

ARCHITECTURAL EDUCATION IN THAILAND: Stepping Stone for 21st Century

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Abstract

In this paper, I examine the revolution in post-secondary Thai architectural education since 1933. The scope of this ongoing research is limited to the educational opportunities offered at the collegiate and graduate level graduates to Thai high school graduates. The study further investigates the current issues and expectation of the architectural discipline, architectural curricula, and whether the current methods of teaching and learning method are appropriate for the 21st century. For the purpose of this research, Thai architectural education development is encapsulated it into three eras: 1) Beginnings: the 55 years from 1933-1988, 2) The Second Era: from 1989 to 2004, and 3) Recent Years –from 2005 to present. During the first era, Thai architectural education was fundamentally

anchored in three institutions that were prominent examples the Thai architectural education system. As discussed, Thailand's national development plans significantly influenced the subsequent periods.

Then, my paper initiates the current issues in architectural education worldwide, expectation from the society, and what to be look for to improve its education, i.e., curricula, teaching methodology, learning experiences, and future study, particularly in order to serve our contemporary life. Nonetheless, perhaps most importantly, the main aspiration of my paper is to serve as a vehicle for continued research in the areas of Thai architectural design education, Thai architectural community and future improvements.

Keywords: Architectural Education History, Thailand, Siam, and Architectural Design Pedagogy.

Introduction

A/The mission of the architectural discipline is to protect the health, safety and welfare of the public. Architecture is a profession that also directly serves public function, efficiency, and healthy environments. Architecture shapes experiences and engages individuals' lives. The Thai architectural discipline serves these same principles.

Global issues such as climate change, economic crisis, and urban settlement, each matters belonging to interdisciplinary fields, are closely related to the architectural profession. Revisiting the architect's role and what is being taught in architectural schools is inevitably necessary. Scarce research has been one on Thai architectural education and profession. This paper's intention is to investigate the history and revolution of the Thai architectural education, examine its shortcomings, and evaluate steps for future improvement. Through understanding what has been offered in the past and present, the main aspiration of this working research is to serve as a vehicle for continued study of Thai architectural design education, the Thai architectural community, and betterments for the future.

'Architect' and 'Architecture' Terms in Siam

The Thai words *Sthapok* (later change to *Sthapanik*) and *Sthapattayakam*, translating respectively to "Architect" and "Architecture" ⁱ were coined in the 1880s during the reign of King Vachiravudh (Rama VI).

Prior to that, construction and building was performed in Thailand – then known as Siamⁱⁱⁱ - by Thai and Chinese craftsmen and artisans through the late 17th century and later through appointing technical professionals from western countries in the 1800s. ^{iv}

In the late nineteenth century, during the colonial period, global economic, social and political realities contributed to Siam's major national planning and development. While Siam was not a colony of one of the western powers, its national development was heavily influenced by the western norms. King Chulalongkorn (Rama V) sought to protect the Kingdom by meticulously adopting westernized ideas and developments. New construction technology, unforeseen types of architecture, and urban transformation and infrastructures such as Ratchadamnoen Avenue^v, were introduced. These physical improvements helped preclude western colonization. During the same period, King Chulalongkorn established Siamese education systems. Many Siamese elites were sponsored privately and by the Thai government to obtain higher education in Europe and North America and to bring their talents back an increasingly modernized Siam. These

educational influences significantly impacted Thai society.

This time in Thai history is considered the beginning of the paradigm shift in Thai education and professionalism. Architecture was among the professions most affected. The western ideas and influences also shaped the domestic political system, including the emergence of democratic institutions.

The birth of Thai Architectural Education and Its Early Stage

General higher education developed in Thailand during the nineteenth and early twentieth centuries, from the early general school system in the Grand Palace compound in the late 1800s to the Royal Pages School to the Civil Service College of King Chulalongkorn in the early 1900s, King Vajiravudh (Rama VI), declared Chulalongkorn University, in honor of his father King Chulalongkorn, on March 26, 1917. - During this period, though, there was no formal architectural education. Professionals working on the construction industry relied on foreign consultants and Thais educated abroad. In 1930, during the reign of King Prajadhipok (Rama VII), the first post-secondary architectural education for the Thai people program was officially established. ^{viii} The first formal teaching and learning architectural program was at the Poh Chang College of Arts and Craft. ^{ix} This program was first under supervision of a Thai professor who graduated from the University of Liverpool in England, ajarn^x Nart Bhodhiprasart. ^{xi} He is considered the founder of the Thai architectural education. The first curriculum developed was a two-year program. In 1932, a bloodless revolution in Thailand resulted in the transition of power as King Rama VII ended centuries of absolute monarchy and established constitutional governance to the people. The same year, the Royal Thai Ministry of Public Instruction, led by Chaophraya^{xii} Thammasakmontri, authorized Chulalongkorn University to admit eleven students to study architecture in its School of Engineering. They would become the first homegrown architects in Thai history.

On May 23rd, 1933, based on "The Royal Decree of Public Regulations for Offices and Departments within the Minister of Public Instructions," Chulalongkorn University promoted its nascent architectural program as one of the departments of its Engineering School. ^{xiii} This date is officially considered as the beginning of the architectural program at Chulalongkorn University – and the starting point for formal architectural education in Thailand. The following year, the program was expanded to be a 3-year course of studies, offering an Associate Degree in Architecture. Under the "Royal Act of Chulalongkorn University of 1934", the University advanced the architectural department, to be independent from the School of Engineering, and the eleven students - 9 male and 2 female students – were admitted. Concurrently to this establishment, the Association of Siamese Architects (ASA) was established as the first

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professional organization in architectural discipline. ASA was formed by a group of Thai architects who were educated abroad and were working in Thailand during that time. In 1939, Chulalongkorn University Council approved its architectural department to become a School of Architecture, offering a 5-year study program, for students to earn a Bachelor of Architecture. The school's first dean was Praya Prakitkolasart.^{xiv} At Chulalongkorn University's architectural

This date is officially considered as the institutional date for the architectural program at Chulalongkorn University. It was expanded to be a 3-year program, offering an Associate Degree in Architecture.

Furthermore, under the "Royal Act of Chulalongkorn University of 1934", the University advanced the architectural department to be independent from the School of Engineer, accepting their first 9 male and 2 female students. Concurrently to this establishment, the Association of Siamese Architects (ASA) was established, as the first professional organization in architectural discipline. ASA was formed by a group of Thai architects who were educated from aboard and was working in Thailand during that time. In 1939, importantly, Chulalongkorn University Council approved to its architectural department to be a School of Architecture, offering 5 years study program, earning the Bachelor of Architecture, first-professional degree. The school's first dean was Praya Prakitkolasart.



Figure 1. A group picture of the first architectural students and teachers in front of a new Faculty of Architecture building, early 1940s.

[source: Faculty of Architecture, Chulalongkorn University, Bangkok, Thailand]

At Chulalongkorn University's architectural program, the early curriculum was heavily influenced by the Beaux Arts tradition. Subsequently, the curriculum incorporated and closely identified with the Bauhaus academic concept, popular in Europe during 1919-1933.^{xv} The school ran independently for a decade, moving into its own building in 1940.

Operations were suspended temporarily due to outbreak of World War II. The school's new building was taken over by the Japanese Empire for military purposes. Chulalongkorn University itself had to close all of its academic activities from 1944 to 1945, as the entire university was occupied by Japanese military.^{xvi}



Figure 2. The first architectural textbook in “Thai” contents, late 1940.
 [source: Faculty of Architecture, Chulalongkorn University, Bangkok, Thailand]

The academic program resumed after the war. For ten years, the Chulalongkorn remained the only offering. Then, in 1955 - 25 years after the establishment of the first formal architectural system in Thailand, a second program was created.^{xvii} Silpakorn University inaugurated its School of “Thai” Architecture. Silpakorn University, founded in Bangkok 1943, was developed from the Fine Arts and Archeology education, directing under an Italian born art professor Corrado Feroci (known in Thai as Silpa Bhirasri).- Silpakorn’s program was fundamentally aimed at Arts and Thai [style] architecture education. Led by Dean Pra Promvijit, it offered a 30-year program culminating in Associate degree in architecture. After three years, it offered a five-year course of study with a Bachelor of Arts in Thai Architecture degree under supervision of Professor An Nimmanhem in as a dean.^{xix} In 1966, the title “Thai” was removed from the name of the school. It would henceforth be a School of Architecture offering a Bachelor of Architecture degree.^{xx}

The third institution to offer a formal architectural program with a distinctive approach in Thai institution development was Ladkrabang. The program was initially introduced through a vocational school geared

toward technical capabilities of the architectural practices.^{xxi} On June 1, 1954, the Royal Government Ministry of Education established “Bor Or Sor,”^{xxii} as a Technical School. But then in 1963, the architectural program was elevated to into a College of Design and Construction, offering a 5-year program in the architecture, engineering architecture and interior architecture programs. A 3-years program was available for those entering with an undergraduate diploma).^{xxiii} Ladkrabang’s programs were supervised under three professors who were architects at that time. Ajarn Prosom Ransriroj was appointed as the College Director. In 1971, the college was approved to combine with the King Mongkut’s Institute of Technology (with Lakrabang in the end), and it was officially established as the Faculty of Architecture in 1972 offering programs for high school graduates and vocational associate degree graduates.^{xxiv}

Three Musketeers Leading in Thai Architectural Programs

As established in the first era of the Thai architectural education, these three architecture institutions played significant roles in Thai architectural disciplines, including their curricula models. They offered three distinguished programs and approaches.

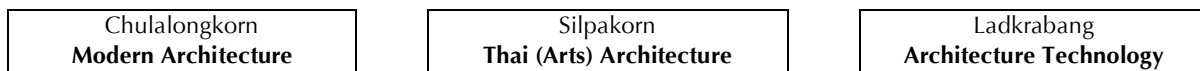


Figure 3. Three architectural institutions offering three different approaches during the early development.

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At Chulalongkorn University, the architectural curriculum was primarily associated with the Beaux Arts tradition and later was transformed and closely associated with the Bauhaus pedagogical concept.^{xxv} At Silpakorn, as its degree's name and its original institution's mission demonstrate, the "Thai" Architectural program was directed toward preserving Thai traditional heritages. Later, the program was combined into a more modern application. At Ladkrabang, in contrast with the other programs, the curriculum was positioned toward technological practices in architecture and construction. All three architectural developments, were the foundation for later curricular advancements at these and other Thai institutions.

Although differentiated by their distinctive programs, the architectural students from these three schools united to form extracurricular activities, knowledge exchanges, and professional affiliations that, in turn, further established the profession of architecture in Thailand.

Changes in Government Roles in Education and Professional needed

Throughout Southeast Asia, as in most of the developing world, institutions including universities are heavily dependent on the government – especially for those countries that have gained independence after colonialism as there are fewer traditions for private advancement. Most institutions are public, although private institutions have grown in the recent years.^{xxvi} State universities, e.g., Chulalongkorn, Silpakorn University, and Ladkrabang, are largely funded from the government. Tuition fees are subsidized and kept very low. Admission. The only way for high school graduate students to gain admission, which is highly competitive, is to pass and compete the Annual National Examination (so-called Entrance–). Private universities also rely on a government permit for their establishment, so their operations are also closely monitored to assure quality and to protect the public. The tuition fees are much higher while the admission processes are less competitive and administered directly by the institutions.

To serve this growth, however, the development of manpower in teaching and professional in Thailand became the state university's main priorities. This has been drastically and rapidly changed in most aspects of society affecting directly to higher education.^{xxviii} Thai education became far less centralized in the capital city of Bangkok and capitalism with market mechanisms and modern management has provided the efficiency needed for competition in a global economy. These changes have been are unavoidable.^{xxix}

During 1986, under Thailand's Economic and Social Development plan, "the Fourth (1977 – 1981) and Fifth National Higher Education Plan (1982 – 1986)," by the Ministry of University Affairs,– the country advanced a goal of promoting major professions through the higher education, such as medical industry, engineering, sciences and architecture.– In the plan, there are two vital components; to produce more academic scholars and to establish more study programs. This plan was to support and stimulate current scholars, professionals, and recent top graduates to further study abroad, earn masters and doctorate degrees through government scholarship and commit to return to Thailand as an educator serving the country. The second part of the plan was to develop and expand the programs into institutions to serve more regions of the country and to expand the number of private universities offering professional programs.

Regional Outreach and Private Institution Stakeholder

Almost 60 years from the start of first era in Thai architectural education development, the second revolution was created due to this regional outreach and expanded private institutions. For example, the Khon Kaen University the School of Architecture was established in response the need for architects in the northeastern part of the country.^{xxxii} At that time, there were only 33 architects in a vast area - less than 2% of all architects in the country.^{xxxiii} Rangsit University, located in the Bangkok, became the first privately owned university offering a 5-year Bachelor of Architecture program.^{xxxiv} These two institutions became models for the next revolution in architectural growth in Thailand, one that offered far greater opportunity for students interested in an architectural field.

In later schemes under the national development plan in Economic and Social Development, 12 universities throughout the country established their Schools of Architecture with 5-year professional degree programs in Architecture. These institutions relied on teaching and research manpower from the scholars and professional who had earned degrees abroad in exchange for a commitment to return to Thailand.

Because of the great expansion in the role of professional associations was re-examined. The Association of Siamese Architects (ASA) - had been in existence since 1934, and had regulated professional licensing for over 60 years. New Council of Thai Architects (CTA) was created in 2000 to handle all licensing and academic accreditation. This shift helped refine focuses for both ASA and CTA, becoming greater resources in improving the quality of continued education, professional practices, and profession relations in architecture.

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The last decade of the Jumping Universe

Over the past decade, Thailand has witnessed the advances in technology that has helped enhance the quality of life. As Jaras Suwanwera, one of the leading in Thai education, wrote, “[Technology] overcame space and time.”^{xxxvi} He adds that we value knowledge and technology as our commodities with the monetary value.^{xxxvi} Information technology, which extends our reach to even the most remote parts of the country, then, creates new opportunities. Suwanwera further summarizes that, “New challenges in the academic institutions have been created due to the information system and rapid change in technology, such as the massification of higher education, life-long services, commercialization, quality requirements, internationalization and new roles in society. While information and communication technology has advanced, this increases the gaps and divides.”^{xxxvii} With these modern changes in society, the role of the government in higher education has further evolved.

During this third period In vocational institutions have been promoted to play a more significant role, Originally formed to serve as non-formal academic systems, they have become an essential part of the educational system and have helped reach out to more areas in the country. From mid 2000s to present, these schools have leveraging and equating techniques institutes to university level by upgrading the programs of studies, (and its name of “Technical Institution” was changed to be to Rajamangala University of Technology).^{xxxviii} This adds value to Thai education, expanding the same professional degree in many disciplines, including architecture. Since 2005, there have been eight other institutions officially promoted to offer a professional 5-year degree in architecture, under close scrutiny and direction of the Council of Thai Architects.^{xxxix}

Will there be a flaw in this overall revolution of Thai architectural education? (Table 1)

As illustrated in Table 1, on one hand, the exponential growth is important in creating and supporting the

development of Thai architect profession production. On the other hand, it posed a risk if the quality assurance of the study cannot be met because, eventually, all these architectural schools produce architects serving the public. Besides, the questions are also toward who teach all of them and what are being taught? How the curriculum was developed? And will it suffice to serve modern society?

Current Situation and Paradigm Shift in Architectural Education

While Thailand has rapidly created more institutions that provide architectural programs to serve Thailand, itself, there has also been greater attention paid to the roles of architects worldwide. Global issues such as climate changes, economic crisis, urban settlement, and advances in technology have become a main focus in the architectural discipline. Architects have questioned how our education and curricula can prepare architects to serve a modern world. Though we know, these problems multi-disciplinary and must be addressed by many responsible parties; they each relate closely to the architectural profession. To cite the recent report by the US Energy Information Administration, building sector contributes close to 50% of the overall energy consumption and CO2 emissions, and, globally, almost 80% of all power plant-generated electricity is produced for building operation.^{xi} These are dramatically affecting the global climate. Design education and its curriculum have not drastically changed in its environmental aspect at its basic level in the decade since this report.

Another example of the expectation changes of architectural education worldwide is the search for the integration of knowledge within the discipline.^{xii} In his paper, Salama^{xiii} argues for introducing a theory for knowledge integration in architectural design education. He further illustrates three major components to be proposed: the disciplinary component; the cognitive-philosophical components; and the inquiry-epistemic component.^{xliii}

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KING OF SIAM 1782-1949		KING RAMA VII REIGN 1925 -1935		
KING OF THAILAND 1782-1949		KING RAMA VIII REIGN 1935 -1946		1930	1931	1932	1933	
KING RAMA IX REIGN 1946 - present				1934	1935	1936	1937	
				1938	1939	1940	1941	
				1942	1943	1944	1945	
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				1978	1979	1980	1981	
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				2009	2009	2009	2009	
				2009	2009	2009	2009	
				2009	2009	2009	2009	
				Early type of mastery artisans and technicians
				1930	1931	1932	1933	Pho Chang: early developmental foundation for Chulalongkorn University
				1934	1935	1936	1937	Chulalongkorn University, Bangkok <i>The Association of Siamese Architects under Royal Patronage</i>
				1938	1939	1940	1941	
				1942	1943	1944	1945	
				1946	1947	1948	1949	
				1950	1951	1952	1953	
				1954	1955	1956	1957	Silpakorn University, Bangkok
				1958	1959	1960	1961	
				1962	1963	1964	1965	King Mognkut's Institute of Technology Ladkrabang, Bangkok
				1966	1967	1968	1969	
				1970	1971	1972	1973	
				1974	1975	1976	1977	
				1978	1979	1980	1981	
				1982	1983	1984	1985	
				1986	1987	1988	1989	Khon Kaen University Rangsit University Kasem Bundit University Rajamagala University of Technology Thanyaburi
				1989	1990	1991	1992	
				1993	1994	1995	1996	Sripatum University Kasetsart University King Mongkut's University of Technology Thonburi; Vongchavartkul University Chiang Mai University Naresuan University Assumption University Thammasat University, Phatumthani; Mahasarakham University King Mognkut's Institute of Technology Ladkrabang, (FIA); <i>Architect Council of Thailand</i> ;
				1997	1999	2000	2001	
				2002	2003	2004	2005	
				2006	2009	2009	2009	Rajamangala University of Technology Srivijaya, Songkra Rajamangala University of Technology Lanna, Chiang Mai Rajamangala University of Technology Suvarnabhumi, Ayutthaya Rajamangala University of Technology Rattanakosin, Prachaupkirikun Rajamangala University of Technology Isan Maejo University, Chaing Mai Walailak University, Nakornsrihammarat Shinawatra University, Pathum Thani
				2009	2009	2009	2009	
				2009	2009	2009	2009	

Table 1. A Timeline showing Thailand institutions and the architectural program establishment.

Now that science and technology has become more available and rapidly emerged into our society, the way of living has incorporated technology as a part of our everyday life. *Will we need the same program's requirement in built environment as we used 20 years ago? Shall these be re-evaluated before further design? What kind of methodologies, researches, and studying should be used?* Not only do advances in technology cause changes in everyday life, they also call to question the opportunities of equity in education throughout our life span.^{xiv} Science and technology, can help narrow the gap of the opportunity in education; widening the higher education competitiveness.^{xv} These challenges and paradigm shift have been investigated and recognized throughout.^{xvi} For instance, in Australian and European communities, there have been ongoing researches on issues confronting architectural education.^{xvii} This similar pose also can be seen from Teymur,^{xviii} who purposes to restructure the architectural program with more research integration.

Issues and Expectation in Thailand

In Thailand, there also has been increasing number of alternate programs offered in architectural education. Although still at its nascent stage there are now a variety of options apart from the 5-year program, which itself continues to grow in popularity. Thammasat University, now offers a 4-year architectural education program resulting in a Bachelor of Science in Architecture, with the option of a 2-year concentration for an accredited professional degree.⁻ Similarly, Chulalongkorn University in 2007 started offering its first "International program" in architecture – a 4-year Architectural Design course of study. These alternatives allow students to continue to focus on their interests and needs. Unlike these new programs, at existing

programs students must complete all five years in order to earn the first professional degree in Architecture. The flexibility of the 4-year program seems to be alternative solutions for future development in Thai architectural education.

In addition to revisiting the program structure to well serve modern society, there has been a similar proposal, focusing on the integration of architectural knowledge.ⁱⁱ This integration addresses the new role for Thai architects in a competitive society, learning to collaborate among other specialists in the field globally, while preserving cultural heritage.

In Summary

As mentioned, the main objective of this study is to serve as a vehicle for on-going research in these areas of Thai architectural design education and our architectural discipline. This paper reviews the history and curricula revolution in Thai architectural education. It further discusses the current problems and, perhaps, future areas of study, which could include phases in detailed surveying, interviewing and observing all the stakeholder, and new teaching methodology.

It is expected that this research will further deepen into other possibilities in architectural education, such as how current teaching methodology and learning can be enhanced. Through the study area of learning sciences, knowledge management integration, and prospective restructuring curriculum could be revisited for future expectation of the architectural discipline. Lastly, the impact of the future research is not only expected to improve the quality of the architectural education but also to make us think of constant changes in education in general, and we are ready to encounter it in any situations.

Notes & References

ⁱ Pusadee Tiptus, *Sthapok Sthapattayakam* [Bangkok: Faculty of Architecture, Chulalongkorn University, 1999], 3-20.

ⁱⁱ The history of Thailand comprises of 4 Kingdoms;

- 1) Sukhothai Kingdom 1238-1448;
- 2) Aythaya Kingdom 1351-1767;
- 3) Thonburi Kingdom 1768-1782; and
- 4) Rattanakosin Kingdom, since April 6th, 1782.

During the Rattakosin Kingdom in the Chakri Dynasty, there are a total of 9 Kings, from King Chulalok (Rama I) to nowadays King Bhumibol (Rama IX). Modern Kingdom of Thailand started to revolutionize and develop under the reign of King Chulalongkorn (Rama V), from 1853-1910.

ⁱⁱⁱ The name Siam served as the old country name of Thailand until June 24th, 1939 (or B.C. 2482). Then, Thailand was renamed back to Siam in 1945-1949, before permanently changed again to Thailand.

^{iv} Pusadee Tiptus, *Chang Farang in Siam* [Bangkok: Faculty of Architecture, Chulalongkorn University, 1998] and Pirasri Povatong, *Chang Farang in Siam during Early the reign of King Rama V* [Bangkok: Faculty of Architecture, Chulalongkorn University, 2005].

^v Major development in Siam was originated during King Rama V's 42 years reign in 1800s. It was a part of his vital strategy for the country to avoid being colonized and introduced western civilization into the city of Bangkok and other main cities in Thailand.

^{vi} Chulalongkorn University's History, Bangkok, Thailand.

^{vii} Ibid.

^{viii} History of Architectural Department at Chulalongkorn University, Bangkok, Thailand.

^{ix} Ibid.

^x Ajarn is "Thai" name commonly referred to Teacher or Professor.

^{xi} Ajarn Nart Bhodhiprasart was one of the first Thai graduates from the University of Liverpool, Bachelor of Architecture with 1st Class Honours in Architectural Construction in 1929. History of Thai teachers. [Karusapa, Bangkok, 1962].

^{xii} 'Chaophaya' is a title given in the Siamese Government system.

^{xiii} History of Architectural Department at Chulalongkorn University

^{xiv} Ibid.

^{xv} Piyalada D. Thaveerungsriporn, *Doing Theory/Playing Theory on Theorizing architecture in the Thai context*. Chulalongkorn University Building & Environment: Design & Research Series: Volume 1, 41-52.

^{xvi} Ibid.

^{xvii} Silpakorn University the Faculty of Architecture's history.

^{xviii} Silpakorn University History.

^{xix} Ibid.

^{xx} Ibid.

^{xxi} King Mongkut's Institute of Technology Ladkrabang History.

^{xxii} "Bor Or Sor" was referred to the Vocational Education Services in Thailand.

^{xxiii} Ladkrabang University History.

^{xxiv} Ibid.

^{xxv} Piyalada D. Thaveerungsriporn, *Doing Theory/Playing Theory on Theorizing architecture in the Thai context*. Chulalongkorn University Building & Environment: Design & Research Series: Volume 1, 41-52.

^{xxvi} Suvanwela, Jaras (2006). Role of the State in Higher Education. The 4th meeting of the Scientific Committee for Asia and the Pacific, UNESCO forum for Higher Education, Research, and Knowledge, Jakarta, Indonesia, January 19, 2006

^{xxvii} Entrance System is Thailand's admission process getting into the universities for Thai high school students. In the past, students were required to select the same programs from university of choices and then to take the National Education Test offered annually. Students scores then were ranked against other students. Nowadays, National Educational Test is required for students to graduate. Those who graduate from the sixth year of high school are candidates for two decisive tests: O-NET (Ordinary National Educational Test) and A-NET (Advanced National Educational Test). These new scoring system offers twice a year and students submit to school of their choice, once they know their scores.

^{xxviii} Suvanwela, Jaras (2006). Role of the State in Higher Education.

^{xxix} Ibid.

^{xxx} Thailand's Economic and Social Development plan, the Ministry of University Affairs is now Office of the Commission on Higher Education under the Ministry of Education. The plan in developing professionals needed was initiated in Plan 4, 1977-1981.

^{xxxi} was the main campaign, architecture including. Thai population at the same period was 50 millions and made the ratio of the architect profession per capita was 1:4000 (ASA 1994).

^{xxxii} Khon Kaen University the Faculty of Architecture History.

^{xxxiii} Ibid.

^{xxxiv} Rangsit University the Faculty of Architecture History

^{xxxv} Suvanwela, Jaras (2006). Role of the State in Higher Education. The 4th meeting of the Scientific Committee for Asia and the Pacific, UNESCO forum for Higher Education, Research, and Knowledge, Jakarta, Indonesia, January 19, 2006

^{xxxvi} Ibid.

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^{xxxvii} Ibid.

^{xxxviii} Rajamagala University of Technology (RMTU) is a new system, created in 2005, of nine universities in Thailand providing undergraduate and graduate level of education. This system was to elevate the level of technical institution to university level. It was originally known as Rajamagala Institute of Technology.

^{xxxix} The Council of Thai Architects statistic (2009).

^{xl} Conference 2009: Response and Responsibilities, Graduate School of Architecture, Planning and Preservation, Columbia University and the US Energy Information Administration.

^{xli} Ashraf M. Salama 2007, A Theory For Integrating Knowledge in Architectural Design Education, Archnet-IJAR, Volume 2 – Issue 1 – March 208 – 910-128) Archnet-IJAR, International Journal of Architectural Research

^{xlii} Ibid.

^{xliii} Ibid

^{xliv} Suvanwela, Jaras (2006). Role of the State in Higher Education. The 4th meeting of the Scientific Committee for Asia and the Pacific, UNESCO forum for Higher Education, Research, and Knowledge, Jakarta, Indonesia, January 19, 2006

^{xlv} Ibid.

^{xlvi} Anthony Williams, Michael Ostwald and Sacha Fuller. Issues Confronting Architectural Education in Australia. International Association of Societies of Design Research, The Hong Kong Polytechnic University. Hong Kong 2007.

^{xlvii} Ibid.

^{xlviii} Necdet Teymur, in his paper, *Toward a working theory of architectural education and Learning from Architecture Education*. Teymur is a Professor of Architecture at METU, Ankara. He was the Dean of the Faculty of Architecture between 1997-2000 and recently serves as a member representing the UIA Professional Practice Commission. UIA is the International Union of Architects.

^{xlix} Thammasat University, Faculty of Architecture and Planning. Bangkok, Thailand.

^l Chulalongkorn University, Faculty of Architecture, Bangkok, Thailand.

^{li} Vimolsiddhi Horayangura, 2003. as a dean of the Faculty of Architecture at Thammasat University, addressed in his keynote speaking, 7 keys integration components--*Innovation through Integration: A Paradigm Shift in Architectural Process in Competitive Society*, in 2003 Innovation Through Integration. A Keynote speaker at the Conference in Architectural Education and Profession in Innovation: Educational, Professional and Technological Progress by Council of Dean of Architectural Schools in Thailand and the Association of Siamese Architects under Royal Patronage, Bangkok, Thailand.