mASEANa Project 2018
Materiality, Technology and modern movement in the Southeast Asia

The Report of mASEANa Project 2018 6th & 7th International Conference

mASEANa
odern rchitecture
Project

2015 - 2020

The Report of mASEANa project 2018 : 6th & 7th International Conference

Materiality, Technology and modern movement in the Southeast Asia

CONTENTS

Introduction

Forward
Shin Muramatsu 09

Part1: Materiality, Technology and modern movement in the Southeast Asia

Characters of Concrete -Antonin Raymond and Reinforced Concrete
Ken Tadashi Oshima 12

Modernization of Wooden Architecture in Japan in 1900-1960s
Struggling between Design and Optimization
Mikio Koshihara 17

- 1. modern architecture and New Materials and Technologies -

Material Selection of Vann Molyvann, Cambodia, 1950-60s
Masaaki Iwamoto 20

The "Colors" of Wood
- Genealogy of Dark Modern Architecture in Japan -
Kentaro Okamura 22

- 2. New Conservation in modern architecture -

Reviewing the Renovation of Modern Shophouses,
built in the 1960s and 1970s, in Bangkok
Chomchon Fusinpaiboon 26

The making of Thailand's the Vocational Education Project, 1965-70:
Collaboration between Thailand and Japan
Waeovichian Abhichartvorapan 29

Phnom Penh Royal Palace
- Case study of Prasat Chanchhaya -
Sisowath Men Chandevy 33

The Heroic and the Everyday:
Histories and Futures of Modern Architecture in Singapore
Jiat-Hwee Chang 36

Development of Modern Architecture in Vientiane City, LAO PDR
Khannaphaphone Phakhounthong, Soukanh Chithpanya 40

The Kasumigaseki Building's Planning and Technology:
Japan's First Skyscraper from the Viewpoint of Renewal
Ryohei Kumagai 43

Part2: Inventory of modern Buildings

- Inventory of modern Buildings in Phnom Penh -

History of modern architecture in Phnom Penh
Masaki Iwamoto 49

Inventory of modern Buildings in Phnom Penh 51

- Inventory of modern Buildings in Bangkok -

History of modern architecture in Bangkok
Pornpas Siricururatana 59

Inventory of modern Buildings in Bangkok 61

Acknowledgment 72

CONFERENCE INFORMATION

The 6th mASEANa Conference Poster

The 7th mASEANa Conference Poster

The 6th mASEANa Conference in Bangkok

- The 6th mASEANa Conference -
Bangkok, 25th - 27th Oct. 2018

The Future of the Past : Materiality and Resilience of Modern Architecture in Southeast Asia

Venue : Chulalongkorn University /Bank of Thailand Learning Center
Organizer : DOCOMOMO JAPAN (mASEANa Project Committee)
Co-organizer : The Japan Foundation
Host : Thai Obayashi Corp./ Ltd, Mitsubishi Jisho Sekkei Asia Pte. Ltd./ KOKUYO International (Thailand) Co.,Ltd./ Nomura Real Estate Development Co., Ltd./ ON GROUND CO., LTD.
Sponsorship : DOCOMOMO International, ICOMOS 20th century committee, mAAN
Supporter : The Toyota Foundation

Program

Session 1A : Development and International influence of Technology and Materials

Modern Construction Materials and the Transformation of Architecture in Siam, 1900 – 1932
by Pirasri Povatong (Chulalongkorn University)

Development of Modern Architecture in Vientiane city
by Khannaphaphone Phakhounthong (National University of Laos)

Early 20th-century Reinforced Concrete Buildings Designed by William Parsons
by Michael Manalo (University of Santo Tomas)

The Making of Thailand's Vocational Education Project, 1965-70: Collaboration between Thailand and Japan
by Waeovichian Abhichartvorapan (Independent Scholar)

Session 1B: Materiality & Materials

Of laterite, teak and concrete: 'modern' materials in the architectural work of Amorn Srivongse
by Pinai Sirikiatikul (Silpakorn University)

Material Selection of Vann Molyvann, Cambodia, 1950-60s
by Masaaki Iwamoto (Kyushu University)

Harjono Sigit and the Use of Cement and Concrete in Surabaya and Gresik
by Ayos Purwoaji (Writer & Indeoendent Curator)

Monumentally Modern, Some Thoughts on the Materiality of Dewan Tunku Canselor, Universiti Malaya
by Ahmad Nazmi Mohamed Anuar (Taylor's University)

Session 1C: Materiality & Meanings

Materializing Identity: Modern Islamic Architecture in Bangkok by Paichit Pongpunluk
by Winyu Ardrugsa (Thammasat University)

Not so concrete – the journey from the Past
by Nguyen Manh Tri (The National University of Civil Engineering, Hanoi)

The "Colors" of Wood
- Genealogy of Dark Modern Architecture in Japan -
by Kentaro Okamura (Kindai University)

Materializing Modern Thai: Faculty of Architecture at Chulalongkorn University , 1938 – 1941
by Chomchon Fusinpaiboon (Chulalongkorn University)

Opening Addresses

Keynote Address I
by Jeffrey Cody (Getty Conservation Institute)

Keynote Address II
by Keiichi Imamoto (Tokyo University of Science)

Session 2A : Conserving Modern Architectural Heritage

The Conservation and Future of Mandalay University Campus
by Su Su (Mandalay Technological University)

Preserving Modern Educational Buildings in Bangkok
by Thitiwoot Chaisawataree (Kasetsart University)

Restoration Projects of Heritage Building in Cambodia Sisowath
by Sosiwath Men Chandevy (Heritage Center Cambodia)

Session 2B : The Future of Modern Architectural Heritage

The Heroic and the Everyday: Histories and Futures of Modern Architecture in Singapore
by Jiat-Hwee Chang (National University of Singapore)

Rejuvenating Singaporean Modern Landmarks: Revaluation – Rehabilitation – Revitalization
by Ho Weng Hin (Studio Lapis)

From the Banknote Printing House to the BOT Learning Center
by Puiphai Khunawat (Creative Crews)

- The 7th mASEANa Conference -
Tokyo, 16th Feb. 2019

Materiality, Technology and modern movement in the Southeast Asia & Japan

Venue : Tokyo Bunka Kaikan
Organizer : DOCOMOMO JAPAN (mASEANa Project Committee)
Co-organizer : The Japan Foundation
Scientific committee: DOCOMOMO International, ICOMOS ISC20C, mAAN
Sponsor : Maeda Corporation
Supporter : The Toyota Foundation

Program

About mASEANa project
by Shin Muramatsu (The University of Tokyo, mAAN)

Keynote Speech I : Characters of Concrete: Antonin Raymond and RC
by Ken Tadashi Oshima (University of Washington)

Keynote Speech II : Modernization of Wooden Architecture in Japan in 1900-1960s: Struggling between Design and Optimization
by Mikio Koshihara (The University of Tokyo)

The inventory of modern architecture in Phnom Penh and Bangkok
by Pongkwan Lassus (ICOMOS Thailand), Hiroaki Anamizu Yu Takahara (Japan)

Session 1: Materiality and Resilience of Modern Architecture

Material Selection of Vann Molyvann, Cambodia, 1950-60s
by Masaaki Iwamoto (Kyushu University)

The Renovation of Bangkok's Modern Shophouses from the 1960s and 1970s
by Chomchon Fusinpaiboon (Chulalongkorn University)

The Heroic and the Everyday: Histories and Futures of Modern Architecture in Singapore
by Jiat-hwee Chang (National University of Singapore)

Session 2: New Conservation in Modern Architecture

The Kasumigaseki Building's Planning and Technology:
Japan's First Skyscraper from the Viewpoint of Renewal
by Ryohei Kumagai (Tokyo University of Science)

The Making of Thailand's Vocational Education Project, 1965-70: Collaboration between Thailand and Japan
by Waeovichian Abhichartvorapan (Independent scholar)

Rejuvenating Singaporean Modern Landmarks: Revaluation - Rehabilitation - Revitalization
by Jonathan Poh (Studio Lapis)

PARTICIPANTS

Co-coordinator

Johannes Widodo
National University of Singapore, mAAN, mASEANa, ICOMOS Singapore

Shin Muramatsu
The University of Tokyo, mAAN, mASEANa

Yoshiyuki Yamana
Tokyo University of Science, mASEANa

Docomomo International

Ana Tostões
Docomomo International Chair, Tecnico-Lisbon University Full Professor

Getty Conservation Institute

Jeffrey Cody
Getty Conservation Institute

Cambodia

Sisowath Men Chandevy
Heritage Center Cambodia

Indonesia

Ayos Purwoaji
Writer & Independent Curator

Japan

Kengo Hayashi
The University of Tokyo

Mitsuru Hirai
Megro Architecture Laboratory co,Ltd

Keiichi Imamoto
Tokyo University of Science

Masaaki Iwamoto
University of Kyushu

Shinnosuke Tadokoro
Nihon University

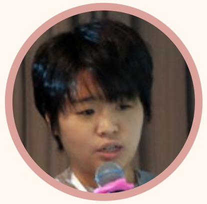
Mikio Koshihara
The University of Tokyo

Ryohei Kumagai
Tokyo University of Science

Kentaro Okamura
Kindai University

Kenji Watanabe
Chair of DOCOMOMO Japan, Tokai University

Hiroaki Anamizu
The University of Tokyo



Yu Takahara
The University of Tokyo

Laos

Khannaphaphone Phakhounthong
National University of Laos

Malaysia

Ahmad Nazmi Mohamed Anuar
Taylor's University

Myanmar

Su Su
Mandalay Technological University

Philippine

Michael Manalo
University of Santo Tomas

Singapore

Ho Weng Hin
National University of Singapore

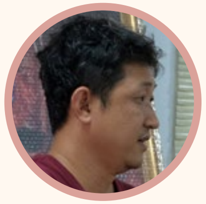
Jiat-Hwee Chang
National University of Singapore

Jonathan Poh
Studio Lapis

Thailand

Beer Singnoi
Architectural Photographer

Chomchon Fusinpaiboon
Chulalongkorn University



Parinya Chukaew
King Mongkut's Institute of Technology Ladkrabang

Pinai Sirikiatikul
Silpakorn University

Pirasri Povatong
Chulalongkorn University

Pongkwan Lassus
Association of Siamese Architects under Royal Patronage

Pornpas Siricururatana
The University of Tokyo

Puiphai Khunawat
National University of Singapore

Thitiwoot Chaisawataree
Kasetsart University

Waeovichian Abhichartvorapan
Independent Scholar

Winyu Ardrugsa
Thammasat University

Yongtanit Pimonsathean
Thammasat University

the United States

Ken Tadashi Oshima
Washington University

Vietnam

Nguyen Manh Tri
National University of Civil Engineering

Foreword

Shin Muramatsu (mASEANa Project Coordinator, The University of Tokyo)

The mASEANa Project, which entails cooperative research on modern architecture in Southeast Asia conducted jointly by researchers in Southeast Asia and Japan, is a five-and-a-half-year project that started at the end of 2015 and will conclude in March 2021. Sponsored jointly by the Japan Foundation and mASEANa Project, it has three goals: 1) To create an inventory of modern architecture in Southeast Asia, 2) to write a history of the modern architecture of Southeast Asia, and 3) to suggest methods for preservation of the modern architecture of Southeast Asia. Therefore, workshops and international symposiums have been held in the capital cities of Southeast Asian countries. The Annual Report 2018 is a record of activities in Japan in the 2018 fiscal year (April 2018 to March 2019).

In FY2018, Inventory Workshops were held in Phnom Penh and Bangkok, and International Symposiums were held in Bangkok and Tokyo. The achievements of these events make up the heart of this report. The theme of the FY2018 International Symposiums was technology and materials, which are areas that have been treated lightly not only in historical research on modern architecture in Southeast Asia, but also in research on the history of modern architecture in Japan.

The keynote presentations in the report include a talk on the relationship of the concrete with the architecture of Antonin Raymond given by Professor Ken Oshima, who addresses and presents modern architecture of Japan globally, and an address by the world authority on wooden architecture, Professor Mikio Koshihara, in which he macroscopically discusses the achievement of his recent research on the modernization of wooden architecture in Japan.

Ten points were selected from among studies reported on at the International Symposiums in Bangkok and Tokyo and they have been included in the report, divided into two categories: “Modern architecture and new materials and technologies” and “New conservation in modern architecture.” All of the points include new perspectives and new topics that will probably be widely used as reference materials for the future compilation of the history of modern architecture in Southeast Asia. The report concludes with reports on the Phnom Penh and Bangkok Inventory Workshops and their achievements. These will definitely be referred to whenever the modern architecture of Southeast Asia is studied.


វិទ្យាស្ថានភាសាបរទេស
INSTITUT DES LANGUES ETRANGERES INSTITUTE OF FOREIGN LANGUAGES

Part 1:

1. modern architecture and New Materials and Technologies

2. New Conservation in modern architecture

Characters of Concrete
-Antonin Raymond and Reinforced Concrete-
-Opening Speech of The 7th mASEANa International Conference-

Ken Tadashi Oshima (University of Washington)

Concrete is a truly international material used worldwide. From another perspective, it is a regional material through the use of locally-found aggregate and the techniques and ideals of its builders. Concrete, as a liquid that becomes solid, can be further considered "more a process than a building material." While one might take concrete for granted as a material used to pave sidewalks, it defies simple, categorical definitions. It begs basic questions of whether it is inherently a material that is natural or synthetic, modern or classic?

To begin to address the international versus regional nature of concrete in Japan, I will examine the work of Czech-born naturalized American architect Antonin Raymond, who pioneered and perfected concrete through a 40-year career in Japan before and after World War II. Raymond explored the potential of concrete on all scales of building in all typologies – from the home to entire university campuses. Going back and forth between continents, Raymond was in a unique position to literally connect the European, North American, and Asian continents and bring the latest concrete technology from the US and Europe to Japan.

He also drew from a long tradition of fine building construction in Japan. However, Raymond is not the sole character in this story, but rather one closely connected with Cass Gilbert, Frank Lloyd Wright and Auguste Perret — each of whom expressed their own unique character of concrete. Moreover, Raymond's influence would be profound, especially seen in the postwar work of Kenzo Tange, as well as, as we'll see, Wright's and Raymond's own disciple, Kunio Maekawa and others.

The French methods of reinforced concrete were introduced into Japan as early as 1895, and here we see the reinforced concrete office, the Mitsui Trading Building, built in 1911 in Yokohama.

So looking further, just as reinforced concrete was in its pioneering stage in Japan, Antonin Raymond arrived in the port of Yokohama at the end of 1919 at the invitation of Frank Lloyd Wright to help oversee the construction of the Imperial Hotel. Previous to arriving in Japan, Raymond had worked for Wright at Taliesin in 1916, which eventually led to his invitation to Japan.

Raymond, who had moved to the United States from Czechoslovakia in 1910, also worked for the American architect Cass Gilbert on the then-tallest building in the world, the 55-story Woolworth Building in New York, from 1913. At this time, he also worked on the reinforced concrete Austin Nichols Warehouse in Brooklyn, which we see on the right, and discovered the rich potential of concrete and gained the necessary experience to build in Japan. Concrete emerged at the beginning of the century from the natural and mental obscurity of a material used for ditch buildings, backwalls, and firestops to wide acceptance in architecture. As Gilbert noted, quote, "If concrete, after full trial, proves to be the economical material for use, it will in time be well designed."

For Gilbert, concrete was not simply a structure, but it offered great potential as a surface. Looking at the exposed surface of the Austin Nichols' concrete – peeking through the pealed-off paint, one can see the character of Gilbert's concrete. He argued that, *There are great possibilities of texture in concrete, as yet untried, and texture is needed to dispel a barrenness of effect in broad surfaces. In stone masonry or in the brickwork of the joints [stones] would give a certain quality of "texture" in the surface of a wall, but while there are no joints in concrete (except those widely spaced for expansion), there is no reason why the texture of the surface may not be made beautiful.*

For Wright, the reinforced concrete structure was the means by which the Imperial Hotel design famously survived the Great Tokyo Earthquake of 1923 (Fig.1). However, Wright did not expose concrete. Rather, he concealed it under carved volcanic stone, *oyaishi*, and tile. Wright argued that, "Aesthetically concrete has neither song nor any story. Nor is it easy to see in this conglomerate, in this mud pie, a high aesthetic property, because in itself it is an amalgam, aggregate compound. And cement, the binding medium, is characterless."

Upon arriving in Japan, Raymond quickly grew tired of working for Wright and was able to gain many projects of his own, promoting himself as an American Architectural specialist especially well versed in reinforced concrete construction. After establishing his office, which he named the American Architecture and Engineering Office, he received numerous building commissions in a nation rapidly expanding after World War I. Raymond's first major independent project was the design of the Hoshi Pharmaceutical School, which was to be the, quote, "most modern school building in the Far East," end quote.

Raymond collaborated closely with skillful Japanese carpenters of the Shimizu Construction Company to design, "one of the first reinforced concrete buildings in Tokyo," which included classrooms for 100 students, an assembly hall for 1,000, a swimming pool and a gymnasium."

Raymond drew from his experience working on Cass Gilbert's concrete warehouse in Brooklyn and gothic detailing. Synthesizing lessons from his mentors Gilbert and Wright, and possibly indirectly from the French architect Auguste Perret, whose work he studied closely and greatly admired, to reinterpret classical styles in the, quote, "plastic and readily adaptable material" of concrete. Precast to imitate "antique forms," elements such as beveled window mullions abstractly recalled Czech cubism and Gothic precedents. Rather than simply rebuilding historical models, however, Raymond attempted to express the surface of concrete more directly. At this early stage, he was only partially successful and reluctantly had to resort to covering the surface with cement mortar and cement plaster.

At the same time that Raymond built the concrete Hoshi school, he began design and construction of the newly established Women's Christian College on the outskirts of Tokyo. Raymond's largest running project, spanning the period from 1921 to 1938, this huge campus included a master plan, classroom buildings, dormitories, and faculty houses, all of which employed concrete and were consciously Western in appearance.

The solidity of the exterior walls contrasted with traditional Japanese wooden post-and-beam dwellings that could be completely opened from the environment. Proven to be a suitable material for institutional buildings in earthquake-prone Japan, concrete had other advantages here: with its international associations, it created a physical setting in which to instill Christian teachings in Japan. Building on this experience, Raymond went on to construct concrete educational complexes around the country.

Over time, concrete would take on a new domestic form inspired by indigenous building traditions and sensibilities. In contrast to the central library's original 1921 scheme featuring a domed roof, like the Hoshi School (Fig.2), Raymond's 1929 design, which we see here, featured a central gabled roof. This not only provided more protection from Japan's rainy climate, but also abstracted the design parti common to both Wright and such Japanese precedents, such as the Byodoin. Concrete, as a plastic material, could thus bring together both sensibilities as an increasingly geometric, yet structural composition.

Housing for the Christian College professors facilitated further Raymond's opportunity to restore concrete architecture in a domestic realm. Frank Lloyd Wright had proposed such a concrete house as early as 1907; however, the higher cost for concrete and the reluctance to fully embrace the material over conventional masonry or wood-frame prevented its realization in the American context until much later. Nevertheless, the great devastation of Tokyo's 1923 Earthquake served to justify its appropriation for Japan.

While Raymond retained a strong character of Wright's geometric detailing, Raymond used reinforced concrete further in these early houses, both as a structural and a decorative material. This was a small step towards Raymond's search for a new monolithic materiality in architecture to unify form and structure.

Raymond's design for a neo-classical house built of concrete for the college's founder, August Carl Reischauer, illustrated how Raymond gained extensive experience working in concrete in Japan despite the limitations of a conservative client.

Concrete construction nonetheless allowed Raymond to freely address the eclectic personalities and requests of his clients. In the residential design for one-time Tokyo mayor, Goto Shimpei, Raymond was able to be more flamboyant in his design with the sculpted fireplaces that express Czech Cubist motifs and Raymond's design for a house for A.P. Tetens that we see here on the right. The geometrical massing foreshadows his later avant-garde work,

Fig.1: Imperial Hotel

Fig.2: Hoshi Pharmaceutical School

but at this stage, only the base was constructed of reinforced concrete and the upper portion is constructed using wood frame.

Raymond's declaration of independence from Wright could be seen materialized in the construction of his own concrete house, the Reinanzaka House, which illustrated the plastic nature of concrete to fuse numerous sources into a multivalent form.

On the one hand, Raymond's design can be seen as an abstract, geometric composition of planes akin to the principles of de Stijl or an abstraction of Wright's Unity Temple in Chicago, which Raymond saw in 1919 just before

Fig.3: Reinanzaka House (1923-26)

going to Japan and acknowledged as a model.

On the other hand, Raymond also looked to the principles of traditional Japanese houses as he incorporated elements such as rope drains hanging from the window overhangs seen on the right.

For Raymond, the impetus to build his house came immediately after the 1923 Great Tokyo Earthquake, which subsequently gave him work through the next decade and enough money to build his own house. The vast destruction of masonry and wood-frame structures in the quake decidedly confirmed the need to fully explore the potential of this material in the seismically-active country and realize the aspirations of Gilbert. Raymond thus used not only a reinforced concrete frame, but also designed an exposed monolithic concrete enclosure around both his home and garden. The design of Raymond's own home in the Reinanzaka area of Tokyo provided the greatest opportunity for him to experiment with reinforced concrete "to his heart's content," as he wrote in his autobiography.

Most importantly, Raymond's own house was one of the very first successful examples of an exposed reinforced concrete dwelling (Fig.3). This marked the start of a long tradition of exposed reinforced concrete in Japan to be taken up by such architects as Kenzo Tange and Tadao Ando, as you all know. The exposed walls revealed both the character of a rough concrete surface and patterns of its wooden Japanese cedar formwork to confirm Raymond's belief that, quote, "there is inherent beauty in concrete and it has its own character if studied and understood." Here Raymond domesticated industrial forms in the design and construction of his house. Just as Walter Gropius, Erich Mendelsohn, and others domesticated great American industrial forms in Europe, so too did Raymond here in Japan. Building on his experience with Gilbert, Raymond designed warehouses also, designing them before the Reinanzaka house.

In contrast to Gilbert and Wright's difficulties in achieving high-quality exposed monolithic concrete surfaces in America, Raymond encountered a highly-skilled building profession that welcomed the challenge to experiment with this new material. Despite Wright's early proposals for monolithic concrete houses in the US, by the 1920s his priorities shifted to exploit the potential of the expressive "conventionalized" surface pattern of Textile Blocks for his houses in Southern California – this is Wright of course – beginning with the Millard Houses of 1923.

By contrast, Raymond's design of exposed monolithic concrete resonated with the thick earthen-wall construction of Japanese storehouses rather than being perceived strictly as an imported Western form. Skilled in Western construction and assembly, they were able to construct finely-crafted formwork resulting in concrete surfaces embedded with the distinctive grain of Japanese cedar. This was Raymond's innovation to address the rainy climate in Japan by polishing and waterproofing of the exposed surfaces, rather than covering it with tile like his contemporaries that would come to be seen as "typically Japanese" over time.

The interior also maintained a multivalent character – familiar and foreign, modern and traditional. On the one hand, it can be seen to realize the double-height interior space of Le Corbusier's 1922 Mass Production house. Raymond's all but identical living volume validated the applicability of the Corbusian principle in Japan. Here Raymond used the plastic strength of concrete to create such dynamic forms as the spiral stair connecting the living and dining spaces and sleeping spaces. Moreover, Raymond decidedly designed a total environment for modern living, including all the furnishings, such as one of the first examples of cantilevered tubular steel furniture.

From another perspective, Raymond also detailed and carefully textured the concrete frame such that it recalled traditional wooden post and beam construction, a technique that would also be later taken up by many other Japanese modernists, such as Tange after World War II, and come to be seen as almost a trope of Japanese modernist architecture. Concrete, as a malleable yet structurally rigid material, fused diverse forms into a new synthetic living environment.

The Reinanzaka house became a dwelling that affirms centuries-old building traditions through new forms and is not simply a generic example of MoMA's 1932 International Style or simply a sculptural form. Rather, it is a modern dwelling firmly rooted to its regional, cultural, and building context. The connection between wood and concrete is affirmed both in its marking of the dwelling's surface and made directly explicit through the asymmetrical Japanese pines in the courtyard space that complete the composition.

Concurrent to Raymond's own drive to perfect reinforced concrete, Auguste Perret built his own landmark work, the reinforced concrete cathedral of Notre Dame de Raincy on the outskirts of Paris. Here we see that Perret continued to fully express the structural concrete frame, but he also used it in conjunction with a non-load-bearing stained-glass curtain wall consisting of pre-cast concrete blocks. In effect, Perret created a continuous curtain of colored light, like the medieval Saint Chapel in Paris, as we see here. Here Perret continued the line of development from the rue Franklin apartments of clearly separating the frame from infill.

Again, beyond Perret's expression of structure, he directly expressed the surface of concrete and used it for all objects, including the flowerpots in front.

While there were many projects that interpreted Perret's lessons, we can see a more direct expression of the "Perret Style" here in St. Luke's Hospital in Japan and the chapel addition that we see here on the right of the Tokyo Women's Christian College completed in 1937. In this example of the Christian College chapel, the campus president wanted to build the chapel in a Gothic Style. However, instead of copying historical styles at this point, Raymond looked to the modern gothic language of Perret as a more appropriate approach.

So Raymond himself acknowledged his debt to Perret. So we see on the left is Perret and on the right is Raymond at the Tokyo Women's Christian College. However, it is interesting to directly compare these two designs to see the diverse possibilities of this same language in different contexts. Reflecting the smaller scale of architecture in this campus, especially here in Tokyo, Raymond's chapel is noticeably smaller than Perret's work from more than a decade earlier (Fig.4,5).

Just as the word order of French and Japanese sentences are typically opposite, what was the back side of Raincy, as we see on the left, has in essence become the front side of the Tokyo chapel, as we see on the right.

The individual bays of Raymond's design, reflecting the overall smaller scale, are correspondingly smaller. Moreover, while Perret expressed the

Fig.4: Church of Notre- Dame- de- la- Consolation (1923)

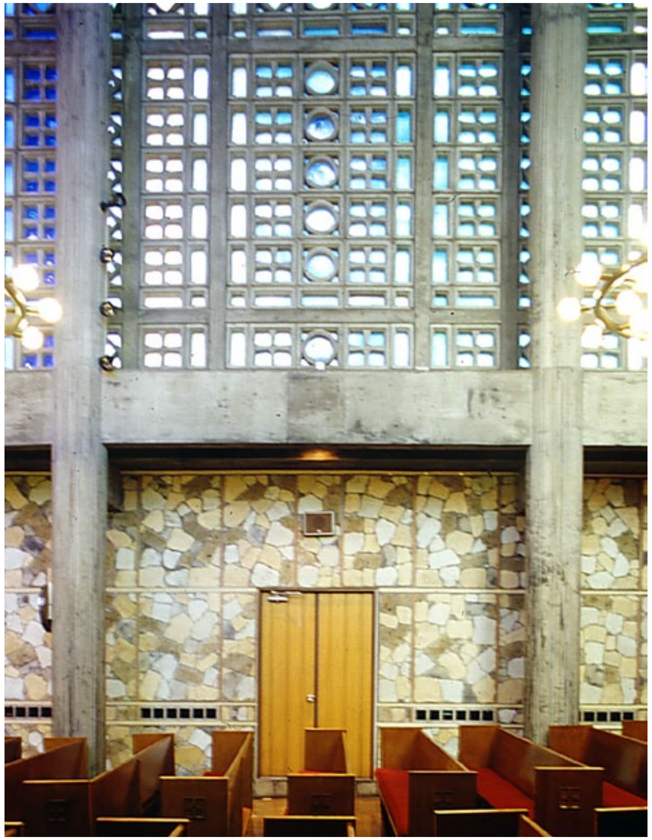


Fig.5: Tokyo Women's Christian College Chapel (1934-37)

character of sand from France on the ground-level wall of his chapel, seen on the left, Raymond expressed the character of Japanese stone, as we see on the right. Thus, each chapel, while sharing a common language, makes subtly different statements within their respective regional contexts.

So just prior to the completion of the Tokyo chapel in December 1937, Raymond abruptly left Japan under the threat of full-fledged war. The commission for the Golconde Dormitory of 1935 to 1942 at the Ashram in Pondicherry, India, led him to explore new possibilities of expressing the concrete frame to suit a markedly different climate and culture. Rather than building in concrete with the culture of wood construction in Japan, here Raymond employed exposed concrete within the culture of French colonial stuccoed-brick buildings from the seventeenth and eighteenth centuries.

This project represents another distinct transnational design: it was originally conceived in Japan and developed on-site in India by Raymond and in conjunction with Japanese-American designer George Nakashima and Czech architect Frantisek Sammer. The building incorporates steel from France and plumbing from Japan and locally-trained Indian labor in its construction. To suit the relatively dry tropical climate, Raymond developed a monolithic concrete structure with pre-cast concrete shell roofs – let's see them, over on the right at the top, over here – deep overhangs, and louvers that would completely open to accommodate cross-ventilation.

And then, when Raymond returned to the United States in 1938, he continued to employ the concrete frame. He did not, however, use the monolithic concrete wall, as he felt it was not appropriate for non-earthquake-prone regions in which he was working. Rather, he brought the openness of traditional Japanese wood-frame construction to the US, as seen here in his 1948 design for the Electrolux Recreation Center in Old Greenwich Connecticut. On the ground level, he filled the concrete frame with red brick, as exposed concrete was not yet a popular aesthetic. The brick walls helped fit the building into the overall context of the surrounding buildings. The modest project provided Raymond with the opportunity to master new concrete technology that exploited the use of electric vibrators and mixers "for exact laboratory design of concrete to a given tensile strength and density." So he would deploy this in returning back to Japan after the war.

His concrete work would reach a new level of technical proficiency, which he synthesized with the aesthetic lessons of his mentors to articulate this transnational tectonic language. The Reader's Digest Building in central Tokyo was also a transnational design on multiple levels. As Japan transformed in the late 1940s under the influence of the American Occupation, American culture had become especially prominent. The magazine Reader's Digest in fact became widely popular in Japan and subsequently commissioned Antonin Raymond to design the new headquarters in central Tokyo.

Here Raymond designed the office with the conviction "that such a building must be the best that the United States could offer in modern architecture." He relied on the scientific methods of US concrete construction in executing the building, but again, the success of the concrete work ultimately resulted from the builder's level of craft, which impressively encompassed the precise calculations of holes in the formwork and careful control of the pouring and slump of the concrete

Upon its completion, the Reader's Digest Building took particular prominence on its site, which faced the Imperial Palace, right now where the Palace site building is, and featured a landscape design by the Japanese-American sculptor Isamu Noguchi. In designing the Reader's Digest Building, he noted that he had in his mind the Japanese respect for proper orientation, the closeness to nature, and the use of material in their natural state in order not to insulate oneself from the elemental."

Raymond also sought to extend the structural principles developed by Auguste Perret to create an office open to nature in this project. Rather than following Japanese structural conventions, he employed an unprecedented structural system designed by New York engineer, Paul Weidlinger, that consisted of a central rigid concrete frame with tapered girders extending out like the branches of a tree. To lighten this building's load, concrete-filled steel pipes helped support the structure at the edge, as we see here, as a flexible hinged connection. This thereby created an open, flexible office space on both sides of an elongated structural core. The building itself won an AIA, or Architectural Institute of Japan award in 1952 for being quote, the "first and best building after the war in Japan. It also constituted an important further development of Perret's structural ideals, facilitated by the high level of craft.

Raymond's impact can also be seen in Kenzo Tange's Hiroshima Peace Memorial design. Here Tange retained both the profile of Raymond's design and the quality of the carefully crafted concrete. However, besides the different external orientation of louvers vertically rather than horizontally, Tange's structural system was completely different.

Fig.6: St. Anselm's Church (1954-55)

Today, one can see the magnificence of Raymond's concrete in his St. Anselm's church, constructed using steel plate form work to create the unprecedented scale and character of the interior space (Fig.6). This preceded the work of Tadao Ando.

So here, as we return to the Tokyo Bunka Kaikan, the legacy of Raymond's architecture can be seen in the transformations and variations of his ongoing material processes to create tactile forms suitable to the regional and human context, as we see in the Tokyo Bunka Kaikan. For Raymond and the subsequent generations of architects, concrete provided a common language that each inflected with a unique syntax for their independent projects. Their projects expressed their distinctive personalities and sensitivities.

In counterpoint to the solidity of concrete in its finished state, the process of concrete construction remains fluid, continually transforming to accommodate its international and regional contexts. Today, exposed reinforced concrete of course is ingrained within Japanese modernist architecture. However, its origins were international. Raymond's unique intermediary position as a go-between in Europe, the US, and Japan allowed him to be able to transfer the latest concrete technology from one area to the next. He drew from the sensibilities of Gilbert, Wright, and Perret, and from the highly skilled methods of Japanese craftsmen. As an outsider in Japan, Raymond was not confined by Japanese convention, but rather, freely was able to interpret aspects which he found valid.

Over the course of six decades, Raymond mastered the use of concrete at varying scales and across many building types and proved that architecture could go beyond the bounds of a single country to be both truly transnational in its construction and symbolism, and yet, fundamentally fused with the landscape and life of the people it serves.

Modernization of Wooden Architecture in Japan in 1900-1960s Struggling between Design and Optimization

-Opening Speech of The 7th mASEANa International Conference-

Mikio Koshihara (The University of Tokyo)

So for my part, as written over here, I am not a historian. I am a wooden structure researcher. Rather than design, methodology and material are the aspects I am going to talk about. From the 1900s to the 1960s, when we talk about modernization, what is the positioning of that from the technological point of view? That's my focus.

When it comes to Japan, we have a longstanding tradition of wooden-building history, so usually, a 1,000-year-old wooden structure is quite often shown. Todai-ji, Horyu-ji and townhouse-style resident houses, as well as farmers' houses, those are the very typical images.

However, in the Jomon period, from very early on, they utilized forest resources to make some architectural structures. Then 3,000 years ago, from as early as that period, we have been using wood.

So the Japanese have used wood, and then the advent of modernization came. From the 19th century to 20th century, modernization started, so the structure of buildings has changed.

What has been produced out of that are these structures, mainly industrial structures. The major ones would be the four-story warehouse, five-story factory, and school buildings, and so on and so forth. So these modern structures came to be realized.

And when these modern buildings are made, using wood is a modern timber building; however, there's a fire issue. Large-scale wooden buildings were no longer built in the 1980s, so since the 20th century, from the end of the 20th century, laminated wood. Along with that, timber-building drew attention one more time.

Now the effective utilization of wood resources is quite often talked about, so not just these structures. Multilayered structures are now available.

Modernization from the Structural Engineering Pont of View

So during the last 1,000 years, there have been various types of wooden buildings, but my focus is modernization. So from the structural engineering point of view, I would say this is what modern architecture is. Industrial structures and large-scale architecture were needed. And then, traditional wood could be used to realize modern large-scale architecture. That was the engineering goal for modern architecture.

From the architectural point of view, the housing point of view would be one way to go. In the Jomon period, the pit dwelling house, and a high-raise store, and a farmhouse and townhouse were already built, and so there has been a change in those structures (Fig.1).

Up until recent years, these are how the structures were, but in the modern era, Modernism, Sakakura Junzo, Antonin Raymond, Maekawa Kunio used wood and made wooden structures (Fig.2).

And this is where I don't understand – the technology used here is conventional wood or is this modern structural architecture? So this is one of the challenges and questions that we face. So in terms of Western style, these were pseudo-Western style, so it could be a traditional wooden frame structure on the inside, but the façade may look very Western, so there is a gap between how it looks and the actual interior.

And on the other hand, in terms of technology and engineering, there was the realistic need to build so much housing, so two-by-four, and other more efficient ways of constructing housing, including prefabricated beams. And so engineering and carpentry got together to create new wooden housing,

Fig.1: Traditional Wooden Building

Fig.2: Wooden Modernist Architecture

Fig.3: St. Michael's Church Sapporo

and so frame structures and very rational construction of housing were being seen, and so structure and design have been fused together in the building of these houses.

However, when we talk about modern architecture, I think many people refer to these types of houses. So wooden modern architecture, you can look at it from a variety of perspectives, from pure architecture or from modern design, but if you look at the gaps, maybe we should look at the construction methodology.

Wooden Joint Technology

In the past, there was primitive housing, so logs were tied together without any processing or machining. It's a very primitive way of making them, and these are farmhouses nut they use natural logs. They are joined together. Some of them are sawn, but most of them are combined, making use of the original shape of the logs. So this type of technology is in one way primitive with not much processing, so when we talk about conventional technology, this is sawn lumber that is joined together using various techniques to create traditional Japanese wooden structures. I think this is the normal, typical image that you have in your head.

While these use the conventional wooden technology, we see the introduction of mass-produced sawn wood because things must be more efficient, so the use of robots and machining processes are introduced and the wood is precut, and these new types of wooden housing were seen more and became prevalent. So mass-produced housing has been made possible because of this.

And pursuing efficiency, rather than using the traditional wood joint, people began to use metal joints, and without having skilled carpenters involved in joining the wood, these metal joints and clamps could be used. And so to what extent can we look back in history of wooden housing?

I think the start line is here, so until contemporary times, using the technology that was fostered until this time, I think we could see many technologies that we could use earlier. We heard about Antoni Raymond and the introduction of RC, but in this case, by combining the natural resources of logs and wood, as seen in this farmhouse, natural materials are used here, and trusses are used to pursue efficiency and effectiveness.

Antoni Raymond realized his architecture (Fig.3), but Japanese architects using logs was seen only in limited areas, so this type of big farmhouse seen in the past is no longer seen, and more modern wooden architecture became the mainstream in Japan.

So priority was given to space and composition. And so you can Maekawa Kunio's designed house, the living-room space and the space upstairs. So this is typical of the wooden modernism seen in Japanese architecture. And the technology used here is not limited to the traditional, conventional wood joint technology, but more modern, efficient technology is in here as well.

Modern Wooden Construction

So here is another example of expressing more efficient modes of architecture, so the post and beam is shifting and more emphasis is being placed on interior space.

And in terms of structural aspects, from traditional methods there is a shift to mass-producible, more efficient methodology, so pseudo-Western styles are incorporated, so the frame may be traditional but made more efficient, and the exterior is different from traditional wooden housing in Japan. So it's a new era type of pseudo-Western.

And with regard to large structures, four stories or five stories, or large-space architectural works, these could be built just on conventional old wooden architecture, so trusses and bracing are used, so there are new trends to produce structurally-sound large buildings.

Higuchi Elementary School, if you look at this example here, well, as a school from the 1950s, we see wooden schools, so this is one of the latter examples, using conventional wood technology but also it has modern structural principles as well, so big space is produced, and so if it was just conventional wooden technology, you would need a lot of beams, but a lot of metal joints are used. So it's efficient as well, so braces are used, so rather than it being an extension of conventional wooden technology, they used wood as one of the materials to efficiently construct schools.

So rather than wooden joints, metal joints or clamps are used. And in this era, the structural engineers developed metal joints that were exported to other countries of the world, so it's not just the wooden joints that were highly reputed overseas but Japanese metal joints had developed technologically, and in terms of structural dynamics, wooden architecture became more prevalent because of the mixture of conventional versus modern technology.

So on the surface, this school looks very Western. This is Nishiwaki Elementary School in Hyogo Prefecture. And if you look at the floor, they use string beam technology, and so the string beam is quite normal now, but in the 1930s, already string beam technology was employed in the building of this school, a very big building.

Now this is a wooden school in a regional area, but you see the beams here, so you don't focus just on wood. You depend also on steel beams if wood strength is not enough. So it's not to say that everybody should always focus just on wood as some people think; steel beams can be used to augment strength.

So modern wooden construction, in the recent past, well, if we look at the wartime period, steel as a resource was in short supply, so a lot of wood was used to create arches and trusses, but again, bolts and metal joints were used rather than the traditional wooden joints. And I think there are two reasons here. Wooden joints are conventional technology but wooden construction is not just about that; you need to do calculations to make sure that there is structural strength, and bolts and dowel and wall plugs, you can model them and use them in larger numbers and it's easier to analyze the strength, so metal joints became more and more prevalent and more desired because of their ease of use.

Tokyo Station was renovated recently but the trusses, the domes at the top used wooden trusses when it was originally built after the war. If you go to the Meiji period, in the restoration of Todai-ji, the Great Buddha Hall, traditional wood building, they had to renovate, so they were thinking of ways to strengthen, and so despite the tradition that people wanted to maintain, reinforcements were made with steel structures.

So steel and wood can be properly combined to make buildings. And this is a concept that we see here. You see metal joints seen for this Makino Museum of Plants and People.

So in terms of technology, there is the more primitive type of carpentry and tying logs, and then wooden joints, and then architecture and engineers came into Japan, including Antoni Raymond, and designs were made more efficient to promote efficient construction of housing in Japan. And so metal connectors and joints were employed more and more, and so when we think about the modernization of wooden housing, metal joints became the mainstream, and also wooden joints had to be modernized so that they could be mass-produced. So to enable wooden housing modernism, it is how to properly combine wooden and conventional versus the new and metal connectors and joints.

Conclusion

So wooden modernism emerged as a new form of architecture. It's not to say that we are overly obsessed with the traditional, historical wooden joints, but rather, we have incorporated new technology. And the engineers themselves entering the 20th century looked toward analyzing structural strength, and so more and more, this led to more complex buildings being able to be made out of wood.

So metal joints led to more ease of analyzing structural strength, but I don't think that we have reached the limits yet. I think there's more and more that we can do in this area, so structurally speaking, metal connection technology has to be studied, but I think we are now at an age where we also are looking at the strength of the conventional wooden joints to figure out how to come up with better ways of analyzing and confirming the strength of wooden connectors and joints.

And by combining the analytics and the technology, we can further make advances in modern wooden architecture for Japan, so it is a question of how we converge and fuse; we have not reached our goal yet. So modernization in wooden architecture is still evolving. It is continuing. Naito Hiroshi's Rinri School uses conventional wooden joints, but there has been structural analysis done on this building, so wooden modernism in architecture in Japan is evolving. It is still continuing even to this day.

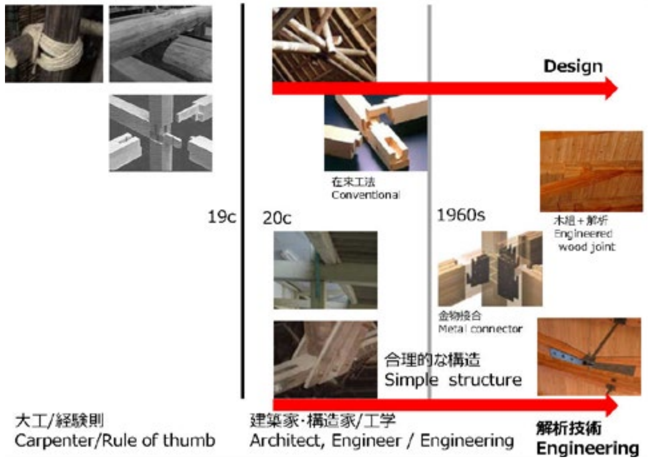


Fig.4: Evolution of Engineering

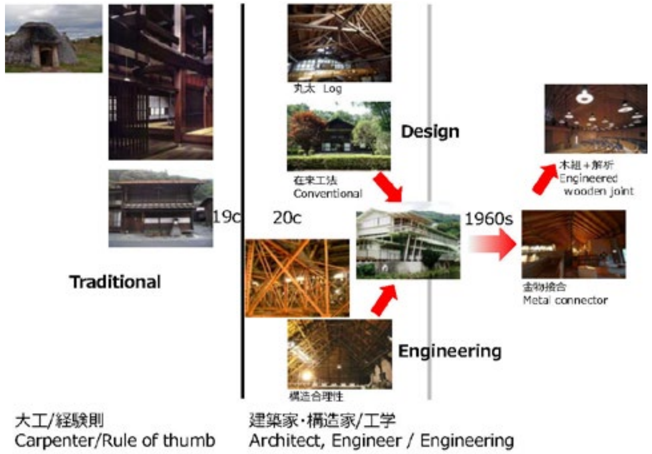


Fig.5: Design and Engineering

#1

modern architecture and New Materials and Technologies

Cambodia

Material Selection of Vann Molyvann, Cambodia, 1950-60s

Masaaki Iwamoto (Kyushu University)

From 1887 to 1953, Cambodia was under French Colonial power. French architects such as Ernest Hébrard and Jean Desbois came to the country and introduced French urbanism and architectural style into its cities. In 1953, thanks to the “crusade” of Norodom Sihanouk, Cambodia gained independence from France. Subsequently, Sihanouk began his quest to form a nation-state and modernize every aspect of the Cambodian lifestyle. So-called “New Khmer Architecture,” a modern architectural movement, flourished in Cambodia against this backdrop in the 1950s and 1960s, with Vann Molyvann (1926-2017) as its representative figure.

But how could architects in Cambodia design and build modern buildings in a newly independent country? Lack of modern industry led to was a serious shortage of modern construction materials.

Literature shows[1] that before independence, architects could procure brick, tile, stone, and sand locally. Palm leaves were also available as construction material.[2] Everything else was imported: cement, steel, glass, equipment, and so on. The situation did not change significantly after independence. Brick, tile, timber, stone, and sand could be procured locally. Cambodia built national factories for plywood and cement in the early 1960s,[3] but their production capabilities were low.

To understand how Cambodian architects selected and procured materials for their projects in the 1950s and 1960s, I conducted two case studies on Vann Molyvann’s projects in Phnom Penh.

Case Study #1: National Theatre

Preah Suramarit National Theater was designed by Vann Molyvann in 1958-59 (Fig. 1). The Japanese construction company Obayashi Corporation won a bid for the project along with a Cambodian partner, Chrun You Hak. The detailed design and structural design were developed by Obayashi around 1960. In 2015, the drawings and documents for the Theatre were discovered in the Obayashi archive in Japan, including quotations and specifications.[4] Those documents are useful for understanding Vann Molyvann’s selection of materials for the theatre project. Based on the specifications, construction materials were categorized into two groups, local and imported (Fig. 2). According to the documents, local materials selected for the theatre included sand, soil, aggregate, brick, and timber. All other materials selected by Vann Molyvann were foreign-made. The locally-procured materials were those that existed in the pre-modern age. They were inexpensive compared to modern imported materials, such as glass, steel, or equipment. For Vann Molyvann, who served the state, reduction of construction expenses to save the national treasury was a highly important objective. To lower the project budget, pre-modern materials

Fig.1: National Theatre (1958-59)

Works	No.	Items	Amount	Unit
Soil Work, Reinforced Concrete Work	1	Soil Works	7,200	m3
	2	Sand for Backfilling	4,600	m3
	3,4,5,7,8	Cement	645	m3
	3,4,5,7,8	Aggregate, Sand	5805	m3
	6	Rebar	790,000	kg
	9~13	Bricks	5880	m3
Frame Work	14	Steel frames	70,500	kg
	15	Timber for Frames	150	m3
Water proofing, Roofing	16	Cement Blocks	230	m2
	17~19	Metal Roofing and Waterproofing	7,710	m2
Finishing	20	Wooden Flooring	500	m2
	21	Decoration for Royal Seat	70	m2
	22, 23	Accoustic Panel, Glass Wool	3,000	m2
	24~27, 32	Porcelain Tile	22210	m2
	28~31	Cement for Mortar	10400	m2
	29~31	Sand for Mortar	31,200	m2
Doors and Windows, Architectural Hardware, Fixtures, Equipments	33, 34	Metal Window Frames, Glass	3180	m2
	35	Glass Doors	10	組
	36	Glass Panels	600	m2
	37~38	Wooden Door Frames	1545	m
	39	Plywood Doors and Frames	740	m2
	40~43	Precast Concrete Tanks, Pipes, Vents	2	sets
	44~47	Sanitary Ware (toiket, basin, etc)	122	組
	48	Metal furniture	44	組
	49	Mirror	44	組
	50	Towel Bar	44	組
	51	Metal Pipes	-	m
	52	Metal Umbrellas	1	組
Painting Work	53	Paints for Wood	-	m2
	54	Metal Paints	-	m2
	55	Metal Paints (Galbanization)	-	m2
	56	Paints for Bricks	50,600	m2
Others	57	Theatre Equipments	1	sets
	58	Elevators	1	sets
	59	Decoration for Royal Seat	1	sets

Fig.2: Material List based on the quotation and specification. (Red=Local material, Blue= Imported material)

had to be used to the greatest extent; but at the same time, Vann Molyvann had to express the modernity of the state through the project. The need to meet these conflicting interests is likely the reason for his choice to combine reinforced concrete structures and brick walls in the final design. In the late 1960s, the architect attempted to use local materials, such as bricks and tiles, to express modernity.

Fig.3: National Sports Complex (1964)

Case Study #2: National Sports Complex

The National Sports Complex is Vann Molyvann's representative work, built in Phnom Penh in 1964 (Fig. 3). During the schematic design phase, two plans were developed for the sports complex: an option using steel, and an option using reinforced concrete. The steel option was designed by a Japanese team led by Gyoji Banshoya, a UN officer at the Ministry of Public Works.[5] A French team, led by Vladimir Bodiansky, proposed the concrete and soil option, which was ultimately victorious. Vann Molyvann said in 2018, "At first, the plan was launched in Japan, but they asked for too much money. We had to work everything out so as to use all the local material we could—the soil, the local workforce. After having settled the deal, we were able to hire a French company to carry it out. This was agreed on because of the experts' knowledge of concrete, local materials, and the actual Cambodian workforce's capacity to bring the sport complex to life."[6]

Cost was the critical factor in choosing the material for the structure. Vann Molyvann chose the cost-effective scheme of concrete and soil. Furthermore by using exposed concrete, or béton brut, Vann Molyvann was able to represent "modernity." In keeping with the Brutalist style of the time, pre-modern materials were exclusively used but expressed modernity. In addition, Vann Molyvann deftly connected the expression of the exposed concrete to Angkorian tradition. He said in 1968, "The ancient Khmers were virtuosos in contrasting the reddish laterite of the foundation-mass with the noble blue of sandstone in the sanctuaries. Today, the best effects are obtained with rough beton."[7]

Conclusion

To reduce construction costs, Vann Molyvann tried to maximize the use of local (pre-modern) materials, such as soil, sand, stone, brick, tile, and timber, which he sublimated into the architectural expression of his work. For the same reason, he preferred reinforced concrete structures over steel. He attempted to use béton brut to connect modernity, locality, and the national identity of Angkor.

Vann Molyvann's approach is at times considered as "critical regionalism". Vann Molyvann, however, was more realistic than critical in his application of local technology and materials to address material shortages and low budgets: he accepted the reality of a newly independent country. In this sense, Vann Molyvann's style could be called "realistic regionalism."

Acknowledgement

A part of this survey was supported by Obayashi Foundation grant (2018- 2019).

Footnotes

1. Teston, E; Percheron, M. L'Indochine moderne: encyclopédie administrative touristique, artistique et économique. Paris: Librairie de France, 1931.
2. Ota, S. Research on Architecture and Urban Planning in Vietnam during the Colonial Era (in Japanese). Doctoral thesis, University of Tokyo, 2000.
3. Anonymous. Photos-Souvenirs du Cambodge, Sangkum Reastr Niyum: Industrie. Phnom Penh: Rama Printing International, 1994.
4. Iwamoto, M. "Research on the architectural documents of Vann Molyvann from the archives of Obayashi Corporation" (in Japanese). AIJ Journal of Technology and Design 22, no. 51, 2016.
5. Matsubara, K. "International cooperation by Japanese specialists for urban planning in Cambodia in 1960's." Journal of the City Planning Institute of Japan 50, no. 3, 2015.
6. Dullin, Micheline. Une vie de photographie: Cambodge 1958-1964 (in French). Paris: Trans Photographic Press, 2012, p. 180.
7. Molyvann, V. "At the school of those architects who laid out and built Angkor." Nokor Khmer 1, October-December 1969.

Reference

Fig.1: National Archive of Cambodia
Fig.2: Masaaki Iwamoto
Fig.3: Masaaki Iwamoto

The "Colors" of Wood -Genealogy of Dark Modern Architecture in Japan-

Kentaro Okamura (Kindai University)

Both Japan and Southeast Asia are located in the same cultural area of wooden architecture. However, Japan is different in that the culture of wooden architecture continues even after the modern era. Japanese wooden modern architecture is classified into two types: one is “bright modern architecture” and the other is “dark modern architecture”. The classification is based on the surface treatment of the wood. This paper will introduce the genealogy of “dark modern architecture”, which usually attracts little attention.

Historical change of preference

Color preferences vary depending on age and region. A mere difference in preference of color caused a big incident in the UK in the 1930s. It was called “Cleaning of the Elgin Marbles”. Elgin Marbles are sculptures which had originally been on the side of the Parthenon temple in Athens. They were cut off by the seventh Elgin, the British diplomat who came to Istanbul as ambassador extraordinary in the first half of the 19th century. After that, Elgin Marbles were brought back to the UK and were donated to the British Museum. In the 1930s, the surface of the sculptures were polished and cleaned by the staff of the British Museum without obtaining formal permission. As a result, the traces of vivid colors on the surface of the Elgin Marbles were completely damaged. There are various speculations about the reasons for them being polished, but there is no doubt that the difference in color preference between ancient Greece and 20th century Britain is one cause.

The same applies to the preference of the surface treatment of woods in Japanese architecture. For example, during the Momoyama era (1568-1600), architecture with extensive decorations, coloring, lacquering and sculpture was preferred. Nikko Toshogu is an example of the culmination of such trends. After that, there was a reaction to the trend. It is said that simple wood with no decoration became popular . It’s easy to imagine that these preference changes have been repeated. Also in contemporary Japan, there is a tendency to prefer raw wood, unpainted or thinly painted, which retains the original wood’s color. The discourse of Bruno Taut that evaluated Katsura Rikyu and criticized the Nikko Toshogu Shrine could be regarded as one of the factors that such trends continue to date .

Bright wood / Dark wood

It can be said that wooden modern architecture, which has been developing in Japan since the modern era, has been somewhat prominent in the base of cultures that prefer raw wood. In fact, most of the architectural works classified as wooden modernism have a surface with the original wood’s grain. In this paper, the wood having such a tendency is called “bright wood”, and modern architecture which uses it is called “bright wooden modern architecture”. Meanwhile, in Japan, there is also a surface treatment method that makes grain disappear by painting it black with lacquer, like Nikko Toshogu. In this paper, the wood having such a tendency is called “dark wood”, and modern architecture which uses it is called “dark wooden modern architecture”. In modern times there should be a wooden architecture that follows the genealogy of dark wood, but in the shadow of bright wooden modern architecture, it has thus far not gained much attention. Therefore, we will follow its genealogy to clarify the possibilities of why dark wooden modern architecture has been overlooked in Japan. The detailed definitions of dark wood and bright wood will be explained later.

Four colors of wood

Why is it necessary to pay attention to the surface treatment of wood?

In Japan, the difference in the surface treatment of wood is expressed in four colors: blue, black, red and white. However, they don’t represent actual, visible colors. Blue wood means from a living tree. Black wood means wood with bark attached, which is used for temporary buildings for the emperor, as detailed later. Red wood means wood without bark, and is often used in traditional Japanese houses, and Sukiya architecture such as tea rooms. And white wood means

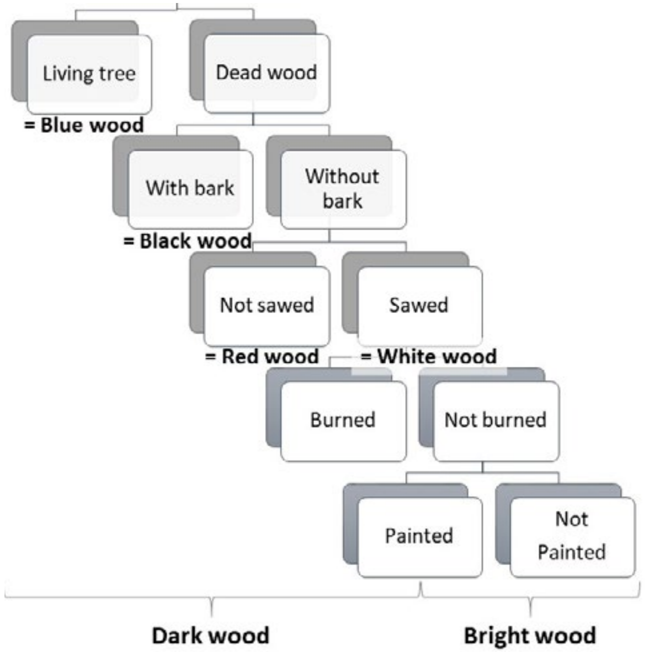


Fig.1: Four Colors and the Dark Wood / Bright Wood

Fig.2: Yakisugi

sawn timber (Fig.1). In reality, there is an intermediate one between black and red which has some bark remaining. There is also one between red and white; two sides of which are sawn. Therefore, not all woods are classified into only four colors. Due to the fact that one characteristic of Japanese architecture is using the proper wood surface treatment depending on the type of architecture, it is necessary to pay attention to the surface treatment of wood in this paper.

The relationship between the four colors and the dark wooden modernism architecture will be explained. The criterion to distinguish between dark wood and bright wood is whether the grain can be seen clearly. Blue wood, black wood, and red wood are classified as dark wood because their grain can't be seen. On the other hand, with regard to white wood, there are cases of grain which may or may not be seen depending on the method of surface treatment. The method of surface treatment of wood in Japan is roughly classified into two types: one is burning and the other is painting. For burning, since the grain can't be seen as the surface is carbonized (called "yakisugi" in Japanese (Fig.2)), it is basically classified as dark wood. For painting, various paints such as lacquer and glue, linseed oil, persimmon juice, etc. are known. Generally, when painting with lacquer or glue, a coating film is formed on the surface of the wood and the grain becomes difficult to see. On the other hand, when painting linseed oil or kakishibu (Japanese traditional paint made from persimmon), etc, paint penetrates the wood and the grain becomes easy to see (Fig.1). However, visibility varies depending on the type of pigment, so that doesn't hold true unconditionally. The unprocessed wood called "raw wood" is purely made of "white wood" and will be classified as bright wood. Historical circumstances and usage in modern architecture of each color of wood will be introduced with specific examples in the following chapters.

Blue wood

Blue wood means a living tree, as mentioned above. For example, large apes such as gorillas, chimpanzees, and bonobos are known to make nests in trees , and it can be said that this shows exactly the form of primitive architecture which uses blue wood. In Southeast Asia, Brazil, among other places, there are "tree houses" using blue wood. The overwhelming height of the tree houses of the Korowai tribe of New Guinea Island are especially impressive. Meanwhile, in Japan, old trees are sometimes worshiped as a god in shrines, but it seems that blue wood itself was never used in architecture like that of a tree house.

Since the modern era, tree houses using blue wood are built not only in Japan but also all over the world. Here, we look at "House Beyond" by artist Kenjiro Okazaki. "House Beyond" was constructed as part of the Haizuka earthwork project which was planned as a regional promotion of the surrounding area, accompanying the construction of a dam in the mountainous area of Hiroshima Prefecture. In the Japanese cypress forest that was planted after World WarIIand left abandoned, the tree house was constructed as a workspace for artists. This architecture is not simply an idyllic tree house built in the trees, but it can be said that it is presented as a prototype of a spatio-temporal structure separated from its infrastructure, as can be seen from the self-sufficiency of electricity. It is interesting that the form of tree house which uses blue wood is selected when trying to critically overcome so-called "modernism", as you can see from the site selection of the abandoned plantation forest or the Haizuka earthwork project itself.

Black wood

Black wood means wood with bark attached. It is a surface treatment method of wood with a strong connection to the emperor as mentioned above.

It is fully conceivable that black wood was used in a pit style dwelling found after the late Paleolithic age in Japan. However, it is thought that the bark was also used as a material for roofing, and is not clear how much black wood was actually used for pit type housing. The most famous use case of black wood is Daijokyu built for the Daijosai, which is to be carried out when the new emperor ascends. Daijokyu is a temporary type of architecture which is built at the time of the Daijosai and demolished as soon as the event is over. Daijokyu is made up of multiple buildings, Yuki-den and Suki-den. The main shrine has digging stands of black wood, with roofs being made of grass, and ceilings being pasted. The Daijosai is scheduled to be held in November of this year along with the enthronement of the new emperor and the Daijokyu will be built in the East Garden of the Imperial Palace in Tokyo. Other than that, it is known that black wood was used in related temporal architecture for the emperor, such as Asakura no Tachibana no Hironiwanomiya (built by Emperor Saimei around 661), Ishiyama temple Shakyosyo (around 754), Kasuga Wakamiya shrine (1136), and Emperor Godaigo's Kuroki Imperial Palace in Iki (1331). There is no definitive explanation as to why black wood is used in the architecture that is closely related to the emperor. Since many of them are temporal architecture, it is used because there is no need to worry about durability. Various theories have been advocated, like even if they were noble members of the emperor, they tried to get a sense of their popularity by using poorer materials.

On the other hand, since modern times, there is hardly any known architecture that actively uses black wood . A few examples of using black wood is a series of tea rooms designed and constructed by architect Terunobu Fujimori. One of them, Takasugian (2004) uses black wood with bark on two pillars supporting the tea room (Fig.3). These two pillars were not living trees. They were harvested from the backyard and then stuck in the ground. Therefore, Takasugian looks like a tree house but is actually not. It can be pointed out that there are similarities with the use of black wood in Sukiya architecture, which will be described later. But in that case, as it mainly uses small diameter wood, the impression is totally different. Also, it is not related to the aforementioned temporal architecture related to the emperor. Fujimori seems to realize a very unique and powerful expression by using rough materials, like ancient architecture, that does not require effort to process as is.

Fig.3: Black Wood of Takasugian (2004)

Red wood

Red wood means wood without bark. It is often used in traditional Japanese houses, and Sukiya architecture including tea rooms.

In traditional Japanese houses, red wood with a large diameter is often used as a horizontal member of the roof structure. It is thought to minimize cross section defects, and it can be said that it is structurally rational. Also, in the case of pine, which is often used as a horizontal member of a roof structure, the tree grows spirally. Therefore, pine wood may be gradually deformed when sawn. In other words, there seems to be a purpose to prevent pine red wood from being deformed by not sawing. The use of red wood in Sukiya architecture was started by the prominent master of Tea Ceremony, Sen no Rikyu. In the Kinki region including Osaka where he lived, expensive and precious wood such as Hinoki (Japanese cypress) and Keyaki (Zelkova) were harvested for the construction of large-scale temples and shrines from ancient times, there were hardly any remaining during Rikyu's life in the 16th century. It is said that forests near the big cities were mostly secondary forests . Rikyu designed his original tea room using small diameter red wood such as cypria pine and cedar grown in secondary forests, instead of high-grade wood (Fig.4). Carpenters who deal with red wood and black wood are required to have different skills than those of ordinary carpenters who handle only sawn timber.

In this way, the use of wood in the construction of each era is closely related to the conditions of the forest at the time, wood processing skills, the situation of the development of transportation infrastructure, and so on. As time goes by, demand for wood has been increasing at an accelerating rate, exceeding the supply of wood, there was basically a shortage of good wood, including large diameter wood in modern times. So wooden modern architecture was built in the context of the lack of good wood. Therefore, we can hardly find good examples of wooden modern architecture that inherited the use of red wood in the aforementioned traditional Japanese houses.

Some of the few exceptions are the use of logs (red wood) by Antonin Raymond. He adopted a structure using red wood in his early works such as St. Paul's Catholic Church (1933) (Fig.5) and the home and office of Antonin Raymond in Kougai town. Until now, the structure was called "scissor trusses" and was supposed to be in accordance with the structure of central Europe, where he came from. However, according to Yoshio Uchida, the structure is called "Tabasami-gassho-gumi (reinforced principal

Fig.4: The Replica of Taian Designed by Rikyu

Fig.5: Paul's Catholic Church (1933)

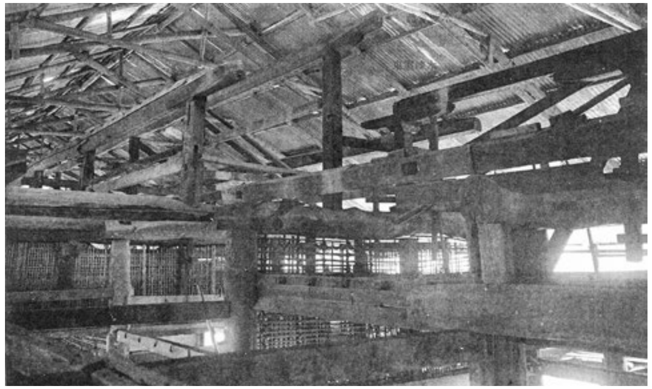


Fig.6: Tabasami-gasshoumumi (reinforced principal rafter frame)

Fig.7: Use of Red Wood in Kasuien (1959) of Togo Murano

Fig.8: Creating Yakisugi by Teronobu Fujimori

rafter frame)" (Fig.6), and he referred to the temporary roof construction method when repairing old temples . I am amazed by Raymond's eye that focuses on the reasonable construction methods of Japanese carpenters and incorporates it into his works. On the other hand, there are many cases of using red wood and black wood in wooden modern architecture in Japan which follows the genealogy of Sukiya architecture (Fig.7). Among them, Isoya Yoshida is known for establishing a new style called "New Sukiya" and heavily using metal fittings such as bolts for joining thin wood . It can be said that the modernization of Sukiya has been achieved by combining traditional skills and modern construction.

White wood

White wood means sawn timber. In this paper, as we focus on the genealogy of the dark wood, here we will focus on yakisugi.

Yakisugi is a kind of cedar board whose surface is burned and carbonized. Although it looks black, it is a kind of sawn timber. Therefore, it is classified as white wood according to the definition in this paper. However, since the carbonized layer covers the surface of the board like bark, one could assume that it is close to black wood. It can be said that there is still room for further study in the future.

Yukisugi is said to have been traditionally used mainly in western Japan, and it can be found used in town houses in post-station towns and traditional houses in fishing villages. As for the performance of yakisugi, various effects such as waterproofing, moisture-proofing, and prevention of deterioration by ultraviolet rays are presumed, but it has yet to be proven scientifically.

Regarding historical circumstances, it is known that yakisugi was used in Nagatomi's residence in the early 19th century, but it is unknown whether it was used from the beginning of construction. In this way, there are few studies on yakisugi, and there are many things regarding it to clarify. After that, since the 1960s, yakisugi has been produced at the factory, and even now it is commonly used mainly in areas where landscape conservation is required, such as post-station towns.

There are few cases where the architects actively used yakisugi since modern times. On the other hand, in contemporary architecture, it is used in Tadao Ando's "Minami-dera" (1999), Terunobu Fujimori's "Yoro insect pavilion" (2005), "Ramune Hot Spring" (2005) and Yoshifumi Nakamura's "Juzo Itami Memorial Hall" (2007). After that, it seems that there is an increasing number of architects who use yakisugi. Among them, Terunobu Fujimori does not use yakisugi produced at the factory, but one which he makes by himself (Fig.8). Fujimori's yakisugi is characterized by a richer texture because the burning time is long and the carbonized layer is deep. In this way, it can be said that Fujimori's yakisugi is the exact opposite of a homogeneous industrial product after the modern era.

Conclusion

We have studied cases of using dark wood in Japanese architecture for each of the four colors: blue, black, red and white. In pre-modern architecture, we confirmed that black, red, and white wood was used in closely related social situation and depended on things like carpenters' skills in each era. After the modern era, the use of red and black wood in Sukiya architecture including tea rooms was developed by modern technology. On the other hand, although it was confirmed that individual cases of their use by the likes of Raymond, Okazaki, Fujimori, and others were available, it can be said that no systematic development has been done. In other words, it seems that there are various possibilities about the use of dark wood in Japanese architecture.

Footnotes

1. Yuriko Kuchiki, Parthenon Scandal. shinchosha, 2004.
2. Nobuo Ito, Japanese Art No.246 Decoration of Japanese architecture. Shibundo, 1986.
3. Bruno Taut, Houses and people of Japan. Sanseido, 1937.
4. Architectural historian Shigeru Kubota pointed out that the Katsura Rikyu and the Nikko Toshogu that Taut saw could possibly have not been in the original state due to subsequent repair, etc. (Shigeru Kubodera, About color coding of Zelkova - Through the repair of Myogi Shrine-. Architectural History. 1991, Vol.16, p. 123-127).
5. While small apes sit and sleep without creating nests, large apes lie down by laying beds in the trees. The relationship between REM sleep and the evolution of large apes has also been pointed out (Matt Walker, Learning to sleep in beds could have been crucial to our evolution. www.bbc.com, 2015).
6. The Korowai tribe tree house can be confirmed on photographer George Steinmetz's website (http://georgesteinmetz.com/collections/tree-people-collection/). In a dangerous environment where there are customs of cannibalism, it is said that it was inevitable to make a house in the trees. It was difficult to cut long-length trees and complicated wood processing in this area because ironware had not been transmitted for a long time, so it can be said that it was a tree-living dwelling that was able to be constructed only with primitive tools.
7. http://kenjirookazaki.com/old/arch/jp/housebeyond.html
8. According to regulations in Japan, it is not architecture as it is not fixed to the ground.
9. In addition, black wood is often used also in tea houses and Sukiya architecture, but its use is discussed here together with red wood to be covered in the next section, so we will not cover it here.
10. Wakako Sawada, A Study on the Architecture of Modern and contemporary Sukiya: Through the Analysis of the Works of "Sukiya Architect" Sotoji Nakamura. Keio SFC journal. 2004, 3 (1), p. 10-33
11. Yoshio Uchida, Study on wooden frame structure designed by Antonin Raymond: -St. Paul's Catholic church in Karuizawa and home and office of Antonin Raymond in Kougai-cho-. Transactions of AIJ. Journal of architecture, planning and environmental engineering. 2015, 80(716), p. 2315-2325
12. Masanori Nishijima et al., Measuring survey of Kokei-KOBAYASHI House 3; Kokei-KOBAYASHI House in Modernization of Traditional Wooden Architecture-the Historical character of BORUTONUKI: Study on expression process of Modern Japanese Architecture 4. 3. Summaries of technical papers of annual meeting. 1994, p. 1447-1448

References

Fig.1: Diagram by Kentaro Okamura
Fig.2: Photo by Satoshi Asakawa
Fig.3: Photo by Tomoko OkamurA
Fig.4: Photo by Kentaro Okamura
Fig.5: Copyright Wei-Te Wong, c-by-sa-2.0, https://commons.wikimedia.org/wiki/File:St._Paul%27s_Catholic_Church,_Karuizawa_2014-08-04_(15063765187).jpg
Fig.6: National Treasure Toshodaiji Temple repair office, National Treasure Toshodaiji Temple repair work report. 1941, fig25
Fig.7: Photo by Kentaro Okamura
Fig.8: Photo by Kentaro Okamura

2

New Conservation in modern architecture

Thailand

Reviewing the Renovation of Modern Shophouses, built in the 1960s and 1970s, in Bangkok

Chomchon Fusinpaiboon (Chulalongkorn University)

This paper is part of my ongoing research titled the Renovation of Modern Shophouses, built in the 1960s and 1970s, in Bangkok. The paper consists of four parts. In the first part, I give an introduction about modern shophouses in Thailand as modern heritage within the context of Southeast Asia. In the second part, I discuss the issues related to modern shophouses in Bangkok. In the following part, I review the existing research on shophouse renovation in Thailand and point out research gaps. Then, I conclude this paper by suggesting possible directions for further research.

Modern Shophouses in Thailand

The shophouse is a modern/living heritage of Southeast Asia. The main character of shophouses are that they are built in rows. The original uses were commercial on ground floor and residential on upper floors. Even though shophouses were originally built in Thailand, especially in Bangkok, during the second half of the 19th century and the early 20th century in similar designs and styles like those in many Southeast Asian cities, e.g. Singapore, Penang, Jakarta, and Phnom Penh, they became a major part in the morphology of Thailand's urban area during the 1960s and 1970s.[1]

During this period, shophouses in Thailand were mainly built in what could be called a modern style. A row of shophouses from this period normally comprises a repetition of a 3.5-4 meter-wide-unit. Their depths range between 10 to 15 meters. Their heights are between 2 to 5 stories. They are built with reinforced concrete columns, beams, and floors. Walls are normally non-load-bearing brick masonry. Unique features always appear on their facades in the forms of reinforced concrete brise-soleil and concrete screen blocks. They increase privacy and shade interior spaces from tropical sun and rain. Elaborate iron grills are always added for security. All these features actually serve not only pragmatic but also decorative and symbolic purposes, not unlike aggregate wash or mosaic finishes on some of modern shophouses' surfaces.[2]

Shophouses from the 1960s and the 1970s in Thailand are testimonies of the country's everyday modernity and ordinary people's, mostly Thai Chinese descendants, ambition for better life during the period of Americanization and economic development.[3] Most shophouses were built by petty developers, who responded to rapid urbanization, housing shortage, and expanding

Fig.1: Rows of shophouses juxtapose with a new high-rise office building in Bangkok

entrepreneurship better than the government.

Problems and future of shophouses

Focusing in Bangkok, shophouses from the 1960s and 1970s are still occupying a major part of inner and intermediate areas of the city nowadays even though their popularity has dropped dramatically.

In the 1980s, the shophouse was blamed for traffic jam, pollution, and disorderliness of the city.[4] Air-conditioned shopping centers started to replace vibrant street life, previously made possible by shophouses. Extensions of road network, the construction of express ways, and higher ownership of cars promoted suburban developments that attracted many of the original owners and residents of shophouses.

Nowadays, a large number of shophouses are running down. Many are abandoned or inefficiently used. Most have gone through uncontrolled alterations, sometimes creating unhygienic environment and structural risk. Many shophouses have been demolished en-bloc to make way for new high-rise apartments. However, not all locations occupied by shophouses in the city are suitable or possible to be redeveloped into high-rise apartment buildings (Fig.1).

For example, some blocks of shophouses are far from a metro station, a popular factor of marketing campaign for a new real estate development project. This affects the prospective developer's decision to buy such blocks because it would limit the project's pricing and competitiveness. Some blocks of shophouses face a small street. This limits the height of buildings in the re-development project according to regulations, so that it may not be financially feasible for developers. Above all, as the majority of shophouses are freehold not leasehold, it is always not easy for a developer or a broker to deal with individual owners in a block or even in a row of shophouses regarding their satisfactory prices. Therefore, the massive number of existing shophouses and the above situations have assured their persisting existence in Bangkok and these are unlikely to be changed dramatically soon.

Accordingly, there is the future for shophouses and those who want to live and/or do business in them. This is because that original advantages of shophouses have recently returned to be relevant.

Firstly, as regard location, many shophouses are in the city center. Growing networks of public transportation and persisting problems of traffic jam have made many Bangkok residents considering buying an old shophouse to renovate instead of a new apartment mainly because old shophouses have lower prices per gross area than those of new apartments.

Secondly, as regard the use, suitability for small business and the fact that a business owner could live and work in the same place match the booming trend of entrepreneurs who want more flexibility of their work/life balance.

Considering the first and the second points together, the cost of renovating a shophouse into a home office, where the business owner could live and work in the same place in the city, is worth comparing with that of buying a suburban house and renting, on a monthly basis, an office in the city. The economic and mental costs of daily commuting are also worth considering.

Lastly, as regard architectural aspects, flexibility of space and basic structural system of shophouses, derived from standardized designs and construction, theoretically allow freedom of renovation, limitations notwithstanding. All above advantages of shophouses go along well with current themes in urban design such as urban regeneration and sustainability.

However, most existing shophouses built during the 1960s and 1970s do need to be renovated before a new use. Creative designs of shophouse renovation have been done and published recently but they are still minor in number comparing with existing shophouses in Bangkok. The more number of renovated shophouses, the more impact they could contribute to the well-being of Bangkok residents.

Conservation and Renovation of Shophouses

A literature review shows that existing research about shophouses in Thailand could be categorized into three groups – conservation of shophouses, design and renovation of shophouses, and development of shophouses.

All research studies on the conservation of shophouses in Thailand only focus on historical values and conservation guidelines for shophouses built before the 1960s.[5] This correlates with the awareness of the historical, architectural, and archaeological values of shophouses, built during the 19th century and early-20th century, by both the academic circles and the public. .

Unlike shophouses from the mid-19th century and early 20th century in many Southeast Asian cities, including Bangkok, modern shophouses from the 1960s and 1970s have not been recognized for their historical and architectural merits. This is not unlike most of Southeast Asian modern architecture, including even those with historical importance and outstanding features, from the same period in general that have not been recognized as heritage and have not been conserved and/or renovated well.

However, given the massive number of shophouses and the fact that many of them indeed do not always possess architectural values, the renovation with adequate understanding of their architectural values, if available, and the nature of their original construction methods would be sufficient. In other words, the renovation of modern shophouses in Bangkok should priorities their and their users' future than their pasts. Interestingly, this is very much the same purpose when these modern shophouses were originally built during the 1960s and 1970s. And this could be considered as modern shophouses' resilience.

As regard existing research studies on shophouse renovation, some focus on design guidelines for alterations and/or additions of architectural features, within structural limits, to enable new uses.[6] Others study and propose guidelines for enhancing temperature, lighting, and ventilation to create the comfort zone in shophouses.[7]

Fig.2: A possible street elevation of a row of shophouses in Bangkok once the owners have adopted and applied a design guideline for improvement of modern shophouses built during the 1960s and 1970s according to their own needs while conforming to regulations and achieving a certain level of unity in design, thanks to the maintenance of standardized concrete screens.

Not all the research studies address the fact that certain levels of renovation entail legal issues. Renovation that is defined by law as alteration and addition need to pass construction permission process. In other words, the application of design guidelines in existing research and the judgment of whether an intended level of renovation is defined as alteration and addition would require proper professional services from architects, engineers, and may result in an engagement with a bureaucratic, and sometimes corrupt, process of construction permission.

All these entail cost and efforts that could be burdens for the majority of those who want to renovate shophouses, and, therefore, delay a widespread shophouse renovation that could contribute to the city more.

A way to mass adoption and application of shophouse renovation

A study on possibility and guidelines for creative and safe shophouse renovation that owners could adopt and apply by themselves without direct supports from professionals and without dealing with the authority is needed. To do so, understanding of standardized design and widespread problems of modern shophouses, built during the 1960s and 1970s is a starting point. This could be supported by existing literature on the development of shophouses.[8]

Then, selected case studies of shophouse renovation that are designed by architects but potentially respond to the issue of mass adoption and application could be analyzed and evaluated. Furthermore, case studies of the renovation of other building types whose designs address the issue of mass adoption and application could be also analyzed in terms of its possible application to modern shophouses (Fig.2).

Most importantly, procedures incurred in conventional renovation of shophouses ranging from project initiation, design, construction permission, construction drawing production, and construction should be also critically reviewed in relations to the analyses of case studies.

Footnotes

1. Pussadee Tiptus, and Manop Bongsadadt, Houses in Bangkok: Style and Change in 200 Years (Bangkok: Chulalongkorn University, 1983): 365-366; Bundit Chulasai, “Shophouses: The Living Testimony of Urban Transformation in Thailand,” paper presented at the International Conference on the Evolution and Rehabilitation of the Asian Shophouse, Hong Kong, 10–12 May 2007).
2. Sant Suwatcharapinun, Studies in Retrospect of the Roles of Iron Grills: The Production of the Culture of Fear in Shophouses and Detached Houses in the Urban Areas of Chiang Mai (Bangkok: National Research Council of Thailand, 2007); Sant Suwatcharapinun, “Reflection of Modernity: Re-exploring the Role of Modern Architecture in Chiang Mai (1884-1975),” Journal of Architectural/Planning Research and Studies (September - October 2015): 79-102.
3. For a detailed discussion on this, please see Chomchon Fusinpaiboon, “Thailand’s Shophouses: A People’s History and Their Future,” in Ute Meta Bauer (ed.) Incomplete Urbanism (TBC) (Singapore: NTU Centre for Contemporary Art Singapore and World Scientific Publishing, 2019) (forthcoming).
4. See Problems of Shophouses (Bangkok: Faculty of Architecture, Chulalongkorn University, 1981).
5. Chiraphon Saengsin, “The appropriate physical characteristic of shophouses in Krung Rattanakosin, Bangkok,” (MArch dissertation, Silpakorn University, 1984); Sayanee Virochrut, “The conservation of shophouses on Charoenkrung Road : between the reign of King Rama IV and King Rama VII),” (MArch dissertation, Chulalongkorn University, 2000); Somsakun Chirasin. “The Studies of Shophouses in Ratchawong Pier and Song Wat Road Area for the Conservation and Renewal of Old Bangkok),” Bangkok : Institute of Research and Development, Suan Sunantha Ratchaphat University, 2013.
6. Vira Sachakul, “Bangkok shophouses : socio-economic analysis and strategies for improvements” (ArchD dissertation, University of Michigan, 1982); Thitipong Oamthaveepoonsaup, “Potential improvement of Crown Property Bureau’s rowhouses in Pomprabsatruphai District,” (MHousing dissertation, Chulalongkorn University, 1998); Parson Boondarick, “Renovation of rowhouses in Suanluang area, Pathumwan district for Chulalongkorn University’s housing,” (MHousing dissertation, Chulalongkorn University, 1999).
7. Woranuch Roeksermsook, “The rehabilitation of a resident shophouse for thermal, lighting and ventilation comfort,” (MArch dissertation, Chulalongkorn University, 2004); Pantapat Boonma, “Management guideline on converting shophouse into multiplehousing : a case study of shophouse in soi Mu Ban Vikorn,” (MHousing dissertation, Chulalongkorn University, 2006); Ngeabheang Lay, “The Use of Wind-catcher Technique to Improve Natural Air Movement in Row-Houses,” (MArch dissertation, Chiang Mai University, 2012); Attachai Luangamornlert, “Adaptive Reuse of Old Shophouses in Bangkok,” (MArch dissertation, Chulalongkorn University, 2015).
8. Santi Chantavilasvong, “A study of some aspects of shop-house architecture,” (MArch dissertation, Chulalongkorn University, 1978); Bundit Chulasai, “Shophouses: The Living Testimony of Urban Transformation in Thailand” (paper presented at the International Conference on the Evolution and Rehabilitation of the Asian Shophouse, Hong Kong, May 10–12, 2007).

References

Fig. 1 Chomchon Fusinpaiboon
Fig. 2 Chomchon Fusinpaiboon

The making of Thailand's the Vocational Education Project, 1965-70: Collaboration between Thailand and Japan

Waeovichian Abhichartvorapan (Independent scholar)

The Vocational Education Project is the construction of 25 secondary vocational schools and colleges for Trade & Industry and Agriculture programs in 20 provinces between 1965 and 1970. This project was designed by an architectural company from Japan: Sakakura Associates, architects & engineers. It is a distinctive example of the production of social mobility in late-19th-century country development policy to provide educational opportunities to locals. Since the completion of this project, all schools and colleges' statuses have been promoted; many schools have become colleges and colleges have expanded and become universities. Not only statuses of those have been promoted, but also building elements of those have been adapted to meet current needs. These colleges and universities are still in great use even they were constructed nearly half a century. It might be due largely to design philosophy behind the project.

Therefore, this paper investigates design philosophy which was formed when the collaboration between Thailand and Japan started. This paper applies firstly, document analysis method of architectural documents found in Japanese.[1] Secondly, interview method with 2 out of 5 architects who involved in the design: Jiro Murofushi and Tsutomu Abe,[2] gives insight information about the collaboration between Thailand and Japan when working in Thailand. Finally, it is necessary to conduct field survey on how much buildings have been maintained or changed in order to understand the current state of building.[3]

The origin of the Vocational Education Project

This section presents the origin of the Vocational Education Project which originated from socio-economic background during 1960s. After the end of World War II, Thai government drew the national plan to stabilize the nation with economy under the World Bank's suggestions.[4] Consequently, the First National Development Plan was launched and implemented between 1961 and 1966 so as to direct country development. One of the goals in the First Plan was to promote regional vocational schools and colleges of trade & industry and agriculture.[5] As a result, 25 schools and colleges in 20 provinces were selected by the Department of Vocational Education, Ministry of Education, Thailand to include in the project (Fig.1). The total construction areas were 176,000 square meters with the total cost at 21 million dollars. The cost of construction was partly supported by the World Bank in a form of loan project at 6 million dollars, and also subsidized by Thai government at 15 million dollars.[6]

A requirement from the World Bank was to invite non-Thai architectural firms in the International Bank for Reconstruction and Development (IBRD) county members to submit design proposals to the Department of Vocational Education. After going through the selection process, a Japanese company, Sakakura Associates, architects & engineers, led by an influential Japanese architect, Junzo Sakakura (1901-1969) was selected in 1965. The project marks a great development in education and it was a massive architectural

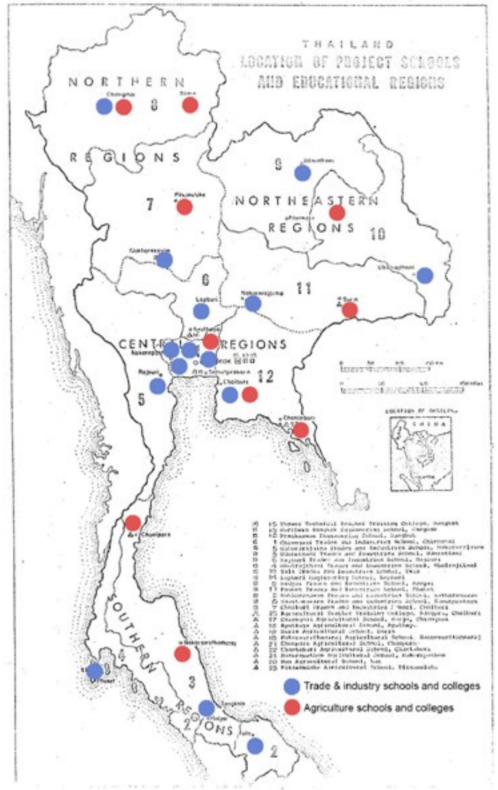


Fig.1: Location of 25 Schools in the Vocational Education Project, Thailand

construction in the history of Thailand. It can be argued that this massive construction project has greatly contributed to social mobilization in Thailand during the 1960s which subsequently has great impact on the formation of technical colleges and universities.

Collaboration between Thailand and Japan

The collaboration between Thailand and Japan can be divided into 3 phases, namely context analysis, design and construction phases. Local context analysis phase, in particular, leads to design philosophy of the Vocational Education Project as a whole. Design philosophy might be a major contribution to the fact that all of schools and colleges have well operated until now.

(a) Context analysis phase: After Sakakura committing the project, a survey team of 5 Japanese architects, 2 structural engineers and 4 mechanical engineers came to Thailand for the first time for 2 months to survey sites and visit other Thai architecture in 1966. The survey team was divided into 3 teams and each team explores 4 regions of Thailand which has different climate characters.[7] During this period the Japanese team had a chance to meet Wathanyu Na Talang: one of the modernist Thai architects, he showed many of his architectural works. This enabled the Japanese architects to understand cultural context of Thailand, especially related to how to make outdoor space and the relationship between buildings and nature. Later on this leads to the creation of design philosophy applied to the design and construction system of the project.

(b) Design phase: After the survey all design process was done in Japan with regular meeting with architects of the Department of Vocational Education in Thailand. Amphon Pitanalabut: a Thai architects in charge of management of the project, briefly visited Sakakura office in Tokyo to observe the working progress.[8] Initially, the architects planned to use pre-fabrication structure, that is to build steel frames in Japan and bring them to Thailand. This might be because pre-fabrication method can produce parts of building in a large amount and assembles quickly and should be suitable to the character of this project which has to simultaneously construct in various sites.

However, after the survey a team of Japanese architects understood the cultural context of Thailand. They decided not to use such method from Japan. They introduced the new design concept that was to make architecture which is suitable for Thai environment, for Thai people, made by Thai people with Thai technology and materials produced in Thailand.[9] By doing this, such architecture can take root in Thailand, can be used for long time, and would be loved by Thai people. Therefore, Japanese architects changed the concept of structural system from steel pre-fabrication structure to standardization of reinforced concrete modular system. This concept became the main philosophy of this project which can be seen in campus planning, selection of structural system and the use of materials. Standardization of campus planning is applied for both Trade & Industry and Agricultural programs. The concept of campus planning is presented in this section and selection of structural system and the use of materials will be explained in the 'Construction phase' section.

Campus planning is standardized design so called zoning. It is used to group associated functions together and connect each zone with circulation (Fig.2). The advantages of this kind of zoning are allowing easy accessibility within associated functions and also circulating a flow of student when changing classes. Moreover, distance between each zone can reduce the impact of each other. For example practical teaching zone is distant from academic teaching zone; therefore, enough distance between them can reduce the impact of noise or smell from one zone to another. Zoning is also flexible enough to allow the extension in the future by connecting newly constructed buildings to existing one with corridor.

(c) Construction phase: The construction process lasted about 3 years from 1968 to 1970. Sakakura set up an office: Junzo Sakakura Architects and Engineers Limited Partnership, in Bangkok for Japanese and hired Thai staffs (Fig.3). At each construction site, Sakakura recruited about 20 Thai staffs to supervise local contractors and workers during the construction. Those Thai staffs, who could speak English, communicated with Japanese architects in English. So they could convey direct message from Japanese architects and explained in Thai to local workers. While those who could not speak English, making hand drawing was a mean of communication between them.

Regarding design philosophy, the Japanese architects decided to use structural system and choice of materials available in Thailand. Therefore, they chose to use concrete as the main construction material in this project. This is because concrete was available all over the country and did not require high construction technique. So even on remote sites, Thai workers could make it with manual labor (Fig.4). Classroom building, administration building and dormitory building's structures are reinforced concrete post and beam modular system. Standardized span of those buildings is 4 meters

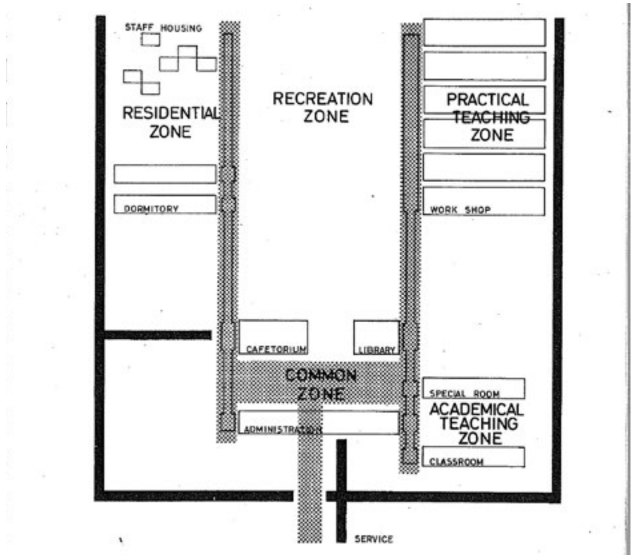


Fig.2: Zoning of schools and colleges of Trade & Industry program

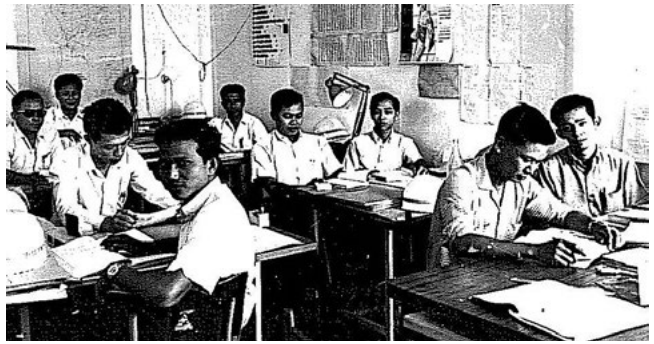


Fig.3: Junzo Sakakura Architects and Engineers Limited Partnership, Bangkok office

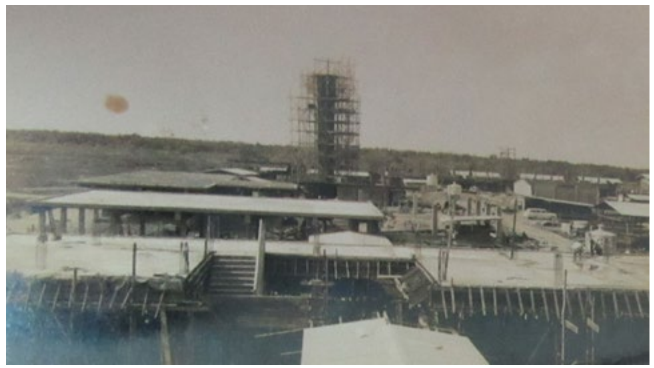


Fig.4: Construction site in Samutprakarn Province

in length (Fig.5,6). Structures of cafetorium and workshop are steel trusses which supported by concrete columns. Cafetorium, in particular, shows unique architectural characteristic among other types of buildings (Fig.7). Shelter structure with no enclosure characterized the form of the building. This quality gives the buildings to show characteristic of tropical architecture to take fully advantage from the natural light and ventilation.

Current conditions of buildings

Nearly half of a century after the completion of the project, schools and colleges have been developed and promoted to become a higher level education. They have expanded in their status, size and physical conditions. Firstly, Trade & Industry Schools were promoted to Technical Colleges supervised by the Office of Vocational Education Commission (OVEC), Ministry of Education. Secondly, many Agricultural Schools and Colleges become public universities. Finally, some Agricultural Schools and Colleges are promoted to public universities and subsequently, become independent in management as autonomous universities. These three different types of institutions can have an impact on their policies including policy on property management. Technical colleges and public universities have full authority to repair or renovate their buildings except for demolition which requires official permission. Meanwhile, autonomous universities have authority over management of their properties. They can gain income from their properties such as by renting buildings out to private companies.

According to the survey in 2015 and 2016,[10] administration teams and head teachers, responsible for managing and planning the development of these sites, expressed their desire to maintain and use the buildings. They aspired to conserve the buildings in their schools in order to reuse building. Some function, which had no longer in use such as dormitory, has been renovated into classroom building (Fig.8). Such change can be possible because both building types: dormitory and classroom building, are similarly designed with standardized modular system (Fig.9). Surprisingly, management staffs at two different schools expressed the same idea to increase the height of cafetorium by lifting the roof in order to allow more air to go inside the building. This idea was already done at one school (Fig.10), while another school still seeks for renovation method. Therefore, if the staff of the latter school had a chance to know about the successful renovation at the former school, the similar renovation method can be possible to apply at the latter school as well.

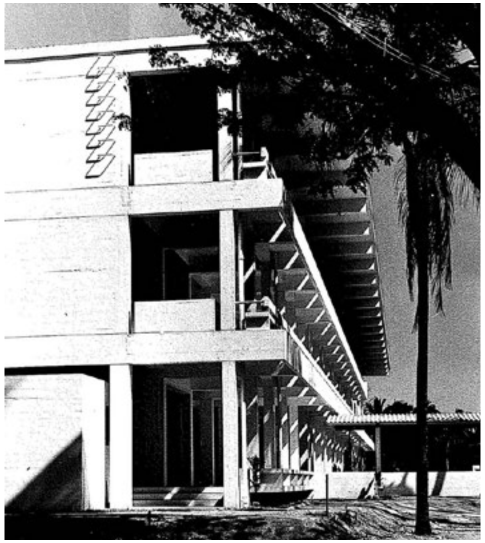


Fig.5: Standardized span of Classroom building

Fig.6: Standardized span of dormitory building

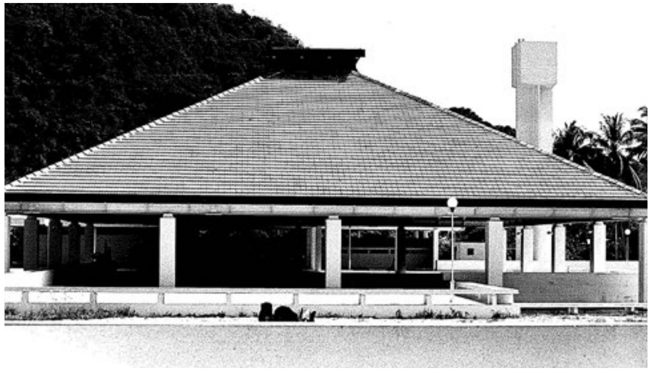


Fig.7: Pyramid roof structure of Cafetorium

Fig.8: Exterior of former dormitory building which was changed into classroom building

Fig.9: Interior of classroom building

Fig.10: Cafetorium after increasing building height by extending the length of concrete column

Conclusion

As we saw in the Collaboration between Thailand and Japan section, the Collaboration plays an important role in forming design philosophy of the project especially during context analysis phase. Rather than teaching Japanese construction technique to Thai architects, Japanese architects learn from available building technology in Thailand by using local technique and local materials in order to create architecture which take root in Thailand. Therefore, students and teachers using the school might have pride in it and would like to continue using the buildings or conserve it for the future.

Furthermore, collective example of physical changes at one site can be applied to other sites, indicating that physical changes are possible to be made to their buildings to meet new needs. Thus creating a network or platform, connecting each school can allow them to see the possibilities of re-using existing buildings from the real examples already commenced at other sites. Thus it can promote awareness of schools' users to continue using their buildings, a proactive conservation approach, and prevent them from being demolished. It could be argued that design philosophy allows the possibility of physical change and expansion ranging from building, structural system to zoning levels. It might be a key factor to make the buildings in the Vocational Education Project schools in continued existence for half a century.

Footnotes

1. Architectural magazines include of Toh, T. (1969). Shin-Kenchiku. 44(11), 131, Abe, T. (1971). Kenchiku Bunka. 26(294), 151-166, Murofushi, J. (1971). Kenchiku. 4(127), 39-78, Seita, Y. (1971). Shin-Kenchiku. 46(4), 182-194, Toh, T. (1979). Kenchiku Zasshi. 94(1158), 42-46. Report includes of Junzo Sakakura Architects & Engineers Limited Partnership. (1970). The loan project for the improvement of Vocational Education in Thailand. Bangkok: Junzo Sakakura Architects & Engineers Limited Partnership.
2. Interviewees are: Jiro Murofushi on 4 November 2016 and Tsutomu Abe on 5 November 2015 and 10 October 2018.
3. Survey was conducted in July 2015 and August 2016.
4. Yothasmutr, S. (2008). The analysis of national economic and social development plan on Co-operative Development Strategy in Thailand : National Plan 1 – 10. International Conference of Social Sciences and Humanities (ICoSSH08), Science University of Malaysia, Penang, 18-20 June. 2008, p. 3
5. The National Economic Development Board, Office of the Prime Minister. (1961). The First National Development Plan. [Online]. Available at: http://www.nesdb.go th/ ewt_dl_link.php?nid=5806 [Accessed 5 May 2016]. p. 176, 181
6. World Bank (1966). Thailand - Vocational Education Project. Technical operations projects series No. TO 478b. [Online]. Available at http://documents.worldbank.org/curated/pt/747681468303568816/pdf/multi0page.pdf [Accessed 12 July 2015].
7. Abhichartvorapan, W. and Watanabe, K. (2017). Cultural significance identification of modern architectural heritage: the 1965-1970 Thailand's vocational education project by Sakakura architects & engineers. J. Archit. Plann., AIJ, 82(735), 1377-1387.
8. Abe, T. (2015). Interview. 5 November 2015
9. Abe, T. (2018). Interview. 10 October 2018
10. Abhichartvorapan, W. (2017). Chapter 5 in Doctoral Dissertaton. The Conservation of Modernist Standardized Design: The Vocational Education Project in 1965-1970.]

References

Fig.1: Abe, Tsutomu's private archive
Fig.2: Abe, Tsutomu's private archive
Fig.3: Abe, Tsutomu's private archive
Fig.4: Samutprakarn Technical College's private archive
Fig.5: Abe, Tsutomu's private archive
Fig.6: Samutprakarn Technical College's private archive
Fig.7: Abe, Tsutomu's private archive
Fig.8: Photograph by the author in 2016 at Dormitory which changed in to Classroom building, Kalasin University, Kalasin, Thailand
Fig.9: Photograph by the author in 2016 at Dormitory which changed in to Classroom building, Kalasin University, Kalasin, Thailand
Fig.10: Photograph by the author in 2015 at cafetorium, Maejo University, Chiang Mai, Thailand

Phnom Penh Royal Palace
-Case study of Prasat Chanchhaya-

Sisowath Men Chandevy (Royal University of Fine Arts)

Phnom Penh, the administrative and economic Capital of the Kingdom of Cambodia was founded in 1431 by the King Ponhea Yat (1405-1647). Then the capital move successively to the other place. On August 11, 1863 an agreement between France and Cambodia set the condition for the protectorate: Cambodia would not have any relation with another foreign power without the agreement of France, and they also accepted that a Résident Général be appointed in the capital. Siam recognized the France protectorate, and in 1867, renounced it sovereignty over Cambodian. In December 1865, King Norodom transferred his capital from Udong to Phnom Penh.

This site is where the Mekong and Tonle Sap meet, a genuine river crossroads, rich in both spiritual and political symbolism. The new capital called "Capital of the four faces happy mistress of all Cambodia, fortunate city of Indraprastha, frontier of the kingdom". The king had major development work undertaken. He decided to have the shrine erected by Daun Penh rebuilt. He enlarges it, made it higher and had a terrace put in on the summit dominated by a large Stupa.

The dwelling made entirely of wooden, planks and bamboo, with no masonry structure. The traditional Khmer House with different style defined by the roof, the Chinese shop house and in particular all building in the Royal Palace. Phnom Penh originally was an agriculture and wetland; ancient villages were settle along the river. During the French Protectorate period, between 1890 to 1930, the French administration was modernized the urban system. Became a city, Phnom Penh was visibly divided into three parts, the North and the East of Phnom were European and Vietnamese quarters, Chinese quarter in the Old market area in the middle, and Cambodian quarter around the Royal Palace in the South (Fig.1).

New Royal Palace in Phnom Penh

Proposed in 1864, a new relocation of the Royal Palace was set up symbolically opposite of the "Four Faces" of the river. Initially built were the throne hall and King's residence. Next came the "Prasat Chanchhaya" where the King give an audience with a population. This first complex was inaugurated in February 14,1871 (Fig. 2).

The outer enclosure in the North-East side, is surmounted by a large tribune of Prasat Chanchhaya, meant "The moon shadow Prasat" where the king can attend to outside for festivities and audience.

Inspired by Cambodian style particularly in its roof and for its decorations, this first Prasat was constructed by the solid brick on the ground floor

Fig.1: Phnom Penh in 1863

Fig.2: New Royal Palace behind the main enclosure and Prasat Chanchhaya

and open with the wooden columns on the first floor. The central part with transversal roof with the arrow shape tower that had 5 levels. The lateral sides had a canopy roof. Later the building has been restored probably the year 1890s. Through some photos taken during the King Norodom's funeral ceremony in 1904, we can see the tower in the middle roof changed to 3 levels with the flame on the top. The guardrail also was added (Fig.3,4).

During the reign of King Sisowath, He asked the French protectorate to improve the city such as the irrigation systems, the road network, to construct more hospitals, schools and reconstruction of most of buildings in Royal Palace which the majority of buildings built of wood and dating from more than 50 years. They are threatened with ruin. So more buildings start to be rebuilt such as "salle des fêtes / ceremonies Hall" in 1912 replacing the old building, then the new Prasat Chanchhaya in following year, 1913. The new building with the reinforce concrete structure was built and stand till now. For this time, a similar plan in general than the one before, but shorter length and the central part was marked by the main porch where the entrance divided the ground floor in two parts. The porch is prominent by two important columns which support the two lions on the top. The decorative lintel presents between those columns. Two wing of the ground floor plan serve for a dancer's hall at the north, and a reception room at the south. The first floor is open, except the north side which has a wall in curve form and inside this, it exhibits the Statue of Vishnu with the step used to display the sacred tiara of dancers.

Around 1986 till now, the building was added a terrace in the front with two level, ground floor and first floor. It is use for national ceremonies (Fig.5,6).

Following some documentations, Prasat Chanchhaya is the first building that was constructed by the reinforced concrete. A study of construction material shows that the main structure was built by the reinforced concrete, such as the foundation system, the columns, the floor and the roof frame. The floor was covered by the cement tiles on the ground floor and a very unique pattern of ceramic tiles on the first floor except the south part in step form seem modified later covered by the granite with cement mortar. The main roof element is made by reinforced concrete, apart a rafters and roof battens are in wood (Fig.7,8).

In addition, the painting is one important subject to study for this Pavilion. According to the document found in the National Archives, mention that the painting of the Prasat Chanchhaya or Dance Hall would be entrusted to "European artists" approved by the King. The ceiling painting represents Cambodian dancers and scenes of Ramayana (the ancient Indian epic), and the task was given to Augustin Carrera in March 1913. The agreement of work has fixed for 14 months, till approximately May 1914. The war interrupted however and Carrera was remained the painting in Marseilles for another ten years. The paintings finally arrived in Phnom Penh in 1925.

The painting painted on large canvases glued to the ceiling plaster. Carrera prepared the canvases in Paris and the retouched on site in order to fit their tones to the architectural setting. We can actually distinguish two kinds of technique, the dark color is the original painting, maybe in oil color, then the light zone corresponds to retouching on site (Fig.9).

For the Ground Floor, the painting present on the north wing, in the dancer's room. By observation, the quality of drawing, the pattern and especially

Fig.5: Second building (actual building) around 1920

Fig.3: First building of Prasat Chanchhaya, Photo circa 1893

Fig.6: Second building (actual building) in 2018

Fig.4: First Building of Prasat Chanchhaya in 1904 after some restorations

Fig.7: Isolated footing of foundation system

the color is different from the first floor. But, it seems to have a similarity of technique and drawing style to the painting on the Throne Hall. So could this decoration have executed in the same period of the Throne Hall? The answer will get after the analysis.

In the same room, two types of painting on the wall exists in the middle room and the both side. The wall painting on the middle room is very specific one comparing to other painting on the wall of other buildings in Royal Palace. Decorated pattern and tones like a traditional silk tissue, fit very good with the ceiling painting. Then rest of the wall was decorated by traditional motifs using the stencil technique (Fig.10,11).

The restoration work is starting from last February 1918, the building restoration was conducted by the Department of Construction of Royal Palace with local and international experts from France.

Through a detail study such an existing survey with construction technique, materials use and painting, the diagnosis studies have been done with a detail. And understanding the problem of damages allows us to find adapt solutions by respecting the authenticity of this heritage building.

The team are also train the students from Faculty of Architecture in order to develop more architects in the Conservation and restoration of built heritage.

Acknowledgement

I would like to express my graduate to Ministry of Royal Palace for giving me a change to work with the team.

Thanks to the team work and The Vispan Company who in charge of restoration project.

Reference

Fig.1: A.N.O.M (Archives National d'Outre-Mer), France
Fig.2: A.N.O.M (Archives National d'Outre-Mer), France
Fig.3: A.N.O.M (Archives National d'Outre-Mer), France
Fig.4: Sisowath Men Chandevy private archive
Fig.5: Sisowath Men Chandevy private archive
Fig.6: Department of Construction, Ministry of Royal Palace
Fig.7: Sisowath Men Chandevy private docume
Fig.8: Sisowath Men Chandevy private docume
Fig.9: Sisowath Men Chandevy private docume
Fig.10: Sisowath Men Chandevy private docume
Fig.11: Sisowath Men Chandevy private docume

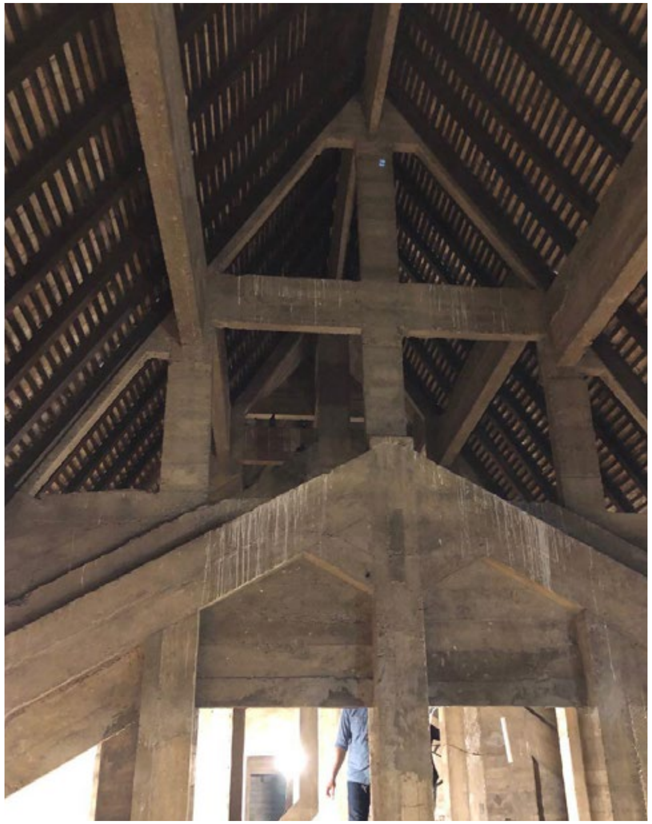


Fig.8: Roof frame

Fig.9: Painting on ceiling at the 1st Floor

Fig.10: Ceiling painting on the Ground Floor

Fig.11: Wall painting on the Ground Floor

The Heroic and the Everyday: Histories and Futures of Modern Architecture in Singapore

Jiat-Hwee Chang (National University of Singapore)

Heroic modernism

In the past few years, there has been increasing appreciation of modern architecture in Singapore. In 2010, we also saw the first post-independence building gazetted as a national monument.[1] The building is the Singapore Conference Hall and Trade Union House (Fig.1), a competition-winning scheme designed by the Malayan Architects Co-partnership and completed in 1965, the year of Singapore's independence. Although some regarded the gazetting of the building as a "weird conferment," because many original architectural features of the building were significantly altered after an insensitive major renovation in 2002, it nevertheless represents an important milestone in the Singapore state's recognition of modern architecture as heritage.[2]

Five years later in 2015, the Jurong Town Hall (Fig.2), a "brutalist" building designed by Architects Team 3 and completed in 1974, was also gazetted as a national monument.[3] This event coincided with SG50, the large-scale celebration of fifty years of independence in Singapore that year. Many pioneer architects—those who were active and play pathbreaking roles in Singapore's architecture and urban design during the decades of the 1960s and 1970s—were recognized for their contributions to nation building and conferred different forms of awards. Lim Chong Keat—co-founder of Malayan Architects Partnership and Architects Team 3, and main designer behind the two aforementioned modern monuments—was given the Singapore Institute of Architect's Gold Medal.[4] Other pioneer architects, such as Alfred Wong, William S. W. Lim, Tay Kheng Soon, Victor C. A. Chew, Wee Chwee Heng, and Tan Cheng Siong, were also presented with the Singapore Design Golden Jubilee Award.[5]

SG50 also coincided with the publication of a number of books that record the history and heritage of modern architecture in Singapore.[6] These books help to raise public awareness of Singapore's modern built environment and steer us away from the colonial nostalgia and Eurocentric bias of the earlier architectural histories written on Singapore.[7] The work of raising public awareness is especially important in the last few years as a number of modernist structures built in the 1970s are being threatened with demolition and redevelopment through collective sales.[8] Notable examples of these works include Pearl Bank Apartments (1976) by Archurban Architects Planners, Golden Mile Complex (1973) and People's Park Complex (1973) by Design Partnership.[9] These residential and mixed-use complexes were not just among the earliest structures to be built as a part of Singapore's post-independence urban renewal, they were also visionary and innovative structures of modern highrise and integrated urban living conceived by pioneering local architects. I have therefore chosen to call these buildings "heroic" rather than adopting the commonly-used but inaccurate label of brutalist. My use of heroic here follows that of Mark Pasnik, Michael Kubo and Chris Grimley, who used the word to describe the concrete architecture designed by architects and built in Boston during the 1960s and 1970s, as a part of a daring social and architectural vision to renew Boston through a series of monumental public and institutional buildings.[10] Although they used heroic to describe concrete architecture in an entirely different social, political and architectural context, I argue that these iconic structures from Singapore share the formal boldness of the Boston buildings and their underlying civic vision. These structures also

Fig.1: Singapore Conference Hall and Trade Union House

Fig.2: Jurong Town Hall

embodied the experimental and can-do spirit of the pioneering generation of nation-builders, for which heroic is an apt word.

Everyday modernism

My interest in this presentation is, however, not so much with heroic modernism but with what I call everyday modernism. While it is important to acknowledge the aforementioned iconic buildings of heroic modernism, the scale and scope of modernization in Singapore during the post-independence era meant that they do not even remotely represent the modern built environment in Singapore. The iconic buildings of heroic modernism were almost entirely developed by private developers and designed by architects in private practice

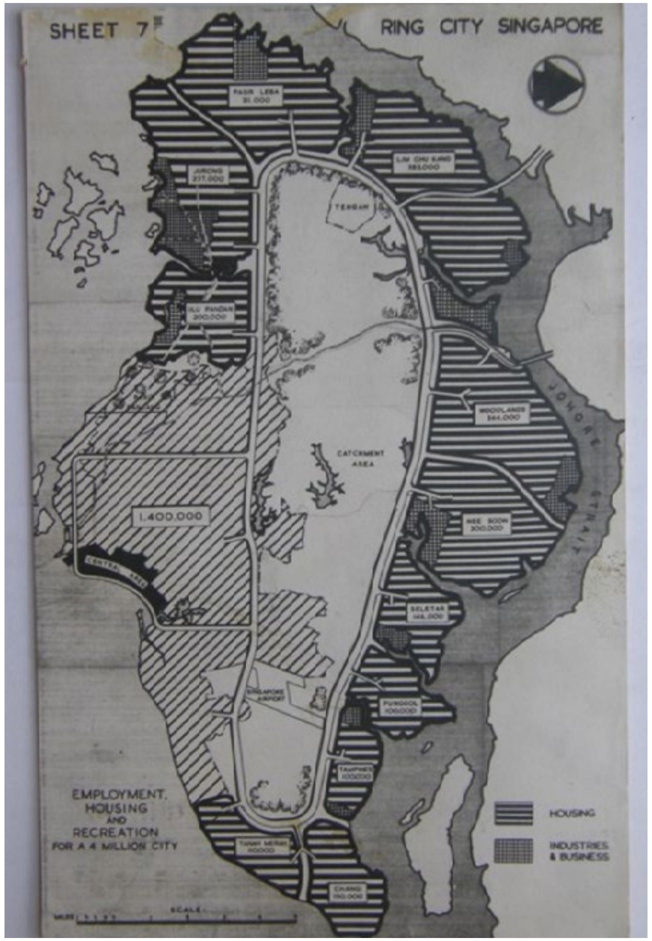


Fig.3: Schematic Ring Plan from Koenigsberger archive

but what Rudolph De Koninck and others considered as Singapore's rapid and systematic "territorial transformation" from the 1960s to the 1980s was primarily a result of state intervention that was planned and implemented by state agencies and their planners, architects, engineers, and other technocrats.[11]

The scale and scope of this territorial transformation is hinted at in the Ring Plan (Fig.3), a concept first proposed by the United Nations experts Charles Abram, Susumu Kobe and Otto Koenigsberger in 1963.[12] It became the basis for the first concept plan, publicly announced in 1971, which was the framework guiding subsequent urban development and growth in Singapore. In fact, parts of the Ring Plan, such as the building of satellite towns in the outlying areas and the development of Jurong as an industrial estate, were decided and implemented before 1971. What the Ring Plan illustrates schematically is the transformation of Singapore from a British colony with a clear rural and urban divide in the main island to an independent nation that treats the main island as an integrated urban entity. This transformation is about urbanization—both urban renewal in the old colonial city and creation of self-sufficient modern satellite towns in the outskirts—and the redistribution of the population as we shall see.

It was also about modernization, planned and managed by what has been called the developmental state of Singapore.[13] The developmental state sought to promote economic development through various forms of socio-political interventions, many of which shaped the built environment. These included the building of industrial estates and factories to attract foreign investments, the provision of public housing as wage subsidy, and the building of schools to equip the population with the relevant knowledge and skills to serve the industries.

Singapore was also seen as a socialist democratic state, one that provided social welfare through its heavily subsidized and affordable housing, education and healthcare.[14] The built environment of this social welfare consisted primarily of modern buildings designed and built based on the underlying principles of economy, utility and sufficiency. Often based on replicable standard types, these buildings were erected rapidly and in large number. Besides housing, education and healthcare, the built environment of social welfare also included those related to community and recreation. In general, the different state agencies worked together to design a total environment of social welfare in a developmental state. Below, we look briefly at the four main state agencies involved in creation of this total environment.

Urban Redevelopment Authority

The first agency is Urban Redevelopment Authority (URA). Initially established in 1967 as Urban Renewal Department within the Housing Development Board (HDB), it was, as its name suggests, originally set up to take charge of urban renewal in the central area. Later, it became the planning agency in charge of urban planning, overseeing and regulating urbanization in Singapore. In 1974, it took on its current name and became an autonomous statutory board.

One of the main ways in which URA has facilitated urban renewal was through its government sales of sites program. Small plots of land in the central area, where shophouses sat on, were acquired by the government. The inhabitants of the shophouses were resettled, typically into public housing, as we shall see. The overcrowded shophouses were deemed as slums and demolished. The small plots of land from the demolished shophouses were then consolidated into larger parcels of land, provided with basic urban infrastructure and services to make them suitable for comprehensive development, and sold to private developers in a tender system.[15]

URA also prepared "simulated plans," which "carry important urban design guidelines" for developers and architects.[16] For almost all cases, URA prescribed the podium-tower typologies. Between 1967 and 1982, 11 sales of sites took place with 166 parcels of land occupying a total of 158 hectares sold. 143 projects were built and there is no doubt that these buildings greatly changed the patterns in which Singaporeans live, work and play.

The urban renewal carried out by URA was inseparable from the building of public housing in new satellite towns. The high-rise flats in these new towns were essential for housing the population displaced. These towns were built by HDB, as we shall see.

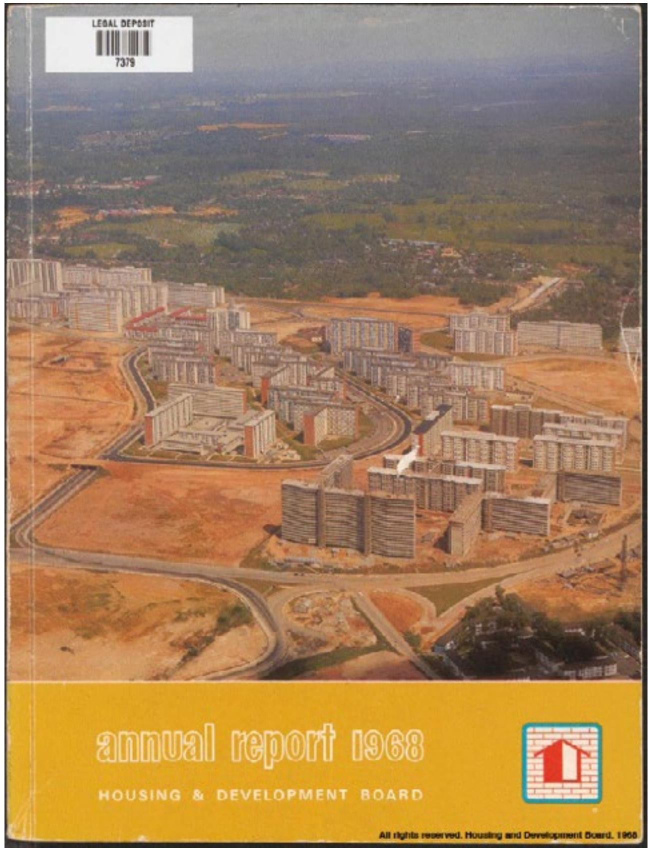


Fig.4: Cover of HDB annual report, 1968

Housing Development Board

Housing Development Board or HDB (Fig.4) was established in 1960 as a statutory board to address Singapore's serious housing shortages. It was created to replace Singapore Improvement Trust, the colonial housing agency. In 1960, only 9% of the 1.65 million population of Singapore lived in a few small public housing estates. By 1987, 84% of the 2.21 million population lived in the 22 public housing estates built by HDB.[17]

HDB planned, designed, built, and managed different typologies of public housing. Besides building podium tower blocks in the city to house population displaced by urban renewal, it also built entirely new public housing estates in the outlying areas. But it did not just built housing.

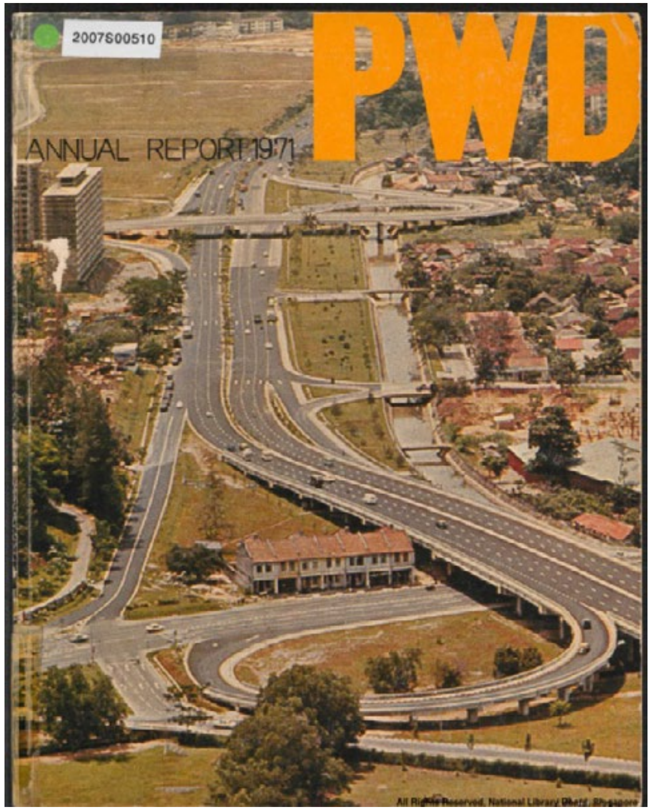


Fig.5: Cover of PWD annual report, 1971

HDB also built almost all the public amenities in the satellite new towns. These included shops, markets, sports complexes with stadia and swimming pools, community centres, mosques and factories. In other words, it created the total building environment that more than 80% of Singapore's population experience daily.

Public Works Department

The Public Works Department or PWD (Fig.5) is a colonial legacy that could be found in many British colonies around the world. In Singapore, it continued to be the state agency in charge of providing infrastructure and other public works after independence until its corporatization in 1999. In the early post-independence years, its focus was on building infrastructures such as roads and expressways that were essential to connecting the industrial estates and satellite new towns with the city efficiently. It also invested significant resources on building drains and creating schemes to alleviate flooding, and construction sewerage and treatment plants. One of its most visible infrastructural legacy could be attributed to the work done by the Parks and Trees Unit. The Unit, a predecessor to today's NParks, was in charge of tree-planting, greening and the planning and maintenance of public parks. Without it, Singapore would not have a reputation as a Garden City or a City in a Garden.

PWD is also known for designing and building all types of public buildings. These included schools based on standardised plans; hospitals, maternity and combined clinics (later known as polyclinics); and community libraries and post offices. These buildings formed the background to the everyday lives of the population. They were places where they learn, heal, socialize and connect with others.

Jurong Town Corporation

Jurong Town Corporation or JTC was formed in 1968 to take over from Economic Development Board the responsibility of developing and managing industrial land and infrastructure in Singapore,and support its export-oriented industrialisation programme. It was the main government agency in charge of developing Jurong Town, the "garden industrial town" that included not just large industrial zones but also residential and recreational amenities, and other industrial estates in Singapore.[18]

Concluding Notes

The above built environment created by the various government boards represents the everyday modernism that most Singaporeans lived in and are still living in. Perhaps familiarity breeds contempt. Almost none of the above examples of everyday modernism has been gazetted for conservation (the only exception being Queenstown Public library). Given that even national monuments, those buildings widely considered to be significant in the social and cultural history of Singapore such as the National Theatre, the National Stadium and the National Library, have all been demolished once they were regarded as outdated, unsafe or an obstacle to further development, it most likely the everyday modernist buildings will meet the same fate once they have outlived their utility or perceived economic value. Indeed, a significant portion of Singapore's housing blocks, school buildings, community centres, and many other building types have been demolished and redeveloped in the past few decades after only short existences.

I think we need a different historiographical and heritage framework from the current status quo to understand and appreciate their qualities and significances. As Kenny Cupers argued in his study of postwar mass housing in France, although the scale of designing and building mass housing made the avant garde modern projects look quaint and that the massing housing has "a pervasive presence in everyday life," it was ignored by architectural historians [and I would add heritage conservationists] because it fell through the gaps of the discipline[s].[19] Considered neither as vernacular expression of local culture nor the canon of high architecture, it was not appreciated and studied. I think the same can be said about everyday modernism in Singapore.

A different historiographical framework can start by challenging a few assumptions of canonical modernism. Instead of focusing on individual, one-off and iconic buildings, we can shift our attention to the ubiquitous, widely replicated standardized designs or typologies that are not eye-catching at first sight but may have broader social significances. Rather than focus on attributing the authorship and the agency behind the design to particular well-known architects, we can understand authorship and agency differently. We can see them as distributed among different agents or anonymous organizational men and women. Finally, in place of the individual clients who dictate the design, we may want to attend to the larger collective users and their needs, in whatever forms they might take and how they might be constructed.[19]

Acknowledgements

This research of this paper is the research for this book is supported by AcRF Tier 1 Project "Agents of Modernity: Pioneer Builders, Architecture and Independence in Singapore, 1890s-1970s" (WBS No. R-295-000-127-112) from the National University of Singapore. This paper forms part of the book tentatively titled Everyday Modernism: Built Environment and Society in Singapore, 1930s to 1980s (forthcoming) that I am co-writing with Justin Zhuang and Darren Soh.

Endnotes

1. Feng Yen, "S'pore Conference Hall a National Monument," The Straits Times , 28 December 2010.
2. "Weird conferment" were the words of architectural historian Lai Chee Kien. Quoted in ibid. For the insensitive renovation of the building, see Weng Hin Ho and Kar Lin Tan, "Singapore Conference Hall Revisited," Singapore Architect 212 (2002).
3. Hui Min Chew, "Jurong Town Hall 'a Baby' among National Monuments," The Straits Times, June 3 2015.
4. Vanessa Lee, "Singapore Conference Hall Designer Lim Chong Keat Is Renaissance Man," ibid., 16 November.
5. "S'pore Design Pioneers Honoured by DesignSingapore Council," Today, 20 October 2015.
6. Notably examples include Weng Hin Ho, Dinesh Naidu, and Kar Lin Tan, Our Modern Past: A Visual Survey of Singapore Architecture, 1920s-1970s (Singapore: Singapore Heritage Society and SIA Press, 2015); Chee Kien Lai, Through the Lens of Lee Kip Lin: Photographs of Singapore 1965-1995 (Singapore: National Library Board and Editions Didier Millet, 2015); Chee Kien Lai, Hong Teng Koh, and Chuan Yeo, Building Memories: People, Architecture, Independence (Singapore: Achates 360, 2016); Alfred Hong Kwok Wong, Recollections of Life in an Accidental Nation (Singapore: Select Books, 2016).
7. These earlier histories include Eu-Jin Seow, "Architectural Development in Singapore" (Unpublished Ph.D. thesis, University of Melbourne, 1973); Jon Sun Hock Lim, "Colonial Architecture and Architects of Georgetown (Penang) and Singapore, between 1786 and 1942" (ibid. National University of Singapore, 1990). Their historiography is obviously influenced by the earliest architectural histories written by colonial Public Works Department architect and amateur historian T. H. H. Hancock. See T. H. H. Hancock, "George Doumgold Coleman, Architect & Planning Advisor to Sir Stamford Raffles, Designer of the Armenian Church, Singapore," The Quarterly Journal of the Institute of Architects of Malaya 1, no. 3 (1951); T. H. H. Hancock and C. A. Gibson- Hill, Architecture in Singapore (Singapore: Singapore Art Institute & Institute of Architects of Malaya, 1954).
8. Janice Tai and Shu Yan Tan, "Iconic Buildings up for Sale: Time to Bid Adieu to Faded Landmarks?," The Straits Times, 11 March 2018.
9. Weng Hin Ho and Jiat-Hwee Chang, "Adding Value without Demolition, Rebuilding: Regenerating Singapore's Modernist Icons," The Business Times, 7 April 2018.
10. Mark Pasnik, Michael Kubo, and Chris Grimley, eds., Heroic: Concrete Architecture and the New Boston (New York: The Monacelli Press, 2015)
11. Rodolphe De Koninck, Julie Drolet, and Marc Girard, Singapore: An Atlas of Perpetual Territorial Transformation (Singapore: NUS Press, 2008).
12. Charles Abrams, Susumu Kobe, and Otto H Koenigsberger, "Growth and Urban Renewal in Singapore: Report Prepared for the Government of Singapore," (New York: United Nations Programme of Technical Assistance, Department of Economic and Social Affairs, 1963).
13. Eugene Dili Liow, "The Neoliberal-Developmental State: Singapore as Case Study," Critical Sociology 38, no. 2 (2012).
14. Steven Kelman, "Singapore 50 Years Ago, and Now: An Asian Middle Way?," The Straits Times, 10 February 2019
15. URA, A Pictorial Chronology of the Sale of Sites Programme for Private Development (Singapore: Urban Redevelopment Authority, 1983).
16. Ibid., 10.
17. Housing and Development Board Annual Report 1987/88, (Singapore: HDB, 1988).
18. Hsiao Ling Tang, "Industrial Planning in Singapore," in 50 Years of Urban Planning in Singapore, ed. Chye Kiang Heng (Singapore: World Scientific, 2017).
19. Kenny Cupers, The Social Project: Housing Postwar France (Minneapolis, MN: University of Minnesota Press, 2014), xix.

Reference

Fig.1: Lim Chong Keat's private collection
Fig.2: Lim Chong Keat's private collection
Fig.3: Otto Koenigsberger's collection (now with the AA Archives)
Fig.4: HDB
Fig.5: PWD

Laos

Development of Modern Architecture in Vientiane City, LAO PDR

Khannaphaphone Phakhounthong (National University of Laos)
Soukanh Chithpanya (National University of Laos)

Laos is a landlocked country situated at the Indochina peninsular region. Colonization of the country in the last decade of the 19th century is proposed to be a reason for the emergence of modernity in Laos. Thereafter, the country has undergone several changes in terms of politics, socio-economic aspects and technology. Through documentary survey and interviews with experts, this paper aims to investigate modernity and modern movement in Laos, particularly at Vientiane, the capital city of Laos. Furthermore, the influence of political, economic, societal and technological changes on the design development of modern architecture in Vientiane is examined. Lastly, the paper discusses about the importance of modern heritage value and the need to prepare inventory to recognize the evolution of modern architecture in the course of time.

History of Vientiane

received recognition between 430 to 120 B.C.[1] during governance by Phraya Chanthabouly Pasitthisak. The term "vien" in Laos means city and "tiane" is basically a Pali word and denotes either sandalwood or the moon. It is a fast growing city in Laos known for its economic development and is geographically located in the northeastern part of the Mekong river. Vientiane was declared the capital city of Laos by King Saysetttha in 1560 and during this period a number of religious buildings including stupas were built which is indicative of religious and cultural prosperity.[2, 3] Archeological excavation shows the presence of an inner wall within the city and this is assumed to be built during King Sayetth's regime (Fig.1).[4] During the 17th century, Vientiane was considered the most evolved and prosperous civilization showing great progress not only in the form of economic growth, but also in its richness in socio-cultural, political and administrative aspects. However, the city was heavily destroyed in 1828 when conquered by the Siamese, dividing Vientiane into two halves. Vientiane was burnt down and destroyed which resulted in lack of adequate governance.[5] Most prominent evidence is seen from the loss of houses along the Mekong river. Due to this, the left half belonged to Laos and the remaining half on the right of Mekong belonged to Siam. This dramatically reduced the size of Vientiane, which is also the present day size.[6, 7]

Fig.1 Thatluang Stupa during King Saysetttha's Regime,1867

Subsequently, Laos was invaded by the French, which led to the retreat of the Siamese and the French took control of the country in 1893, and was occupied until 1954. This was an important aspect in the revival of the Vientiane; however, this phenomenon led Laos to fall into colonialism that could not be avoided. In 1916 Vientiane was completely refurbished by the French and served to be a strategic area for the French delegates.[8] The administrative center of the French regime was situated in Vientiane. During this period,there were several changes throughout the country, especially in Vientiane, changes in the administrative, political and architectural aspects were witnessed. It was also the time when several axial roads were introduced throughout the city. These roads were around landmarks and along these roads resided some schools and French residential buildings. After 1954, Laos was further under the influence of the Americans and this is known as the Modern era in Lao architecture. Concrete and sandstone was also introduced during this period and important government buildings were built in Vientiane.

Laos received independence in 1975 which required tremendous efforts from the government and the Lao people to rebuild and in turn recover from the aftermath of the war. Therefore, Laos at present is undergoing a state of development.

Vientiane traditional architecture in the past

Traditional architecture in Laos reflected the characters of tropical humid climate. The two main types of buildings that existed were the residential and religious buildings. The traditional houses were basically composed of wooden structures, whereas, the traditional brick buildings were representative of monarchism and monastic buildings for centuries. Before colonization by the French, the Lao people mostly maintained a self-containment way of life with less influence from abroad and thus their vernacular architecture was representative of their own local wisdom, the houses were built on stilt using local materials especially wood.[9] The royal palace was also constructed in woods, but with a much better in terms of construction quality and functional architectural designs.[10] The religious buildings such as temples received more privilege in comparison to the civil buildings and were constructed using bricks and masonry, with the roofs covered sometimes by wood tiles or tiles. The distinction between civil and religious architecture was clearly defined.

Transition of Traditional architecture to Modern architecture in Vientiane

During colonization by the French, there were numerous changes that were adopted in the major cities in Laos, especially with a significant influence on the cities' architectural and construction style. The new style of architecture and construction, under French colonial period, had been introduced as a new way of using public buildings. This gave a new identity to the country, where the new colonial buildings stood alongside the traditional Lao structures. In the second decade of the 20th century, there were many buildings in the colonial style, which included hospitals, French administrative offices and residents for French officers in Vientiane, Savannakhet, Pakse, Thakhek and Luang Prabang. The row houses were constructed and introduced for residential and commercial buildings especially for Chinese and Annam people in Vientiane. The buildings were initially constructed by timber and wood elements, and later using brick and masonry. Subsequently, the architecture in Vientiane was classified as traditional Lao houses, French colonial houses, Villas and individual houses, Collective buildings, Compartment buildings or Row houses, and Public edifices (Fig.2,3,4).[11]

The Modern Architecture in Laos was started from 1954 to 1975 during American regime, and this was very evident by the emergence of government buildings, dormitories and collective dwelling, private villas, and university campuses.

The new building elements such as cantilever structure, beam post, fin and shade, sun shield, terrace or flat roof, arch and vault structure were introduced to local construction throughout Vientiane and main towns in Laos.

From 1975-1990, Lao PDR was assisted by Eastern European countries especially the former Soviet Union, supporting all necessary infrastructure. It could be said that the Modern Architecture based on the socialism style was presented in Laos for the first time which could be seen in the form of Laos-Soviet Friendship Hospital, poly-technic school, National Circus Hall, USSR embassy and apartments.

Since 1986 Lao PDR launched the New Concept policy, the concept of liberal economy market which attracted more investment by the domestic and foreign partners. International aid and loan made dramatic changes for rapid urbanization; aiding in the rapid growth of Vientiane both in size and population. In 1990s, the foreign investment flourished both in private and government sectors; wherein, new products and innovation were presented to the construction business. The domestic and foreign firms had the opportunity to compete freely and present new design of architecture to both the

Fig.2 Ministry of Education in Vientiane

Fig.3 Laos News Agency

Fig.4 Lao-German Technical College

government and private sectors. The appearance of architecture in Vientiane during this period, partly followed the unidentified style of architecture.

Since the year 2000, collaborations with international organizations and countries have opened up many projects of construction to prepare and support the capacity of Laos for hosting several important international events. The large amount of projects such as the construction of convention center, university's facilities, new town, sports facilities, residential projects, commercial center, etc. have been launched subsequently. Recently, the Chinese government has supported many constructions in Laos by investing in several projects in order to strengthen the relationship between the two countries. This could signify the new image of the townscape in Vientiane and has reflected the emergence of the new face of architecture in Laos.

Conclusion

Lao PDR has constantly been a part of several wars in the past and has encountered heavy damages, which have slowed down the economic progress of the nation as a whole as well as in Vientiane. Although the country was colonized for several decades, the French influence has brought about several changes in the Lao education system. However, the first architecture school was built in 1979 with the name of Ecole Superieure du Batiment et d'Architecture for studying architecture and engineering due to the urgent need of the country back then; however, the local architects in Laos are not well recognized for their work in the past.

The new concept of modern architecture was introduced during the American influence between 1960s to 1970s, when the first Bibliotheque, a seven storeyed building was constructed at the historic core of Vientiane city. However, these modern buildings that existed at that time have not been preserved and are considered as mere concrete buildings. Therefore, this has led to the demolition of several buildings that have been replaced by commercial buildings by the foreign investors and supported by the Lao government. The above phenomenon clearly shows that Laos is lacking the so-called "protecting modern heritage" regulations, and and raises questions amongst conversionists and society.

Therefore there is a need for architects or architectural institutions to prepare inventories, the concept of adaptive reuse should be discussed and the awareness of local people is the key to protect the value of modern heritage.[12]

Acknowledgement

I would like to express my sincere gratitude to my supervision Dr. Soukanh Chithpanya & Prof. Dr. Bounleun Sisoularth for providing their suggestions and guidance throughout this report.

Endnotes

1. Maha Sila Viravond. "HISTORY OF LAO PDR". Ref-ugee Educators' Network. Retrieved December 29, 2017.
2. ÄLLÉN, A. (2014). Lao PDR: Cultural Heritage Management. In:SMITH, C. (ed.) Encyclopedia of Global Archaeology.
3. Grant Evans. "A Short History of Lao PDR – The land in between". Higher Intellect – Content Delivery Network. Retrieved December 30, 2017.
4. Chayphet Sayarath. (2005). Wīangčhan hūpsōm khọng mư̄ang thī kamlang wiwatthanā = Vientiane, portrait d'une ville en mutation. Paris : Editions Recherches
5. Ivarsson, Søren (2008). Creating Lao PDR: The Making of a Lao Space Between Indochina and Siam, 1860–1945:102.
6. Martin Stuart-Fox. "Politics and Reform in the Lao People's Democratic Republic)" . University of Queensland. Retrieved December 29, 2017
7. Lemire, Charles. (1893). Lao PDR in 1893. A Histor-ical Introduction to Lao PDR in 1893 (being a new translation & edition of "Le Lao PDR Annamite).
8. Xayaphone Vongvilay, Jai-Eok Shin, Young-Hwan Kang, E-Doo Kim & JoongHyun Choi (2015). The In-fluence of French Colonial Rule on Lao Architecture with a Focus on Residential Buildings, Journal of Asian Architecture and Building Engineering, 14(2): 279-286.
9. Saysavanh Phongsavanh, Hirokazu Abe and Katsu-yuki Yoshida, (2009). "Inhabitants Conscious-ness Concerning Detached Houses in the City and Suburbs of Vientiane, Lao PDR" Journal of Asian Architecture and Building Engineering. 8 (2): 346.
10. Vongvilay, Xayaphone & Kang, Young-Hwan & Kim, E-doo & Seong, In-Soo & Choi, Joong-Hyun. (2015). Typology of Lao Vernacular Dwellings and Settle-ments in Context of Cultural and Physical Environ-ment. Architectural research. 17: 127-137.
11. MacAlister Brown and Joseph J. Zasloff. (1978). Lao PDR 1977: The Realities of Independence. Asian Survey.18 (2):164-174.
12. Mohamed, Rayman & Boyle, Robin & Yilun Yang, Allan & Tangari, Joseph. (2017). Adaptive reuse: a review and analysis of its relationship to the 3 Es of sustainability. Facilities. 35: 138-154.

Reference

Fig.1 Delaporte,1867. Vientiane during Lanxang Kingdom, 2009.
Fig.2 Author, 2018
Fig.3 Author, 2018
Fig.4 Author, 2018

The Kasumigaseki Building's Planning and Technology: Japan's First Skyscraper from the Viewpoint of Renewal

-The 7th mASEANa International Conference-

Ryohei Kumagai (Tokyo University of Science)

Kasumigaseki Building (1968)

So 1968 saw Kasumigaseki Building, Japan's first full high-rise years. Fifty years have passed and a memorial book was authored by researchers from six different areas: urban planning, architectural planning, structure, facilities, construction, and renewal. I was in charge of renewals. I would like to introduce to you some of our findings.

If you go to Kasumigaseki Building today, you can feel its landmark as a full-scale high-rise built 50 years ago, but it feels new as well, so we kept the good parts but also renovated it to make it look new. Kasumigaseki Building has undergone three major renewals. The first renewal was from 1989 to 1994, and it was the first-ever skyscraper renovation. It drew a lot of attention. Mitsui upgraded equipment renovations and the office floors. The second renewal was from 1999, and it was exterior surface work and renovation of the common space of the lower floors. And the more recent renewal was 2006 to 2009, improvement of the exterior spaces, expansion and renovation of the lower commercial floors and existing retroactive construction. And the building was diagnosed, so it is diagnosed for ten years, 15 years, and 20 years after the initial construction, but the building has been conducted maintenance, and there has been an increase in maintenance costs. We saw corrosion of plumbing and frequent complicated problems of aging wires. And the exterior curtain walls had an aesthetic problem. And in terms of software, the building are needed to provide functions necessary to meet the requests of contemporary tenants.

The first renewal work

So the first renewal work, in 1986, the building renewal committee was established to renovate the office to a state-of-the-art office to serve an information-oriented society, so the concept was prestige office, so to make improvements without losing the status that this building had before.

So in 1989 the renewal project was disclosed, and the budget was roughly 30 billion yen, and the cost of living was a little different from now, but the construction cost was about 16 billion yen.

Construction began in June 1989. It began with renewal of the facility system, facilities on the top floors and the 13th floor, which was regulated to the facilities, and then the basement floor as well was for facilities. And from 1991 the office floors were renovated as well and saw the moving of the tenants. In June 1994, the whole process of renewal work was completed.

Kajima and Mitsui Construction corporate bodies participated. Centering around these participating companies, construction work began. And in 1989, renewal started for the removal of the existing boilers and new boilers for a district heating system were newly installed. Including Kasumigaseki Building, the renovation was conducted for the whole district, and so this is a photograph of the basement floor too.

Now, the capacity increase went from 15 volt-amperes per square meter to 45 volt-amperes per square meter, and at the core here, new corridor panels were set and new electric shafts were built. So the renovation work took place while the office was still working, and so people were still working, so the existing shaft was updated to one dedicated corresponding to a LAN system.

And a central duct system that operated with ten stories as one unit was changed so that each floor unit system allowed air-conditioners to be controlled separately, so each floor could control. And also, we adopted a

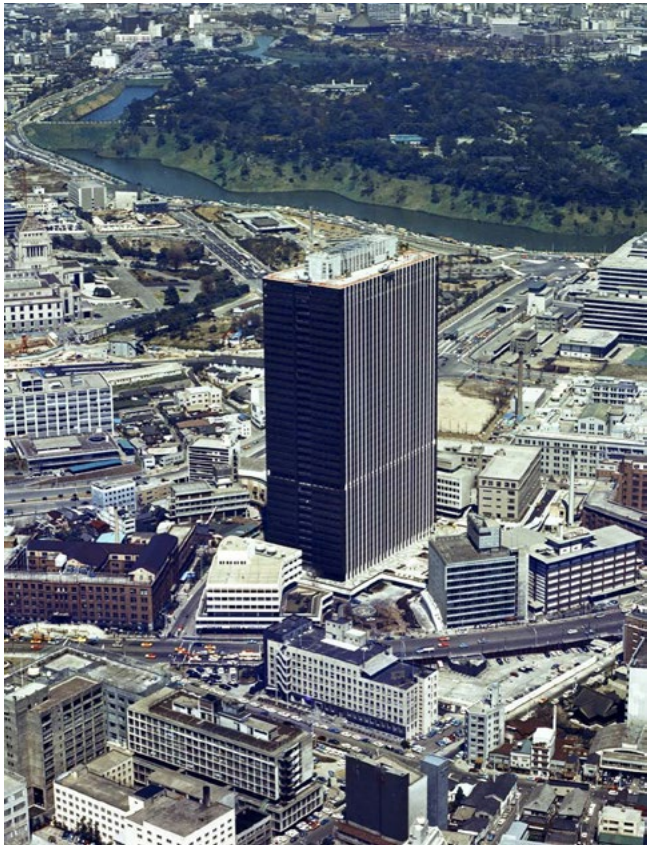


Fig.1: Kasumigaseki Building (1968)

variable airflow rate. There were air-conditioning facilities set on each floor and the air was ventilated.

And it says weather master here, but it is also called an induction unit. This was removed so there was overall air-conditioning. Induction units were used before when the building was first constructed, but not used anymore, so there was a risk of water leakage because water pipes would be used.

And also, the vertical hole penetration ducts were minimized to form horizontal compartments, so these were some of the changes that took place.

Next, office floor renovations. The interior finishes, such as the floors and ceilings were fully renovated. The 3.2-meter modules, this is a line-type of system ceiling, so the lower is after renewal, the upper before, so it's the same system. You cannot tell the difference from a distance.

And for the floor, it's an OA floor, free access floor, and the wiring is below the floor, but the ceilings were able to maintain same height. the ceilings were elevated and also the carpet were changed from PVC to tile carpet.

And around the windows, the induction unit was removed so it led to better comfort. And the Kasumigaseki Building here, there were two beams under the windows. That is a distinctive feature of this building.

And for the floor renovation, the construction period per floor was about 15 or 16 weeks, about four months, and so construction had to be completed within 16 weeks per floor to avoid compromising the tenants' relocation schedules, so that was the restriction.

And the layout was changed on the 36th and 13th floors. And air-conditioning equipment was shrunk because air-conditioning is changed to having on each floor, so new space could be made into office space that was freed up on the 13th floor. And similarly on the 36th floor, this floor was used as provisional relocation space for the tenants. So the 36th floor, it's now all office space, and the 13th floor as well, half the space is used for offices.

And also, the tenant relocation work, tenants were temporarily relocated. To control cost, and also a potential change to the tenant office telephone numbers was a problem, so two provisional transfer offices were constructed on the east and west of the premises, and the 36th floor and the 4th floor were also used as temporary offices.

And in 1990, the construction of the temporary relocation office was begun. Tenant relocation renovation of the office floors began in 1991, so you see the provisional office there. And in 1993, the relocation ended, and the layout and the provisional offices, the layout was basically the same as before the relocation.

And a maximum of four floors could be worked on at the same time, and the 13th floor and 36th floor, they had facilities, so the construction was divided them into three blocks. And the middle floors, the existing air-conditioning air was sent from the 13th floor, and so construction would be update based on the schedule.

And in order to avoid mass relocation at the same time, two adjacent floors advanced one week apart, and since the piping of the existing induction unit was behind the ceiling of the lower floor, it was necessary to work on the next floor in the middle of the construction period of the floor under construction, so there had to be overlap in the construction of each of the floors.

And with regard to the relocation of the tenants themselves, this is before relocation, before renewal and after renewal. And the tenants themselves, some of them wanted to improve their office triggered by relocation, so with regard to the relocation itself, and basic renovation, the building owner would shoulder the expenses, and with regard to the individual improvement of offices, the tenants would bear the expenses.

And with regard to the common space of the offices, the corridors and the elevator lobbies were redesigned. This is before and after renewal. This is after the second renewal, but every time there is a renewal, the interior changes.

And for the elevators, they were renovated and the performance itself improved. Toilets, the hygiene functions were also changed.

And with regard to the outer wall refurbishment. And the 13th floor, it was changed to offices. Louvers were there; they were removed. And this area setback design was original, so the sash line was left as it was.

Construction technique. Continuing office operations during renovations makes it necessary to minimize noise, vibration, and dust. Therefore, for drilling work for the facilities, which was necessary, and concrete, a rotary water-jet method was employed. Kajima Corporation developed this, and this Kasumigaseki Building project was the very first trial.

The second and third renewal work

And that was about the first renewal engineering work. I would like to move to the second and third renewal work.

The first one, an important one, they did painting of the exterior and also modernization of the design and the function in the lower floors and construction they did not touch in the first renewal, the engineering work period was from March 1999 to October 2001.

The first-floor entrance, these are all photos after the renewal. The marble on the wall is the original, and the tile on the floor was replaced by design stone. And so it was upgraded. And the ceiling design was also changed and made higher, and the luminescence was improved. The elevators were upgraded. And there was a gallery space here, a slope was introduced instead.

And the lobby floor, it was also upgraded. This is the original lobby floor. This floor was open to the public, and that is how the original plan was, and the floor design and lighting were replaced. And the marble on the walls and aluminum-cast lighting remained. The steel panel in the elevator hall, it was replaced with marble.

And the outer wall painting work, there were some conflicting interests, and in order to improve the weather resistance, a fluoropolymer paint was applied.

A trial was done in the first place, and then those who were familiar with the building's appearance helped to select the color. As you can see, at the time of the outer wall painting work, scaffolding of entire circumstance was installed.

Next is the third renewal work. From 2004, the Tokyo Club Building in the neighborhood and this Kasumigaseki Common Gate buildings, which are government buildings, they were all included in the renovation project to create an open, wide space. And Kasumigaseki Building was aiming to renovate the lower floors for the promotion of commercial activities.

From 2006, the third renewal work started. Nihon Sekkei and Kajima Corporation were the contractors, and the existing retroactive construction started in 2007, because of the enhancements and additions. And what was important was direct access to the subway station, and there was also a route where even on a rainy day, pedestrians would not have to use umbrellas. Some of the obstacles were removed and the plaza become open to the main street.

And renovation of the first and lobby floor, there is a food court under this. This is the commercial entrance building, so this wide space was to be created.

Also, a wind laboratory was added to the lobby floor entrance. So as you can see, the commercial facility was added, and with this, the shopping and food area was created.

And structural reinforcement. It is not about the overall structural reinforcement but for the lower floors. For the higher floors, there was no problem with the quality of the steel structure.

And another aspect was that there was existing retroactive construction or repair in order to meet the requirements of the building construction code and fire service code. And when it came to the higher floors, there were no structural requirements with regard to retroactive construction, but for the fire safety, as you can see, different kinds of applications were applied, for example, smoke exhaust measures, and there also should have been measures to guarantee evacuation safety routes.

So in this way, the retroactive construction was carried out in large scale.

Plan and Technology seen from Renewal

Now the plan and technology seen from renewal. As for the structure, Kasumigaseki Building was based on a computerized design. This was the very first trial, and as a result, structurally speaking, it was solid and safe. That is part of the reason why there was no structural renovation, in spite of many large-scale renovations were applied. You can see, this is a seismic wall with slit and it is made of reinforced concrete, and the rigidity was controlled by this wall. If there were any cracks, such cracks were supposed to only concentrate in this area. And the horizontal rigidity was improved. And it is effective for the long period ground motion, how to deal with that is a big issue for high rise buildings today. And it was also effective that this building had these spacious air-conditioning rooms.

So system upgrades was done by making use of the air-conditioning machine room. And in order to renovate the air-conditioning system, one of the characteristics of the building was the honeycomb beams. They were used for the installation of piping.

The technology in that, developed for Kasumigaseki Building, was a sideways drain piping unit, and this unit was installed on the floor, so it was able to avoid pipe penetrating the floor slab. This resulted in ease of renovation, and this is the photo of the sideways drain piping unit, which is displayed in the Toto Museum.

And this carry-in lift was installed, so you can see the façade. It was installed close to the façade and it was effectively used at the time of the renewal.

Mr. Takekuni Ikeda, the architect who took the leadership in the construction of the building, said the planning itself was based on the most advanced technology, although in terms of information technology, it was not able to expect the change of requirements. In fact, after construction of Kasumigaseki Building, most of the skyscrapers were built on the concept of prefab production.

I think the Kasumigaseki Building is one good example of contemporary architecture. Excluding the façade or the external wall, I think it allows upgrades without preservation of the interior decoration.

It received a BELCA Award, Best Reform category, in 1994. This was an award for the first renewal, and through those renewal plans, accumulated know-how will continue to be useful.

Approximately four times the cost of new construction has been applied in all construction after completion, so this is the level of the amount or expenses that should be spent for maintenance and renovation.

Conclusion

Some of the skyscrapers have been demolished, those constructed in the early days. That is partly because of management problems. The reason why we still have Kasumigaseki Building is as follows.

This is the very first initial high-rise building, and for the owner it is a symbol of the company. It has unique value, and as I mentioned earlier, was pioneering in planning materials and innovation at the time of construction in anticipation of future renovations and technologies, eye of the future, and universal value.

I think going forward, Kasumigaseki Building is supposed to be a good model for future maintenance and renovation of high-rise buildings. Thank you very much.

Reference

Fig.1 "KASUMIGASEKI BUILDING" Mitsui Fudosan Co, Ltd, 2018

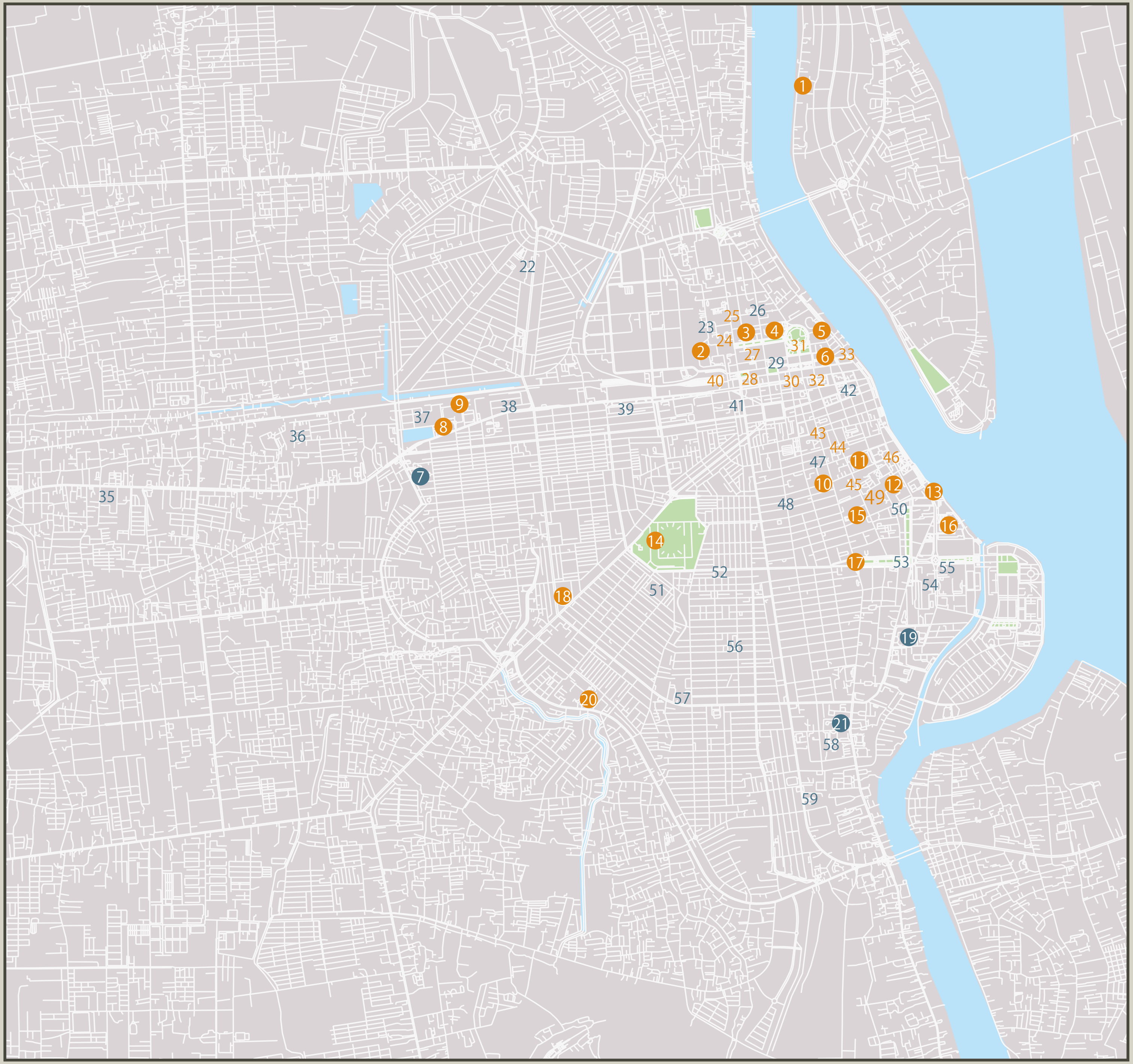

THANKS YOU FOR YOUR ATTENT

Part 2:

1. Inventory of modern Buildings in Phnom Penh

2. Inventory of modern Buildings in Bangkok

Inventory of modern Buildings in Phnom Penh



Colonial Building (-1953)

Post-Indeoendent (1953-)

History of modern architecture in Phnom Penh

Masaaki Iwamoto
(Kyushu University)

Cambodia is famous for its Angkorian and Pre-Angkorian heritages. In the shadow of those great monuments, modern artifacts tend to be overlooked. However, fascinating modern buildings were built in Phnom Penh during the nineteenth and twentieth centuries, and their beauty and variety are not inferior to those of other Asian cities. During the French colonial period, Phnom Penh was known as the "Paris of the East," as were Shanghai and Saigon, and during the Vietnam War in the 1960s, Phnom Penh was called the "Oasis of Peace." However, because of the Cambodian Civil War and the vandalism in Khmer Rouge during the 1970s and 1980s, many buildings were destroyed and urban development slowed down until the Peace Agreement was signed in 1991. This short essay on the architecture of Phnom Penh defines the term "modern architecture" to mean the buildings constructed from 1866, when Phnom Penh became the capital of Cambodia under the French, until 1970, when the quasi-dictatorship of Norodom Sihanouk ended and the Civil War began.

French Colonial Urbanism and Architecture (1866–1952)

In 1863, King Norodom Sihanouk signed a treaty acknowledging that his Kingdom was a French protectorate. Three years later, in 1866, France decided to move the capital from Oudong to Phnom Penh. In 1889, King Norodom transferred the city's development rights to France, and French colonial urban development began under Albert Louis Huyn de Vernéville, the Resident-Superior of Cambodia.

Noël Daniel Fabré (1850–1904), of the Public Works department of Phnom Penh, was the central figure during this early stage of development. Fabré designed important public buildings, such as the post office, court-house, hospital, and market, and infrastructure, such as bridges. He also participated in the first modern urban plan for Phnom Penh, which encircled the city's oldest temple, Wat Phnom, with a roundabout from which an urban axis was extended. A rectangular street pattern was applied along the axis, and the city was divided into French, Chinese, and Cambodian districts. In 1894, a fire destroyed many of the city's timber buildings, and, from that point, fireproof construction materials, such as brick and tile, were promoted.

Phnom Penh's early development was modeled on the Suzerain. In civil engineering, the methods of Alfred Durand-Claye were applied; in the building designs, Paris' architecture was the reference; and Haussmann's renovation was applied to urbanism. It is remarkable that the French architects during this early stage studied and tried to understand Cambodia's traditional architecture. Daniel Fabré created a replica of Angkor Wat for the 1889 Paris Expo in collaboration with archaeologist Louis Delaporte. In 1892, to design a bridge in Phnom Penh, Fabré again referred to Angkor Wat and quoted the decoration of Naga (holy snake). This is probably the first project that evoked Angkor Wat to express Cambodia's national identity.

During and after World War I, Albert Sarraut, Governor-General of Indochina who became the Minister of the Colonies, changed colonial governance policy from a focus on assimilation to an emphasis on appeasement. French artists and architects in Phnom Penh reacted to this political turn in various ways. In 1917, Geroges Groslier (1887–1945) established an arts school in Phnom Penh to restore Cambodia's traditional arts and crafts, such as painting, sculpture, engraving, and lacquering. His school also covered architecture regarding the traditional timber buildings, and applied it to the standard designs for residences, businesses, and bridges. Groslier designed the Albert Sarraut Museum (the current National Museum of Cambodia) and demonstrated the way that the traditional moldings and details of the Khmer sacred buildings were integrated with the European architectural style. During that period, King Sisowath built eclectic buildings in the royal palace that similarly combined concrete structures with traditional timber roofs. These represent, so to speak, the architecture of colonial appeasement.

In 1921, Ernest Hébrard (1875–1933) was appointed head of Architecture and Town Planning in Indochina, and Phnom Penh's development moved into its next stage. In Phnom Penh's 1925 urban plan, Hébrard fixed a direction for urban growth and introduced functional zoning. Furthermore, aiming to create a quasi-Baroque urban space, he planned public spaces (parks and promenades) and the locations of symbolic buildings, such as a cathedral, station, and central market. Regarding architectural design, he tried to adapt new buildings to the traditional construction techniques and Indochina's climate, a design ultimately named the Indochinese style. This style was so influential that designs adapting to the tropical climate became popular in Phnom Penh during the 1930s. Architects used eaves, louvers, and ventilation blocks to impede the harsh tropical sunlight and encourage airflow through their buildings. The Art-Deco Central Market, designed by Jean Desbois (1891–1971), is one of the best examples of this period. Starting in the 1920s, Phnom Penh rapidly developed under the Hébrard's plan. The city's population increased from about 30,000 in 1875 to about 205,000 in 1950.

In 1945, Japan occupied Phnom Penh for eight months. While under Japanese control, King Norodom Sihanouk declared national independence from France, but that was invalidated when Japan was defeated at the end of World War II, and the French reclaimed the city. Despite that setback, a struggle for independence continued. Norodom Sihanouk launched a diplomatic campaign named Royal Crusade for Independence, and, in 1953, France agreed to leave the country and Cambodia gained full independence. At that point, Cambodia began building her modern cities and buildings.

New Khmer Architecture of the Sangkum Era (1953–1970)

Immediately after independence, Phnom Penh experienced an unprecedented modernization under the Sangkum Reastr Niyum (People's Socialist Community), a political group led by Norodom Sihanouk, and many modern public buildings and infrastructure were quickly built. To demonstrate the vitality of the emerging country and its clear break from colonialism, Sihanouk appeared to favor modernist architecture. The first building in the international style in Cambodia was the National Bank in Phnom Penh designed by French architects and built in 1953 shortly before independence (The Khmer Rouge destroyed this building in the 1970s). Henri Chatel (1923–) had managed and supervised the site of the bank building, and he remained in Cambodia after independence and continued to design modernist buildings.

Sihanouk pursued a policy of neutrality and nonalignment, and, therefore, the country received significant support from the West and East Blocs. The United States helped with the construction of major roads throughout the country, France aided port development, Japan focused on the water supply and sewerage system in Phnom Penh, the Soviets built the Khmero-Soviet Friendship Hospital (1960) and Institute of Technology (1964), and China supported the construction of cement and plywood factories.

However, Sihanouk wanted Cambodians to develop their own country, and he appointed new Khmer architects to handle the major public works. Vann Molyvann (1926–2017), an architect and high-level official in the Ministry of Public Works, designed more than 30 buildings in Phnom Penh during the 1950s and 1960s, including important national projects, such as Chaktomuk Conference Hall (1961), Independence Monument (1962), Bassac Riverfront Masterplan (1961–1967), National Sports Complex (1964), and Teacher Training College (1971). Lu Ban Hap (1931–), Director of Department of Housing and Urbanism in Phnom Penh City, also worked on national projects, such as Chenla Theatre (1969) and Hotel Cambodiana (1969). These new architects led the so-called New Khmer Architecture movement in Cambodia.

Central characteristics of the New Khmer Architecture were architectural solutions that adapted structures to the tropical climate and expressed the national identity. From that perspective, New Khmer Architecture succeeded French colonial (appeasing) architecture, but the new Cambodian architects used relatively modernist designs. For example, many architects used Corbusian brise-soleil (deflection) and concrete double roofing to protect structures from the heat of the sun, and they transformed the traditional sloped roofs into abstract shapes. Vann Molyvann went beyond formalism by interpreting the composition and spatial experience of Angkor Wat for the design of the National Sports Complex.

During the Sangkum era, Phnom Penh's population grew rapidly from about 272,000 in 1955 to about 765,000 in 1970. Vann Molyvann and United Nations' experts at Ministry of Public Works developed the Greater Phnom Penh Plan during the early 1960s to accommodate the growing population, a plan that was partly realized. Urbanites enjoyed a modern culture and lifestyle with sports, arts, literature, film, theater, and modern architecture. However, hidden beneath the spectacular development in the capital, a gap between urban rich and rural poor Cambodians crucially widened, and Sihanouk's neutrality policy was broken down during the Vietnam War.

The Civil War period (1971–1989)

In 1970, General Lon Nol ousted Sihanouk, but Lon Nol's regime lasted just five years before he was overthrown in 1975 by Pol Pot and the Khmer Rouge, a radical communist and anti-urban group. They conquered Phnom Penh and drove the people from the city. Four years later, in 1979, the Vietnamese forces that defeated the Khmer Rouge found Phnom Penh like a ghost town. During Vietnam's rule of Cambodia from 1979 to 1989 through a puppet government, the city was re-developed. There has been little research on the architecture and urbanism that developed from 1980 to the present.

01 Camelite Church

Construcution Year: 1919, **Function:** Religious Facilities
Architect: Unknown
Address: 11.597886, 104.923660

02 Factory of Purification of Wate

Construcution Year: Unknown, **Function:** Industrial Facilities
Architect: Unknown
Address: 11.574483, 104.915011

03 Central Market

Construcution Year: 1925, **Function:** Commercial Facilities
Architect: J. Desbois + L. Chaucon
Address: 11.576467, 104.919614

04 Office of Resident Superior, currently Ministry of Finance

Construcution Year: 1910s, **Function:** Government Building
Architect: Unknown
Address: 11.576489, 104.920448

05 Trading Company Office (EDC's office)

Construcution Year: 1889, **Function:** Commercial Facilities
Architect: Unknown
Address: 11.576594, 104.925197

06 Phnom Penh Post Office

Construcution Year: 1895, **Function:** Commercial Facilities
Architect: Unknown
Address: 11.575314, 104.925657

07 Preah Kossamak Centre

Construcution Year: Unkonwn, **Function:** Educational Facilities
Architect: Mam Sophana
Address: 11.564009, 104.890173

08 Auditorium, Royal University of Phnom Penh

Construcution Year: 1968, **Function:** Educational Facilities
Architect: Leroy & Mondet
Address: 11.567991, 104.891683

09 Teacher Training College

Construcution Year: 1969, **Function:** Educational Facilities
Architect: Vann Molyvann
Address: 11.569190, 104.893363

10 Lycee Sisowath

Construcution Year: 1920s, **Function:** Educational Facilities
Architect: Unknown
Address: 11.564015, 104.924914

11 National Museum

Construcution Year: 1900s, **Function:** Cultural Facilities
Architect: Georges Groslier
Address: 11.565753, 104.928856

12 Steel pavilion Napoleon III at Royal Palace

Construcution Year: Unknown, **Function:** Monument
Architect: Unknown
Address: 11.563055, 104.931391

13 Chaktomuk Conference Hall

Construcution Year: 1960, **Function:** Government Building
Architect: Van Molyvann
Address: 11.562621, 104.935088

14 Olympic Stadium

Construcution Year: 1964, **Function:** Sports Facilities
Architect: Vann Molyvann
Address: 11.558370, 104.910951

15 National Assembly

Construcution Year: 1920a, **Function:** Government Building
Architect: Unknown
Address: 11.560079, 104.928493

16 Hotel Cambodiana

Construcution Year: 1968, **Function:** Accommodation Facilities
Architect: Lu Ban Hap
Address: 11.559974, 104.936301

17 Independence monument

Construcution Year: 1962, **Function:** Monument
Architect: Van Molyvann
Address: 11.556501, 104.928010

18 Chenla State Cinema

Construcution Year: 1969, **Function:** Cultural Facilities
Architect: Lu Ban Hap
Address: 11.553211, 104.902731

19 National Bank Apartment (currently Russian Embassy)

Construcution Year: 1963, **Function:** Government Building
Architect: Henri Chatel
Address: 11.564009, 104.890173

20 Bioskop MetropoleaKhmer Soviet Friendship Hospital

Construcution Year: 1959, **Function:** Health Service Facilities
Architect: Gardienko & Erchov
Address: 11.544769, 104.903957

21 State Reception

Construcution Year: 1961, **Function:** Government Building
Architect: Vann Molyvann
Address: 11.542380, 104.927517

22 Police Building

Construcution Year: Unknown, **Function:** Government Building
Architect: Vann Molyvannl
Address: 11.582099, 104.899809

23 Phnom Penh City Hall

Construction Year: Unknown, **Function:** Government Building
Architect: Unknown
Address: 11.576160, 104.916964

24 Ministry of posts & telecommunications

Construction Year: Unknown, **Function:** Government Building
Architect: Unknown
Address: 11.576015, 104.917370

25 Hotel Le Royale (Ruffles)

Construction Year: Unknown, **Function:** Accommodation Facilities
Architect: 1924
Address: Unknown

26 National Archives of Cambodia

Construction Year: Unknown, **Function:** Cultural Facilities
Architect: Unknown
Address: 11.576773, 104.919562

27 National Library

Construction Year: 1920, **Function:** Cultural Facilities
Architect: Unknown
Address: 11.576467, 104.919614

28 Lycee Descartes

Construction Year: 1920s, **Function:** Educational Facilities
Architect: Unknown
Address: 11.574945, 104.919777

29 Former US Embassy

Construction Year: Unknown, **Function:** Mixed-use
Architect: Unknown
Address: 11.574859, 104.921139

30 Ministry of Public Works and Transport

Construction Year: 1910s, **Function:** Government Building
Architect: Unknown
Address: 11.574282, 104.923037

31 Wat Phnom

Construction Year: 1900, **Function**: Religious Facilities
Architect: Unknown
Address: 11.564015, 104.924914

32 General Department of National Treasury

Construction Year: 1920s, **Function**: Government Building
Architect: Unknown
Address: 11.574331, 104.923803

33 Le Grand Hotel

Construction Year: 1920s, **Function**: Accommodation Facilities
Architect: Unknown
Address: 11.575423, 104.926300

34 Pochentong Airport

Construction Year: 1966, **Function**:Transportation
Architect: Guy Lemarchands
Address: 11.552691, 104.844423

35 Royal University of Phnom Penh Campus 2

Construction Year: 1989, **Function**: Educational Facilities
Architect: Unknown
Address: 11.562305, 104.862781

36 "100 Houses" for National Bank staff

Construction Year: 1966, **Function**: Residential Facilities
Architect: Vann Molyvann
Address: 11.567980, 104.880975

37 Royal University of Phnom Penh

Construction Year: 1967, **Function**: Educational Facilities
Architect: Leroy & Mondet
Address: 11.568386, 104.890607

38 Institute of Defense at USSR Bd

Construction Year: 1963, **Function**: Educational Facilities
Architect: Unknow USSR architect
Address: 11.570085, 104.898213

39 Ministry of defense

Construction Year: 1962, **Function**: Government Building
Architect: Van Molyvann
Address: 11.5700735,104.9080429

40 Central Station

Construction Year: 1930s, **Function**: Transportation
Architect: Unknown
Address: 11.572430, 104.916320

41 Monolum Hotel

Construction Year: 1961, **Function**: Accommodation Facilities
Architect: Jamshed Patigura & Roger Colne
Address: 11.5704631,104.9182675

42 Former Pasteur Institute

Construction Year: 1967, **Function**: Residential Facilities
Architect: Vann Molyvann
Address: 11.571395, 104.927590

43 Cine Lux

Construction Year: 1930s, **Function**: Cultural Facilities
Architect: Roger Colne
Address: 11.567821, 104.925079

44 Sarawan Pagoda

Construction Year: 1920s, **Function**: Religious Facilities
Architect: Unknown
Address: 11.565978, 104.926296

45 Museum Director's House

Construction Year: 1920s, **Function**: Cultural Facilities
Architect: Unknown
Address: 11.565478, 104.929050

46 Villa (Current UNESCO office)

Construction Year: 1910s, **Function**: Commercial Facilities
Architect: Unknown
Address: 11.565730, 104.931300

47 Dr. Saing Sophan House

Construction Year: 1957, **Function**: Residential Facilities
Architect: Vann Molyvann + Seng Suntheng
Address: 11.565098, 104.925811

48 Housing

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: 11.561658, 104.922229

49 Buildings in the Royal Palace

Construction Year: 1910s, **Function**: Government Building
Architect: Unknown
Address: 11.563050, 104.929952

50 Stupa of Royal family at Royal Palace

Construction Year: 1961, **Function**: Monument
Architect: Van Molyvann
Address: 11.562121, 104.931606

51 Olympic Market

Construction Year: 1960s, **Function**: Commercial Facilities
Architect: Unknown
Address: 11.554135, 104.910930

52 Kirirom Cinema

Construction Year: Unknown, **Function**: Cultural Facilities
Architect: Unknown
Address: 11.555664, 104.916338

53 Naga Monument

Construction Year: Unknown, **Function**: Monument
Architect: Lu Ban Hap
Address: 11.556537, 104.932318

54 Buddhist Institute

Construction Year: 1930 , **Function**: Religious Facilities
Architect: Ly Chin Torng
Address: 104.935972,11.555673

55 Sangkum Reastr Niyum Reception Hall

Construction Year: 1963, **Function**: Closed
Architect: Vann Molyvann
Address: 11.554350, 104.934739

56 High school building(S21)

Construction Year: 1960s, **Function**: Educational Facilities
Architect: Lu Ban Hap
Address: 11.549118, 104.917651

57 Vann Molyvann House

Construction Year: 1964, **Function**: Residential Facilities
Architect: Vann Molyvann
Address: 11.544339, 104.913415

58 State Residence

Construction Year: 1966, **Function**: Residential Facilities
Architect: Vann Molyvann
Address: 11.541137, 104.926391

59 Royal University of Law and Economics

Construction Year: 1961, **Function**: Educational Facilities
Architect: Unknown
Address: 11.536004, 104.924014

60 Royal University of Agriculture

Construction Year: 1961, **Function**: Educational Facilities
Architect: Leroy & Mondet
Address: 11.508274, 104.897066

61 Chinese Restaurant

Construction Year: 1903-1905, **Function**: Commercial Facilities
Architect: Unknown
Address: Unknown

62 Private Residential Building (12 families)

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

63 Residence

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

64 Residence

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

65 Park Coffee Shop

Construction Year: Unknown, **Function**: Commercial Facilities
Architect: Unknown
Address: Unknown

66 Exchange Restaurant

Construction Year: Unknown, **Function**: Commercial Facilities
Architect: Unknown
Address: Unknown

67 Office

Construction Year: Unknown, **Function**: Commercial Facilities
Architect: Unknown
Address: Unknown

68 Round House

Construction Year: 1971, **Function**: Commercial Facilities
Architect: Unknown
Address: Unknown

69 Residence

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

70 Residence

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

71 Residence

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

72 Old Stadium

Construction Year: Unknown, **Function**: Sports Facilities
Architect: Unknown
Address: Unknown

73 Borei Keila

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

74 Apartment

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: Unknown

Survey Members:
Institute of Technology of Cambodia
Royal University of Find Arts
The University of Tokyo
Kyusyu University
Tokyo University of Science

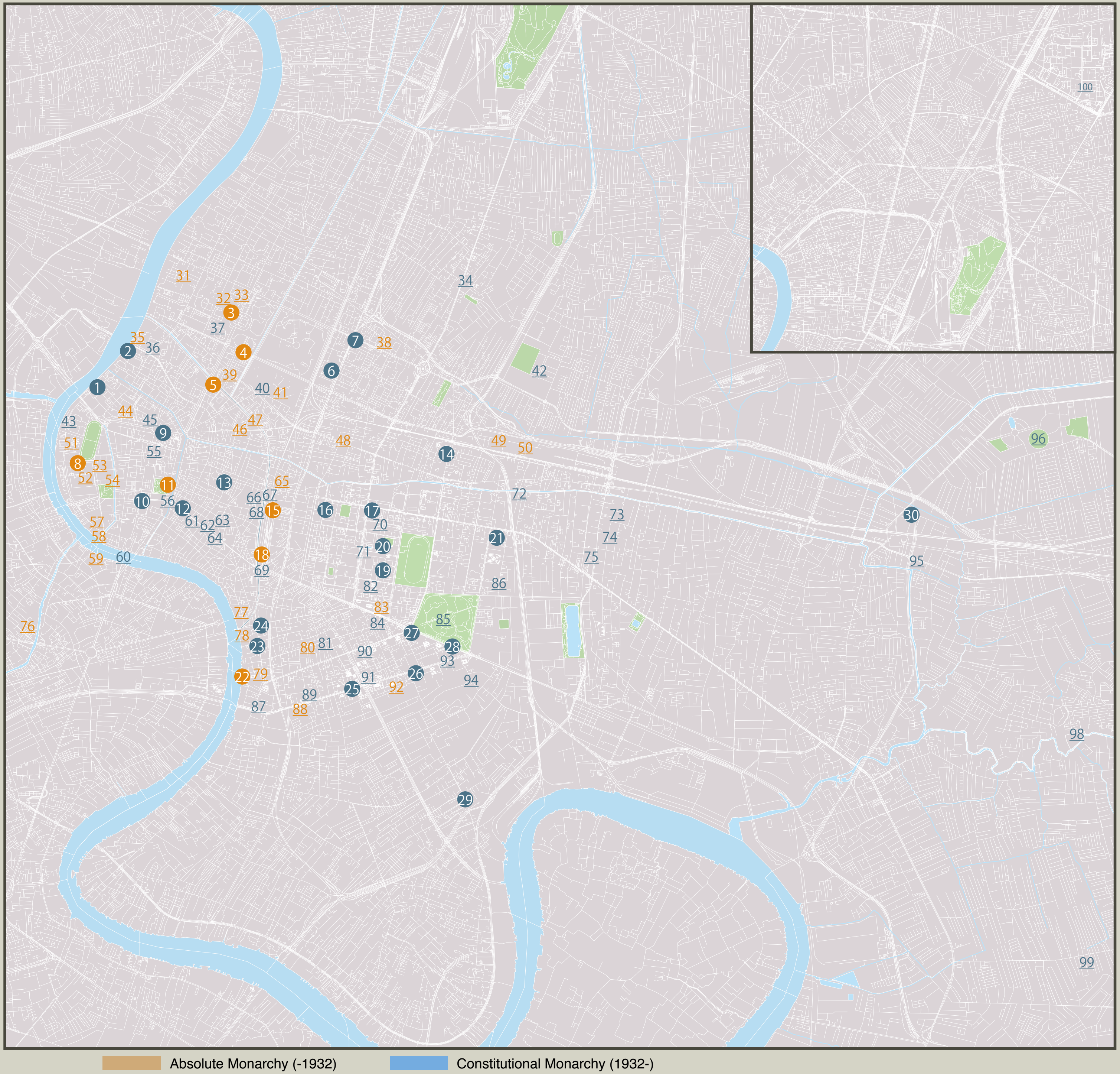
National Sports Complex by Vann Molyban

mASEANa WS in Phnom Penh

Modern Architecture Photo WS at National Sports Complex

Modern Architecture Photo WS

Inventory of modern Buildings in Bangkok



History of modern architecture in Bangkok

Pornpas Siricururatana
(The University of Tokyo)

A Brief History of the Modern Architecture in Bangkok

Several studies,[1] whether directly related to the subject or not, have been conducted to trace the history of modern architecture in Bangkok. This short essay does not aim to provide original analyses based on newly found sources; rather, it utilises the existing studies, together with sets of statistic data, to offer a very brief outline of architectural history in Bangkok. Although movements and events are presented in this essay in a chronological manner, the distinctions between each are in fact unclear, with some overlap in their duration.

Early Architectural Transitions and Formation

With the rise of foreigners in Bangkok after the Bowring Treaty in 1855, "western style" architecture started to appear in Bangkok. These buildings were mostly constructed by the royal master builders.[2] These masters learned to build the "western style" architecture from the photos and even stories of those who witnessed the authentic and semi-authentic[3] western architecture.

In the early 1860s, the construction of streets began in southern Bangkok, the transformation process from water-based city to land-based city gradually started. As the first land development and real estate projects in the city, Singapore was used as a model.[4] Shophouses, which later became key components in the transformation of Bangkok's cityscape, were constructed along these roads.

The Scottish architect, John Clunis, one of the earliest European builders who later became the first western architect to work for the Siamese government, was also from Singapore. Apart from Clunis, several "European builder-contractors,[5]" such as Joachim Grassi, Stefano Cardu were active in this period. There were also several collaborations or what some might call "compromise" or "adaptation" between the European builder-contractors and the royal master builders. The Chakri Throne Hall (Inventory, No.8)[6], which was completed in 1882 as a celebration of the Centennial of Bangkok, is an excellent example of the "interaction" between these newcomer architects and the royal master builders.[7]

After the Department of Public Works (PWD) was established in 1889, the main actors shifted from European builder-contractors (and partially the royal master builders) to European (mostly Italian) architects in the PWD. These architects completed large projects, such as the Anantrasamakhom (No.03) and the Central Bangkok Station (No.18). Due to the massive amount of construction occurring during this period, the Siam Cement Company was established in 1913. This company marked the first time that Siam gained the ability to produce its cement. In the same year, formal education in the field of architecture also began to be developed in the country at Poh-Chang Academy of Arts,[8] Thailand's oldest Arts and Craft School.

Establishment of the Architectural Ecosystem

From the mid-1910s, the first generation of western-educated Siamese architects started to return home, gradually replacing the Italian architects who worked for the government. In 1932, during the celebration of the 150th anniversary of Bangkok, the first air-conditioned movie theatre, "Sala Charoemkrung" (No.10), which was designed by one of these returnees, opened its doors to the public. For most of the public,[9] it was their first direct contact with modern architecture and the "international capitalist culture.[10]"

Only two months after the theatre's opening, on June 24th ,1932, Siam underwent a major transition from an absolute monarchy to a constitutional monarchy led by the People's Party. During this period, returnees actively participated in some construction projects, including buildings for newly established institutions, such as universities, recreation spaces, and other government buildings. In 1936, the National Stadium (No.16), designed in the style of art deco, was completed, followed by the initiation of the construction of 16 buildings, including the Democracy Monument along Rajadamnern Road. The avenue became a runway for exhibiting the new "modern" lifestyle[11] ; at the same time, it was becoming part of the people's life.

Additionally, in this particular period, the formal architectural education of the locals in the country started to be operated on a full scale. The Association of Siamese Architects was formed in 1934. In 1936, the first building construction control act was announced. The foundations were laid and the ecosystem of architects was thus established.

Expansion and Experiments

After the victory of Mao Zedong in 1949, American aid towards Thailand increased substantially.[12] In the same year, Thailand became a member of the World Bank, which enabled Thailand to receive World Bank loans and other international aids. This led to the rise of money flow in the country, resulting in the development of the private sector.

Before this development, Thai architects mostly worked for government institutions, such as the PWD or state railway office. Although some architects conducted private practices along with public work, there were no active full-time architectural companies in place. After 1949, however, full-time private architectural companies started to appear.[13] These included young architects who graduated from the United States and veteran architects who quit their jobs with the government to dedicate their time to the companies. At the same time, foreign architectural firms, such as Louis Berger, Joseph Salerno or Intaren Architects, were also very active. Actors in the architectural scene in this period became international once again. The rise of international capital, the number of foreigners, as well as the need for a new type of architecture, led to a dramatic increase in construction. Higher educational institutes were constructed across the country, including many in Bangkok (No.6,100). Banks started to expand their businesses, establishing branches (No.13,34,69,93,99) all over the city. Hotels (No 14,27,84), department stores, shops, and offices (No 25,81,90,91) continued to open relentlessly.

New types of architecture brought about new tendencies. One was an experimental mindset about new technologies, incorporating such innovations as prefabrication, new structural systems, or new materials, which fostered a collaborative process among architects, engineers, and builders. Another was a trend towards regionalism, which had already spread across the globe with the New Humanism since the end of the Second World War.[14] Modern architecture in Thailand also experienced these tendencies. Attempts to deal with the tropical climate and local materials can be found in the works from both foreign and Thai architectural firms. (No.26,28,30,36)

Industrialisation also underwent a full-scale expansion. The rapid emergence of housing developments occurred mainly in the suburbs as a response to the massive increase in the urban population. The inauguration of the Stock

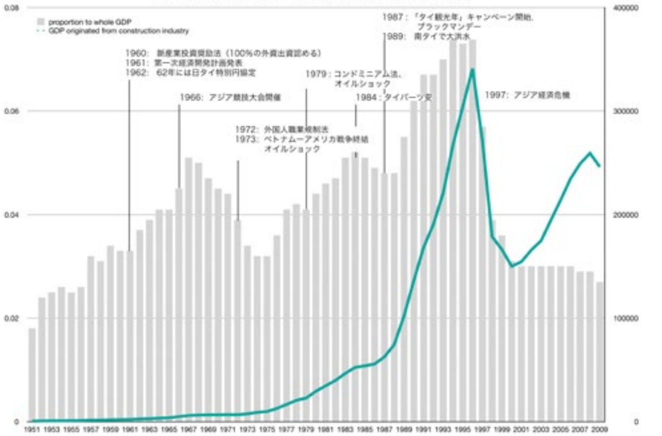


Fig.1: GDP originated from construction industry and its proportion to the whole GDP

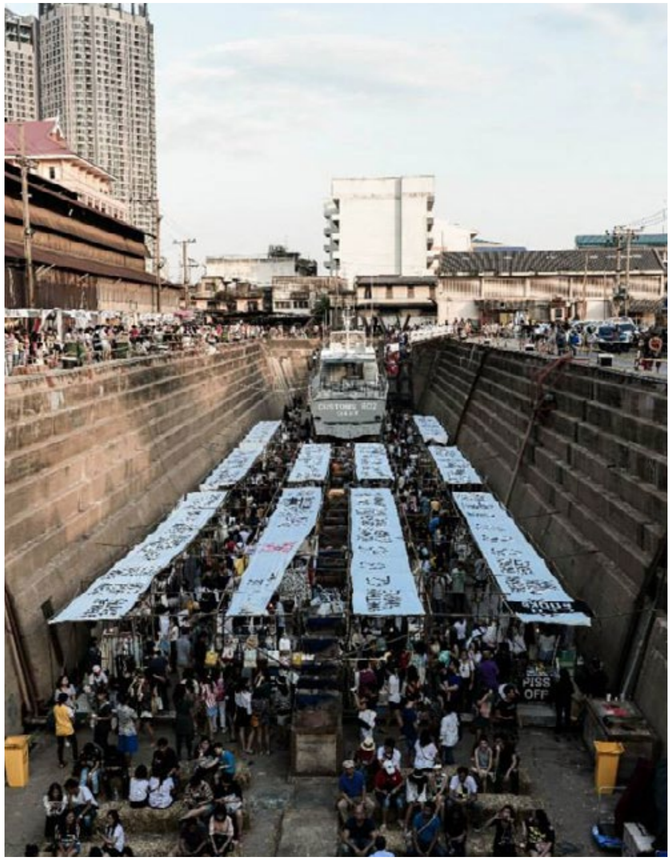


Fig.2: During the Great Outdoor Market at Bangkok Docklands, 19-21 December 2014.

Exchange of Thailand marked a significant turning point that directly affected the architectural industry. After the Condominium Act was announced in 1979, the condominium boom began, followed by the construction of combined offices and condominiums and large shopping complexes.[15] This construction frenzy, driven by "reckless commercialisation"[16] and the stock market boom, accelerated even more in 1986 and continued to increase till its peak in 1994 (Fig.1). The bubble burst in 1997 or as known as The Asian financial crisis in 1997.

Towards Progressive Preservation

The writing of this essay coincides with the demolition of the Dusit Thani Hotel. Several buildings in the inventory (P.61-68), such as the Australian Embassy (No.26) or Suan Amporn (No.37), have either been demolished or cannot be accessed anymore. The reasons for this change are diverse, involving economic, functional, and even political issues. The sharp increase in land prices had led to the shift of stakeholders. One significant phenomenon in the past few years has been the departure of several embassies. Some demolitions are more political,[17] such as that of the Supreme Court building or the on-going demolition of the Nan Leong Racecourse.

However, the situation is not hopeless. Several movements involving academics, the press,[18] and architects have continued to develop since the success of the first major exhibition of modern architecture in Thailand in 2008.[19] Researches on modern architecture from various points of view have increased continuously. Among these new movements is a project called "Fotomomo" by the photographer, Weerapon (Beer) Singnoi. His impressive photos of modern architecture nationwide have captured people's hearts and contributed greatly to enhancing the public's level of awareness.

Alternative solutions have also been presented. The renovation and conversion of the former banknote printing factory into a learning centre for the Bank of Thailand represents an exciting alternative that addresses the functional issues of modern architecture while retaining the elegant structure. "The Great Outdoor Market" project is also worth mentioning here. Through its ephemeral events, the project has successfully drawn people to "hidden spaces" that include several abandoned modern architectural spaces, such as the Bangkok dock (Fig.2) or the racecourse before its demolition in 2018.

Based on the country's complex political situation, it is clear that vigorous discussions and active individuals cannot necessarily bring about happy endings. Although waves of change, whether they consist of economic or political pressures, are inevitable, some resistance can make a difference. One can hope that lessons from the Asian financial crisis in 1997 will enable us to move towards an inclusive city that generously makes room for people from different backgrounds and generations — a city enriched with various layers of time.

Endnotes

1. Most prominent works are described in Fusinpaiboon, C.(2016). The Historiograph of Modern Architecture in Thailand. Others include PhD dissertations by Yantrasast, K.(1996) , Choochuey,R.(2002), Chua, L.(2012), Teeraviriyakul, U.(2014). For Comprehensive brief history see Povatong,P.(2014). Outline of the history of Modern Thai Architecture,1914-2014.
2. Povatong, P. (2011). Building Siwilai : Transformation of Architecture and Architectural Practice in Siam during the Reign of Rama V, 1868 - 1910. (PhD), University of Michigan. P.25-26.
3. Here "semi-authentic" refers to architectures in the colonial cities such as Singapore or Batavia. For more details see Chungsiriarak,S. (2010).[Western Style Architecture in Siam (From the 4th Reign – 1937)].,Povatong, 2011. P.25-26, Teeraviriyakul, U. (2014). Bangkok Modern – The transformation of Bangkok with Singapore and Batavia as Models (1861-1897).
4. Earliest roads include Charoen Krung Road in 1861, Bumrung Muang Road and Fuang Nakhorn Road in 1863. For further reading see Preyawanit,N. (2014). The building of Streets in Bangkok and the Economic Advantages of the Siamese Leading Class.
5. Povatong,2011.
6. "No." refers to photo number in the Inventory of this booklet, P.61-68
7. Povatong,2011, Fusinpaiboon, C. (2014). Modernisation of Building: The Transplantation of the Concept from Europe to Thailand, 1930s-1950s. (PhD), University of Sheffield.
8. Prakitnonthakan, C.(2016) Architect, Knowledges, and Architecture Schools.
9. Other includes the Memorial Bridge (Inventory No.60) for more details see Fusinpaiboon,2014.
10. Ibid
11. Sirikiatikul, P.(2007). Remaking Modern Bangkok Urban Renewal on Rajadamnern Boulevard,1932-1957, Master Thesis,UCL.
12. Charnvit, K. (2007). A political history of Thailand-Siam 1932-1957.
13. Chaiyaboon,S. (2014).[Siamese architect's Route: Works and Bibliography of 75 Thai Architects 1932-1982].
14. Canizaro, V.(2007).Architectural Regionalism: Collected Writings on Place, Identity, Modernity, and Tradition. For related writing see Wustenrot Foundation, (2017). Brutalism – Contributions to the international symposium in Berlin 2012.
15. Phongsathat, M. (1984). Condominium in Thailand. Chulalongkorn University.
16. Povatong, 2014.
17. Noobanjong, K.(2017) The Poetic of Destructions: Demolitions of Iconic Modernist Buidling in Bangkok, Prakitnonthakan, C.(2011) Architecture and Modern Thai Society.
18. Major examples include the special issues on Brutal architecture by Horyingsawad, W. et al on art4d magazine (July,2016)
19. Thailand Creative and Design Center. (2008).Keeping Up - Modern Thai Architecture 1967-1987.

Reference

Fig.1 Created by author based on several data sets from Office of the national economic and social development council, GDP 1951-1996, NI 1980-200, NI 1993-2009, Phongsathat, M. (1984). Suehiro,A. (1993)
Fig.2 "The Great Outdoor Market" , https://m.facebook.com/thegreatoutdoormarket

01 Nine Shophouses on Phra Arthit Road

Construction Year: 1947, **Function:** Mixed-use
Architect: Unknown
Address: 13.762426, 100.494078

02 Bank of Thailand, Learning centre (Former Banknote Printing Factory)

Construction Year: 1967, **Function:** Mixed-use
Architect: M.L.Santaya Israsena
Address: 13.767846, 100.498426

03 Ananta Samakhom Palace

Construction Year: 1916, **Function:** Government Building
Architect: Annibale Rigotti + Mario Tamagno (Italian)
Address: 13.771961, 100.513188

04 Wat Benchamabophit

Construction Year: 1900, **Function:** Religious Facilities
Architect: HRH Prince Narisra Nuwattiwongse
Address: 13.766908, 100.514110

05 The Royal Thai Army Headquarters

Construction Year: 1909, **Function:** Government Building
Architect: Unknown
Address: 13.762841, 100.509528

06 Round building, Faculty of Science, Mahidol University

Construction Year: 1962, **Function:** Educational Facilities
Architect: Amorn Sriwong
Address: 13.764878, 100.526273

07 The Bangkok School for the Blind

Construcution Year: 1973, **Function:** Educational Facilities

Architect: Sumet Jumsai na Ayudhya(Sumet Likit Tri Co,Ltd.)

Address: 13.768666, 100.529605

08 Chakri Maha Prasat Throne Hall

Construcution Year: 1882, **Function:** Government Building

Architect: John Clunish + Henry Clunish Rose (British)

Address: 13.752205, 100.491338

09 Ratchadamnoen Boulevard and its Buildings

Construcution Year: 1937, **Function:** Mixed-use

Architect: Jittasen Aphaiwong, Pum Malakoul

Address: 13.756163, 100.502693

10 Sala Chalermkrung Royal Theatre

Construcution Year: 1932, **Function:** Cultural Facilities

Architect: M.C. Samaichaloem Kridakara

Address: 13.746830, 100.499991

11 Corrections Museum

Construcution Year: 1889, **Function:** Cultural Facilities

Architect: Joachim Grassi

Address: 13.748813, 100.503537

12 Sing Sian Yer Pao Building

Construcution Year: Unknown, **Function:** Commercial Facilities

Architect: Unknown

Address: 13.746015, 100.505604

13 Krung Thai Bank, Suan Mali (Former Thai Pattana Bank)

Construcution Year: 1970, **Function:** Commercial Facilities

Architect: Amorn Sriwong

Address: 13.749394, 100.511222

14 Indra Hotel and Ratchaprarop Shopping Centre

Construcution Year: 1971, **Function:** Mixed-use

Architect: Chira Silpakanok

Address: 13.753014, 100.541384

15 Office of the State Railway of Thailand, Yotse (Tuek Daeng)

Construcution Year: 1931, **Function:** Government Building

Architect: Luang Sukhawat

Address: 13.744733, 100.518146

16 National Stadium (Supachalasai Stadium)

Construcution Year: 1936, **Function:** Sports Facilities

Architect: Chitrasean Aphaiwong

Address: 13.745502, 100.525088

17 Scala Theatre

Construcution Year: 1969, **Function:** Cultural Facilities

Architect: Chira Silpakanok

Address: 13.745638, 100.531454

18 Bangkok Railway Station(Hua Lamphong Railway Station)

Construcution Year: 1916, **Function:** Transportation

Architect: Mario Tamagno and Alfredo Rigazzi

Address: 13.739367, 100.516763

19 Main Auditrium of Chulalongkorn University

Construcution Year: 1939, **Function:** Educational Facilities
Architect: Phra Phromphichit
Address: 13.738547, 100.532760

20 Faculty of Fine and Applied Arts, Chulalongkorn University

Construcution Year: 1941, **Function:** Educational Facilities
Architect: Phra Sarojrattananimman
Address: 13.739617, 100.532933

21 Siri Apartment

Construcution Year: 1970, **Function:** Residential Facilities
Architect: Dan Wongprasat
Address: 13.742113, 100.548164

22 East Asiatic Co., Ltd.

Construcution Year: 1900, **Function:** Cultural Facilities
Architect: Annibale Rigotti
Address: 13.723271, 100.513957

23 General Post Office

Construcution Year: 1939, **Function:** Mixed-use
Architect: Saroj Rattaniman
Address: 13.727312, 100.515617

24 World Travel Service Office

Construcution Year: 1957, **Function:** Commercial Facilities
Architect: M.C. Vodhyakara Varavarn
Address: 13.729012, 100.515923

25 Robot Building

Construcution Year: 1984, **Function:** Commercial Facilities
Architect: Sumet Jumsai
Address: 13.720813, 100.527363

26 Australian Embassy

Construcution Year: 1978, **Function:** Demolished
Architect: Ken Woolley
Address: 13.723310, 100.537823

27 Dusit Thani Hotel

Construcution Year: 1970, **Function:** Under Demolition
Architect: Yozo Shibata (Kanko Kikaku Sekkeisha Architects)
Address: 13.728433, 100.537472

28 Esso Building, Bangkok

Construcution Year: 1971/72, **Function:** Commercial Facilities
Architect: Intaren Architects
Address: 13.726828, 100.542834

29 Boonnumsup House

Construcution Year: 1975, **Function:** Residential Facilities
Architect: Rangsan Torsuwan
Address: 13.706270, 100.544061

30 Islamic Center of Thailand

Construcution Year: 1983, **Function:** Religious Facilities
Architect: Paijit Pongpunprug
Address: 13.777757, 100.505472

31 St. Francis Xavier Church

Construction Year: 1903, **Function**: Religious Facilities
Architect: Unknown
Address: 13.777757, 100.505472

32 Parliament Club Building

Construction Year: 1973, **Function**: Government Building
Architect: Bohol Chulasewok
Address: 13.774513, 100.514044

33 Vimanmek Teak Palace

Construction Year: 1900, **Function**: Government Building
Architect: Unknown
Address: 13.774381, 100.512450

34 Thai Military Bank, Sana-mpao Branch

Construction Year: 1975, **Function**: Commercial Facilities
Architect: Design 103 Limited
Address: 13.777125, 100.544049

35 Bank of Thailand's Museum

Construction Year: 1906, **Function**: Cultural Facilities
Architect:Karl Dohring (German)
Address: 13.768492, 100.499670

36 Bank of Thailand Head Office

Construction Year: 1975, **Function**: Commercial Facilities
Architect: Chuchawal Pringpuangkaew
Address: 13.768226, 100.500330

37 Suan Amporn

Construction Year: 1972, **Function**: Government Building
Architect: CASA
Address: 13.770285, 100.510566

38 Phya Thai Palace

Construction Year: 1910, **Function**: Government building
Architect: Unknown
Address: 13.768657, 100.532879

39 Thai Khu Fa Building (Government House)

Construction Year: 1926, **Function**: Government building
Architect: Mario Tamagno and Annibale Rigotti
Address: 13.763977, 100.511630

40 Royal Turf Club of Thailand (Nang Leong Race Course)

Construction Year: 1972, **Function**: Under Demolition
Architect: Kiti Sindhuseka
Address: 13.761921, 100.516749

41 Royal Turf Club of Thailand, Multi-purpose Auditorium

Construction Year: 1916, **Function**: Sports Facilities
Architect: Unknown
Address: 13.761861, 100.517685

42 Dindaeng Housing (Flat Dindaeng)

Construction Year: 1965, **Function**: Residential Facilities
Architect: Aram Rattanakul Serireongrit
Address: 13.764280, 100.554176

43 Administration Building of Thammasat University

Construction Year: 1936, **Function**: Educational Facilities
Architect: Chitrsen Abhaiwong
Address: 13.757721, 100.490126

44 Khao San Museum

Construction Year: 1909, **Function**: Cultural Facilities
Architect: Chao Phraya Athonthurasin
Address: 13.759207, 100.497967

45 McDonald's, Ratchadamnoen Branch

Construction Year: 1943, **Function**: Commercial Facilities
Architect: M.L. Pum Malakul
Address: 13.757420, 100.501647

46 The National Council of Women of Thailand

Construction Year: 1909, **Function**: Commercial Facilities
Architect: Unknown
Address: Lan Luang Rd.

47 National Economic and Social Development Board

Construction Year: 1905, **Function**: Government Building
Architect: A.Rigotti, E.Manfredi, M.Tamagno (Italian)
Address: 13.757695, 100.514758

48 Siam Commercial Bank Pcl., Thanon Phetchaburi Branch

Construction Year: 1931, **Function**: Commercial Facilities
Architect: Unknown
Address: 13.755359, 100.527347

49 Makkasan Factory International

Construction Year: 1920, **Function**: Industrial Facilities
Architect: Unknown
Address: 13.755527, 100.548949

50 Makkasan Train Warehouse

Construction Year: 1910, **Function**: Industrial Facilities
Architect: Van Molyvann
Address: 13.753848, 100.552338

51 Thaworn Watthu Building

Construction Year: 1916, **Function**: Cultural Facilities
Architect: HRH Prince
Address: 13.755121, 100.490944

52 Royal Museum

Construction Year: 1872, **Function**: Cultural Facilities
Architect: Unknown
Address: 13.752205, 100.491338

53 Ministry of Defence

Construction Year: 1891, **Function**: Government Buidling
Architect: Gerolamo Emilio Gerini (Italian)
Address: 13.751758, 100.494333

54 Grand Vi hara, Wat Ratchapradit Sathitmahasimaram Ratchaworawihan

Construction Year: 1864, **Function**: Religious Facilities
Architect: Phraya Ratchasongkhram
Address: 13.749774, 100.495998

55 Bangkok Metropolitan Administration City Hall

Construction Year: 1955, **Function**: Government Building
Architect: M.C. Samaichaloem Kridakara
Address: 13.753860, 100.501816

56 Miramar Hotel (Former Min Sen Machinery co.ltd)

Construction Year: 1956, **Function**: Hotel
Architect: Unknown
Address: 13.747506, 100.503904

57 National Discovery Museum (Former of the Ministry of Commerce)

Construction Year: 1922, **Function**: Cultural Facilities
Architect: Mario Tamagno
Address: 13.743657, 100.494192

58 Sununthalai Building

Construction Year: 1880, **Function**: Educational Facilities
Architect: Unknown
Address: 13.742712, 100.494030

59 Santa Cruz(Convent) Church

Construction Year: 1916, **Function**: Religious Facilities
Architect: Father Parrot
Address: 13.738950, 100.493772

60 Memorial Bridge

Construction Year: 1932, **Function**: Infrastructure
Architect: Dorman Long co.,ltd (Thomas Smith Tait)
Address: 13.739497, 100.497704

61 Muang Thai Life Assurance

Construction Year: Unknown, **Function**: Commercial Facilities
Architect: Unknown
Address: 13.744179, 100.507717

62 Hang Khai Ya Berlin (Berlin Dispensary)

Construction Year: 1932, **Function**: Commercial Facilities
Architect: Unknown
Address: 13.743789, 100.508244

63 Mang Korn Kamonlawat Chinese Temple

Construction Year: Unknown, **Function**: Religious Facilities
Architect: Unknown
Address: 13.743720, 100.509607

64 Charoen Chai Community Shophouses

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: 13.742583, 100.509956

65 Nonthi House

Construction Year: 1897, **Function**: Residential Facilities
Architect: Ercole Manfredi
Address: 13.749558, 100.519113

66 Maen Naruemit Building, Debsirin School

Construction Year: 1949, **Function**: Educational Facilities
Architect: HRH Prince Krommaphraya Narisaranuwattiwong
Address: 13.747163, 100.515942

67 State Railway of Thailand

Construction Year: 1951, **Function**: Commercial Facilities
Architect: M. C. Vodhyakara Varavarn
Address: 13.746804, 100.516888

68 SiriWattana Building

Construction Year: Unknown, **Function**: Commercial Facilities
Architect: Unknown
Address: 13.745631, 100.515801

69 DOB Building (Bangkok Bank's Old Hua Lamphong Branch)

Construction Year: 1971, **Function**: Commercial Facilities
Architect: Keit Jiwakul
Address: 13.737675, 100.516440

70 Former British Council

Construction Year: 1970, **Function**: Mixed-use
Architect: Sumet Jumsai na Ayudhya(DEC Consultant Co,Ltd.)
Address: 13.744222, 100.532221

71 Faculty of Architecture, Chulalongkorn University

Construction Year: 1942, **Function**: Educational Facilities
Architect: Lucien Coppé
Address: 13.739881, 100.530870

72 Ariyasomvilla

Construction Year:1942, **Function**: Accommodation Facilities
Architect: M.C.Vothayakorn Voravan & Jarun Somchana
Address: 13.747949, 100.551621

73 Prasarnmit Building, Srinakharinwirot University Prasarnmit Campus

Construction Year: 1950, **Function**: Educational Facilities
Architect: Phian Sombatpiam
Address: 13.745241, 100.564710

74 Indian Embassy

Construction Year: 1979, **Function**: Government Building
Architect: Moblex Co., Ltd.
Address: 13.742332, 100.563826

75 Siam Society

Construction Year: 1932, **Function**: Cultural Facilities
Architect: Edward Healey
Address: 13.739202, 100.561459

76 Khunluang Rithanrongron House Museum

Construction Year: 1923, **Function**: Cultural Facilities
Architect: Unknown
Address: 13.729861, 100.484577

77 Church of the Holy Rosary

Construction Year: 1897, **Function**: Religious Facilities
Architect: Father Desalles Proprietor Wat Mae Phra Lukprakham
Address: 13.731377, 100.513642

78 Portuguese Ambassador's Residence

Construction Year: 1860 , **Function**: Residential Facilities
Architect: Unknown
Address: 13.728219, 100.514185

79 Assumption Cathedral

Construction Year: 1919, **Function**: Religious Facilities
Architect: Unknown french architect
Address: 13.723428, 100.514865

80 Neilson Heys Library

Construction Year: 1921, **Function**: Cultural Facilities
Architect: Unknown
Address: 13.727383, 100.522907

81 AIA building

Construction Year: 1964, **Function**: Commercial Facilities
Architect: John Graham - Obayashi Gumi
Address: 13.727785, 100.524849

82 Sala Phrakeaw

Construction Year: 1966, **Function**: Educational Facilities
Architect: Lert Urasayananda
Address: 13.735714, 100.531425

83 Saowapa Building

Construction Year: 1922, **Function**: Health Service Facilities
Architect: Unknown Itaiian architect
Address: 13.732419, 100.532729

84 Montien Hotel

Construction Year: 1968, **Function**: Accommodation Facilities
Architect: Mitaroon Kasemsri
Address: 13.730552, 100.531087

85 Lumpini Park Public Library

Construction Year: 1955, **Function**: Cultural Facilities
Architect: Unknown
Address: 13.730717, 100.540675

86 Holy Redeemer Church

Construction Year: 1954, **Function**: Religious Facilities
Architect: Giorgio Acinelli
Address: 13.734707, 100.548838

87 Sathorn Church

Construction Year: 1932, **Function**: Religious Facilities
Architect: Unknown
Address: 13.718640, 100.516183

88 Blue Elephant (Former Bombay Burmah Trading Company)

Construction Year: 1915, **Function**: Commercial Facilities
Architect: Unknown
Address: 13.718653,100.521508

89 The Chapel Bangkok Christian College

Construction Year: 1971, **Function**: Religious Facilities
Architect: Amos IT Chang
Address: 13.720419, 100.523033

90 Bangkok Bank Head Office

Construction Year: 1974, **Function**: Mixed-use
Architect: Capt.Krisda Arunvongse Na Ayudhaya
Address: 13.726466, 100.530387

91 Sathorn Thani

Construction Year: 1978, **Function**: Commercial Facilities
Architect: CASA
Address: 13.723140, 100.530741

92 Baan No. 139 Soi Tian Siang

Construction Year: 1910, **Function**: Residential Facilities
Architect: Unknown
Address: 13.721678, 100.534460

93 Kasikorn Bank, Sathorn Nuea Branch

Construction Year: 1973, **Function**: Commercial Facilities
Architect: Rungsan Torsuwan(Rungsan Associate Co,Ltd.)
Address: 13.725804, 100.541915

94 Bhirasri Institute of Modern Art

Construction Year: 1974, **Function**: Permanently Closed
Architect: Deva Studio Co., Ltd. (Moblex Co., Ltd. and M.L.Tridhosyuth Devakul)
Address: 13.722526, 100.544884

95 Old Pakistan Embassy - House No 512

Construction Year: Unknown, **Function**: Residential Facilities
Architect: Unknown
Address: 13.737957, 100.606972

96 Rajamangala National Stadium

Construction Year:1973, **Function**: Sports Facilities
Architect: Rungsan Torsuwan(Rungsan Associate Co,Ltd.)
Address: 13.755500, 100.622318

97 Hua Mark Indoor Stadium

Construction Year: 1966, **Function**: Sports Facility
Architect: Robert G Boughey & Associates Co,. Ltd.
Address: 13.757685, 100.623446

98 Al-Kubra Mosque

Construction Year: Unknown, **Function**: Religious Facilities
Architect: Unknown
Address: 13.715459, 100.628066

99 Kasikorn Bank Sukhumvit 101 Branch

Construction Year: Unknown, **Function**: Commercial Facilities
Architect: Unknown
Address: 13.684542, 100.628558

100 School and Auditorium, Faculty of Science and Faculty of Arts, Kasetsart University

Construction Year: 1968, **Function**: Educational Facilities
Architect: Ongard Satrabhandhu
Address: 13.845717, 100.57068

Photo Credits:
2, 6, 7, 10, 12~14, 16~18, 21, 23~30, 33, 35, 36, 39, 42, 55, 60, 68~70, 73, 74, 81, 82, 84, 87, 89~91, 93, 96, 97, 99, 100
By FOTOMOMO(Weerapon Singnoi)

Survey Members:
Chulalongkorn University, King Mongkut's Institute of Technology Ladkrabang,
Silpakorn University, Thammasat University, Kasetsart University
The University of Tokyo, Kyusyu University, Tokyo University of Science

Round building, Faculty of Science, Mahidol University

mASEANa WS in Bangkok

The 6th mASEANa Conference

Modern Architecture Tour in Bangkok

Acknowledgments

We deeply thank everyone who kindly and devotedly gave corporation, especially the Japan Foundation and supported organizations to have "mASEANa Project" made possible.

This report is a documentation of the following project:

Appreciating Asian modern :mASEANa project 2015-2020
The 6th mASEANa Project Conference, 2018, Bangkok, Thailand
The Future of the Past:

"Materiality and Resilience of modern Architecture in Southeast Asia"

Term 25th-27th October, 2018
Venue Chulalongkorn University / Bank of Thailand Learning Center
Organizer DOCOMOMO JAPAN, mASEANa Project Committee
Co-organizer The Japan Foundation
Hosted by ICOMOS Thailand, Faculty of Architecture, Chulalongkorn University
Sponsor THAI OBAYASHI CORP., TLD.
Mitsubishi Jisho Sekkei Asia Pte. Ltd.
Kokuyo International (Thailand) Co., Ltd.
Nomura Real Estate Development Co.,Ltd
ON GROUND CO., LTD.
Sponsorship DOCOMOMO International, ICOMOS ISC20c, mAAN
Supporter The Toyota Foundation

The 7th mASEANa Project Conference, 2018, Tokyo, Japan

"Materiality, Technology and modern movement in the Southeast Asia & Japan"

Term 16th February, 2019
Venue Tokyo Bunkakaikan 4F Large Conference Room
Organizer DOCOMOMO JAPAN, mASEANa Project Committee
Co-organizer The Japan Foundation
Scientific Committee DOCOMOMO International, ICOMOS ISC20c, mAAN
Sponsor MAEDA CORPORATION
Supporter The Toyota Foundation

mASEANa Project Coordinator

Johannes Widodo (The National University of Singapore)
Shin Muramatsu (The University of Tokyo)
Yoshiyuki Yamana (Tokyo University of Science)

Japan

Kenji Watanabe (Tokai University)
Kengo Hayashi (The University of Tokyo)
Kentaro Okamura (The University of Tokyo)
Pornpas Siricururatana (The University of Tokyo)

Thailand

Bovornvet Rungrujee (ICOMOS Thailand)
Chomchon Fusinpaiboon (Chulalongkorn University)
Chutayaves Sinthuphan (Site-Specific: Architectural & Research)
Masaki Iwamoto (ON GROUND CO.,LTD)
Nathathai Chansen (King Mongkut's Institute of Technology Ladkrabang)
Parinya Chukaew (King Mongkut's Institute of Technology Ladkrabang)
Pinai Sirikiatikul (Silpakorn University)
Pinraj Khanjanusthiti (Chulalongkorn University)
Pirasri Povatong (Chulalongkorn University)
Pongkwan Lassus (ICOMOS Thailand)
Vasu Poshyanandana (ICOMOS Thailand)
Yongtanit Pimonsathean (Thammasat University)
Weerapon (Beer) Singnoi (Architectural Photographer)

The Japan Foundation

Akihiko Murata
Seiya Shimada
Noboru Futako
Sae Sueyoshi

mASEANa project Secretariat

Yuko Nishimura
Taeko Enomoto

Publication

Design Hiroaki Anamizu,Yu Takahara, Yoshiko Takubo
Photo Hiroaki Anamizu, Keigo Kubishiro
Printing TOKYO Print

Sponsor

Following corporation gave us support in bringing about "mASEANa Project",
We would like to express our great appreciation.

Maeda Corporation
THAI OBAYASHI
Mitsubishi Jisho Sekkei Asia
KOKUYO
NOMURA REAL ESTATE DEVELOPMENT
ON GROUND

Bank of Thailand

mASEANa Project

modern architecture

2015 - 2020

do_co,mo.mo_japan

The Documentation and Conservation of buildings, sites and neighborhoods of the Modern Movement