photograph.



05 Leandro V. Locsin, Saint-Andrew The Apostle Parish Church, Makati 1967, view from the street.
© Akio Kawasumi Photograph.



06 Leandro V. Locsin, Saint-Andrew The Apostle Parish Church, Makati 1967, view of the roof's structure.
© Akio Kawasumi Photograph.

answers with either traditional or innovative solutions.

To the question of the floor plan is added that of enclosure of the space, meeting the need to house the assembly of the faithful. A further question is that of the climate, insofar as temperature, humidity and the weather must be accounted for so as to favor meditation under conditions different to those encountered by the European models hitherto imported by the Spanish.

In his text “Directions for the building of a church”, Locsin wrote about how the contemporary church had opened-up and must respond to appropriations defined by worshippers around the world:

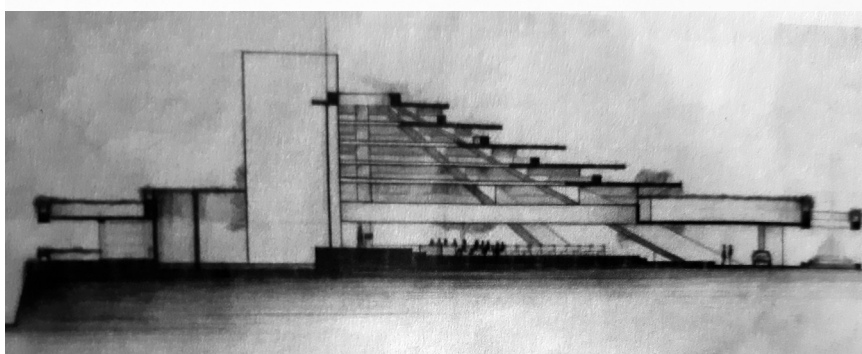
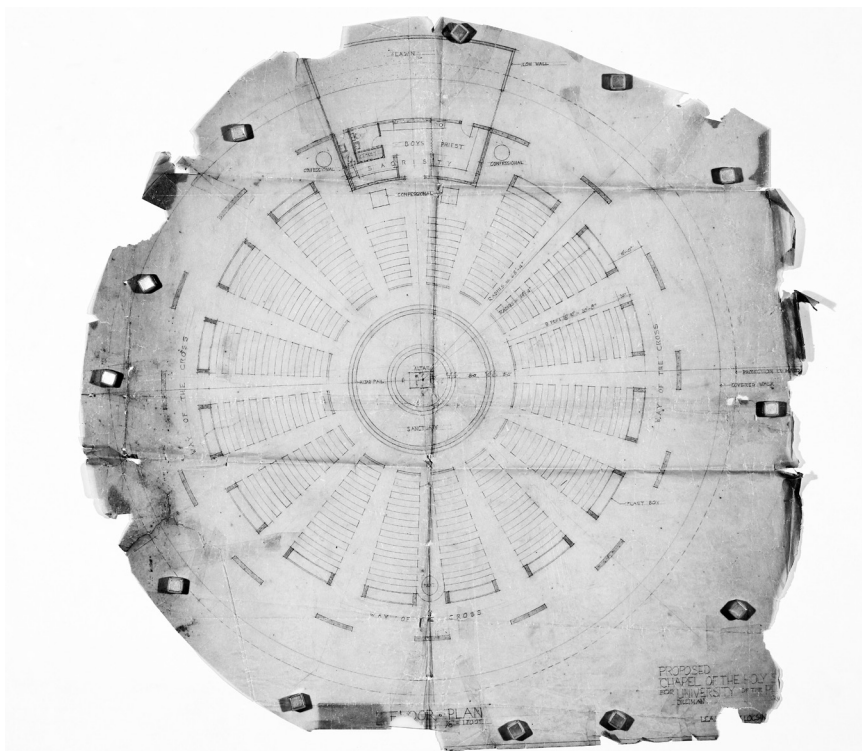
The services of Christian worship, the Eucharistic sacrifice, the administration of the sacraments, the preaching of the word of God, the adoration of the Eucharist, these are not rendered in precisely the same way in all churches throughout the world. (...) The church of today is intended for the people of our times. Hence, it must be fashioned in such a way that the people of our times may recognize and feel that it is addressed to them. The most significant and the most worthy needs of modern mankind must here find their fulfillment: the urge toward community life, the desire for what is true and genuine, the wish to advance from what is peripheral to what is central and essential, (...).¹³

Journey through the body of the churches

The Holy Sacrifice Chapel (1955) not only marks the start of Locsin’s architectural production, but also propels it to the forefront of the Philippine and international architectural scene thanks to its unexpected silhouette, its structural prowess and its typological invention.¹⁴ The Philippines’ first reinforced concrete thin-shell roof with a span of 30 meters is the fruit of collaboration with the civil engineer Alfredo L. Juinio. The circular typology shows an interesting gradation of the entry sequence, the faithful having to cross several levels before being able to sit on the pews. Caryn Paredes-Santilan analyzes this concept of the intermediate zone and describes it as a threshold allowing one to connect the two spaces, while marking a pause in time to raise awareness of a change of place.¹⁵

The following achievements, such as the Church of Ozamis City (1958) and that of Cadiz City (1963), again based on the basilica-plan, showed again the reluctance to adopt a new typological configuration. However, their reinforced concrete construction highlights an expression close to Auguste Perret’s (1874-1954) architecture already present in the Antonin Raymond Chapel, and demon-

07 Leandro V. Locsin, Holy Sacrifice Chapel, Diliman, 1955, original plan. © Locsin and partners’s archives, Neal Oshima Photograph.



08 Leandro V. Locsin, Everest Hills Memorial Park Muntlupa, Church, 1990, section. © Locsin and partners’s archives, Jean-Claude Girard Photograph.

strates the new structural possibilities offered by this material.

From 1967 there was a stylistic evolution based on the expressive capacities of reinforced concrete, but also, the new typological possibilities that appeared after the Second Vatican Council (1962-1965). The St-Andrew Church (1967), Magallanes’ Village Church (1970) and the Church of the Immaculate Heart of Mary (1970), all located in urban areas, demonstrated, not only the creative freedom that Locsin acquired since he began in 1953, but also his adherence to certain principles of organic architecture.

In this collection, the Saint-Andrew Church is certainly the most radical in its formal break with the immediate environment, with its enclosure reminiscent of a shell and the importance given to its load-bearing structure comprising beams forming a cross.

Here Locsin pays tribute to Eero Saarinen (1910-1961) whom he met in the USA in 1959,¹⁶ in designing a church that is “(...) organic and graceful, yet brutal, textured (...)”¹⁷

The Immaculate Heart of Mary Church, on the other hand, is a re-use of the geometric organism of the infinitely growing spiral that Locsin uses to create a gigantic canopy on the scale of the neighborhood.

Other projects exploited this notion of canopies on different scales, such as the Meditation Tower (1964), located in the Paranaque memorial park, which illustrated the ability to reinterpret the principles of the Nipa Hut, the traditional home of the Philippines, in a religious building.

The principle of the Nipa Hut: Lightness of construction; Concern for ventilation; simple use of space and unity of ornament and structure (...).¹⁸



In contrast, other projects had a much more demonstrative landscape dimension, such as the Everest Hills Memorial Park Church (1990) which sought to radicalise the question of canopy at a monumental level by giving it a form derived, again, from traditional roofing of the vernacular hut. As in traditional construction, the structure allowed the roof to be raised in order to promote cross ventilation; the air, passing over basins, is cooled by the freshness of the water.

Finally, his last building ever constructed, the Monastery of the Transfiguration in Bukidnon, Northern Mindanao (1994), is characterized by a pyramid roof, this time made by a metal structure whose large beams appear to emerge from the ground. The position of the structural supports frees the angles,¹⁹ giving the roof the impression of being suspended above the ground.

Conclusion

The corpus of Locsin's churches, although only part of a work comprising very different structures,²⁰ does not however, form a separate chapter. On the contrary, it demonstrates the architect's great ability to interpret local conditions and international references in order to integrate them into his architecture.

Locsin managed, by using the new means at his disposal, in particular, the new structural and expressive possibilities of reinforced concrete, to link his projects to archetypes of religious space while adapting them to the context, towards a built environment unique to the Philippines. His proposals for religious architecture are thus completely in line with the local conditions of the country, while

proposing his own language derived from previous international models.

Notes

- For a complete view of Leandro V. Locsin's work see Jean-Claude Girard, *L'œuvre de Leandro V. Locsin (1928-1994), architecte. A la recherche de l'identité évasive de l'architecture Philippine du second après-guerre*, thèse No. 8593, Lausanne, Laboratoire of history and theory 2, École Polytechnique Fédérale de Lausanne, 2018.
- During WWII, the Japanese occupied the country from 1942 until independence was proclaimed in 1946.
- Although located in the center of Southeast Asia, the population of the Philippines comprises around ninety percent of Catholics, the rest being divided between Muslims and diverse religions.
- If this is the case in the majority of state and institutional buildings or in the Manila Beaux-Arts plan drawn-up by Daniel Burnham (1846-1912) in 1905, certain actors, in particular the architect William E. Parsons (1872-1939), in charge of applying the Chicago architect's plan, tried to seek continuity with local conditions. Apropos of this see Andrew Nicolas Rebori, "The work of William E. Parsons in the Philippines Islands", *The Architectural Record*, No. 41, New York, January-June 1917, 305-324, 423-434.
- Apropos of this see Girard, Jean-Claude, Opus cit.
- Leandro Locsin, "The Elusive Filipino Soul in Architecture", *Exchange*, 4th Quarter, No. 33, Manila, The United States Educational Foundation in the Philippines, 18-25.
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Makkasan Train Factory: an attempt to preserve Bangkok's urban heritage

BY PONGKWAN LASSUS

The Makkasan Train Factory, opened 110 years ago, is the first industrial estate in Thailand and used to be the biggest hub for train production in Southeast Asia. Nowadays, this huge land of 80 hectares, with direct access from the Savarnabhumi airport rail link, is considered a golden land right in the business center of Bangkok, that attracts real estate investors. A third of the land set aside at the end of last year for the development of a mixed use commercial project as a part of the High Speed Train project. As this land is the last big area of public land in the capital, civic groups for urban heritage conservation and the environment tried to point out its tangible and intangible heritage value hoping that there would be a proper master plan to preserve these values for future generations.

History of Thai Railways and the Makkasan Train Factory

During the reign of King *Chulalongkorn* (RAMA V), when Thailand became a buffer state between the expanding British and French colonial empires, His Majesty recognized the tactical importance of developing rail transport in the country. In 1890, the Royal State Railways of Siam (RSR) was founded under the Department of Public Works and Country Planning and the construction of the first Royal line, Bangkok-Ayutthaya railway, started. It was inaugurated in 1896, followed by the construction of more lines. A first repair factory for steam locomotives and trailers was established at the Bangkok Railway Terminal in the center of Bangkok, and another one at the Bangkok Noi Station on the left bank of the river.

In 1905, the Bangkok Railway Station started to become too small to cater to the new railway lines, and plans were made to build a bigger, more modern and spectacular-looking station. The Thai Railways Maintenance Centre was moved to Makkasan in 1910, and its former site was used for the new Hualamphong Railway Station, which opened in 1916. Makkasan became a repair center for locomotives and all kinds of vehicles. In 1917, the Government decided to merge the Northern and Southern Railway Department and incorporate all the repair factories into the Makkasan Factory. Its area was expanded and new buildings were built.

A second wave of expansion and improvement of the Makkasan Factory started in 1938, with new buildings hosting repair shops

for diesel locomotives, electrical appliances, trucks, and so on, as well as a train engineering school and welfare housing for Makkasan factory crew and officers. However, the construction was cut short with the outbreak of WWII. Deemed to be an unsafe location, most of the repair equipment was moved to temporary factories, near the Kaeng Khoi Junction Railway Station area and the Nakhon Ratchasima Station during the war, leaving Makkasan with only secondary equipment. The Makkasan Factory was bombed four times during the war, and some buildings and structures were severely damaged.

The RSR renovated and continued construction after the war. On top of the existing Makkasan Factory and Makkasan Station, Burachat Chaiyakorn Hospital was established in 1950 for the train officers and their families, and a Makkasan welfare housing community was built in 1954 for the workers affiliated with the Makkasan factory. In 1959, a rail welding factory was created. In an effort to decentralize repair work, additional repair factories were built in other districts, leaving the Makkasan Factory with the main tasks of repairing and replacing diesel locomotives, carriages and wheels.

In the meantime, in 1951, the Royal State Railways of Siam became a public enterprise under the name of The State Railway of Thailand (SRT). With this new structure, the SRT had control over the whole railway system and pushed for its modernization. The Makkasan Factory became the biggest hub of train production in Southeast Asia after 1967. In 1982, the SRT discontinued the use

of steam engines, replacing them with diesel locomotives. And in 1983, as imports were less costly than domestically produced trains, the government ceased production.

Makkasan Train Factory to become a mega project development

Thailand faced the financial crisis in 1997. The SRT, with its poor performance and resistance to reform, was obliged by order of the Thai cabinet to reduce the staff such that only 5 new employees could be hired for every 100 retirees.

There has never been a clear official explanation why rail transport in Thailand was not properly developed like in other developing countries. What we can note is that there was a more rapid development in construction of highways to serve cars, busses, and trucks made in the USA and Japan. The SRT seems to be an organization that is forced to be "in debt" by the obligation to give a low cost public transport service and running at a "loss". The Thai government should actually be subsidizing this "loss" but instead they consider that the SRT has a big debt to pay back from decades of operation. So this financial pressure pushed the SRT to want to develop their big plot of land in the center of Bangkok in order to pay the debt.

In 2004, the Thai Government allowed the SRT to construct a mass rapid transit line, the Airport Rail link (ARL), to connect the new Suvarnabhumi Airport to the City Terminal at Makkasan and Phayathai station in the center of Bangkok. The SRT also planned to move the train factory and maintenance plant in Makkasan to Kaeng Khoi in Nakhon Ratchasima Province in order to develop Makkasan into a mix-used commercial complex. In 2005, the SRT drafted a development plan to turn the plot into the Makkasan Complex, an ambitious project for commercial use. The plan was to maximize land use, with a set of skyscrapers. The ARL and its stations opened in 2010, Makkasan station becoming the biggest rapid transit station in Bangkok. The Makkasan Complex plan, however, was shelved and then dusted off in 2012. For the reasons that Bangkok, despite being the capital, lacked green spaces, public parks and cultural infra structure, the redevelopment proposals drew criticism from the civic sector which wanted to keep the maximum of area for public parks, an exhibition center and museums.

I began to be involved in this project in 2013, when I was a chairperson of the Architectural Conservation Committee of the Association of Siamese Architects under Royal Patronage (ASA). One of the Architectural heritage buildings in Makkasan, which

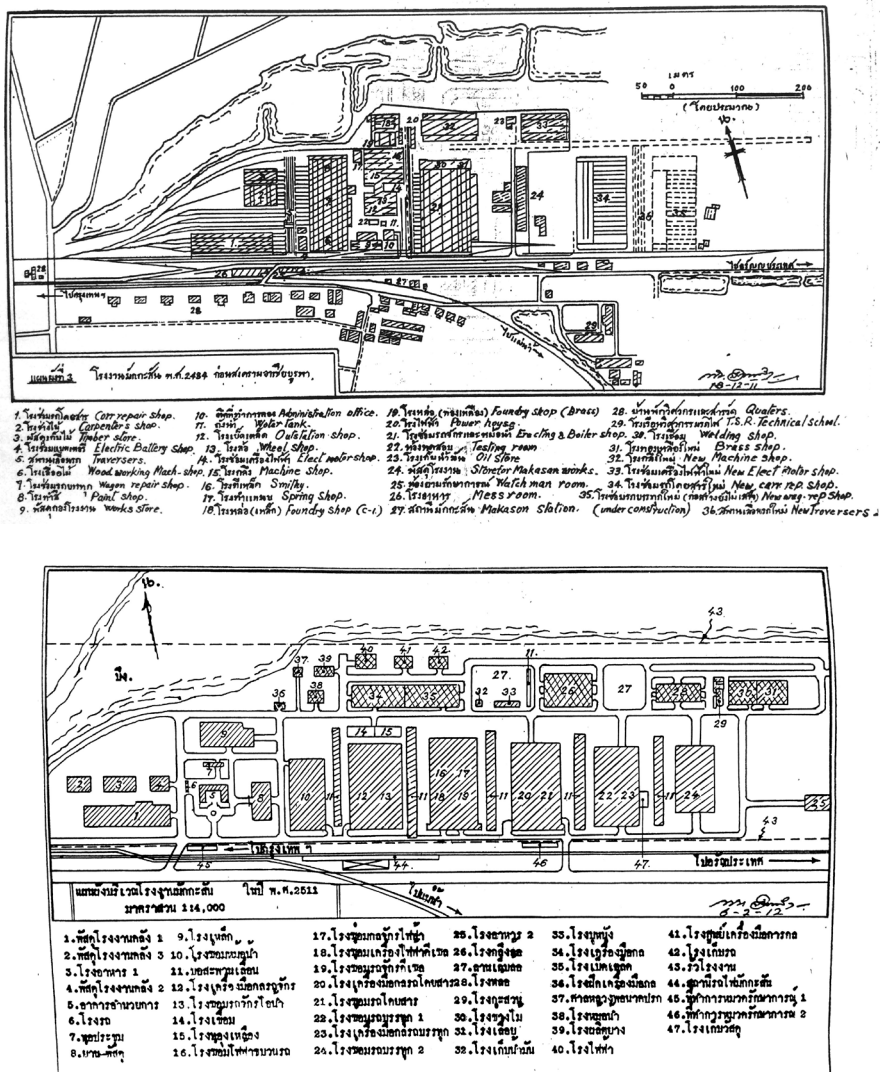
01 Makkasan Factory land, bird eyes view. © Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.



02 Carriage Shop, photo taken at its opening in 1922. © Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.

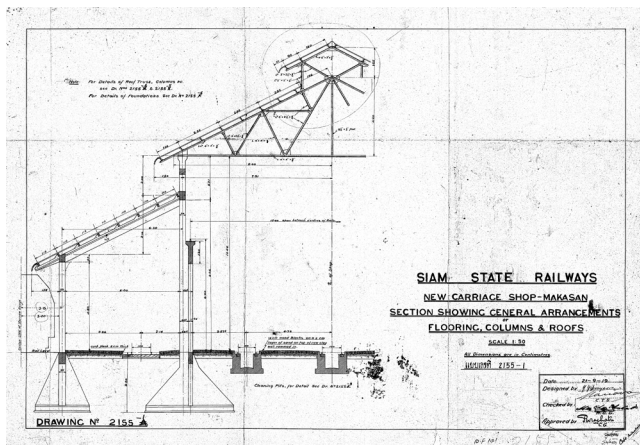


03 Comparison layout plan of Makkasan Train Factory before the war (in 1941) and in 1968 (after the war). © Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.



04 Comparison layout plan of Makkasan Train Factory before the war (in 1941) and in 1968 (after the war). © Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.

- 05 Carriage Shop construction drawing dated 19th September 1921. © Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.



- 06 Carriage Shop, built in 1922, in use as Workshop Store nowadays, is the oldest building still standing after the war. © Weerapon Singnoi, 2016.



was awarded an architectural heritage prize by our association, was at risk. The Makkasan complex master plan projected the demolition of all architectural heritage on the site. As the land is very vast, it is possible to create a new mixed use zoning for many purposes, such as industrial heritage adaptive reuse zones for cultural and commercial activities, public parks, a creative village and new commercial and business center zones. I succeeded in meeting with the governor of the SRT to discuss this new idea of zoning that would allow the SRT to comply with both its financial interests and the public interests. It is unclear whether my proposition to modify the SRT master plan of Makkasan complex was well-accepted or not, but many civic society activist groups collaborated to create a campaign via social networks and the press in order to put pressure on the SRT. The campaign pushed for the Makkasan Complex project to become more public-oriented instead of only commercial, with its main emphasis being “We want Makkasan to be a public park and a museums complex”. Our aim is not to oppose the new development, but to add a socio-cultural and environmental value. Public talks and exhibitions to promote these ideas were organized by ASA and other NGOs. In 2014, the project was halted as Thailand entered a political crisis, ending in a *coup d'état*.

The new military government raised the Makkasan Complex project again in early 2015. This time the civic groups gathered again under the name of “Makkasan Network”. Campaign events were organized in March 2015 at the Bangkok Arts and Culture Centre (BACC) and included public talks and

the exhibition “Makkasan Creative Park” showing a model of an alternative new master plan based on new requirements to maximize the public interest. After the event, the Prime Minister announced that the Makkasan Complex project will include a public park and a museum in it to serve the public interest. This new decision from the government stressed that the land at Makkasan should be leased to the Finance Ministry for long-term commercial development, which is expected to generate revenue for the SRT to settle its huge debts. Later that year, the “Makkasan Network” members, comprised of multidisciplinary experts, met with the Public Treasury Department of the Ministry of Finance in charge of the project, to discuss our needs to establish a proper terms of reference (TOR) for the new master plan. The Ministry of Finance announced that the new master plan will consist of two-thirds of the land being used for roads and commercial developments, with the remainder reserved for a rail museum and a green zone. However, it was suspended after legal concerns were raised over whether the land can be developed for purposes other than those related to the rail system. The year after, the decision to lease the land to the Finance Ministry was finally abandoned.

In 2017, the SRT hired the NIDA Consulting Center (NCC), National Institute of Development Center to study its new master plan and new project investment model. The “Makkasan Network”, including myself, took part in the public hearing process. This time, they split one zone near the Makkasan Airport Rail Link to develop in priority as part of Thailand's future first high-speed rail

project to link the three airports, Donmuang, Suvarnabhumi and U-Tapao. This first zone of around 24 Hectares, which is currently a train stock yard for trains awaiting repair, has no significant heritage buildings nor old trees in it. Three more zones are proposed to be leased afterward, when plans to move all Makkasan Factory's repair activities is completed. The new master plan also includes a zone dedicated to conserve the Makkasan heritage and a public park zone to conserve its natural heritage. Unfortunately, there is no guarantee that this master plan will be respected in the future, as only two buildings of the Makkasan factory were recognized as historical monuments by the Fine Arts Department.

Raising awareness of the heritage value of the Makkasan Train Factory

The best way to ensure its conservation is to raise the public's awareness and especially that of the SRT of the heritage value of Makkasan. The SRT still struggles with financial difficulty, poor management. In 2016, as the advisor of the ASA Architectural Conservation Committee, I advised ASA to allocate a budget for a first survey and Inventory on Architectural heritage in Makkasan. In the report that was finished in 2017, *Parinya Chukaew*, the head of the project mentioned that

From the evaluation of the value and importance of the Makkasan Factory District by the standard of The Nizhny Tagil Charter for Industrial Heritage, it is found that the Makkasan Factory District reflects the qualifications of value and importance as follows:

1. The Makkasan Factory District is a testimony

- 07** Steam Locomotive Repair shop, built in 1928, in use as Train & Factory Tools Repair Shop nowadays, is the 2nd oldest building still standing after the war.
© Antoine Lassus, 2019.



- 08** The workers still work on old machine in Smith Shop.
© Antoine Lassus, 2019.



- 09** SRT Makkasan Complex project 2012, birds eye view. © Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.



- 10** Old large trees and the lake in Makkasan factory district's housing zone.
© Pongkwan Lassus, 2013.



- 11** My presentation about the valuable urban heritage of Makkasan, during the Makkasan Campaign event at the Bangkok Arts and Culture Centre (BACC).
© Antoine Lassus, March 2015.



- 12** mASEANa post-conference site visit at Makkasan Factory, 27th October 2018, from left to right, Prof. Ana Tostões, Asst. Prof. Parinya Chukaew and Prof. Yoshiyuki Yamana. © Pongkwan Lassus, 2018.



- 13** 24 hectare land on the east side of Makkasan Factory, used to be the train stock yard, will be the area for a mixed use development project under the high speed train project to link Bangkok's three airports.
© Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District, 2017.

to the era of manufacturing and industry that emerged in Thailand since 1910, which related to the industrial and technological development in Europe and America. This reflects through the work of its engineering, architecture and city plan.

2. The Makkasan Factory District reflects the way of life and well-being of the employees and officers of the Royal State Railway of Siam through the repair and production of the tools, wheeled vehicles, and locomotives etc.

3. The Makkasan Factory District reflects the codependence among factory buildings and engines, Makkasan station, Makkasan station's officers' residential estates and the Burachat Chaiyakorn Hospital, which contributes to the unique atmosphere of the area.

Therefore, the guidelines for the conservation and development of the Makkasan Factory District are that: there should be conservation with the consideration of the aforementioned value and importance, there should be a comparative study between the Makkasan Factory District and other industrial heritage sites. If found that the Makkasan Factory District has outstanding qualifications, it should be nominated as world heritage.¹

The document was submitted to the SRT and is used partially for the new SRT Makkasan masterplan. This new awareness of the heritage value of the Makkasan site spread among the Makkasan workers and factory staff, reminding them of the importance of their work and of the Railway Syndicate's significant value and legacy. They started to take on a more active role, coming up with their own masterplan for the development of Makkasan and organizing public talks. The Makkasan Factory, which was a place unknown to outsiders, began to open their doors to public, especially when Dr. Siriphong Prutthipan became the SRT Deputy Governor and facilitated its access for civic groups and academic institutes.

In October 2018, when I was a chairperson of the 6th mASEAN² International Conference organizing committee in Bangkok, we organized a post-conference site visit to the Makkasan Factory with international participants such as Prof. Ana Tostões, Chairperson of **docomomo** International, and other experts. Discussions with these experts during the visit confirmed the importance of the site for its architectural but also its intangible heritage value and encouraged me to put more effort to preserve it. This place is a real living museum, with many original machines from the factory's opening still in use today. The most surprising discovery of this visit was the old "Pattern Shop" that was locked down for several decades. Filled with teak wood molds of all parts needed to manufacture a

train, this shop should be turned into a small museum as a priority. In 2019, I retrieved all the technical drawings of almost all pieces that were hiding in a small room that had been locked for almost 40 years.

In early 2019, a preliminary survey of old large trees was performed by Big Trees³ Network. Activities to raise awareness that could lead to the protection of old large trees was organized and resulted in the Makkasan Factory workers responding well. In August 2019, the VERNADOC⁴ Network Thailand organized a measured drawings documentation project. The resulting documentation drawings of five buildings in Makkasan were shown in an on-site exhibition to celebrate 109 years of the Makkasan Factory, leading to a heightened sense of pride of the Makkasan workers and more recurrent university visits and work on the site.

That same year, the government launched the tendering process for the high speed train project and the right to develop the 24 hectare plot of land (the first priority zone of the masterplan to be developed), which was won by a Charoen Pokphand Group (CP)-led consortium in October 2019. The SRT will have to hand over that land to the developer within 18 months. Even though that land has no significant architectural or natural valuable heritage, this will affect the other zones of the Makkasan factory land. Factory buildings next to the leased land may have to be demolished or century old big trees cut off to make room for the railway for trains waiting for repair that are now located on the leased land. With the urgency to complete the next step of the heritage assessment to counter that risk, I conducted a project called "Makkasan Heritage Documentation". Running under an independent structure called Urban Heritage Network, it is an open initiative for everyone (volunteers, professionals, photographers, civic groups, academic institutions and private sectors) to help start documenting the site through photography, the GIS survey of old large trees and natural heritage and a 3D scan of architectural heritage to begin with. The project also aims to celebrate 110 years of Makkasan Train Factory in June 2020. With the COVID-19 pandemic severely affecting Bangkok in March 2020, parts of the work can still continue, but the project is forced to slow down. Nevertheless, I hope that the result of the ongoing project will help shape a better sustainable development of the Makkasan Complex project to preserve as much heritage value of the place as possible for public benefit and for future generations.

Notes

- 1 Chukaew Parinya, *Survey and Inventory of Valuable Buildings Worthy of Preservation in Makkasan Factory District*, 2017.
- 2 mASEANa (modern ASEAN architecture) is a 5 year project organized by **docomomo** Japan and The Japan Foundation, co-organized by **docomomo** International, 20CSC of ICOMOS International, mAAN and supported by the Toyota Foundation.
- 3 Big Trees Projects is a social network civic group for the protection of large trees in urban areas, founded in Bangkok in 2010.
- 4 The word VERNADOC refers to a methodology for vernacular architecture study that emphasizes the collection of data and information on site by basic techniques to produce high quality measured drawings. It is expected that the results of taking field measurements will inspire building owners as well as people in the community to realize the value of their property as perceived by outsiders, so that they will co-operate in conserving those buildings. Architect Markku Mattila (Finland) started the first international vernacular documentation camp (VERNADOC) in 2005, then Architect Sudjit Sananwai (Thailand) spread this idea all over Thailand from 2007 with the support of ASA and ICOMOS Thailand.

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Pongkwan Lassus

Architect living and working in Bangkok. She graduated with a bachelor in architecture from Silpakorn University, Bangkok and Architect DPLG from Paris, France. She has run a small architectural firm, first in France from 1989 to 1994, and then in Bangkok from 1995 to the present. She has been serving the Association of Siamese Architects under Royal Patronage (ASA) on the Architectural Conservation Committee since 2002 and has also participated actively as an ICOMOS Thailand Council Member since 2008. She is the Deputy Chair of the Society for the Conservation of Natural Treasure and Environment since 2018 and a member of the Heritage Protection Working Committee of the Siam Society under Royal Patronage. She has written and edited many books and articles about architectural conservation for ASA. She's also the co-founder of independent civic groups: Big Trees Projects, Makkasan Network and Urban Heritage Network.

Encounters with Southeast Asian Modernism

BY MORITZ HENNING, SALLY BELOW,
CHRISTIAN HILLER AND EDUARD KÖGEL

Against the backdrop of the Bauhaus centenary in 2019, *Encounters with Southeast Asian Modernism* examined the history, significance, and future of postcolonial modernism in this region, with partners in four cities – Jakarta, Phnom Penh, Singapore, and Yangon. The project provided a historical perspective on the societal and political upheaval that accompanied the transition to independence after the colonial period in these countries. It also showcased current initiatives in the fields of art, architecture, and science that are committed to the preservation and use of Modernist buildings. In 2020, the project will continue with an exhibition and accompanying program in Berlin.

The Bauhaus centenary was celebrated in Germany with great enthusiasm and hundreds of activities. It can still be an inspiration, it seems, especially when considering its ideas in relation to the societal and political context in which it existed. *Encounters with Southeast Asian Modernism* (*Encounters*), initiated by the authors and funded by the German Federal Foreign Office as part of these celebrations, took the situation of political and societal upheaval in which the Bauhaus existed as its point of departure. After WWI, the Bauhaus contributed to the aesthetic and architectural program of the new democratic state of the Weimar Republic with its agenda of social reforms and liberal politics. After WWII, the Bauhaus and the architectural concepts of Modernism served as models for reconstruction and new beginnings in Germany.

By the mid-20th century, a new era was also beginning in many Southeast Asian countries, as the colonies and protectorates of France, Great Britain, and the Netherlands gained their independence. The young states were faced with the task of establishing themselves as nations and defining their own identity in an international context. Accompanying their efforts was often the desire to express this new beginning through architecture and urban planning. Many countries saw in international Modernism a contemporary form that reflected their hopes for progress and prosperity and at the same time signaled emancipation from colonial rule. Buildings, public squares, and entire neighborhoods were designed by local architects, some of whom were trained in the West, by European planners who maintained postcolonial networks, and also by architects from the Soviet Union, China, and other Asian countries.

Regional Modernist styles emerged, which harmonized the design ideas of a universal Modernism with specific cultural references, building traditions, and the climatic challenges of building in the tropics.

Today, many of these structures are considered insignificant and obsolete, have been destroyed or are threatened with demolition. Likewise, Southeast Asian Modernism is not present in relevant Western works on architectural history.¹ Although the former colonial powers have occasionally addressed architecture in these countries, the focus has mainly been on their own (European) architectural heritage.

In the region itself, however, a lively discourse on Modernism and Modernity has developed in recent years,² which attempts to overcome Western-oriented historiography and to describe a “non-West Modernist past.”³ With a few exceptions, this discourse is relatively unknown in Europe. *Encounters* therefore aimed to increase its visibility and to strengthen the discussion. What can past architectural solutions contribute to meeting the challenges of the present, and how are Modernist works being evaluated today? Can Modernist ideas still serve as reference? How can their acknowledged achievements be brought into the current discourse – or how can such a discourse be initiated and accompanied?

Encounters addressed both a specialist audience and a broader, culturally interested public. A major goal was to “popularize” existing knowledge and to foster the dialogue between regions and disciplines – with visual artists, filmmakers, architects, photographers, curators, activists, teachers, and students. The cities of Phnom Penh, Jakarta, Singapore, and Yangon, which represent very different

scenarios in their discontinuous history, also open up references to developments in other Asian countries.

The project⁴ launched in August 2019 in Berlin. A symposium brought together the regional curators, further international speakers, and the Berlin audience to discuss the history and presence of Modernism in Southeast Asia for the first time in Germany.

“Southeast Asian Modernism Spaces” (SEAM Spaces) formed the heart of the project in the four cities between October and December 2019. Each SEAM Space was developed and run by local curators. This resulted in very different exhibitions and events, which in their diversity reflected the specific situation in the participating cities. Contributions from the other cities complemented the exhibitions. There were presentations, lectures, interviews, discussions, film screenings, and architectural tours. Representatives of the German embassies and local branches of the Goethe Institute – Germany’s cultural institute – took part in the dialogue.

Folding Concrete

The program in Southeast Asia started on 10th October in Cambodia’s capital with *Folding Concrete*. The contribution was curated by Pen Sereypagna, an architect, independent researcher, and director of the Vann Molyvann Project, together with Vuth Lyno, an artist, curator, and artistic director at Sa Sa Art Projects. The title refers to the characteristic folded structures that have become a landmark of New Khmer architecture. It also refers to the variety of disciplines such as art, culture, architecture, urbanism, industry and technology, from which Cambodian Modernities have developed. The venue that hosted most of the activities and the exhibition, was an apartment in a typical 1960s apartment building in the city’s Chinese quarter. The unconventional location reflected the fact that Phnom Penh does not have many spaces available for urban discourse. And the large number of visitors, among them many young people, showed all the more how important places of common cultural exchange are.

While architecture and urbanism were the main focus of the exhibition, overlaps with the fields of art and visual culture were also highlighted. Drawings from archives, research projects, and artworks revealed the richly textured architectural and cultural language that helped to shape and was also shaped by Cambodian Modernism.

A large part of the projects on display was based on the work of initiatives, artists, and young architects, many of whom have been addressing the heritage of Modernism independently. One such example is the Rounkon Project, initiated by a group of young architects and architecture students.

01 A visit to Tripitaka Library by architect Benjamin Polk was part of the program in Yangon. © Photo: Moritz Henning.



02 Poum Measbandol's graphics at the exhibition Folding Concrete in Phnom Penh. © Photo: Moritz Henning.



03 Housing Modernities in Singapore showed posters, videos, installations, and architectural models. © Photo: Moritz Henning.



04 The exhibition *Occupying Modernism*. © Photo: William Sutanto.



05 The Encounters team and curators at the Akademie der Künste, Berlin, from left to right: Shirley Surya, Eduard Kögel, Berlin, Annika Schmidt, Moritz Henning, Win Thant Win Shwin, Christian Hiller, Avianti Armand, Vuth Lino, Pwint, Pen Sereypagna, Setiadi Sopandi, Sally Below, Johannes Widodo, Puay-peng Ho.
© Photo: Anonymous stroller.

Since film culture has never really recovered from the devastations that the Khmer Rouge inflicted on the country, almost all historic cinemas have been demolished in recent years too. Against this backdrop, the project aims to explore and document cinemas and film culture of the 1960s in Cambodia. The work of Poum Measbandol, whose exquisite graphics sharpen the view on the details of Khmer Modernism, or the activities by artists and architects in and around the iconic White Building, an apartment complex built in 1963 and demolished in 2017, documenting the life of its inhabitants as well as the building itself in order to protect them from eviction and demolition, are further examples.

In view of the enormous real estate boom, which has particularly affected the capital Phnom Penh for some years now, those civil society initiatives seem all the more important. While at least some respect is gradually being paid to the architectural heritage of the former colonial power France, there is still little awareness of the value of the post-colonial “Architecture of independence”. Many valuable buildings have already been lost, and even the everyday architecture of this period, which still shapes the cityscape is gradually disappearing. If buildings are preserved and continue to be used, this is usually done on the initiative of private owners for whom the value of building culture outweighs profit.

Occupying Modernism

At the second location, Jakarta, the topic of Modernism was examined in two parts. One part was curated by Setiadi Sopandi and Avianti Armand, both curators and architectural scholars who have made fundamental contributions to the perception of historical Modern architecture and Contemporary architecture in Indonesia, well beyond the country's own borders.⁵ For *Encounters* they teamed up with Rifandi S. Nugroho, curator and editor of *arsitekturindonesia.org*. Their

exhibition *Occupying Modernism*, which opened on 24th October at Kopi Manyar, a café, co-working space, and gallery, designed and owned by the architect Andra Matin, was a reflection on how Indonesians have rendered the spaces of Modern architecture.

The curators invited contributors from the fields of art, literature, and design⁶ to explore Modernist buildings in Jakarta, comment on them artistically, and reinterpret them from a sociopolitical perspective. In the exhibition, historical floor plans, drawings, and photographs were juxtaposed with the highly sensual, critical, and humorous perspectives by the contributors on eight selected buildings, including Istiqlal Mosque, the National Monument, architect Friedrich Silaban's Residence, and Hotel Indonesia Roundabout.

The second part was a contribution by ruangrupa and Gudskul, curated by Grace Samboh. *Visualisation of the National History: From, by, and for whom?* included an archive exhibition that investigated the diorama-making process of Indonesia's eminent sculptor Edhi Sunarso, which gave deep insight into the country's “decreed” historiography after attaining independence. Accompanying the exhibition was a workshop that navigated the contemporary perception of the dioramas into curatorial practice. In a joint teaching and research process, students were asked to develop podcasts, which critically examined dioramas at the National Monument and offered alternative narratives about these. This contribution showed how the promise of Modernism, as expressed through urban planning and in the monument itself, was taken up in the selective narration of history by various governments.

Synthesis of Myanmar Modernity

The third chapter of *Encounters* was presented at the villa of the Goethe-Institut in Yangon. The historical site played a key role in Bur-

mese general Aung San's fight for independence.⁷ For the exhibition *Synthesis of Myanmar Modernity*, opened on 20th November 2019, the curators Pwint, Professor and Deputy Head of the Department of Architecture at Yangon Technological University, and Win Thant Win Shwin, an architect, planner, and lecturer in the Department of Architecture at Mandalay Technological University, worked closely with the documentary filmmaker Kriz Chan Nyein and a team of young architects. The curatorial team from Berlin provided further contributions. An accompanying conference featured presentations by curators, artists, architects, and scholars on modern architecture and art and their intertwining with political, social, and cultural narratives.

More than 150 guests, among them students of architecture, artists, and architects, joined the opening of the exhibition and the conference – despite the challenges such a project has to face in Myanmar, as the curators explained:

Questioning architecture and urban planning in Myanmar had fallen silent for decades. Now, after the newly forming of democracy, the interest in modern architecture is thriving again. A young generation of architects and scholars, as well as the general public, are asking about the historical significance and current value of the architectural heritage of this period. But in a multi-ethnic society, with a population that speaks hundreds of different dialects, the re-negotiation of Modern architecture and its values is a great challenge. Further, the interactions with religion, politics, and technology must be taken into account, as well as relating developments in the Southeast Asian region.

Against this specific backdrop, *Synthesis of Myanmar Modernity* analyzed how Modernity was translated into an architectural language. Drawings and images examined the Modernist Tripitaka Library, Martyr's Mausoleum, and Yangon Regional Parliament. The work Irene gave a more private view on Modern living in the 1960s and 1970s through photographs the artist Lukas Birk collected. The filmmaker Kriz Chan Nyein captured video interviews with eminent architects and artists as U Shwe, U Sun Oo, and U Win Pe.

Many of the guests pointed out that for them *Synthesis of Myanmar Modernity* was their first encounter with Yangon's Modernism. Modernist buildings are also a blank spot in the country's heritage protection law, which still only provides protection for buildings that are more than 100 years old. The efforts for the preservation of buildings, whether by the city, private initiatives or even the active Yangon Heritage Trust, focus almost exclusively on the architectural heritage of

the British colonial power, as does common literature – an astonishing fact, since these buildings also always represent exploitation and oppression.

Housing Modernities

At the last destination of *Encounters*, the exhibition *Housing Modernities* explored the architecture of Modernism and its role in nation-building and the construction of a Singapore identity. This SEAM Space was conducted in partnership with the National University of Singapore (NUS) and the Nanyang Technological University (NTU) Centre for Contemporary Art Singapore. Ho Puay-peng, Professor and Head of the Department of Architecture at the NUS, curated the exhibition together with Associate Professor Johannes Widodo and Senior Lecturer Nikhil Joshi.

Housing Modernities was presented in the exhibition space of the Urban Redevelopment Authority, which as Singapore's central planning organization is largely responsible for the preservation or demolition of buildings. With a focus on public housing, it demonstrated Singapore's path to Modernism, which was inextricably tied to nation-building, improving the lives of the citizens, and laying the foundation of a postcolonial modernized state. The exhibition explored relevant sub-themes such as master-planning and urban design of new housing estates, architectural form and lifestyle, everyday Modernism in community structures for daily needs, and domesticity and life in public housing estates.

The exhibition, provided insight into social and cultural modernization and illustrated the search for unique architectural expression liberated from colonial symbols. The artist Michael Lee conducted a workshop with local residents to explore their perspectives, and presented resulting objects, installations, and ideas. The bringing together of pleas for the preservation of identity-building structures from Singapore's young history with proposals for the conversion of such buildings and the views of residents in this exhibition will hopefully bring important voices into the further discourse on site.

As it is the case in most of the big cities of Southeast Asia, the increasing densification and the concomitant demolition do not stop at the icons of modern architecture, nor at the many modern residential buildings, the everyday architecture that has become for many inhabitants of Singapore the home and part of the post-colonial identity of the city. Despite many initiatives to preserve the heritage of modernity, and a growing awareness of this issue within the relevant institutions, it seems uncertain whether these buildings will be able to withstand the pressure.

At the closing event for *Encounters* in 2019, the issue of housing in Singapore was discussed, and the experiences with the SEAM Spaces in Phnom Penh, Jakarta, and Yangon were shared. The conference was held at the NTU Centre for Contemporary Art upon kind invitation by its founding director, Ute Meta Bauer. With its cross-disciplinary approach, the NTU provided the backdrop for concluding thoughts. These included alternative perspectives on the narrative of Modernism, which shaped the period after independence with many promises, but which today, like its architectural testimonies, has been devalued by current trends in real estate development. The closing talk highlighted the importance of interdisciplinary and regional exchange. Each of the cities involved has its own unique history and narrative and reflects the state of the current discourse. But every place needs critical reappraisal and re-evaluation to anchor the cultural and architectural legacy in the here and now. Although each local story has its own special features, it is necessary to develop a mutual understanding that challenges the dominant Western perspective with its own unique approaches.

Outlook

The positive reaction to the project, the active encouragement and enthusiasm with which all contributors worked to develop it, but also the many questions that remain open or, more often, arose, encouraged the initiators to continue with the project and also deepen the exchange between Germany, Europe, and the Southeast Asian countries. In order to share the ideas and findings of the regional projects with a wider public in Germany, the authors are therefore preparing *Contested Modernities*, a follow-up exhibition accompanied by an auxiliary program, for autumn 2020 in Berlin, based on the Southeast Asian contributions along with supplementary elements.

Notes

- 1 Examples include Kenneth Frampton, *Die Architektur der Moderne*, Stuttgart, DVA, 1989, and Leonardo Benevolo, *Die Geschichte der Stadt*, Frankfurt am Main, Campus, 1983.
- 2 See, for example, the activities of the mAAN (www.m-aan.org) from 2000 to 2011 or the current Modern ASEAN Architecture (mASEANa) network (www.maseana.iis.u-tokyo.ac.jp), partly documented in *docomomo Journal* 57 – Modern Southeast Asia (2017/2).
- 3 Jiat-Hwee Chang and William Lim (eds.), *Non West Modernist Past: On Architecture and Modernities*, Singapore, World Scientific Publishing Co., 2012.
- 4 See the full program and documentation at www.seam-encounters.net.
- 5 For example, their exhibition *Tropicality Revisited*, shown in 2015 at the German Architecture Museum (DAM) in Frankfurt, among other places, and their contribution *Craftsmanship: Material Consciousness at the 14th Venice Architecture Biennale* (2014).

- 6 The team was able to attract four outstanding personalities: Goenawan Mohamad (1941-) founded *Tempo* magazine, becoming one of Indonesia's most important intellectuals. His work combines journalism, poetry, visual arts, and political activism. Hikmat Darmawan (1970-) researches and works in the fields of comics, film, and pop culture. Cecil Mariani is an artist, designer, and cultural activist who deals, among other things, with collective forms of design practice and develops alternative economic models. Alvin Tjitrowirjo's work as a furniture designer focuses on research into handmade materials and local design knowledge.
- 7 From 1945 until the assassination of Aung San in 1947, the building was the headquarters of Burma's Anti-Fascist People's Liberation League. Although the villa's precise origins are unknown, it is known that it was acquired by a wealthy Chinese merchant in the early 1920s and was then abandoned in the turmoil of WWII. Later, the State Art Academy was located in the building until 2003. Cultural relations between Myanmar and Germany began in 1959 but were interrupted after Ne Win (1911-2002) took power in 1962. Once they were resumed, the villa was renovated and an expansion completed in 2018 to house the Goethe-Institut. Today, the premises with its garden and café is an invaluable oasis in dense and busy Yangon.

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Towns are made from houses Jean-Pierre Watel (1933-2016)

BY RICHARD KLEIN

When describing the history of towns through the distorting mirror of modern urban design, historians barely attempted to find out what simple material was used to build towns in the past. The answer was obvious however: towns were made from houses. It was houses that made towns. If we had remembered this obvious fact, then the urban sprawl would not have taken us by surprise.¹

Jean-Pierre Watel (1933-2016) has not been forgotten in the history of contemporary architecture. Gérard Monnier recounts the architect's success in the 1960's, his single-family houses and "a domestic modernity largely linked to his design of North European-style houses": a central living room, an assumed horizontality and large sections of glass.² His main constructions were mentioned or have featured in the professional magazines as well as in the more mainstream press - ensuring recognition from his peers and the aspirations of potential clients.

The houses grouped together into new towns were also lavishly commented on for their stylistic affiliations:

forming harmonious ensembles of contemporary Nordic design, these elegant brick houses were built with factory-prepared elements - a wooden frame and brick cladding. Their offset plan is a good example of the assimilation of a proven-formula in Denmark.³

Jacques Lucan underlines the rigor of the proposals within the context of the multiplication of town house projects,⁴ Pierre Joly and Véra Cardot photographed them from all angles to such an extent that Jean-Pierre Watel is one of the most represented architects in photographic archives.⁵ Two buildings illustrate a text devoted to him in the dictionary of 20th century architecture.⁶ Finally, for Daniel Le Couédic, Jean-Pierre Watel's architecture falls within the scope of Modernist *naturalism*⁷ like that of the Sallier, Courtois and Lajus team in Bordeaux or Christian Gimonet in Bourges: examples of architectural forms often developed far from Paris, compilations of Japanese, American

and North European references which renewed the regional genre of domestic architecture.

Even if Jean-Pierre Watel's buildings served industrial, commercial and service programs as well as some housing estate projects, it was his houses that made his reputation. Individual family houses, the most spectacular of which were lavishly laid out like the best American examples of the time, or small housing estates in which he specialized. The dialog with his clients and the examination of their family life conditioned above all the architect's interest in this program, in the plan and interior.

His father, Jean Watel, was an architect. He graduated in Lille in 1923 and was active from 1925 to 1972. He was closely linked to the regional Catholic community and designed the Sacré Cœur Church in Mouvaux (1964) with Maurice Novarina.

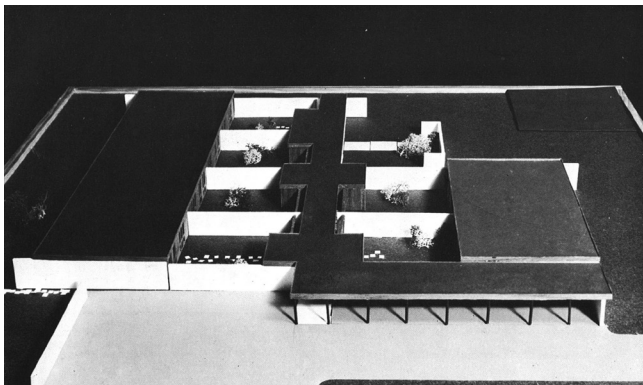
Jean-Pierre Watel was trained at the Fine Art School and at the Saint-Luc School in Tournai. At Saint-Luc, the classes he attended benefited from the input of Jean Dubuisson, Pierre Pinsard and Pierre Vago. He readily retained from Jean Dubuisson his capacity to "design on a postage stamp" but also, it would seem, his focus on Northern Europe. Jean-Pierre Watel created his agency in Bondues in 1963 and in 1964, won the competition for the "European house" commissioned by the Belgian National Housing Institute and the EEC in Strasbourg. Then he was selected for the Villagexpo in Saint-Michel sur Orge by the Ministry for Infrastructure. The dwellings he designed in 1966 for the Villagexpo with *La Construction Horizontale* were clearly different from the other models presented. The L-shaped houses, structured in zigzag

fashion offered an early compromise to the simultaneous expression of individuality and the collective, by placing the openings onto gardens facing South. His participation in the Villagexpo in Wattignies in the North was based on a more radical mode of introversion, since the housing groups illustrated the idea of a horizontal collective based on a continuous surrounding enclosure with a passageway which led, after a turning gate, to the annexes and interior gardens of the dwellings.

At the time of the first Villagexpo, houses with patios were already fashionable in Europe. Excerpts from the architectural journal *Baumeister* present material from a manual titled *New houses with patios*,⁸ and demonstrated their historical roots that go back to the Roman Empire. The rationale generally taken up by practitioners was to pursue a version of modern architecture with its roots in the long tradition of family houses.

These trends were to find a favorable context in the new towns. In Villeneuve d'Ascq, the collaboration between Jean-Pierre Watel the developer Philippe Motte, head of the SEDAF (Real-estate study and implementation company),⁹ resulted in the commercial success of the model. From 1966 onwards, the different areas of the Brigode housing estate between the old villages of Annappes and Ascq were developed on the basis of an urban plan conceived by Gérard Deldique. Jean-Pierre Watel, but also other designers such as Yacek Waclaw Sawicki, designed five hundred houses in hamlets in a recomposed landscape round a golf course. The Jean-Pierre Watel formula became a signature style which was reproduced several times: the white brick walls formed a screen on which the vegetation took on a sculptural

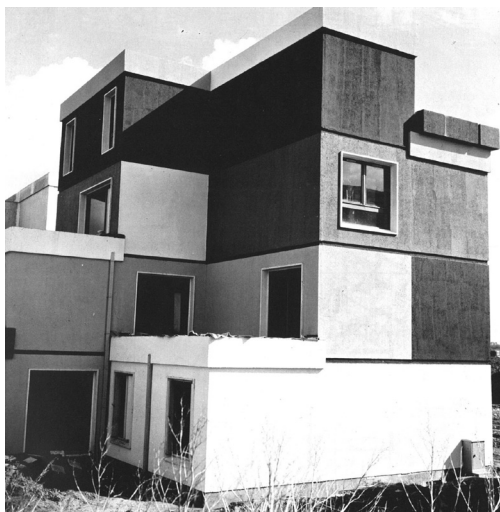
01 Model for *Villagexpo* in Wattignies, in *Watel 63-73*, Paris, sipe édition, 32.



02 Model for the 64 houses of the Château Hamlet (1976) in Villeneuve d'Ascq, 64 houses. Archives J. P. Watel.



03 View from the garden of the houses for *Brigade* (1973) in *Watel 63-73*, Paris, sipe édition, 31.



04 The Sigma prefabrication system use for the Courtille residence in Villeneuve d'Ascq, Archives J. P. Watel.

dimension and which continued beyond the perimeter of the house, with horizontal lines of black painted wood and generous bay windows which disappeared to let this simple and contrasted design stand out.

In the Château neighborhood in Villeneuve d'Ascq, in 1976, Jean-Pierre Watel and the same developer created a housing complex called the Chateau Hamlet which illustrated the architect's research on groupings of individual houses. The project led to innovative solutions for integrating elements of everyday life such as the car - based on contemporary architecture which renewed the use of traditional brickwork and demonstrated the hope for a new urban lifestyle driven by the dynamic of new towns. Pierre Joly describes the principles of composition dictated by the architect:

The "material" used in this instance is a square that can be assembled on its four sides: an undifferentiated element as it were on its own scale. This material is worked in a totally abstract way, by ignoring the individual aspect and developing empty spaces: lanes, little squares... by taking into account exterior constraints (the terrain, existing roads). Once the urban plan is

*established, we reconsider each house in itself, the direction it faces, the exterior openings, the intimacy that needs preserving. At this stage, we decide between the individual and the collective in order to reach the best compromise.*¹⁰

The Château Hamlet, thanks to the topography of the land and the different combinations, produces a picturesque silhouette which really suits the idea of merging the new town with the old town of Flers. Built on a 12 x 12 meter plot including a small garden, the houses sometimes include an extra story. The construction of a series of four garages on the ground floor facilitates the creation of two stories for a few more unusual versions which include a terrace on the first floor instead of a patio. About twenty or so ensembles based on this model and its variations were to be built in other new towns such as Cergy Pontoise or elsewhere in France. A year after its completion in 1977, the Architecture Academy, presided at the time by Robert Auzelle, gave an award to the Jean-Pierre Watel agency for their focus on individual dwellings and groups of houses.

At the end of the 1970's, Jean-Pierre Watel developed in more intensive fashion the

procedures for light industrialized houses with factory-built wooden frames. "Cladded frames" which enabled him to rethink the building process¹¹ was not the only aspect of prefabrication he was interested in – there were also attempts to use modular components such as in the *Sigma* procedure which he used with the *Flandres-Artois housing company* which launched, from its Violaines factory in the Pas-de-Calais area, the production of industrialized housing.

Jean-Pierre Watel was fiercely opposed to vertical densification despite several attempts with a few projects on this theme notably in Dunkirk, and often looked to demonstrate that his groups of houses enabled a density of 50 dwellings per hectare which was comparable to the density of four story collective housing blocks. He also tried to propose a credible alternative to the mediocre housing estates that were spreading to the suburbs, far from service facilities with their excessive use of land and the banality of the landscape that they generated.

If Jean-Pierre Watel has not been forgotten in history, it is however most likely that the place he occupies seriously needs to be re-examined. What should be retained of the

declared link between the collective dwellings by Jean-Pierre Watel and the Nordic developments? This link is both a reality but also a cover since the cultural crossovers, transfers and influences were at the heart of his practice.¹²

The architect referred with pleasure to his trips to Denmark, and his surprising meeting with Arne Jacobsen. Indeed, Arne Jacobsen lived in a house similar to those he had imagined for others in a now famous housing estate. Jean-Pierre Watel remembered first and foremost the simplicity of this encounter, a simplicity which explained *why architecture refrains from superfluous gestures, effacing the form from the "receptacle" which enables people to live, to be.*¹³

However, the houses designed by Arne Jacobsen in Klampenborg were perhaps not the design that Jean-Pierre Watel assimilated in the most obvious manner. The presence of a mineral base, the opening of the bay windows onto the neighboring houses are particular features of the Jacobsen model. One needs to look to other Danish buildings that Jean-Pierre Watel did not always specifically mention: those of Jørn Utzon, the Kingo houses (1953-1955) in Helsingør, their L-shaped plan closed by a courtyard sited on a sloping terrain on the edge of a lake, the Fredensborg housing estate (1959-1963) or again, later, the more densely

arranged prefabricated houses of Albertslund (1963-1968), to the South of Copenhagen designed from plans by Peter Bredsdorff, Knud Svensson and Ole Nørsgaard. All these examples embodied the ensembles imagined by Ludwig Karl Hilberseimer or Mies Van der Rohe at the beginning of the 1930's. Like Jørn Utzon who was influenced by the vernacular architecture of Morocco, Jean-Pierre Watel never missed an opportunity to present the popular architecture of the Magreb as a source of inspiration: the idea was to extol the merits of the wall, the way it was made and its capacity to protect intimacy with an elemental simplicity where the beauty was to be found in its proportions. But, he also tried in a discreet fashion to resolve a more contemporary problem. With the Citroën DS visible in Arne Jacobsen's garage and the one featured in the advertising brochures of the SEDAF, the relationship imagined by Jean-Pierre Watel between the car and the domestic environment was crucial. In the context of a new town which based its doctrine on the separation of urban flow, the endeavor at the Trianon Hamlet to treat the roof of a car-park as the central public space of a group of houses, the aesthetics of the car port associated with the kitchens which avoided the Brigode houses from displaying the vulgarity of a banal garage door, or the ingenious way the built zone is organized

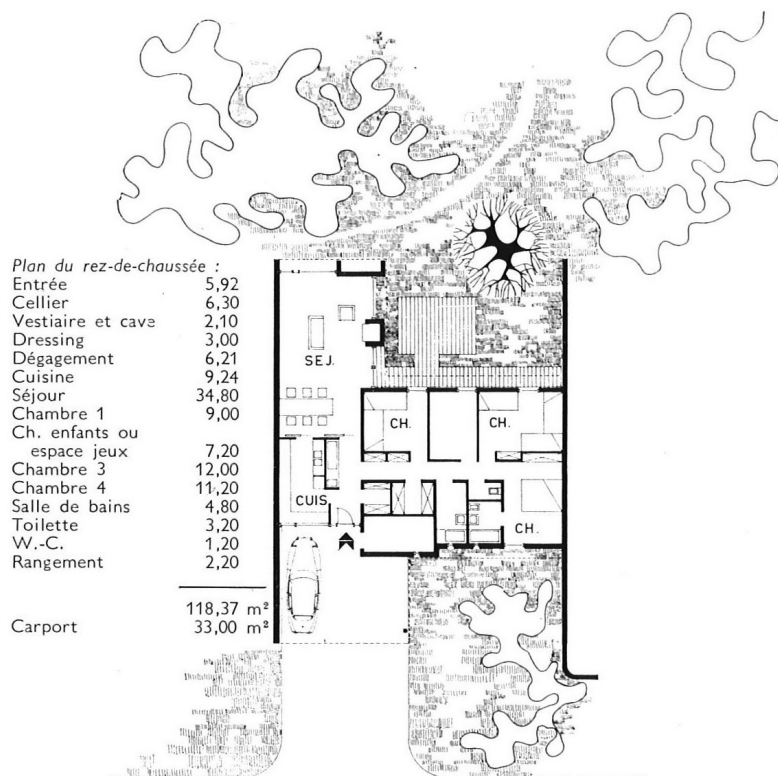
around the Château Hamlet to accommodate cars show that Jean-Pierre Watel was constantly thinking about a reasonable co-existence between the automobile and domestic space. This essential problem that he attempted to resolve by domesticating the car is further proof of the vitality of a brief period of communion between modernity and modesty, between simplicity and architecture which he brilliantly embodied.

Notes

- 1 Pierre Joly, "Le Château, logements sociaux. Ville nouvelle de Lille est. 1977", *Techniques & Architecture*, No. 316, October-November 1977, 116.
- 2 Gérard Monnier, *L'architecture moderne en France, tome 3, de la croissance à la compétition*, Paris, Picard, 2000, 166-167. Gérard Monnier mentions several times in this publication the thesis by Claudette Déom-Fournival, *L'architecture de la maison individuelle en France depuis les années 1960: références et invention dans trois agences d'architecture*, PhD Thesis, Univ. Paris 1, La Sorbonne 1996.
- 3 Gérard Monnier, *L'architecture moderne en France, Vol. 3, de la croissance à la compétition*, Paris, Picard, 2000, 164.
- 4 Jacques Lucan, *Architecture en France (1940-2000). Histoire et théorie*, Paris, le Moniteur 2001, 270.
- 5 The archives of Véra Cardot and Pierre Joly (Kandinsky Library, Musée d'art moderne, Pompidou centre) include a very large number of photographs of the works of Jean-Pierre Watel. The relationship between the architect and the critic went beyond the professional framework and they became friends through the different articles.
- 6 Jean-Pierre Ménard, "Jean-Pierre Watel" in Jean-Paul Midant (Dir.) *Dictionnaire de l'architecture du xxe siècle*, Paris, Hazan, Institut Français d'Architecture, 1996, 949.
- 7 Daniel Le Couédic, *La maison, une identité galvaudée*, Rennes, Presses universitaires de Rennes, 2003, 151.
- 8 *Maisons nouvelles à patio, collection architecture de notre temps*, Paris, Eyrolles, 1966.
- 9 On this subject, Marie-Pierre Sampson, "Le projet de Brigode à Villeneuve d'Ascq (1966-1981)", Richard Klein & Gérard Monnier (Dir.), *Les années ZUP, architecture de la croissance 1960-1973*, Picard, 2002. The Villeneuve constructions occupy an important place in the work of Jean-Pierre Watel, 63-73, Paris, Société Internationale de Presse et d'Édition, 1973.
- 10 Pierre Joly, "Le Château, logements sociaux. Ville nouvelle de Lille est. 1977", *Techniques & Architecture*, No. 316, October-November 1977, 116.
- 11 Jean-Pierre Watel, "Lossature bois, deux décennies d'expérimentation", *Techniques et Architecture*, No. 321, October 1978, 75-78.
- 12 Richard Neutra, one of the most important figures of the crossovers and reciprocal influences between the United States and Europe, visited the constructions by Jean-Pierre Watel when he came to Croix near Roubaix when he was designing the Delcourt house (1967-1970).
- 13 Jean-Pierre Watel, *Le faux problème de la maison, recherches et réalisations sur l'habitat individuel groupé* par JP Watel architecte, 1977. Tapuscrit.

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05 Plans of a house for *Brigode* (1973) in Villeneuve d'Ascq, Archives J. P. Watel.