

Reflection of Modernity: Re-exploring the Role of Modern Architecture in Chiang Mai (1884-1975)

ภาพสะท้อนความทันสมัย: ทบทวนบทบาทสถาปัตยกรรมสมัยใหม่เมืองเชียงใหม่ ระหว่างปี พ.ศ. 2427 – 2518

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บทคัดย่อ

งานวิจัยที่ว่าด้วยการวิเคราะห์สถาปัตยกรรมสมัยใหม่ของเมืองเชียงใหม่ขึ้นนี้มีวัตถุประสงค์ (1) เพื่อทำการเก็บรวบรวมข้อมูลความสัมพันธ์ทางสังคมวัฒนธรรมและการเมือง กับงานสถาปัตยกรรมในเมืองเชียงใหม่ที่เกิดขึ้นในช่วงต่อของยุคสมัยระหว่างปี พ.ศ. 2427 – 2518 ซึ่งเป็นช่วงการเปลี่ยนแปลงที่สำคัญของเมืองเชียงใหม่ทั้งในด้านการเมืองการปกครองที่ได้รับการแทรกแซงจากสยาม การขยายตัวทางเศรษฐกิจ และการเข้ามาของเทคโนโลยีวิทยาการสมัยใหม่ (2) เพื่อวิเคราะห์ถึงปัจจัยและอิทธิพลของการเปลี่ยนแปลงโครงสร้างทางความสัมพันธ์ทางสังคม โดยอาศัยการวิเคราะห์ผ่านทางงานสถาปัตยกรรม การเก็บข้อมูลภาคสนามเน้นที่การเก็บข้อมูลจากอาคารสถาปัตยกรรมสมัยใหม่ในเมืองเชียงใหม่ที่สร้างในช่วงเวลาดังกล่าว แบ่งพื้นที่การเก็บข้อมูลออกเป็น 6 พื้นที่ คัดเลือกเก็บข้อมูลละเอียด 42 อาคาร รวมถึงสัมภาษณ์เจ้าของอาคาร ผู้เกี่ยวข้อง และผู้เชี่ยวชาญด้านการออกแบบสถาปัตยกรรมที่ทำงานในช่วงเวลาดังกล่าว งานวิจัยชิ้นนี้พบว่า มีปัจจัยที่สำคัญ 4 ปัจจัย ที่ก่อให้เกิดการเปลี่ยนแปลงเมืองเชียงใหม่เข้าสู่ยุคสมัยใหม่ ปัจจัยทั้งสี่ ได้แก่ ปัจจัยด้านพัฒนาการศึกษา ปัจจัยด้านพัฒนาการทางเศรษฐกิจ ปัจจัยด้านพัฒนาการทางโครงสร้างพื้นฐานของเมือง และปัจจัยด้านพัฒนาการทางการเมือง

อย่างไรก็ตาม งานวิจัยชิ้นนี้ชี้ให้เห็นว่าการเปลี่ยนแปลงดังกล่าวเกิดขึ้นมีปัจจัยเสริม 3 ประการ คือ 1) การเปลี่ยนแปลงโลกทัศน์เดิมค่อยๆ หมดความสำคัญลง พร้อมๆ กับการเข้ามาของความรู้และวิทยาการสมัยใหม่ เช่น ระบบคิดที่เกี่ยวข้องกับคติความเชื่อเดิมที่ผูกโยงกับทักษะของเมือง การตั้งถิ่นฐาน การแบ่งชนชั้นของผู้คนในเมือง 2) ลักษณะของการเมืองการปกครองของเมืองเชียงใหม่ในช่วงเวลานั้นสะท้อนให้เห็นถึงลักษณะหรือรูปแบบการเมืองที่มีความยึดหยุ่นสูง เนื่องจากความจำเป็นในการตอบสนองความไม่แน่นอนของการเปลี่ยนแปลงระบบการปกครองแบบมณฑลเทศาภิบาลไปเป็นแบบการปกครองแบบจังหวัด เพราะในขณะที่จะต้องถูกควบคุมดูแลจากรัฐส่วนกลางภายใต้ระบบการปกครองแบบเทศาภิบาล เจ้านายฝ่ายเหนือเองก็จะต้องทำการรักษากลุ่มคนต่างๆ ที่อยู่ในการปกครองเดิมให้มีความจงรักภักดี หรืออาจจะเรียกได้ว่ารักษาดำแหน่งทางสังคมของระบบเจ้านายเดิมเอาไว้ให้ได้เช่นกัน และ 3) การเข้ามาของเทคโนโลยีใหม่ๆ โดยเฉพาะการเข้ามาของ “รถไฟ” การขนส่งก้าวข้ามข้อจำกัดเดิมๆ ส่งผลให้ทั้งเทคโนโลยี วัสดุอุปกรณ์การก่อสร้าง สินค้า และที่สำคัญการเข้ามาของคอนกรีตเสริมเหล็ก งานวิจัยชิ้นนี้ต้องการจะชี้ให้เห็นว่ายังคงมีสถาปัตยกรรมในยุคสมัยใหม่ในเมืองเชียงใหม่หลายหลังที่ยังไม่ได้รับเปิดเผย ลดคุณค่า และถูกทำลายโดยปราศจากการพิจารณาความสำคัญของสถาปัตยกรรมเหล่านั้นในฐานะที่เป็นภาพสะท้อนของประวัติศาสตร์การเปลี่ยนแปลงของเมืองเชียงใหม่ในยุคที่กำลังจะเข้าสู่ความทันสมัย

Abstract

Re-exploring the role of Modern Architecture of Chiang Mai, this research aim (1) to collect and identify the socio-cultural as well as political relations between “social relations” and “architecture” during the transitional period between 1884-1984, which can be regarded as an era of radical change in Chiang Mai originated by an imposed political power of Siam, together with a new economy, as well as rising modern technologies; (2) to analyze the causes and effects of how the social structures has been changed through the built environment. Methodologically, a field survey was conducted that focused on the present conditions and situations of those modern buildings in Chiang Mai City. These were based on 6 area divisions, where 42 public buildings were selected in order to explore them in detail, including in-depth interviews with owners, designers, as well as any other relevant person who has closely related to the building. This research identified four important causes which could increasingly transform Chiang Mai to be considered as a modern city - through the educational development, economic development, the development of city infrastructures, and the political and administrative development.

However, this research also identified three key factors that could further accelerate such transformation which are: 1) the decline of old ideology due to the rise of modern technologies - in particular the aspect of cosmology that related people to the city, segregating inhabitants in relation to their class systems, and how to locate people and their settlement in the city. 2) The political and administrative model of Chiang Mai in that period has become relatively flexible as a result of the unpredictable mode of administrative governance from Siam – changing Chiang Mai from under an intendent status to be a province. In short, Chiang Mai required a political system that allows it to be controlled by Siam, while maintaining the social status and class system that were already well established among the old nobilities. 3) The arrival of new technologies, in particular the railway from Bangkok that overcame the limitations and the boundary of transporting goods and supplies, particularly for new building technologies such as new reinforced concrete constructions. This research remarks that there are many unfortunate modern buildings that are still unseen, devalued, and perhaps destroyed without ever being considered as a part of the historical reflection of how Chiang Mai was transformed and modernized.

Keywords (คำสำคัญ)

Modernity (ความทันสมัย)

Modern Architecture (สถาปัตยกรรมยุคสมัยใหม่)

Socio-cultural Relations (ความสัมพันธ์ทางสังคมวัฒนธรรม)

Political Relations (ความสัมพันธ์ทางการเมือง)

Chiang Mai (เมืองเชียงใหม่)

Reflection of Modernity: Re-exploring the Role of Modern Architecture in Chiang Mai (1884-1975)

The topic of modern architecture in Chiang Mai is not a new subject matter but rather it offers us a way to further explore the architecture of the city in a different approach, in particular arguing for reconsidering architecture outside Lanna and vernacular discourses. There are numerous interesting buildings that can be categorized with a modern style – i.e., simplified, geometrical articulation, the use of concrete and glass as the main construction material – can be easily seen in the city today. But, due to the lack of academic as well as historical investigation to support their value, many of them have been abandoned and destroyed. This paper is taken from the main research, which aims: (1) to explore the relationship between social relations and architecture in Chiang Mai City's areas during 1885 – 1975 and (2) to analyze how architectures can reflect the changes on Chiang Mai's social, cultural and political productions. The reason why this period is carefully marked as a modern transformation, it was one year after the second Chiang Mai Treaty was signed and endorsed in 1883 which led to a series of changes in the city in particular the political as well as economic transformations. This era also covers the period when the first electrical company operated in Bangkok, same time as the first arrival of the train in Chiang Mai from Bangkok in 1921. Moreover, it also includes the National Economic and Social Development Plan no.1 when it was launched in 1961 and led to the establishment of Chiang Mai University in 1964. Finally, in 1975 it was the first City Planning Acts which offered a radical development to Chiang Mai's urban-scape. Architectures can be regarded throughout this research as historical artifacts which can be either explicitly or implicitly show how the modernization gradually took place.

Modernism in Thai Context

Thai Scholars, such as Chattri Pakitnonthakan and Yongtanit Pimonsathean, believe that Modernism became significant in the Kingdom of Siam during the reign of King Rama IV but becoming vividly dominant in the period of King Rama V (20 September 1853 – 23 October 1910). To visualize the transformation, it was the roles of architecture and the built environment where they can impose the notion of civilization, urbanization, as well as modernization from the West (Pakitnonthakan, 2004, p. 29).

Modernism in Siam in that particular period perhaps could not be regarded as “to be updated” or “to be modern” in a Western sense. It should rather be understood as a mode of controlling both from the King and from the West. In order to modernize Siam, we need to consider both internal and external factors. For the internal factors, some scholar argues that because of a radical change in the leader's perception and the worldview – i.e., changing from religious and belief system based on Buddhist ideology and astrology to a type of newness and scientific articulations. For the external factors, the political power of the West that dominated over Siam must be considered. Both factors played out differently during this period of transformation, but undoubtedly it brought Siam into a new direction. Some might say that it is the process of “westernization” instead of “modernization” per se, in particular when we look at physical changes found in architectures and built environments. For example, by imposing Italian Renaissance style under the name of Siam Beautiful City's Project, the outcomes seem to be rather a radical i.e., Chakri Maha Prasat in the Grand Palace completed in 1882 and the Ananda Samakhom Throne Hall built in 1908. These can be regarded as an insertion point where a new style was politically introduced to Siam, offering us various alternatives from the so-called ‘traditional’¹ (Hinchiranun, 1995, p. 43). Perhaps it may not be truly correct when ones said these newness was solely belonged to the West, regardless of how

it was integrated and transformed through the local and specific socio-cultural contexts, as well as responding to local economic and political changes (Ibid, p. 11).

During the reign of the King Rama V to VI, various new inventions were introduced to Siam. For example, Siam Electricity Co., Ltd. was the first electrical company to operate in Bangkok in 1898 (see Figure 1). And the first railway track was constructed between Bangkok and Nakhon Ratchasima in 1891, and then to Ayutthaya in 26 March 1896. Besides the introduction of electricity and locomotive transport, many inventions from the modern world were introduced to Siam, such as the auto-mobile, a tram, the telegram, the telephone, machineries and construction, including new styles of music, fashions, sports and clubs were also introduced to the Siam population and as a part of their public lives (Malakul, 1987, p. 151).



(Source: Yumungmee, 2013, p. 90)

Figure 1. Photos of the shop house in the reign of King Rama V, it was occupied by the building of Siam Electricity Co., Ltd. in Bangkok in 1898.

In 1932, during the reign of the King Rama VII (8 November 1893 – 30 May 1941), Siam underwent a political reform from being an absolute monarchy to a constituted monarchy. Then Siam was also changed the name to Thailand in 1939. To some extent, we could regard such political reforms as a part of modernization, in the name of democracy and constitution. One of the reflections of such changes in this period was what Chatrri calls “Khana Ratsadon’s Architecture”, or translated as Architecture of the People’s Party. It was a visual evidence signifying the concept of an equality, which was the principle of Khana Ratsadon’s political standpoint. Khana Ratsadon’s

architectural style tends to be simplified, not complex nor connoting any hierarchical orders or traditional decorations. It is similar to modern architectural style in the West. Thus, it led to the misinterpretation that Khana Ratsadon’s architecture is a part of the modern movement as in the West. According to Chatrri, although modern architecture and Khana Ratsadon’s architecture may not be the same, it offers a new direction for Thai architecture. That is to say, the changes of architectural style in Thailand during the 1940s-1960s could possibly be characterized into two poles: one was called “Up-to-date architecture”, sharing a similarity of the modern style in the West, over simplified geometrical forms, the lack of decoration, and based on a flat roof; another was called “Thai Traditional Architectural Style in Concrete”. Based on the notion of how Thai traditional architecture could be transformed, not entirely eradicated an abstraction of a decorative expression but rather geometrized them in relations to the use of metal and reinforced concrete (see Figure 2).



(Source: Left; http://www.matichon.co.th/news_detail.php?newsid=1356575301 Right; <http://www.thaimtb.com/from/viewtopic.php?f=63&t=210999&start=7395>)

Figure 2. (on the left) Example of “Up-to-date” architectural style, photograph of The Court of Appeals in Sanam Luang Area built in 1941, (on the right) Example of “Thai Traditional Architectural Style in Concrete”, photograph of Sawadisopa Gate, design by Phra Phrombhichitr.

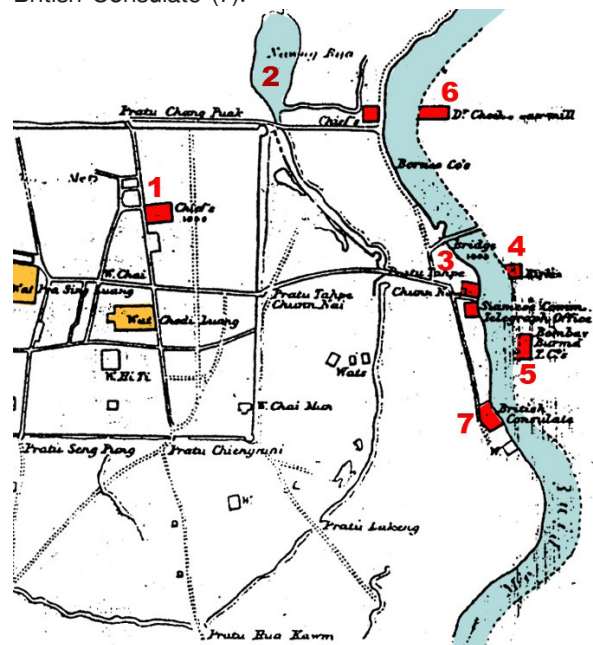
Short History of Chiang Mai in the Political Transformation Period

Dating back for more than 700 years, Chiang Mai was believed as the center of the Lanna Kingdom and is still be regarded as the heart of the Northern

part of Thailand. It is not this paper's intention to draw back to the beginning of Chiang Mai but rather pin point the important events that could reflect the socio-cultural as well as a political transformations. So many significant events could be marked, such as in 1774 when it could be regarded as a new dawn of Chiang Mai after being abandoned for a long period of time since the domination of Burma, or during the period of Siam's dependency In 1854 – 1855 when the British came to Chiang Mai for the logging industry between Lanna and Molmein or known as Mawlamyine (Poon-tajak, 1987, pp. 23-26) , or in 1874 when Chiang Mai was integrated as a part of the Kingdom of Siam and the "Treaty of Chiang Mai no.1" was also endorsed to offer benefits and solutions to some business conflicts of the British, but the problems and the conflicts persisted until the second treaty was endorsed in 1883 (Ibid, p. 36). This paper regards that the second treaty is a critically important one because it allowed British subjects to be heard only in international courts, or Consular Courts when more appropriate (Barlow, April 26, 2015). And then finally in 1884, at the same period of Bangkok's transformation when the newness and modernization were strongly injected to Siam. This could be considered as how socio-cultural conditions got play out politically. Thus, it is important to note that the period of 1884 onwards is marked as the focusing period for this research, while many other significant events also need to be recognized as a crucial part of a history manifestation.

In order to discuss the physical transformations of Chiang Mai, one might need to refer to a reliable resource, such as the map of Chiang Mai in 1888 (see Figure 3). This map was produced in the period of King Rama VI when he was interested in mapping technologies of the West. He officially appointed Mr. James Fitzroy MaCathy to take up the position as the First Director of the Map Making Department. The king preferred to know and to be able to differentiate the territory of Siam's kingdom from the others, at the same time to use such geographical information to prepare for a royal proceed in various important cities

such as Bangkok, Chiang Mai, and Luang Prabang. Later on in 1900, Mr. MaCathy's map of Chiang Mai was published by the Royal Geographer Society in Britain (Ongsakul, 2004, pp. 63-64). The reason why the map of Chiang Mai in 1888 is necessary to be considered is because it shows details of locations where many of the places were at that period. For example, it illustrated the location of the palace of Prince Inthawarorot (1901 - 1909), the seventh Royal Rulers of Chiang Mai (see no.1 in Figure 3); the location of the city's biggest pond, which was called "Nong Bua" (see no.2 in Figure 3); the location of the house of Siam Commissioner along the River Ping (3); the location of the first church, indicated as "kirk" (4); Borneo Co's and Bombay Burma T.Co's the logging company (5); Dr. Marion Cheek's sawmill (6); and the British Consulate (7).



(Source: original map from Payap University Archive Library, added graphic by the research team, 2014)

Figure 3. Partial image taken and added the graphic on Chiang Mai Map of 1888.

What we can read and interpret from Chiang Mai's map of 1888 are, (1) how it reflects the political strategy of the royal Lanna rulers in responding to various groups of foreigners. Two sides of River Ping shows that there were at least three groups of people actively occupying this area, which is known as Wat

Ket. Firstly, two leading logging companies located there for transportation reasons, which also drew many Chinese labour migrated from Bangkok to settle in this area; For the second group, the American Christian Presbyterian Missionary was given these pieces of land for housing the church, in which a printing house, and a girl's school was built in 1867. Some scholars believed that the reason why the royal Lanna rulers offered such location was because it was further away from the city center, which was regarded as the outskirts of the city, or perhaps there were other intentions such as to be able to easily observe and monitor these foreign groups; Lastly, before the arrival of the train in 1921, Siam commissioners arrived in Chiang Mai by boat on River Ping and it is not surprising that the houses as well as other buildings related to the Siam Kingdom seem to be allocated beside the River Ping instead of the city center, perhaps this shows us how the royal Lanna rulers may perceive them as outsiders or as the intruders from the Siam Kingdom.

Secondly, this indicates the notion of the City Center. Lanna City Center was represented by the holy navel pole located in the middle of the city, surrounding with royal palaces, royal family's houses and important temples. The important axis of the city also related to Buddhist ideology and cosmology, such as the north side was meant to be the King's direction, while the south is meant to be the slave and the death. Drawing on this idea, it may request the King to protect and to maintain the political center of the city while gave away the lands outside the city wall to the outsiders. Yet, until 1921 when the train arrived, the important axis of the city gradually changed not only from political to economic significant, but also from the north towards the east side of the city, towards Thapae Road and the River Ping where it was dramatically transformed into the new business center of Chiang Mai.

Methodology

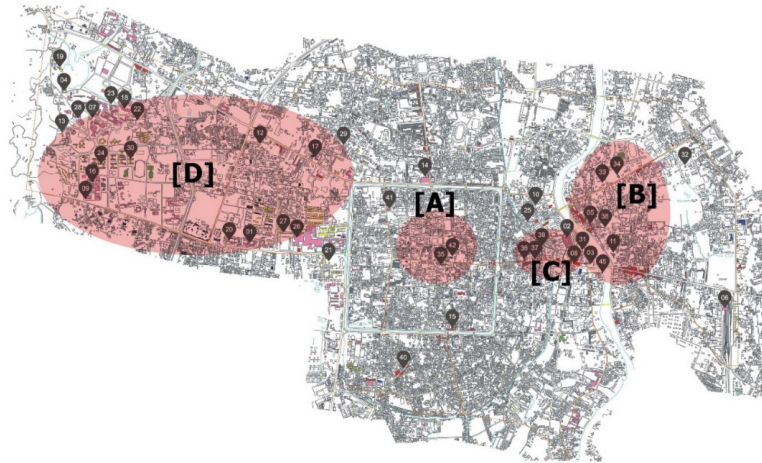
42 buildings built between 1884 and 1975 in the city area have been selected. Various tools, such as measuring, photographing, and computer modeling have been used to record these buildings and their details as much as possible. After the survey, the city area where these 42 buildings located has been divided into 4 zones and has been conceptualized each zone differently: zone A refers to the political city center in the old day, zone B refers to the land owned by American Presbyterian Christian Missionary and the development of two important private schools "Prince Royal College" and "Dara Academy"; zone C refers to the economic transformation particularly the Chinese settlement on Thapae Road; and zone D refers to the area of Chiang Mai University. The research aims to collect data on building's size, proportion, materials, as well as the information of the buildings in relations to these four areas (see Figure 4).

Findings and Discussions

This research argue that there are four significant factors that actively transformed Chiang Mai into a modern city, these include the development of an educational system; transformation of the economic; the development of the city's infrastructure, and the flexible mode of locally political integration.

1. *The Development of an Educational System*

One of the important factors that led Chiang Mai to be a modern city was through a new educational system. Deriving from modern education, it challenged the Buddhist ideology and cosmology with the notion of Rationalism and economic transformation. For example, the idea of a cosmic mountain was replaced by the location of hospital and university, which was regarded as a basic human need for better living and a modern scientific articulation. Chiang Mai was no longer shrouded in the shadow of the unknown and mysticism conditions, rather be shed



(Source: map and graphic by research team, 2014)

Figure 4. The graphic on the map indicates 42 buildings in four different zones of the city where there are some buildings, built between 1884 – 1975, remain for conducting the field survey; zone A focuses on the political transformation, zone B focuses on the educational transformation; zone C focuses on the economic transformation; and zone D focuses on the university area.

the light and reappeared differently. Three significant events could be used as markers of a city's transformation.

The group of Christian American Presbyterian Missionary led by Rev. Daniel McGivary and Mrs. Sophia McGilvary, his wife, who came to Chiang Mai on 3 Jan 1867. The First settlement in Chiang Mai was in the east side of Ping River. It was in the reign of the 7th Lanna King, King Intarawitchayanon (reigned between 1873 and 1897). After a long and undiscouraged period, other missionaries came to join. As a result, the local printing house was established in 1892 by Rev.D.G.Collins², after which hospital and then the first public school in town was established in 1873. It was called Rohng Rian Phra-Ratchaya or known among locals as American Girl's School, and later on the new name was given by Chao Dara Ratsamee to be called as Dara Academy, on 6 November 1909. For the boy, Rohng Rian Chai Wang Singh Kam or known among locals as American Boy's School was established in 1887 by Rev.D.G.Collins in the location of the printing house. In 1899, Dr. William Harris, known as Rev. Harris, became the school's principle. According to Prof. Sayrin Jitakub, the Chairman of Rev.Harris's Museum, he believes that the main purpose of this school is not only solely to provide the boys with an

education, but rather to improve their personality and to offer them an opportunity for doing business and improving their livelihood³. American Boy's School later received a new name from Prince Somdej Chao Fa Maha Watchirawut, the Prince of Siam in 2 January 1905 to be known as "Prince Royal College" since then.

For many buildings in Dara Academy and Prince Royal College, they could be regarded as a reflection of Modernity, more specifically, through different aspects of modern building technologies, new structural systems, as well as new social functions. Referring to Rev.Harris's modern way of thinking, he also brought a number of 'newness' to Chiang Mai. For example, the way in which he planned for Prince Royal College's layout. Taken from Princeton Theological Seminary where he used to study and train as a missionary, the layout of Prince Royal College was also designed following the same principle (Ibid) (see Figure 5). Introducing the front terrace of the buildings found in both schools, similar to the porch used in the West, it could show how the newness was adapted and appropriated locally, such as Harris House (built in 1904) and Missionary House (built in 1907). It was also termed Colonial Style by various people in Chiang Mai (see Figure 6). Power Hall, built in 1928



(Source: http://www.ptsem.edu/uploadedFiles/Seminary_Relations/Communications_and_Publications/About_PTS/revisedmap01.pdf, 22 June 2014)

Figure 5. Original layout of Prince Royal College designed by Rev. William Harris (photo with permission of Prof. Sayrin Jitakub, 31 March 2014) and a Planning of Princeton Theological Seminary.



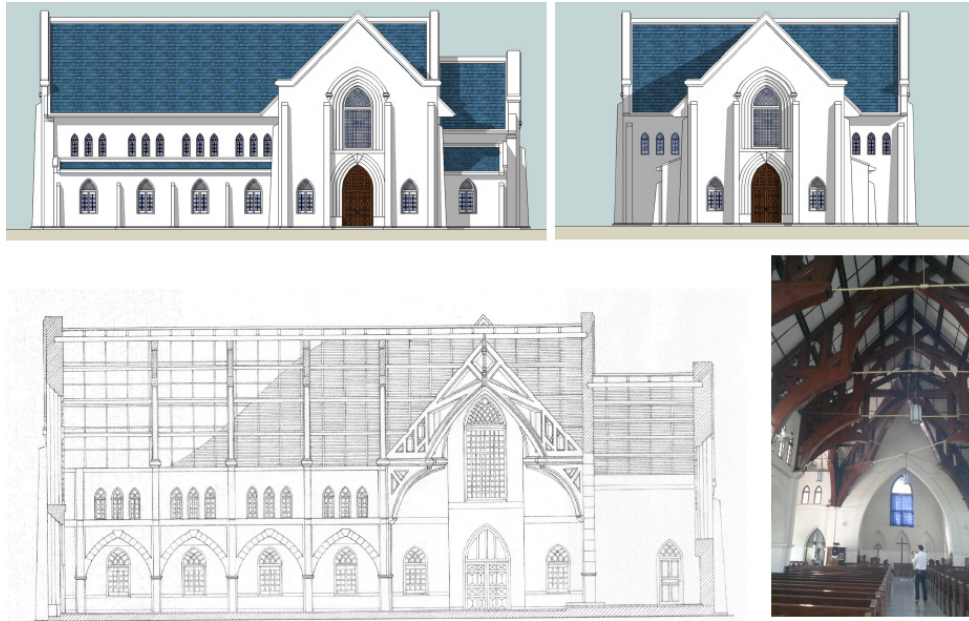
(Source: The Author)

Figure 6. Front façade of Harris House, designed by Mr. Van Alan Harris, Rev. William Harris's brother, architect and engineer who helped Rev. Harris establishing the school. Harris House was built in 1904-1905. Today it uses as a museum. Awarded by ASA (The Association of Siamese Architects) in 1996 to be a well-preserved architecture.



(Source: The Author)

Figure 7. The inside of Power Hall (built in 1928), using the Wooden Rigid Frame Structure to maximize the width of the building. Today it functions as a library.



(Source: photos by permission of Lanna Architectural Center and Sant Suwatharapinun)

Figure 8. Prince Royal Chapel, built in 1929 by Mr. Van Alan Harris. Adopted the Pitch Roof from Gothic Architecture and re-applied to this chapel using Hammer Beam Roof. Also Awarded in 1996 by ASA (The Association of Siamese Architects) to be a well-preserved architecture.

(see Figure 7), and the Prince Royal Chapel, built in 1929 (see Figure 8) demonstrates the application of how the new building structures, both a wooden rigid frame and a wooden hammer beam roof, were introduced. Lastly, Rev. Harris's brother, Van Alen Harris, an architect, built an auditorium in 1929-1930 for the theatre and for a new gathering social space, apart from a traditional public space in a temple (Ibid).

Apart from the school being established and operated by the Presbyterian missionary, there was also the first central government-operated public school using the central education system by Siam at Wat Pra Jaydee Luang in 1899. Originally, the school was designed to train government officers who could communicate in Thai, meaning the school aimed to change "Laos people" to be "docile Thai people".⁴ It also aimed to produce well-trained clerks who can read and write Thai fluently as well as improving their proficiency in mathematics. Central government believed it was much more efficient and required less investment comparing to the way of sending someone from Bangkok in order to do the work here up in the north. In short the central government-oriented public

school can be understood as a political tool for controlling the locals and sustaining their power over Chiang Mai. However later on the attitude of the school was dramatically changed, where it focused solely to offer a better education for locals. On 23 September 1906, the new name of the school was given by the Prince - Somdej Chao Fa Maha Watchirawut – to be named as Yupparaj Witayalai.

What Yupparaj Witayalai offers us to think about Chiang Mai's Modernity is not the building style but rather its location in the center of the old city. As in the old days, this central location was reserved for royal palaces such as that of King Intarawitchayanon. It was also surrounded by numerous noble houses, important temples, as well as many other important buildings of the Lanna Kingdom. It was understood as a representation of a strategically political location. Yet, when the power was changed, the center was also shifted to the outside of the city, in particular beside the ping River where Siam government officers was housed. This particular center was paradoxically transformed into a periphery (see Figure 9).



(Source: http://library.cmu.ac.th/ntic/picturelanna/search_form.php, 22 October 2013)

Figure 9. The photo taken when the Siam Prince - Somdej Chao Fa Maha Watchirawut – visited Chiang Mai and given the new name of the school to be Yupparaj Witayalai on 24 December 1905.

On 21 January 1964, Chiang Mai University was established by the reinforcing educational development policies introduced in 1958, this can be regarded as the third marker. It was the first government-operated university outside the central area. Various significant transformations of the city could be found here, for example, the old ideology of the city's orientation was re-imposed and re-introduced with a new meaning. That is to say the area of a sacred and preserved forest,¹⁴ traditionally called Aranyik forest, towards the West side of the city close to Suthep Mountain was replaced by the need of new technologies, reliable health system, and modern education. The reason why the new university was chosen to be located in the West side of the city was due to the dramatic development and occupation of other parts of the city. For example American Presbyterian was in the East; the city center tended to move towards Thapae road following the influx of Chinese migrants; Montfort College (1932), Sacred Heart College (1932), and Regina Coeli College (1964) were already occupied the South; and Teachers Training School in the North. Moreover, there was also a new road going up directly to the mountain led by the monk Srivichai in 30 April 1944, which also caused the degeneration of Suthep Mountain's holiness.

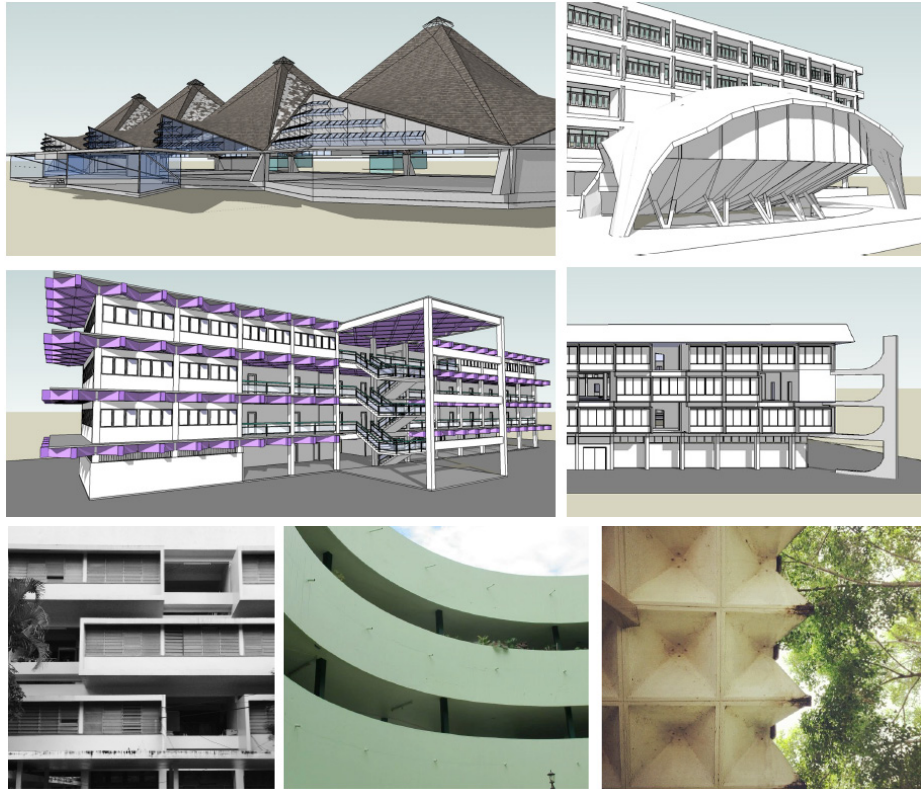
579 Rai and 68 square wa allocated for the development of Chiang Mai University in the first establishment (Chiang Mai University's Historical Development Hall (Pin Mala Art Hall), October 10, 2014), Dr. Paul Seagers, an architect and an expert

in academic planning from Indiana University, U.S.A, was invited to help carry out planning and designing the university in 27 July 1964 (Ibid). During the first three decades (1964-1994), architects and engineers, like Liam Triratranon, Armon Sriwong, M.R. Chaliamsamai Krisdakorn, from Bangkok were asked to design numerous new buildings for different faculties, in which various architectural styles were introduced. Chiang Mai University by that time can be seen as a competing ground for architectural design. New types of structures, such as waffle slab and shell structure concrete, were introduced. Modular system was also used in many buildings like AngKaew Dormitory (1963) or Library Building of Engineer Faculty (1985) (see Figure 10). Sun shading devices made by concrete fin became the signature of the architecture in this period. It created the second skin for the building where it can also be used as a terrace, a seating area, as well as a corridor (see Figure 11).

2. Economic Transformation

The various foreigner groups played a significant role in the transformation of Chiang Mai, in particular during the modernization period. While the American Presbyterian missionaries and Siam government officers can be regarded as important agencies in relations to the rise of modern education, Chinese merchants can also be regarded as equally important. They migrated and lived in Bangkok and then moved to Chiang Mai both by boat and later on by train. They were the key factor that offered radical changes to the modern economic of Chiang Mai.

The first settlement of Chinese migrants in Chiang Mai was around the Wat Ket area, on the East side of Ping River, which was a port for goods and transportation (Nimmanhemin, 1967, p. 467; Ongsaku, 2006, p. 467) (see Figure 12). Soon after the railway station was built and the train arrived in Chiang Mai in January 1921, the business around the Wat Ket area was eventually recessed. Many of the Chinese migrants moved to another side of the Ping River to



(Source: computer model by research team and photos by Sant Suwatcharapinun, 2014)

Figure 10. These images from various different buildings in Chiang Mai University show the different types of building structure such as concrete shell structure, waffle slab, flying buttress, and also the use of modular system.



(Source: computer model by research team and photos by Sant Suwatcharapinun, 2014)

Figure 11. These images taken from various different buildings in Chiang Mai University to show how creative the designers were when they designed the concrete sun shading device, using as a second skin of the building, also allowing the building to have a good ventilation all day.

the area called Tha-pae Road where it was known as the second Chinese settlement in Chiang Mai, such as Lao Cho alley, Warorot market, Witchayanon road, Changmoi road, and Charernmuang road, which is closed to the main market called Warorot market. The localization of Modernity can be seen through the economic transformation in Tha-pae Road – which is regarded as a transitional space between the old city and the area of development at the East side of the city.



(Source: <http://pantip.com/topic/30300155>, 10 October 2014)

Figure 12. Photographs of the early Chinese settlement in Chiang Mai, around 1868-1910. Some still remains today such as on the left photograph shows VILA CINI, silk shop and the Gallery restaurant on the right, built in 1892.

Chinese merchants gradually replaced other merchant groups from Yunnan or Myanmar (or Burma). They also stepped forward to take control over Chiang Mai's economic market. They also developed a good relationship with the Lanna Royal Family, in order to take the opportunity to become tax controllers for importing and exporting goods (Ibid, p. 79). Richer Chinese families also offered a loan for other Chinese migrants in order for them to start their business, such as Shinawatra, Chutima, Viboon, and Nimmanhemmin (Ibid, p. 80). Those business not only drove Chiang Mai into a realm of modern economic market, they also offered new political connections linking Chiang Mai to major business and powerful elite in Bangkok – intertwining locality with a new business model such as imported goods, electronic appliances, modern engineering vehicles from Bangkok.

Exploring Chiang Mai's economic transformations, this research looks through the vision of Professor An Nimmanhemmin who was trained as an architect who designed Warorot market and had a plan for a

new city of Chiang Mai, and most importantly, he was born and lived in Tha-pae Road, to be more specific in Baan Tuek – the most important of historical buildings in Tha-pae road. It can be regarded as a story of Pro. An's family – Nimmanhemmin and in particular the grandfather Luang Anusarn Sunthorn and his contributions to Chiang Mai and the city's modern economic transformation (see Figure 13-16). Baan Tuek, or officially known as Anusarn Sunthorn Compound, was subsequently built from 1897 to 1932. It can illustrate how modernity has been appropriated and manifested through built forms. For example, various new materials and structural systems were used in this compound, in particular cement and steel rods, which were sent to Chiang Mai along with the railway. Other new technologies introduced at the time including ventilation devices and modern sanitary systems can also be found here.

Prof. An wrote that his “grandfather” (Luang Anusarn Sunthorn) bought this piece of land from the previous owner where 4 members of his family all passed away on this land. Thus no one wanted it except his grandfather. He acquired the property with a reasonable price and converted it into a 2 stories building. Located on Wichayanon Road, it was a thick brick wall building used for a commercial shop below and a residence on the top floor, which currently is occupied by Sure Yong Sang Limited Company. It was then called Tuek Luang, built from 1897 to 1902, which could be regarded as the first concrete building to be built outside of Chiang Mai's city wall. For Mr. Kie and Ms. Kimhor Nimmanhemmin, they lived in Tuek Dang, built from 1921 to 1924. Tuek Dang, literally means a red building, was built before metal rods for reinforced concrete were imported from Bangkok. After Tuek Dang, Tuek Kaow was the next to be constructed. Tuek Kaow literally means a white building, this was the first reinforced concrete structure in Chiang Mai built in 1932. It showed how the building was changed and its space was also appropriated to be wider, higher, and larger due to the introduction of new building materials.

Prof. An Nimmanhemmin also described how innovative of Tuek Dang was from his memory:

The whole living space in this building was surrounded by a mosquito net. A Large terrace was on the second floor, also the toilet. We use the partition to divide the large space into three rooms. “Ventilation Wall” was installed in the top part of the wall, which was invented by the grandfather, called Fa-Lai. It was composed of two wooden panels, it was movable, sliding towards each other providing a closure as well as an opening to ventilate the air. Moreover, there was also the sanitary wears imported from the United Kingdom, such as a bath tub with the shower, a toilet, and a septic tank installing under the terrace. For my understanding, beside those foreigners’ house who lived in Chiang Mai, this building can be regarded as the most modern residence in the city (Ibid, p. 76).

In 1932, Tuek Kaow was the last to be built in Anusarn Sunthorn Compound on the side of Tha-pae road. Similar to Tuek Dang, it had all the similar building accessories installed in it, Tuek Kaow also had a mosquito net, metal fire-proof window frames, a reinforced concrete, and in particular, built by complying with a high standard of safety factor. It was believed that the structure of this building was very strong which can easily perform to support much greater loads. It can be acknowledged as a newness in Chiang Mai at that time because building like this can only be built in an official or the government sector, rarely for the masses and their private houses (Ibid, p. 77).

Anusarn Sunthorn Compound is composed of 5 buildings containing a tranquil and serene courtyard in the middle of the compound (see Figure 13-14). Family and cousins of Luang Anusarn Sunthorn still live and work here. We can see traces of modern transformation through innovatively wooden ventilating panels up against the thickness of the old brick wall, the fine joints and details of wooden staircase in the

contrast of large concrete column (see Figure 15-16). Recently, Baan Tuek has been creatively transformed into an art gallery called Baan Tuek Art Center. In 2013, the Association of Siamese Architects under the Royal Patronage of His Majesty the King, known as ASA, presented the preservation award for Baan Tuek for great achievements in historical building preservation.



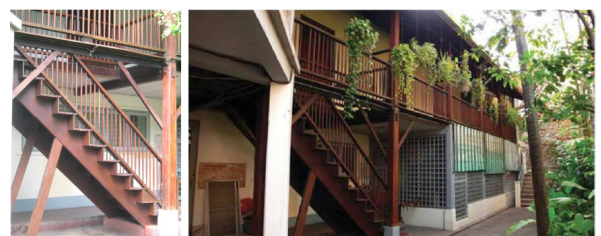
(Source: photos by research team, 2014)

Figure 13. The Façade of Baan Tuek.



(Source: model by research team, 2014)

Figure 14. Computer modeling of Baan Tuek.



(Source: photos by research team, 20 May 2007)

Figure 15. Photographs showing the wooden details of the staircase and the terrace.



(Source: photos by research team, 20 May 2007)

Figure 16. Photographs showing the entrance and the connecting wall between White and Red House, called breathable wooden.

It was a great opportunity for this research to be able to visit and photograph inside the compound, five main buildings still remain in a good condition. Comparing Baan Tuek with other modern buildings in Chiang Mai, we can consider that Baan Tuek still have a charm of modern aesthetics in its composition as well as in its materiality. It captured the history of Chiang Mai's economic transformations as it was used to be the first bank of Chiang Mai, as well as how Chinese merchants have become one of influential groups of the city.

As mentioned previously, Baan Tuek is also the house where Prof. An Nimmanhemmin, an important figure in the architectural profession as well as education, was born. After he graduated from the Faculty of Architecture, Chulalongkorn University in Thailand, Prof. An studied further in the field of architecture in the U.S.A. When he graduated, he returned to Thailand and worked in the Faculty of Architecture, Chulalong-

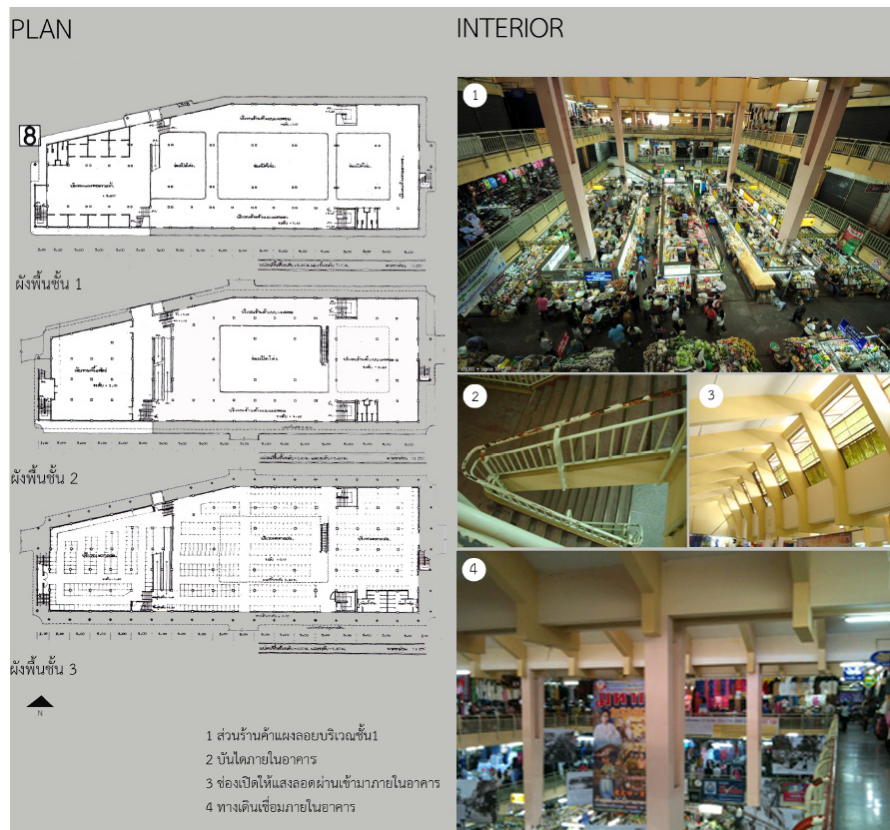
korn University. His vision was to produce modern design that can collaborate and integrate with the traditional at the same time - without heavily on a traditional meaning and form nor tend towards the machine aesthetics without concerning its function, location and context (Ibid, p. 111). As we can see in his design for a new Warorot market after it was destroyed by fire in 1968 (see Figure 18-19). Prof. An elaborates that:

Warorot market is a retail market similar to an Oriental Bazaar in the past. Various goods, foods and many others can be founded here. It is regarded as a neighborhood shopping center or a small side of a city market... it is a place for trading, exchanging and working for more than 1,000 families, so it is important to design the building that can comprehend local contexts as well as appropriate those new building technology (Ibid, p. 327)



(Source: photos and computer model by research team, 25 May 2007)

Figure 18. Photographs of Warorot market designed by Prof. An Nimmanhemmin, in 1969.



(Source: photos and computer model by research team, 25 May 2007)

Figure 19. Photographs of Warorot market plan and interior design, showing the integration of the “Y” structure with the ventilation system at the roof structure.

Apart from Baan Tuek and Warorot market, various row houses located in Thapae Road can also be regarded as a modern heritage from the period of 1950s. They can be divided roughly into four time frames:

- First period: before 1897, row houses in this period were found in Wat Ket area, they looked similar to the Chinese row house called “Lei-Long”, such as the Gallery Restaurant beside River Ping.

- Second period: between 1897 and 1926, it was the period when the American Missionary arrived in Chiang Mai. The commercial buildings may not look like “row house” in a modern sense. Most of them is rather regarded as detached commercial buildings with large balconies around the house on the second floor, similar to what it is called a “porch” in the West, such as Sri Prasert building, Kum Choa Burirat, British Counselor (before changing into a hotel restaurant) (see Figure 20).

- Third period: between 1927 and 1956, it can be regarded as the most transformative period in particular of architectural styles and building technologies because of the railway from Bangkok, a new mode of transportation. Various goods, skillful people, and modern technologies were imported to Chiang Mai. Tuek Dang and Tuek Kaow can be used as examples of this period (see Figure 21).

- Fourth period: between 1957 and 1977, economic market of Chiang Mai was greatly expanded. The First Economic and Social Development Bill (1961–1977) were endorsed. The development also moved to the regional part of the country. Many new streets were built and therefore provided a large amount of spaces along the road to build row houses. The rising number of row houses in Thapae road was one product of this transformation. These row houses were beautifully constructed to show the skills of the local builders. And because of their uniqueness it can reflect the importance of Thapae road in that particular period (see Figure 22-25).



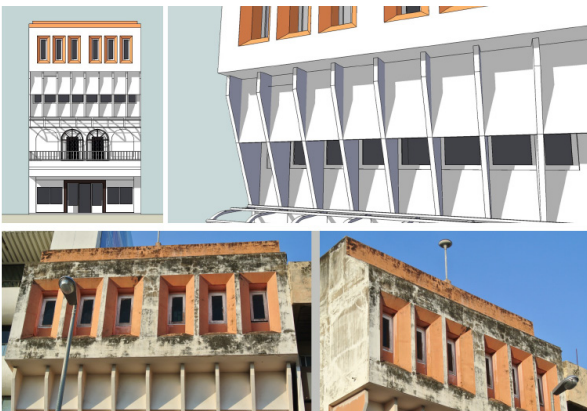
(Source: Computer Images by researcher, and photos of the former British Consulate General from <http://www.davidmixner.com/urbandesign/> and <http://www.wexas.com/thailand-hotel/offer-the-chedi-chiang-mai-thailand-102332.html>, 19 October 2014)

Figure 20. Comparing between Sriprasert Building, built in 1905 (on the left) and the former British Consulate General, built in a similar period of Sriprasert due to the similarity of the style where it shows the terrace around the building on the second floor and emphasizes the large size of column on the ground floor. Many people regards this as a “Colonial Style”, which can also be found in Harris House and Green House in Dara Academy.



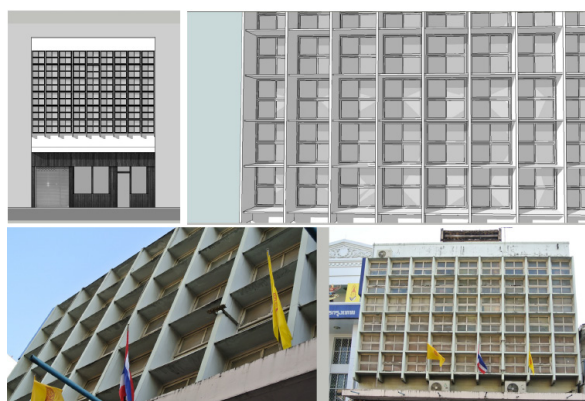
(Source: photos by research team, 20 December 2013)

Figure 21. Images of remaining of beautiful shophouses in Thapae Road. Built approximately between 1947-1967. Body of the building is mainly based on three units of shophouse combining into one building and having a capital at the top to differentiate itself from the others.



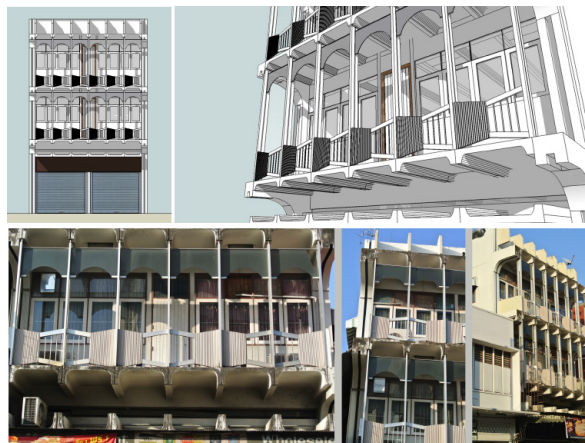
(Source: computer model and photos by researcher team, 20 December 2013)

Figure 22. “Achara Silverwear”, approximately built in 1970s, showing a geometrical composition based on the language of modern architecture in the West.



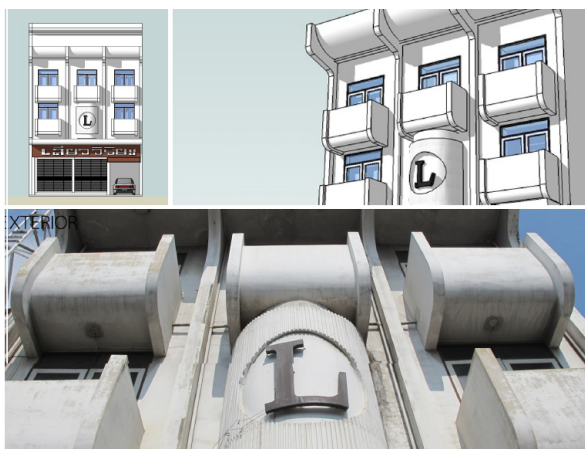
(Source: computer model and photos by research team, 20 December 2013)

Figure 23. “Lanna Antique Shop”, approximately built in 1970s, showing a geometrical composition based on the language of modern architecture in the West.



(Source: computer model and photos by research team, 20 December 2013)

Figure 24. “Chatrapon Boutique Shop”, approximately built in 1970s, in Thapae Road also shows how popular it was for using a reinforced concrete. Geometrical composition based on various building materials can also be seen in this building’s façade.



(Source: computer model and photos by research team, 20 December 2013)

Figure 25. The letter “L” stands for “Liyw Vriya Panich” in Thapae Road, designed by Chulathat Kitibutr in 1977. Curve lines at the façade reflects the skills of craftsmanship in a building construction in that period.

3. The development of the city infrastructure

“Urbanization” can be regarded as ‘the social process whereby the city grows and the society becomes more urban’ (Longdo Dict, October 10, 2014), in particular when the agricultural domain has been transformed forcefully or willingly to become an industrial domain. Household economy has also adopted a capital mode of production and lends itself into the process of being capitalized. We can also see Chiang Mai in the transitional period in this light. One of the factors that tend to support transformation is the development of the city’s infrastructure, i.e., a street network, a new sanitary system, a new electrical system, and also a new communication system. These can be seen as a part of wider government policies to encourage such an economic transformations and expansions in investments in the private sectors.

In this research, some buildings have been selected to reflect how the city’s infrastructures was developed. For example, before the modern hospital was first established in Chiang Mai, the way in which people acquired medical treatment was limited only at the place called “Sala-Osot”, established by Dr. Charles Vrooman in 1872, which we can find the record of its establishment in the map of Chiang Mai in 1893. Later on, in 1913, Dr. A.M. Carey, one of the American Presbyterian Missionaries, aimed to expand “Sala-Osot” to be a proper hospital. Then, American Mission Hospital was established in 1913. Three years later, the medical school was added to be a part of the hospital by Dr. Edwin C.Cort. In 1925, the hospital was relocated to another side of River Ping where it remains till today, also known as “Maccormick Hosptial” (see Figure 26).

Not only do the hospital where American Presbyterian missionaries help to setup aimed to help improving the health of the locals, but it also aimed to become a re-habiting place called “McKean Re-habitation Center”, established in 1904 by Dr. James McKean, it can also be regarded as a significant part of the same mission. “McKean Re-habitation



(Source: <http://www.oknation.net/blog/print.php?id=314389>)

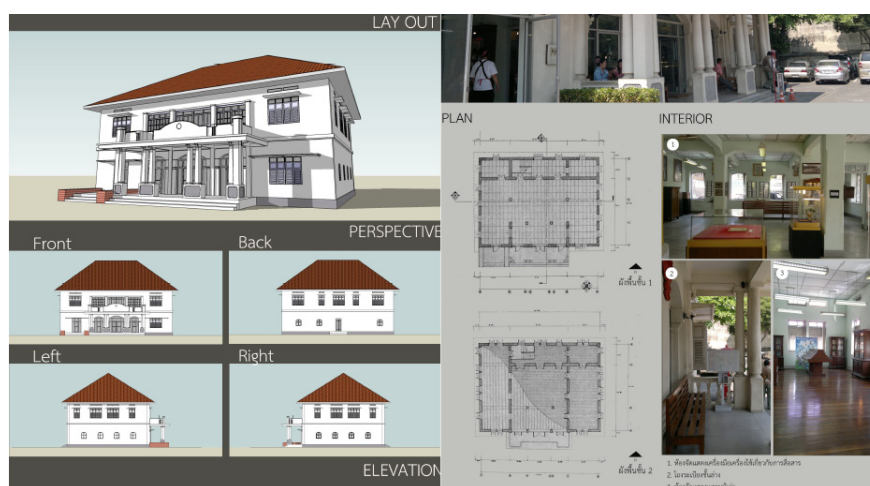
Figure 26. (on the left) Photos of the American Mission Hospital in the past. (on the right) Photos of McCormick Hospital in the past.

Center” aimed to cure and took care of those leprous patients who got the *Mycobacterium leprae* and *Mycobacterium lepromatosis* Bacteria, or perhaps known as Hansen’s disease. But as the leprous disease have been eradicated from Chiang Mai, the “McKean Re-habitation Center” no longer serves the function of curing leprous patients. Yet it still operates as a part of remaining mission for improving health of the locals.

For the establishment of a government hospital, we need to recall back to the reign of Field Marshal Plaek Phibunsongkhram. On 12 December 1956, the government endorsed the bill to establish the third medical school in the country and the first outside of the capital (History of Faculty of Medicine Chiang Mai University, October 10, 2014). It aimed to offer an opportunity for many medical doctors to be able to help people who live in the countryside, and also to encourage doctors to practice in other parts of the country when they graduate (History of Faculty of Medicine Chiang Mai University, October 10, 2014). Thus, the third medical school was established in 1956 in Chiang Mai in what it is called the Maharaj Hosptial today. Soon after Chiang Mai University was established in 1964, Chiang Mai Medical School was transferred and integrated to become a part of Chiang Mai University and known as the Faculty of Medicine since 1965.

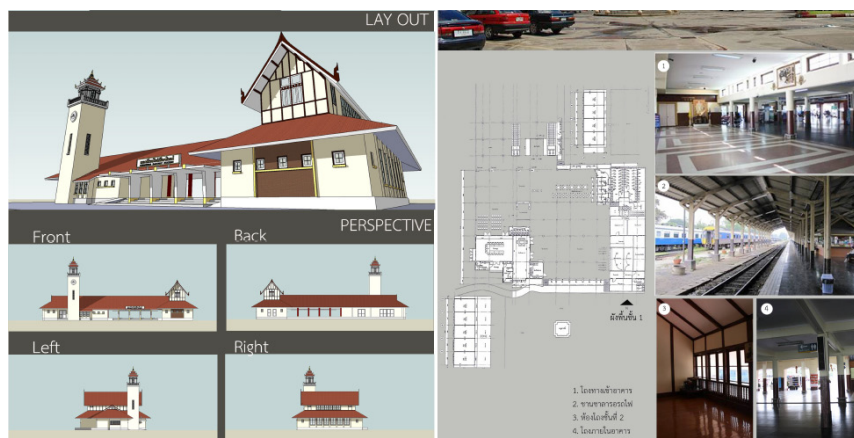
The characteristic of the new Chiang Mai Post Office, built in 1885 in what was the location of the first office, can be seen as a part of “Thai Traditional Architecture in Concrete”, which can be described as the application of new architectural styles and materials to traditional Thai forms, mostly seen in the period of Rama 7 (1925-1934). Not only has the aspect of a traditional form still be appropriated, the notion of air-ventilation and the opening of void can also be included in the style as well. For some, it can be regarded as a part of Thai Modern Architecture. Today Chiang Mai Post Office has been transformed to be a National Postal Museum (see Figure 27). To demonstrate the integration between the old and the new in an architectural form, we also need to discuss about Chiang Mai’s Train Station (see Figure 28). Built in

1921, the wooden structure imitated the traditional roof style and was carefully designed in combination with the concrete body on the ground to comprehend a totally new functional building of Chiang Mai. Beside Chiang Mai Train Station, Suthep Airport also operated at the first for military purposes in 1939 and then allowed for public access in 1946. A new electrical and sanitary system were introduced to Chiang Mai in 1960’s, same as a transportation network like the super highway and various new streets in the city. During the 1940’s – 1960’s, they were dramatically increased, by which locals can have more reliable and efficient connections as well as be able to move to other parts of the country as a way of supporting the city and enable its economy to grow.



(Source: computer model and photos by research team, 17 May 2014)

Figure 27. Computer model, photograph, and planning analysis of National Postal Museum, Chiang Mai.



(Source: computer model and photos by research team, 15 October 2014)

Figure 28. Computer model, photograph, and planning analysis of Chiang Mai’s Train Station.

4. The flexible mode of locally political integration.

By exploring Chiang Mai's political transformation, three significant stages need to be discussed. The first was in 1774 when Chiang Mai became a dependency of the Siam Kingdom. Then, in 1899 during the reign of King Chulalongkorn, Rama V of Siam Kingdom, (20 September 1853 – 23 October 1910), can be regarded as a second political transformation of Chiang Mai. It changed Chiang Mai from the position of a dependent state to be an intendant one. Government officers from Siam were sent to Chiang Mai in order to control over the state economically as well as politically. Until 1902, the status of the intendant state was removed and changed Chiang Mai to another political agenda, which was under the power of an absolute monarchy. Thus,

Chiang Mai became one of the provinces of Thailand in the last political transformation. Perhaps it is not this research's attention to draw on every details of any political transformation, but rather focus more on physical evidences like architecture and built forms where they can offer some reflection of such political transformations. For example, Chiang Mai Town Hall or known as "Chiang Mai Cultural Center" today, various noble houses or known as "Kum Chao" in the inner city, in particular Khum Chao Burirat Mahain (built during 1889 – 1893) and Sala Thanarat (built during 1962 – 1967) or as National Treasury Museum Chiang Mai, Yupparaj Wittayalai School, and the Center Prison of Girls can also be regarded as a great examples of how political change can be manifested through built forms (see Figure 29 – 30).



(Source: <http://www.cmimc.coj.go.th/info.php?info=about>)

Figure 29. (upper row) The image of Yupparaj Wittayalai School and the Three King Monument in front of Chiang Mai Cultural Center [<http://www.compasscm.com>, 5 November 2014]; (lower row) The image of Chiang Mai Court District which becomes Lanna Vernacular Museum nowadays.



(Source: <http://www.manager.co.th/Local/ViewNews.aspx?NewsID=9570000039365>)

Figure 30. The images of the City Prison for Women before moving to the new location in Mae Rim area in 2012 and the winner of the design competition, by Kawin Wongwigkarn of DDT, based on the program called "Wieng Kaew" where the City Prison of Women was located.

Before political transformation, the area within the city wall, known as the area of the old town today, consisted of various noble houses in relations to the grand temple, Wat Chedi Luang, and the Royal Palace. It is believed that it was the heart of the city belonging to the King and his noble relatives. As for foreigners and outsiders, they were required to be located outside of the old city and away from the center, even as far as to the opposite side of the Ping River like the case of the American Presbyterian Missionaries, or perhaps for the sake of security reasons. Likewise, the case of those intendants when they were offered the position working in Chiang Mai, intendant's houses or governor's official residents were located in the edge of the city, not at the center. When Chiang Mai became intendant, during the reign of King Rama 6, this area was offered to Siam government and Chiang Mai Town Hall was rightly built into that position in 1925 (Chiang Mai City Arts & Cultural Centre, November 5, 2014). Yet, after the political transformation, those who occupied the center were paradoxically changed (Ongsaku, 2066, p. 453). For example, the city center where it has always been secured for the important position was changed to be Chiang Mai Town Hall (Chiang Mai City Arts & Cultural Centre, November 5, 2014). When a new town hall was built in 1996 in Mae Rim area, the old Chiang Mai Town Hall was carefully transformed to be a cultural museum. In 1999, the Association of Siamese Architects under the Royal Patronage of His Majesty the King, known as ASA, presented the preservation award for Chiang Mai Cultural Center for great achievements in historical building preservation.

Conclusions

This research found that Chiang Mai underwent radical transformation during 1885 – 1975. It could be regarded as the period of Chiang Mai modernization. By exploring through selected Modern architectures in Chiang Mai, this research could summarize into 5 main points.

1. New architectural spaces and styles were significantly used in Chiang Mai based on two factors. The first was the way in which architects adopted previous style and concentrated more on its function in relations to ventilation design. As there was a little balcony surrounding the house, similar to what American called 'porch' in the front of the house's entrance. Many people regarded these as "colonial style", while some scholars believed that it may be inspired by the proportion of a rice barn, such as Harris House, Green House of Dara Academy, Sripasert Building on Thapae road, or the British Consulate. The second factor was those who brought a totally new design to Chiang Mai. It could be seen as how architects responded to a new movement initiated from the West. Such as Prof. An Nimmanhemin and the way in which he designed the Warorot market with the large structure integrated with ventilation design, or other architects who introduced waffle slab, rigid or shell structures to Chiang Mai University. It created a type of newness to forms as well as to spaces.

2. New building types were introduced to Chiang Mai as a part of responding to new lifestyles or new infrastructures of the city, such as private schools, universities, hospitals, and train station.

3. New construction materials and new building technologies were imported from Bangkok. Such as the use of rod metals in reinforced concrete. The railway was the key factor for these transformations. It not only offered a new mode of transportation for people, but also for the introduction of goods, as well as as machineries.

4. New meanings were imposed on the city. When the university and the hospital was chosen to be located at Suan Dok area – which used to be a sacred forest of Chiang Mai, it also signified to us that people chose science over myth, or technology over astrology. Chiang Mai's urban figure was once built based on Buddhist ideology and astrology, but now with new meanings – such as the new political center or the new economic axis – was given to the city.

5. A new center was established. When Chiang Mai was regarded as a dependence of Siam Kingdom, there seems to be a political negotiation between how to maintain the center and how to protect invasion from the periphery. As the result, much of the royal rulers and their properties were taken over, with alterations made and their functions changed for the central government. In order to maintain a class system and social hierarchy based on the connection in the previous day, many royal families decided to devote their lands and properties to the central government (Ongsaku, 2006, p. 542).

Inspired by a simple question of what is Modern Architecture in Chiang Mai, whether or not we do have one or whether it is meant to be all Lanna Architecture either traditional or a contemporary, it led this research to explore further into the relationship between the buildings and their socio-cultural dimensions – why they were built, how they were built, and under which conditions we can learn from them socially, culturally, economically, or perhaps politically. This research remarks that there are many unfortunate modern buildings that are still unseen, devalued, and perhaps destroyed without considering them as a part of historical reflection of how Chiang Mai was transformed and modernized. Collectively they offer us a better understanding of how both internal and external factors led Chiang Mai to such changes.

Note

¹ “Be aware of being a victim of modernization”, it was one of to points of the development of contemporary architecture, coined by Hinchiranun, N. (1995). *The Symposium of Thai Architecture*. Bangkok: Chulalongkorn University Press, p. 43.

² Rev. D.G.Collin was the first manager of the printing house since 1892 and operated until 1923; the second manager is Collin's wife, operated the printing house from 1924-1926 and then closed down in that year. More information in Chanram Chaisri, “History of Bible Translation” in <http://www.cct.or.th/cctweb/index.php/cctarticles/ccthistoryarticles/101-2012-09-25-06-19-07> (20 June 2014).

³ Interviewing Prof. Sayrin Jitakub, the Chairman of Rev. Harris Museum, 20 March 2014.

⁴ In the early period of King Rama V when Chiang Mai was given as the Northwest Precinct of Siam, it was believed that Chiang Mai was in the West side of Laos. Referring to the letter sending to King Rama V from Somdej Chao Fa Maha Watchirawut, in *100 Years of Yupparaj Witayalai*, p. 145.

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