INDUSTRIAL HERITAGE BUILDINGS AND SITES IN THAILAND FROM THE 1850'S – 1950'S: THE RELATIONSHIP OF THE ARCHITECTURE, COMMUNITIES AND NARRATIVES

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An Independent Study Submitted in Partial Fulfillment of the Requirements for the Degree
MASTER OF ARTS
Program of Architectural Heritage Management and Tourism
(International Program)
Graduate School
SILPAKORN UNIVERSITY
2008

The Graduate School, Silpakorn University has approved and accredited the independent study title of “Industrial heritage buildings and sites in Thailand from the 1850’s - 1950’s. The relationship of the architecture, communities and narratives” submitted by Ms. Julia Jane Davies as a partial fulfillment of the requirements for the degree of Master of Arts in Architectural Heritage Management and Tourism.

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50056303 : MAJOR : ARCHITECTURAL HERITAGE MANAGEMENT AND TOURISM
KEY WORD : INDUSTRIAL HERITAGE, DOCUMENTATION, THAI HERITAGE POLICY, ADAPTIVE RE-USE, INDUSTRIAL HERITAGE TOURISM
JULIA JANE DAVIES : INDUSTRIAL HERITAGE BUILDINGS AND SITES IN THAILAND FROM THE 1850'S - 1950'S. THE RELATIONSHIP OF THE ARCHITECTURE, COMMUNITIES AND NARRATIVES. INDEPENDENT STUDY ADVISOR : PROFESSOR WILLIAM R. CHAPMAN Ph.D. 264pp.

Industrial heritage is a global phenomenon yet barely noticed or recognised within Thailand. The signing of The Bowring Treaty with the United Kingdom in 1855 signified an opening of international trade with the rest of the world. The rice, teak and tin industry were the primary exportable commodities which saw Thailand utilise a new mode and method of production. Thailand was still a predominantly agrarian society, however the changes brought about by the influx of new technologies such as steam power saw a new socio-economic strata developing across Thailand, predominantly in Bangkok. Foreigners were brought into Thailand as advisors within governmental departments, they were designing buildings across the capital and they were also the managers of large scale export companies. It was shortly after this foreign influx that roads were built, colonial mansion houses erected and new services such as hotels and department stores became available. These were all to become a familiar part of the urban landscape. The Chinese community was noticeably increasing, and this consequently had a profound effect on the country. The Chinese culture appeared in a variety of forms. New building types, such as the shophouse which became a popular and functional addition to Thai towns and cities. The Chinese also became closely assimilated into the Thai community through industrial links and connections furthermore through inter marriage. The Chinese were at the heart of the rice and tin industry, whilst the foreigners dominated the teak industry and other commercial activities.

The legacy of the new economies and industries from the 1850's onwards can be seen scattered throughout Thailand. Often, not obvious or visible, they include warehouse buildings, sawmills, rice mills, shophouses and other buildings which have an association, connection or relationship with industry. It is not only buildings which are valuable, but other aspects such as the printing industry, which are significant in representing new technologies, processes and communication.
A lack of awareness or appreciation for these industrial sites has led to their demise, and they are often neglected, abandoned or demolished.
A study of industrial heritage at a global level helps to gain a perspective and understanding of Thailand's position at a regional, national and local level.
The Thai heritage policy is examined to see how industrial heritage fits within a Thai heritage aesthetic. It offers some suggestions as to why industrial heritage should be more inclusive, specifically offering social and economic benefits for the community. Industrial tourism offers an alternative form of cultural tourism, whilst some sites have the potential for adaptive re-use into new functions. Areas which have been de-industrialised can use industrial heritage to stimulate regional or local revitalisation.
There have been several sites across Thailand identified as having industrial heritage significance, which represents a beginning process for the recording and documentation of these valuable places which reflect the modernisation of Siam and the emergence and development of modern architecture in Thailand.

Program of Architectural Heritage Management and Tourism Graduate School, Silpakorn University Academic Year 2008
Student's signature .....
Independent Study Advisor's signature .....

Acknowledgements

My interest for industrial spaces grew when I was an architectural student living in London in the early 1990's. The warehouses spaces we occupied provided space and excellent daylight at an affordable cost. The thrill of living in a building which had offered so much flexibility and potential has never left me.

When I moved to Bangkok I naturally began to seek out similar spaces, and the fascination for these types of industrial spaces began once again. Looking at these spaces from a different perspective of being potential heritage conservation as sites began when I started the program at Silpakorn University. It was indeed a difficult task in writing an acknowledgement, with so many people to which this would not have been possible without.

Firstly, I would like to thank all of the teaching and administrative staff at the University, whose lectures and ideas were truly a huge source of inspiration.

I would like to extend a special thank you to Professor William Chapman, for his active interest in the subject matter and excitement for this topic to be researched. Also, to Professor Trungjai Buranasomphob for her encouraging smiles, words of wisdom and kindness.

I would also like to express my thanks to my friends in Bangkok and my family overseas for providing me an invaluable amount of support and encouragement throughout the last few years.

Finally, an extra special mention to Lucas and Udo, to whom I both dedicate this. I couldn't have done it without your love, patience and understanding.

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Chapter 1

Introduction

Background

Industrial heritage sites in Thailand are largely ignored, overlooked and not appreciated. They are often deemed unsightly and aesthetically unappealing. They are often forgotten, abandoned, neglected or demolished. These sites should be respected and conserved in an appropriate manner.

A nation's industrial heritage represents important values of an historical, architectural, social, or scientific significance. These industrial places represent and reflect the modernization of Siam and the emergence and development of modern architecture, which assisted in the making of the modern nation of Thailand we know today.

The study shall begin with a definition of what constitutes an 'industrial heritage'. It shall then continue to look at some international charters and organizations working directly with industrial heritage issues and concerns. An examination of industrial heritage on a global scale will show a range of sites and issues from a World Heritage perspective through to a series of industrial heritage places recognized at a localized Asian level. This will then follow through to a discussion about defining a Thai industrial heritage, and looking at sites which are currently listed as national heritage places.

Presently, the Thai national heritage policy and thinking does not reflect the extent of industrial heritage found in Thailand due to its rather limited scope of a Thai national heritage aesthetic. The study shall reveal the key players and stakeholders in this critical debate and the consequences it has on industrial heritage sites.

The literature review in Chapter 4 provides an insight into Thailand's primary industries of rice, tin and teak. It examines texts from a range of authors from a variety of different perspectives such as Thai economists, historians to contemporary theorists. The mid 19th century in Siam saw changes which would affect every level and class of society, and the 1850's marks the beginning of this study. This was a period which saw the beginning of international free trade, following the historic signing of 'The Bowring Treaty', a trade treaty with Britain in 1855. The mid 19th century also signifies a crucial moment in Thai history as King Rama IV (1851 -1868) realizes the impact that the Western nations are having on neighboring countries. The approach King Mongkut (Rama IV) took to quell the colonialists left a visible and marked impact upon the city and its people. The economic stimulation provided through the newly formed trade treaties with Europe led to an influx of foreigners from mainly Europe and China, all bringing with them new ideas, new technologies (such as steam powered technology), new customs and new cultures.

In this amalgamation of cultures a changing environment is formed throughout Siam. It is the imprint which is still visible today, left behind from the industrialization of Siam which has led to the interest behind this study. The architectural structures of rice mills, sawmills, printing presses, textile mills, and the communities that are associated form the centre piece of this study.

Chapter 5 shows the recording and documentation of the sites which forms the main body of the work. It has been divided into 3 categories, *Manufacturing Processes and Production sites, Infrastructure, Transportation and Communication and Sites which are associated with industry.* Historical maps were used which was an integral resource in locating these sites. Each site is examined within a historical, architectural, social or scientific aspect. It is then possible to reveal the significance of the site.

Chapter 6 aims to identify the reasons and benefits for conserving industrial heritage. It examines case studies where industrial heritage has served as stimulation for regional or local revitalization. It also looks at the idea of industrial heritage tourism in terms of an economic factor and stimulator, and how the adaptive re-use of industrial buildings and structures is a sustainable approach of conservation.

The conclusions and recommendations suggest further research for this topic, and some suggested techniques to change public perception towards industrial heritage which will assist in raising an appreciation and awareness for their future conservation from governmental policies to local communities.

Goals and Objectives

- To identify the extent , nature and type of industrial heritage that exists in Thailand
- To record, document and classify potential sites in Thailand, with the focus of research to be based in Bangkok
- To suggest policies and guidelines for the protection of these sites

Scope of the Study

- Chronologically (time) – period is 1850-1950's
- Thematic (types) – Railways, canals, factories, mills, warehouses, workers housing, museums, mines, factories etc.
- Geographically (spatial) - by Thailand's regions northern, north eastern, central & southern.

Research Methodology/Research Instrument:

- Participant observations & surveys
- Archival documentation, photos, maps & chronicles
- Aerial photography records
- Historical maps

- Provincial records
- Newspapers
- History books
- Websites
- Research papers/thesis

Sources of Data:

- Fine Arts Department
- National Archives
- National library
- BMA local district office
- Site Surveys/observations/interviews
- SEAMEO SPAFA
- Siam Society
- ICOMOS
- UNESCO
- ASA (Association of Siamese Architects)
- TICCIH (The Industrial Committee for the Conservation of Industrial Heritage)
- Local communities

Collection of Data:

- Surveys, photographic, sketches, notations
- Interviews
- Field trips

Analysis of Data:

- Urban morphological analysis
- Establishment of a classification system
- Review of primary & secondary sources

Chapter 2

Industrial Heritage - From a Global to a Thai Perspective

A Global Perspective and Definition of Industrial Heritage

The UK and other western nations have had a long history and deeper understanding and appreciation for industrial heritage. These nations have developed specific policies for planning and managing the protection and preservation of such sites which are deemed to be significant and worthy enough to pass onto future generations.

Industrial heritage as a cultural resource covers a broad spectrum of both tangible and intangible entities. To clarify the term 'industrial heritage' I shall use the definition provided within *The Nizhny Tagil Charter for the Industrial Heritage,* which was passed by the delegates of the National Assembly of *The International Committee for the Conservation of the Industrial Heritage* (TICCIH) on 17th July 2003:

> Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.

The TICCIH is an organization which was established in the UK in 1973. They are the main advisory body to the *International Council of Monuments and Sites* (ICOMOS) and its main objective is to "study, protect, conserve and explain the remains of industrialization". It continues to explain that they are the "world organization for industrial heritage, promoting preservation, conservation, investigation, documentation, research and interpretation of our industrial heritage". The TICCIH has a worldwide member representation, however most members are European based, with only India and Japan representing Asian nations. The lack of Asian representation is a reflection of the commitment that the Asia Pacific region has to its industrial heritage. The TICCIH has been a critical tool in raising the awareness of industrial heritage and has created a framework and a forum for the exchange of ideas internationally. The TICCIH publishes a Bulletin 4 times a year, which features articles and conference reports and is also responsible for a journal called *Industrial Patrimony* which is published bi-annually with Professor Louis Bergeron the Chief Editor of the Journal, and, TICCIH Honorary President.

In the 10th anniversary issue of the Bulletin in Spring 2008, Eusebi Casanelles, the TICCIH President, summaries in his article "Ten years of the TICCIH Bulletin" just how far the

Organization has come in its objectives in promoting the global phenomena of industrial heritage, but, it also points out how 'far of they still are in achieving a global understanding of Industrial heritage'. He highlights that the path to its successes have been often difficult in the way that industrial heritage is often considered as "anti heritage, and often not thought of as having an aesthetic value, are not especially old, and nor are they always potent symbols of national identity, the three qualities generally associated with the idea of a monument".

However, despite the negative connotations that industrial heritage sites often have attached to them, the number of sites which have been listed as UNESCO World Heritage sites continues to grow. In looking towards the future of the organization, he requests that industrial heritage specialists are pushing for continuing research related to conserving and restoring in particular to adaptation and re-use of sites. He would also like to provide more support and guidance to ICOMOS and make comparative studies at an international level.

In an article titled "Industrial heritage – and beyond?" by Professor Louis Bergeron (TICCIH Life president) a key issue is raised that amongst less developed counties, such as Thailand, they have little or even no methods or means in place of how to include industrial heritage amongst their cultural ethos. One aspect of this study is that I hope that this may be a tentative and a primary step in a new direction for industrial heritage in Thailand. The process of documenting and recording certain key sites is only the very beginning for this largely unconsidered area of Thailand's cultural heritage.

The Role of Heritage Charters + ICOMOS

The International Council of Monuments and Sites (ICOMOS) is an international non-governmental organization which was borne out of the *Second Congress of Architects and Specialists of Historic Buildings* in Venice, in 1964. The ICOMOS mission is outlined through a series of objectives and initiatives, which include:

Objectives:

- to bring together conservation specialists from all over the world and serve as a forum for professional dialogue and exchange
- to collect, evaluate and disseminate information on conservation principles, techniques and policies
- to co-operate with national and international authorities on the establishment of documentation centers specialising in conservation
- to work for the adoption and implementation of international conventions on the conservation and enhancement of architectural heritage
- to participate in the organisation of training programmes for conservation specialists on a world-wide scale
- to put expertise of highly qualified professionals and specialists at the service of the international community

Initiatives:

- the strengthening of its presence world-wide by encouraging the creation and growth of ICOMOS National Committees
- extending the influence of the Venice Charter by creating flexible doctrinal texts for specific sectors of architectural heritage
- defining adaptable management techniques for cultural properties
- developing training programmes on a multilateral basis involving the collaboration of National and International Committees
- enriching ICOMOS International Documentation Centre in Paris and setting up video and slide libraries devoted to architectural heritage
- organising and managing expert missions at the request of heritage administration and legal entities which judge necessary the intervention of a consultant for a particular conservation question
- playing a vital role in counselling UNESCO on those cultural properties to be included on the World Heritage List and on the reporting of the state of conservation of the properties already listed
- reaching specialists by means of wide distribution of the organisation's quarterly newsletter, ICOMOS News, its Scientific Journal, the publication series "Monuments and Sites" on the heritage of particular countries and the publishing of conference proceedings
- awaking public interest in conservation by encouraging media coverage and the celebration of the International Day for Monuments and Sites (18 April)

  (source: http://international .icomos.org)

ICOMOS has national committees which are members of UNESCO of which there are currently 110. The idea is that this can provide a framework for discussion and ideas between its members. Thailand being a member of UNESCO has its own national committee representatives. Each national committee is essentially individually managed setting their own 'rules of procedure' however they must fall within the ICOMOS mission statement. This therefore allows each member nation to adapt to more contextual and localized issues rather than to adopt a unanimous worldwide approach.

ICOMOS has adopted a host of charters since it was formed in the 1960's. The role of Charters within the heritage profession have played a crucial role in formulating guidelines and principles to assist the way to which heritage professionals should decide which approach is in the best interest for a particular site, and to ensure its safe keeping for future generations.

International Charters

The Venice Charter (1964) can be seen as the guiding principle for conservation practice. It established 16 articles mainly centering on ancient monuments and buildings. The decades following World War II saw huge amounts of reconstruction due to vast areas destroyed during the war. It was the concern for the way that this was managed that the Charter arose. The emphasis was on the physical fabric of the buildings, and the headings of 'Definitions',

'Conservation', 'Restoration', 'Historic Sites', 'Excavations' and 'Publications' appeared to cover all the important aspects of heritage conservation at that moment in time.

Since *The Venice Charter*, the principles and articles contained within the various International Charters has become much more demanding, complex and intricate. They now need to cover a huge range of issues that simply did not seem to exist or did not seem to previously appear under the umbrella term of 'cultural heritage'.

The Australia ICOMOS Charter for Places of Cultural Significance 1999, or more commonly known as *The Burra Charter*, more than doubles the number of articles present in *The Venice Charter.* The heritage umbrella was indeed growing rapidly and the need for further development and representation of a much larger heritage scope was definitely necessary by this point.

By introducing the term "place" instead of monument and site, it moves from a rather static perception of heritage to a realm which embraces much more:

> Definitions, Article 1:
>
> 1.1 Place means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Another important point now raised in *The Burra Charter* is the inclusion that cultural significance is not just an aesthetic, historic or scientific phenomenon, but has a social or spiritual dimension, which can be "*embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places, and related objects". (The Burra Charter)*

It became apparent that *The Venice Charter* did not fulfill every society's needs, which in turn led to the development of *The Burra Charter* by the Australian ICOMOS. More recently there became a feeling that *The Venice Charter* or *The Burra Charter* didn't completely satisfy the needs for Asian societies and cultures either.

The Nara Document on Authenticity (1994), The *Principles for the Conservation of Heritage Sites in China (2002)* and most recently *The Hoi An Protocols for Best Conservation Practice in Asia* (2005) all emerged to deal with issues relating directly to Asian situations.

The Nara Document on Authenticity highlighted for the first time the differences between the western or 'eurocentric' approach to conservation, and documented the fact that Asian values and cultures reflect the need for a different approach to conservation. It is impossible to simply apply *The Venice Charter* or indeed some parts of *The Burra Charter* (however this is much more applicable) for a conservation project within Asia.

The Hoi An Protocols recognizes the impact of tourism in Asia and the need to address this. There are many similarities made between *The Burra Charter*, however section 'H' deals specifically with Asian issues. It also points out the way that Asian societies believe that

nature (the environment) and human interaction are intertwined, and not viewed as separate entities, like the western perception of the landscape.

The Nizhny Tagil Charter for the Industrial Heritage

Finally, *The Nizhny Tagil Charter for the Industrial Heritage 2003,* as briefly mentioned previously is the charter which deals specifically with industrial heritage sites. It has 7 parts which include:

1. Definition of industrial heritage
2. Values of industrial heritage
3. The importance of identification, recording and research
4. Legal protection
5. Maintenance and conservation
6. Education and training
7. Presentation and interpretation

In the preamble the charter explains that ever since early humans began to make objects there has always been a fascination and interest with the way in which those objects and tools became more and more advanced with the acquisition of knowledge and technology. The study of Industrial heritage today is based upon the same fundamental fascination of places where objects and things are manufactured or processed, which also signifies the advancement of certain technologies or skills. Part one outlines the definition of industrial heritage, which was previously quoted, but also defines the period in which the charter is focusing on:

> The historical period of principal interest extends forward from the beginning of the Industrial Revolution in the second half of the eighteenth century up to and including the present day, while also examining its earlier pre-industrial and proto industrial roots. In addition it draws on the study of work and working techniques encompassed by the history of technology. (The Nizhny Tagil Charter for the Industrial Heritage, 2003)

Part two is examining the 'Values of Industrial Heritage' and is separated into 4 key points:

I. The industrial heritage is the evidence of activities which had and continue to have profound historical consequences. The motives for protecting the industrial heritage are based on the universal value of this evidence, rather than on the singularity of unique sites.
II. The industrial heritage is of social value of part of the record of the lives of ordinary men and women, and as such it provides an important sense of identity. It is of technological and scientific value in the history of manufacturing, engineering, construction, and it may have considerable aesthetic value for the quality of architecture, design or planning.

III. These values are intrinsic to the site itself, its fabric, components, machinery and setting, in the industrial landscape, in written documentation, and also in the intangible records of industry contained in human memories and customs.
IV. Rarity, in terms of the survival of particular processes, site typologies or landscapes, adds particular value and should be carefully assessed. Early or pioneering examples are of especial value.

Part two outlines that the value of industrial heritage should be regarded at both a local level as well as at world heritage level for certain sites containing values of Outstanding Universal Value.

Part three provides 10 points related to the importance of identification, recording and research. The surveying processes is the beginning to understanding the extent and diversity of the industrial heritage within a given area or nation. To conduct an extensive survey requires carefully time, planning and financial assistance and support to gain access to sites whether state or privately owned. This part of the processes can be time intensive as a full record of the physical features and condition of the site should be made public. Point number 3.iii states that, “the recording process should be done before the process ceases to operate, and the types of recording should include descriptions, drawings, photographs and video film of moving objects, with references to supporting documentation. Peoples’ memories are a unique and irreplaceable resource which should also be recorded when they are available”.

Part 4 deals with legal protection issues. This part contains some useful indications for government interventions required for the protection of the sites, and also explains some general issues:

I. The industrial heritage should be seen as an integral part of the cultural heritage in general. Nevertheless, its legal protection should take into account the special nature of the industrial heritage. It should be capable of protecting plant and machinery, below ground elements, standing structures, complexes and ensembles of buildings, and industrial landscapes. Areas of industrial waste should be considered for their potential archaeological as well as ecological value.
II. Programmes for the conservation of the industrial heritage should be integrated into policies for economic development and into regional and national planning.
III. The most important sites should be fully protected and no interventions allowed that compromise their historical integrity or the authenticity of their fabric. Sympathetic adaptation and re-use may be an appropriate and a cost-effective way of ensuring the survival of industrial buildings, and should be encouraged by appropriate legal controls, technical advice, tax incentives and grants.

IV. Industrial communities which are threatened by rapid structural change should be supported by central and local government authorities. Potential threats to the industrial heritage from such changes should be anticipated and plans prepared to avoid the need for emergency actions.
V. Procedures should be established for responding quickly to the closure of important industrial sites to prevent the removal or destruction of significant elements. The competent authorities should have statutory powers to intervene when necessary to protect important threatened sites.
VI. Government should have specialist advisory bodies that can give independent advice on questions relating to the protection and conservation of industrial heritage, and their opinions should be sought on all important cases.
VII. Every effort should be made to ensure the consultation and participation of local communities in the protection and conservation of their local industrial heritage.
VIII. Associations and societies of volunteers have an important role in identifying sites, promoting public participation in industrial conservation and disseminating information and research, and as such are indispensable actors in the theatre of industrial heritage.

The legal aspects and implications will be discussed in Chapter 3 as it has a relationship with heritage policies currently in use in Thailand.

Part 5 looks at maintenance and conservation concerns. It raises some interesting aspects relating to the adaptive re-use of sites as part of sustainable development, and it states that industrial heritage sites can contribute to the economic regeneration of decayed or declining areas.

Part 6 explains that the importance of industrial heritage issues should start as early as primary and secondary education and more specialists training provided at university level.

Part 7 explains that the most effective tool for the promotion and understanding and appreciation of industrial heritage is to ensure that the public has an interest in it. The methods to do this can be through “publications, exhibitions, television, the internet and other media, by providing sustainable access to important sites and by promoting tourism in industrial areas.”

As discussed previously when examining other international charters there can be difficulties for nations to wholly adopt a charter due to cultural differences, and therefore the suitability may vary. *The Nizhny Tagil Charter for the Industrial Heritage, 2003* may need to be amended in order for it work as an effective tool for guiding practitioners within Thailand. On the whole, the majority of the points contained within the charter should be applicable to an industrial heritage in Thailand, however issues relating to the authenticity of the ‘fabric’ will need to be considered as inappropriate. Part 4.iii in the legal protection section

(see above) says that no interventions should compromise the integrity of the 'fabric', however the Buddhist philosophy towards impermanence means that this western notion does not fit. A final point relating to ICOMOS is that their documentation centre provides a very useful reference source which is a bibliography on industrial heritage. The table of contents divides the bibliography into themes, as follows:

1. Blast furnaces
2. Bridges
3. Canals
4. Chimneys
5. Conversion of buildings
6. Factories
7. Hangars
8. Harbour buildings
9. Industrial development
10. Industrial landscapes
11. Industrial heritage at risk
12. Kilns
13. Mills
14. Mines
15. Museums
16. Railways
17. Textile
18. Warehouses
19. Workers housing

The information can be found online http://international.icomos.org/centre_documentation

Evolution of the International Industrial Heritage Movement

Britain can be described as having the most evolved industrial heritage in the world, which continues to evolve today. The article by Keith Falconer titled 'The industrial heritage in Britain – the first fifty years' describes a historical review of the growth and emergence of the movement from the perspective of a government agency being concerned primarily with applied research as opposed to pure academic research . It charts the difficulties and the successes that it had faced, and the challenges which lie ahead for the future.

Industrial heritage thinking began in Britain in the mid 1950's. The term 'Industrial archaeology' was coined by Michael Rix of which a definition is contained within *The Nizhny Tagil Charter for the Industrial Heritage, 2003*:

> Industrial archaeology is the interdisciplinary method of studying all the evidence, material and immaterial, of documents, artifacts, stratigraphy and structures, human settlements and natural and urban landscapes, created for

> or by industrial processes. It makes use of those methods of investigation that are most suitable to increase understanding of the industrial past and present.

In 1959 the first national conference relating to the study of Industrial Archaeology was organized by the Council for British Archaeology (CBA). The outcome of this conference made suggestions that the British government should provide a national survey of its industrial monuments to 'identify, assess historic industrial sites worthy of protection'.

This survey took over 3 years to begin, and it was only after the controversial demolition of the monumental arch in front of Euston station, when the station was rebuilt in the 1960's, that the survey was kick started into immediate action (Plate 1).

Plate 1 Euston Arch in 1896
(source: http://wikipedia.org)

The CBA sought the assistance of local archaeological societies in the enormous task of identification and documentation of sites. These local groups and societies proved to be a crucial resource in the documentation process. Following on from this exhaustive survey the CBA requested that certain notable sites would require protection and to be nationally listed with the Royal Commissions of Historical Monuments. Protection was given to sites that were considered to contain valuable cultural significance and were protected under the relevant Ancient Monument and listed building codes.

An incident which occurred in the 1980's highlighted the fact that the protection previously considered adequate was indeed not sufficient. The façade of a building in West London was demolished, despite attempts by the Secretary of State to stop this action. The Firestone Building in Brentford was built in 1928 by Wallis Gilbert and Partners, and was a fine example of art deco industrial architecture (Plate 2).

Plate 2 The Firestone Building, London, 1928
(source: http://buildingconservation.com)

These examples highlight the way in which national government agencies are highly instrumental in aiding the protection of industrial heritage.

The public popularity of industrial archaeology was spurned by media interest which in turn led to the setting up of a series of museums at Coalbrookdale in 1967 which celebrated the Iron Bridge constructed in 1779, an area largely considered to be the birth place of the industrial revolution. In 1986 Ironbridge Gorge acquired world heritage status by UNESCO as an industrial landscape (Plate 3).

Plate 3 The Iron Bridge, Coalbrookdale, UK
(source: http://ironbridge.org.uk)

In 1973 the TICCIH was established which projected industrial heritage onto a global platform, and importantly replaced the term 'industrial monument' for 'industrial heritage'. This mirrors the way in which the conservation movement was concerned that the term 'monument' was narrow in terms of representation and needed expanding to include other aspects of culture, such as industrial sites.

From the 1980's industrial heritage became widely accepted within the heritage realm and the emergence of sites of the World Heritage list is testament to this, which is discussed in more detail at a later stage.

English Heritage, Historic Scotland and CADW in Wales are currently the main bodies for the management and protection of UK industrial sites. All 3 are covered by the same legislative procedures; either as an Ancient Monuments or as an Historic Building, but each body has developed its own system for recording and documentation.

Public and private funding on various levels is another aspect which has stimulated UK industrial based projects, on both large and small scales. The Heritage Lottery Fund (HLF) is one example which has given more than GBP630 million for hundreds of projects. The regeneration of entire areas, such as Saltaire Mill in Yorkshire has been made possible through these types of funding possibilities (Plate 4).

Plate 4 Saltaire Mill dates to 1853
(source: http://chromavision.co.uk)

The way in which Britain has managed to include industrial heritage as a cultural resource was firstly to implement a government led survey to identify, record and document sites. Those considered to contain significant values were then protected and managed under legislation. Funding from various bodies and agencies have further stimulated and regenerated areas which otherwise could have been lost to decay and neglect. Several of these sites have since been inscribed on the World Heritage list.

International Conferences - Big Stuff 07

In September 2007, an International conference held in Germany was put together as a collaboration between a number of key bodies and agencies such as ICOMOS, TICCIH and *Verband der Restauratoren* (VDR – Association of German Restorers) all working within the industrial heritage movement.

The main aspects that it was discussing was the difficulties of financing large scale projects, as the majority of heritage sites simply do not operate on the same physical scale that some of these places do. It was discussing the way in which these sites can be maintained and made safe for public access. It divided the conference into a series of topics:

1. Site management – risks and opportunities
2. Repair and conservation: irreconcilable contradictions?
3. Entrusted to our care: what does this mean?
4. Pathways through heritage sites: necessary and encumbering
5. “Restored to working glory’ – to work or not to work?
6. Conservation of “buried treasure’: gathering and preserving technical, working knowledge from past generations
7. Vocational training on the job? The education of “interpreters”

An international team of experts from various disciplines were assembled to provide a cross cultural exchange of information and ideas related to the above topics and themes.

A series of lectures were presented by members of the scientific committee. The committee consisted of delegates from Australia, Canada, Japan, Germany, Latvia, Netherlands, Belgium, Greece, UK and the USA; however participants from over 20 countries attended.

The workshop series were connected to the topics outlined above, and the recordings from each can be accessed on http://bigstuff07.net

The next Big Stuff conference is scheduled for 2010, and hopefully by then the representation from Asia Pacific countries will have grown.

World Heritage Listing and Industrial Heritage (under) Representation

In 2008/2009 there were 878 properties inscribed on the UNESCO World Heritage list. These properties are sub divided into 679 cultural sites, 174 natural sites and 25 mixed properties. There are 186 state parties who have ratified the World Heritage Convention, however only 145 state parties have properties inscribed on this list. The importance of a state party's property being listed on the World Heritage List has tremendous implications and impacts not only on cultural aspects but also for socio-economic reasons.

There are 5 geographical zones within the UNESCO classification system, as follows:

Zone	Natural	Cultural	Mixed	Total	%	State party with inscribed properties
Africa	33	40	3	76	9%	27
Arab states	4	60	1	65	7%	16
Asia-Pacific	48	125	9	182	21%	27
Europe + North America (Incl. Israel + Russia)	54	372	9	435	50%	49
Latin America + Caribbean	35	82	3	120	14%	25
Total	174	679	25	878	100	145

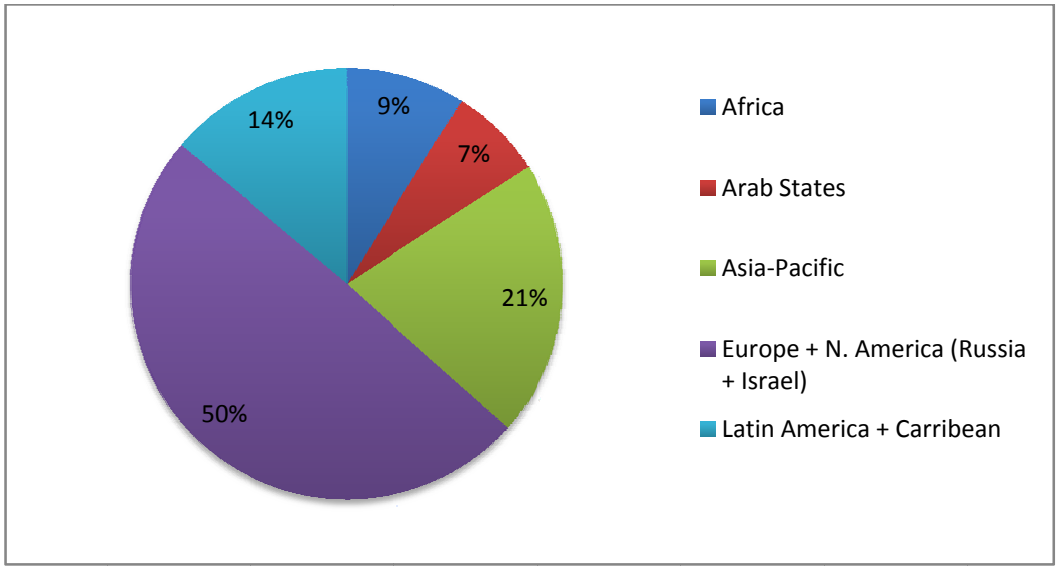


Table 1 Table and pie chart showing geographic/zonal breakdown of properties on World Heritage list (author)

We can see that there is a heavy weighting with 50% of the overall World Heritage Listing coming from Europe, North America (including Russia + Israel), and the second largest geographical zone listing with 21% is from the Asia-Pacific region.

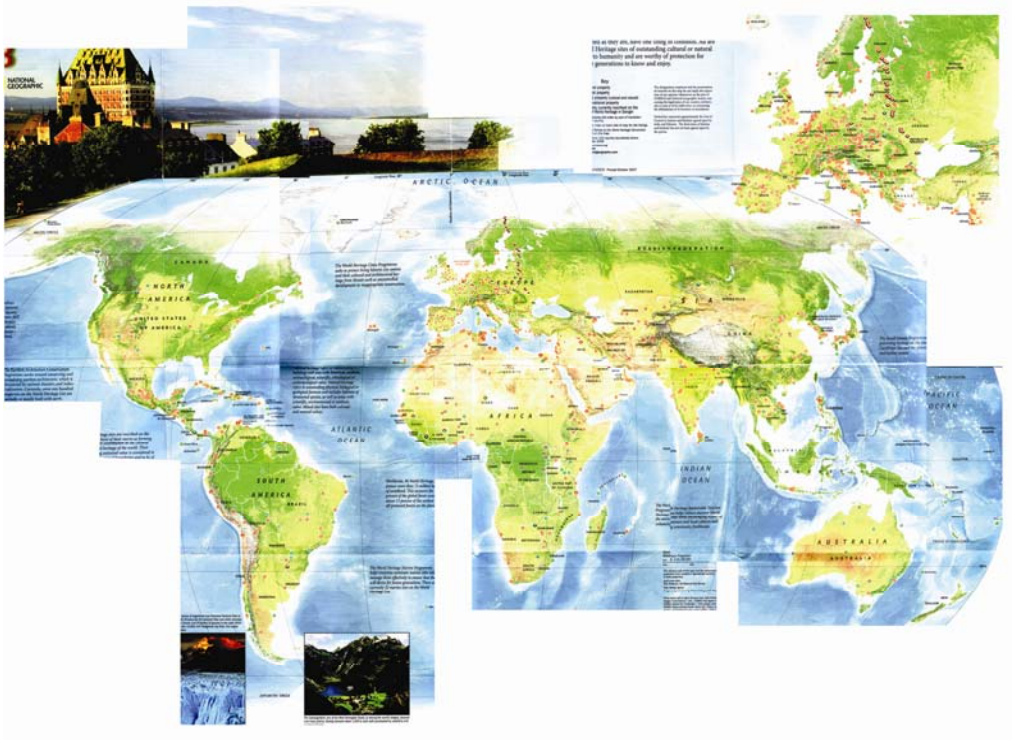
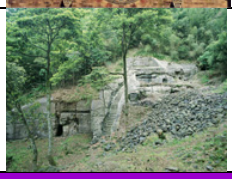
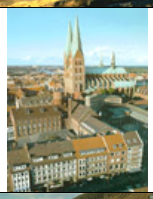
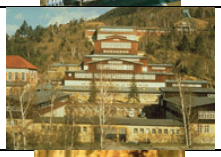


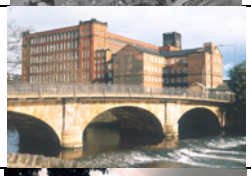
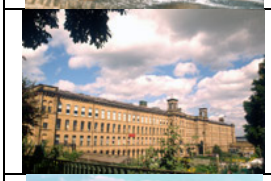
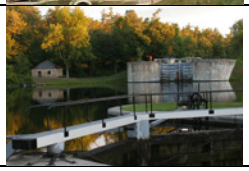
Figure 1 World Heritage Map showing location of listings
(source: UNESCO 2007)

The information in Table 2 identifies and lists all of the World Heritage Lists which contain an industrial theme. It categorizes into geographical zones and then has a country entry. It also provides information about when the site was inscribed, and under what criteria it was listed for.

Zone/Country	Image	Name of Site	Date Inscribed	Criteria/Category	Total
Africa:					0
Arab States:					1
Oman		Aflaj irrigation systems Of Oman	2006	(v)	1
Asia-Pacific:					3
India		Mountain Railways of India	1999 (2005,2008)	(ii)(iv)	2
		Chhatrapati Shivaji Terminus	2004	(ii)(iv)	
Japan		Iwami Ginzan Silver Mine and Its cultural landscape	2007	(ii)(iii)(v)	1
Europe + North America (Including Russia + Israel)					28
Austria		Semmering Railway	1998	(ii) (iv)	1
Belgium		Neolithic Flint mines at Spiennes (mons)	2000	(i) (iii) (iv)	3
		The four lifts on the canal du centre and their Environs, La Louviere and Le Roeulx (Hainault)	1998	(iii) (iv)	
		Plantin-Moretus House – Workshops-Museum complex	2005	(ii) (iii) (iv) (vi)	

Zone/Country	Image	Name of Site	Date Inscribed	Criteria/Category	Total
Europe + North America (Including Russia + Israel)					28
Czech Republic		Kutna Hora: Historical Town centre with the Church of St Barbara and the Cathedral of Our Lady of Sedlec	1995	(ii) (iv)	1
Finland		Verla Groundwood and Board Mill	1996	(iv)	1
France		Royal Saltworks of Arc -et - Senans	1982	(i)(ii)(iv)	2
		Canal du Midi	1996	(i)(ii)(iv)(vi)	
Germany		Hanseatic City of Lubeck	1987	(iv)	4
		Mines of Rammelsburg and the Historic Town of Goslar	1992	(i)(iv)	
		Volklingen Ironworks	1994	(ii)(iv)	
		Zollverein Coal Mine Industrial complex in Essen	2001	(ii)(iii)	

Zone/Country	Image	Name of Site	Date Inscribed	Criteria/Category	Total
Europe + North America (Including Russia + Israel)					28
Netherlands		Ir,D.F Woudagemaal (D F Wouda steam pumping station	1998	(i)(ii)(iv)	2
		Mill Network at Kinderdijk-Elshout	1997	(i)(ii)(iv)	
Norway		Roros Mining Town	1980	(iii)(iv)(v)	1
Poland		Wieliczka Salt Mine	1978	(2008) (iv)	1
Sweden		Engelsberg Ironworks	1993	(iv)	4
		Hanseatic Town of Visby	1995	(iv)(v)	
		Mining Area of The Great Copper Mountain of Falun	2001	(ii)(iii)(v)	
		Varburg Radio Station	2004	(ii)(iv)	
Slovakia		Historic Town of Banska Stiavnica and the Technical Monuments in its Vicinity	1993	(iv)(v)	1

Zone/Country	Image	Name of Site	Date Inscribed	Criteria/Category	Total
Europe + North America (Including Russia + Israel)					28
U.K.		Ironbridge Gorge	1986	(i)(ii)(iv)(vi)	6
		Blaenavon Industrial Landscape	2000	(iii)(iv)	
		Derwent Valley Mills	2001	(ii)(iv)	
		Saltaire	2001	(ii)(iv)	
		Liverpool Maritime Mercantile City	2004	(ii)(iii)(iv)	
		Cornwall and West Devon Mining Landscape	2006	(ii)(iii)(iv)	
Canada		Rideau canal	2007	(i)(iv)	1

Zone/Country	Image	Name of Site	Date Inscribed	Criteria/Category	Total
Latin America + Caribbean					4
Chile		Sewell Mining Town	2006	(ii)	2
		Humberstone and Santa Laura Saltpeter Works	2005	(ii)(iii)(iv)	
Mexico		Historic Town of Guanajuato and adjacent mines	1988	(i)(ii)(iv)(vi)	2
		Agave Landscape and Ancient Industrial facilities of Tequila	2006	(ii)(iv)(v)(vi)	

Table 2 World Heritage listings with an industrial theme (author)

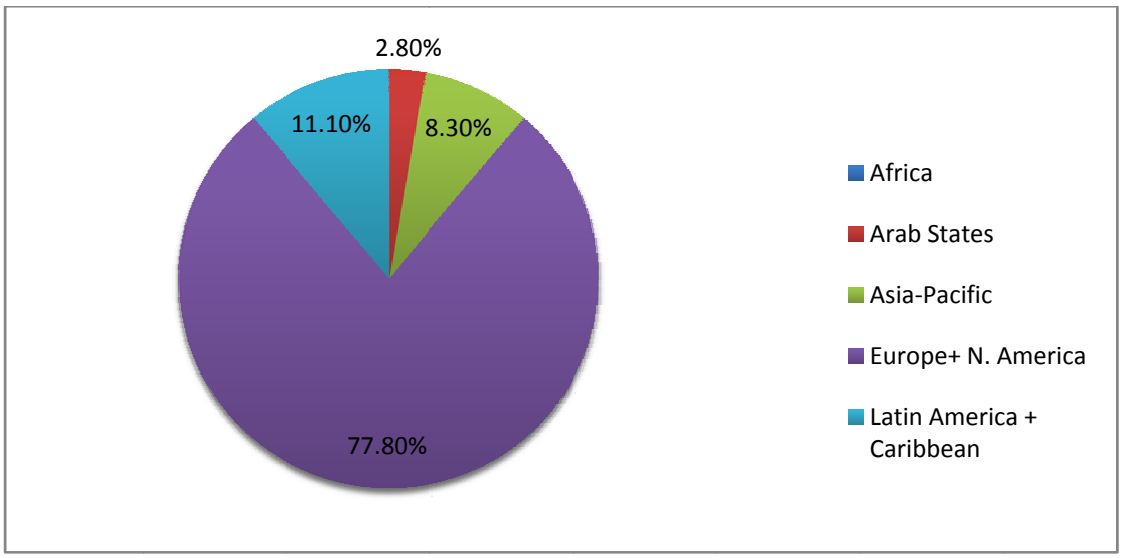


Table 3 Shows the distribution of industrial World Heritage sites across the 5 geographical zones (author)

The total number of industrial heritage sites on the World Heritage List is 36 out of a total of 878 properties. Industrial heritage sites account for only 4.1% of the representation on the World Heritage list (covering cultural, natural and mixed sites).

All of the industrial heritage sites fall within the cultural nominations (none of them are natural or mixed sites). Out of all of the cultural sites, industrial heritage representation accounts for a mere 5.3% (Table 4).

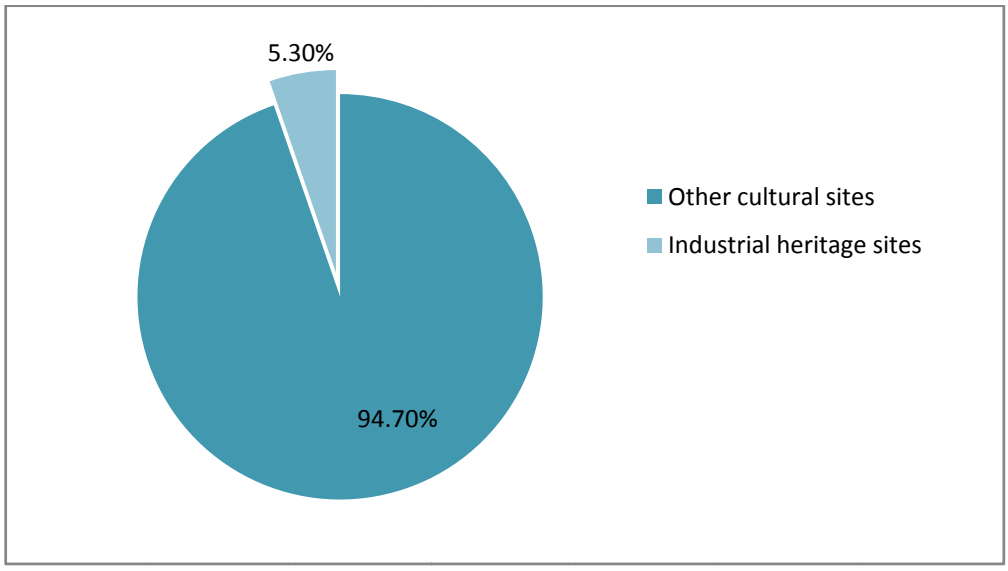


Table 4 Showing industrial heritage representation within the culture nominations on the World Heritage List (author)

This is significantly low and does not reflect an accurate proportion and balance between the diversity of heritage at a global level. Table 3 shows that the distribution of the industrial World Heritage listed sites is concentrated largely in Europe & North America accounting for 77.8% of the sites. A very small proportion of industrial sites can be found in Asia-Pacific at only 8.3%.

The first site to be listed representing an industrial heritage theme was 31 years ago in 1978. This was the Wieliczka Salt Mine located in Poland. Another significant listing was Ironbridge Gorge, UK in 1986 as it was the first of its kind to be acknowledged as an industrial landscape rather than as a single site. One site in Chile, The Humberstone and Santa Laura Saltpeter Works which was inscribed in 2005, is currently placed on the World Heritage in Danger list.

All the industrial sites are represented as cultural nominations of which there are 6 criterions that it could be assessed for:

World Heritage List selection criteria:

i. to represent a masterpiece of human creative genius
ii. to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design
iii. to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared
iv. to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history
v. to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change
vi. to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria)

(source: http://whc.unesco.org/en/list)

World Heritage Criteria number:	Number of times a site nominated using this criteria:
(i)	8
(ii)	**23**
(iii)	11
(iv)	**31**
(v)	7
(vi)	6

Table 5 Criteria used for industrial heritage nominations (author)

The largest numbers of sites have been nominated under criterion number (iv):

> to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history

Secondly, criteria number (ii):

> to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design

ICOMOS + TICCIH – Filling the Gaps

The statistical data shown in Table 3 and Table 4 highlights the significant and unacceptably low quantity of industrial heritage sites compared to others.
In 1994 TICCIH compiled a report which was sent to the World Heritage Committee. This report highlighted 25 of the most significant industrial heritage sites and landscapes in the world. It was felt that this was necessary in order to assist with the evaluation procedure of nominating world heritage sites. A recommendation emerged from the World Heritage Committee explaining that more 'contextual documentation' was required. Since then a series of thematic studies were conducted with the help of ICOMOS. The themes reviewed were, canals, railways, bridges, workers settlements and collieries.

A 2004 report published by ICOMOS, "The World Heritage List – Filling the Gaps, an Action Plan for the Future" was based on a series of studies conducted between 2002 and 2004. Delegates at the 24th Session of the World Heritage Committee in Cairns in 2000 proposed that a study be undertaken based on "*an analysis of sites inscribed on the World Heritage List and the Tentative List on a regional, chronological, geographic and thematic basis".*. This analysis was "*to provide States Parties with a clear overview of the present situation, and likely trends in the short to medium term with a view to identifying under-represented categories" (ICOMOS:* The World Heritage List – Filling the Gaps, an Action Plan for the Future, 2004).

The report shows 2 main reasons for the gaps which were identified.

The first were due to 'Structural' constraints, meaning that certain States Parties did not have sufficient "*technical capacity to promote and prepare nominations, lack of adequate assessments of heritage properties, or lack of an appropriate legal or management framework, which either collectively or individually hinders the preparation of successful nominations".*

The second reason falls under 'Qualitative' constraints, which refers to the way in which certain 'themes' or 'types' of properties are simply absent, and support should be given to those "*State Parties to undertake research to identify their heritage resource, and to*

encourage properties not previously considered for nomination" (The *World Heritage List – Filling the Gaps, an Action Plan for the Future, 2004, p. 20)*

The analysis was divided into 3 categories, as a method of ensuring a well rounded viewpoint:

- Typological (Part A)
- Chronological (Part B)
- Thematic (Part C)

For Part A, the typological analysis identified the following 14 categories:

- Archaeological heritage
- Rock-Art sites
- Fossil Hominid sites
- Historic Buildings and ensembles
- Urban and rural settlements/Historic Towns + Villages
- Vernacular architecture
- Religious properties
- **Agricultural, Industrial + Technological properties**
- Military properties
- Cultural landscapes, Parks + Gardens
- **Cultural routes**
- Burial monuments + sites
- Symbolic properties + memorials
- **Modern heritage**

It continues to identify types of properties within each of the above category which are associated with industrial heritage:

Agricultural, Industrial + Technological properties:

- Monuments – **Factories, bridges, water management systems (dams, irrigation etc)**
- Groups of buildings – Agricultural settlements, **industrial settlements**
- Sites – Field systems, vineyards, agricultural landscapes, **water management systems (dams, irrigation etc) mines, mining landscape, canals, railways etc**

Cultural routes:

- Sites - Pilgrimage routes, **trading routes, roads, canals, railways etc.**

Modern Heritage:

- Monuments – Buildings, works of art, **industrial properties** (from late 19th century onwards)

Part B, is based on a historical timeline. The position in which industrial heritage would fit, would be:

- Ottoman Empire (1300-1922) (Near +Middle East, North Africa)
- Europe from the French Revolution to the first World War (Europe)
- The Modern World (post World War 1)

For Asia, The Pacific and Australasia, Sub Saharan Africa, The Americas & The Arctic and Antarctic Regions no specific culture is specific to the timeline.

Part C, looks towards themes, to which they identify seven, of which 4 have relevance:

- Cultural Associations
- **Expressions of creativity** (including industrial monuments, 19th + 20th century settlements and industrial landscapes)
- Spiritual Responses
- **Utilisation of Natural Resources** (mining and quarrying with associated manufacturing, and irrigation systems)
- **Movement of peoples** (Routes of Transportation, canals, railways, highways, aviation, harbours, tunnels and bridges)
- **Development of technologies** (energy conservation and utilization, information processing and communication systems, and technology of urban community (infrastructure and transport)

By far the largest representation falls under the 'expressions of creativity' with monuments accounting for 65% of all inscriptions, however, if we breakdown monuments into sub-groups then we can see that religious monuments account for over 250 sites, compared to industrial monuments with about only 25 sites.

The TICCIH summarized in its follow up report that "*One of the most consistently under represented types of property in all 3 analyses was that of technological and industrial heritage and its related sites and landscapes".* In the report it confirms that the vast majority of sites are not to be found in Asia-Pacific:

> Technological/agricultural properties are overwhelmingly located in Europe and North America, along with earlier mining sites in Europe and Latin America . (The World Heritage List – Filling the Gaps, an Action Plan for the Future, 2004: p 42).

It suggested that industrial heritage requires much clearer definitions for it be better understood and then consequently have better representation on World Heritage Listings.

In order for better representation, TICCIH decided to use the thematic approach as in Part C, and to develop a framework of contextual studies for each identified industry.

Some of the studies have already been completed and the following classification was suggested:

I. Extraction
- 1.1 Coal (completed by Hughes, 2003))
- 1.2 Metal
- 1.3 Non-metal (stone, oil, salt)
- 1.4 Timber

2. Mettalurgy

3. Textiles (draft completed by Watson)

4. Manufacturing
- 4.1 Food
- 4.2 Paper
- 4.3 Glass, ceramics, cement

5. Mechanical engineering

6. Transport
- 6.1 Railways (completed by Coulls, 1999)
- 6.2 Roads
- 6.3 Canals (completed by Hughes, 1996)
- 6.4 Airports
- 6.5 Ports, harbours + Shipbuilding
- 6.6 Bridges (completed by Delony, 1997)

7. Communications, post and telecommunications

8. Energy
- 8.1 Electricity
- 8.2 Gas

9. Chemicals, Oils + Plastics

10 Water + Waste

11 Industrial settlements (completed by Bergeron, 2001)

12 Industrial architecture

We can see that there are several classes which require detailed studies to be undertaken, and indicates the primacy that industrial heritage continues to operates in.

To conclude therefore, industrial heritage in general represents a gap in the listings and in particular if looking at industrial sites within the Asia-Pacific region, the representation is much lower compared to Europe for example. However, a glance at the Tentative List reveals a promising indication of change, as nominations in China for 2008 shows that 4 sites can be classed as industrial heritage:

- Ancient Porcelain Kiln Sites in China: The Yue-Kiln Site at Shanglin Lake
- Site of Ancient Copper Mine: Site of Ancient Copper Mine in Tongling
- Sites for Liquor Making In China
- The Grand Canal

China currently has no inscriptions for industrial sites so this marks a significant shift and a new direction for them.

Perhaps the most significant nomination came from South Africa in 2004, which must be one of the most under-represented categories (Africa continent has low representation). They proposed the following 2 sites:

- Kimberley Mines and Associated Early Industries
- Pilgrim's Rest Reduction Works Industrial Heritage Sites

Unfortunately these 2 sites are not yet on the World Heritage List, however, the fact that the government of South Africa managed to make a Tentative List submission is a step in the right direction.

An Asian Context: Lessons Learnt from Japan

Industrial heritage sites in the Asia-Pacific region account for a small fraction of World Heritage Listings as previously identified. These sites are represented from only 2 States Parties, which is India and Japan. There are only 3 sites, which include the Mountain Railways of India (1999 and subsequent additions in 2005 and 2008), The Chhatrapati Shivaji Terminus, India (2004), and The Iwami-Ginzan Silver Mine site (2007) which shall be discussed in greater detail.

This is not a true reflection of the extent of interesting sites, and just because they are not represented at an international level does not mean that other sites are not valuable often containing significant values either on a national level or for local communities.

Japan can be described as leading the quest for industrial heritage conservation within Asia. The government is actively encouraging and funding this as a cultural resource. They understand that to support the preservation process local government officials need to be educated in the value of their Industrial heritage. Japan became the most industrialized nation outside of Europe, and its rapid expansion over a relatively short period of time is testament to this. The Japanese have embraced the fact that these sites are part of a Japanese identity and are proud of their achievements through the advancement of technological skills. The industrial heritage sites across Japan are the legacy of this important aspect of the modernization of their nation.

The Iwami-Ginzan Silver Mine site and its cultural landscape was inscribed 2007 (Plate 5). In June 2005 an International Specialist Seminar Concerning the Outstanding Universal Value and Conservation Management of Mine Sites was convened in Ohda City, Shimane Prefecture, Japan. The participants included Japanese academics, cultural conservation specialists and a panel of international experts from ICOMOS and TICCIH. Several key and poignant issues were discussed and debated. Several of the issues discussed connected and made reference to the recently published ICOMOS report, *"*World Heritage List – Filling the Gaps, an Action Plan for the Future".

Plate 5 The Iwami-Ginzan Silver Mine site
(source: http://japansugoi.com)

The paper written to conclude the seminar explains that , "*that no major progress has been made to date in research on industrial ruins that predate the Industrial Revolution and are related to mining activities in Asia, especially those in the eastern part of the region" ,* and also *"in efforts to recognize the outstanding universal value of industrial ruins, particular attention should be directed to those properties that exist outside Europe, predate and have no connection to the Industrial Revolution, and represent locally distinct industrial cultures.*

In the evaluation of those ruins, careful consideration should be given to their unique, non-European geographic contexts". (Discussion Items and Conclusions of The Iwami-Ginzan Silver Mine Site International Specialist Seminar, source: http://2.pref.shimane.jp).

Plate 6 The Steel Factory Shoko Shuseikan in 1872
(source: http://senganen.jp)

The Iwami-Ginzan site fits perfectly into the category of underrepresented sites as it pre-dates the Industrial Revolution dating back to 1526. During the 1500's the Iwami-Ginzan mine was the world's busiest silver mines which continued to be operational until the 1920's.

Other sites which have national designations, include Shoko Shuseikan (Kagoshima City,Kagoshima) Prefecture. This factory site used to make ships and cannons and was instrumental in the production of the steel industry. It was declared a National Historic Site in 1959, and as an Important Cultural Asset in 1962 (Plate 6 & Figure 2). The Tomioka Silk Mill (Tomioka City, Gunma Prefecture) was declared a National Historic Site in 2005. It was built in 1872 by the Meiji government to promote new domestic industries. The factory architecture represents a blend of Japanese and Western elements, constructed out of brick and timber. This site was placed on the World Heritage Tentative List in 2007 (Figure 3 & Plate 7).

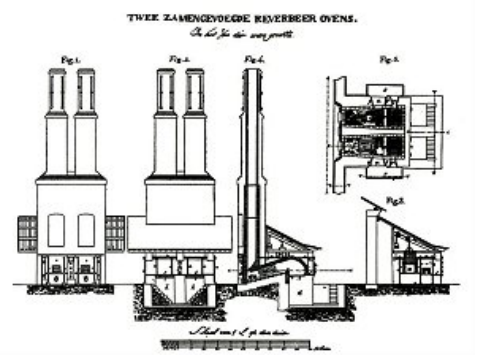


Figure 2 Cross section drawing of the steel factory, date unknown
(source: http://senganen.jp)

Figure 3 Woodprint of a color-printed genre painting of Johshu Tomioka Silk Mill (source: http://2.city. tomioka.lg.jp)

Plate 7 The Tomioka Silk Mill (source: http://panoramio.com/photo/4917183)

Along with the Tomioka Silk Mill one other industrial site is on the Tentative List, The Modern Industrial Heritage Sites in Kyushu and Yamaguchi. This has recently been added in 2009, and represents a group of historical sites dating back to the mid 19th century. A similar comparative site could be drawn with The Blaenavon Industrial landscape (UK inscribed in 2000), and the Zollverein Coal Mine Industrial Complexes in Essen (Germany, inscribed in 2001).

According to a paper given at The Big Stuff conference in 2007, titled “Conservation of Large Scale Modern Cultural Heritage in Japan” there are currently 51 nationally designated industrial heritage sites in Japan, and 26 others covering dams, bridges, docks, tunnels and other railway facilities. It notes that the Japanese Agency for Cultural Affairs needs to respond quickly in designating sites flagged for conservation or protection.

Japan, however, is not the only other Asian nation who is aware and attempting to document, record and protect its industrial heritage. Mentioned earlier, China currently has 8 industrial sites on the Tentative List, India has 3 all connected to the Railway, and Nepal has 1 being Khokana, the vernacular village and its mustard-oil seed industrial heritage, which was placed on The Tentative list in 1996.

To conclude, the TICCIH is currently organizing the first international conference to be held in China during 2009 (dates to be confirmed). This is showing that Asia is realizing the richness that industrial heritage has to offer, hopefully before it is too late.

Industrial Heritage in Developing Asian Nations

An examination of the industrial heritage of developing Asian nations shall take a look at Indonesia. Despite the fact that it has no industrial representation at a global level there exists some activity and interest at a localized level.

In Yogyakarta, Indonesia, the local tourism authorities have carefully considered the way in which it should present cultural activities to the tourists who visit the area. One of the tours that they have planned includes a visit to 3 'Historical' factories in the area. The factories each represent a different manufacturing process, including, the Taru Martani Cigar Factory, the Madukismo Sugar Factory and the Kunci Floor Tile Factory. Each of the factories are still in operation, and allows visitors to see how the products are manufactured and presents a historical background to the premises.

The Taru Martani Cigar Factory is the oldest factory dating to 1921, however the company was founded in 1918 by a Dutch cigar maker. The company was in the hands of the Japanese for 3 years during the war occupation, and then finally the cigar company was in the hands of the Indonesian government in 1945, who named it Taru Martani (Plate 8).

Plate 8 The Taru Martani Factory
(source: http://tarumartani1918.com)

The Kunci Floor Tile Factory was constructed in 1929, and similar to the cigar factory was begun by a Dutch couple. The tiles have adorned some of the most prestigious floor throughout Indonesia, and have managed to keep this reputation going until today (Plate 9).

Plate 9 The Kunci Floor Tile Factory
(source: http://yogyes.com)

The Madukismo Sugar Factory was built in 1955, not only does it represent an important aspect of the sugar industry which was one of the world's largest exporters of sugar at one point, but the site provided the iron used for the construction of the River Kwai Bridge in Thailand. The site is still in operation and the visitors to the sugar factory learn a lot about the production of Indonesia's famous crop (Plate 10 - 12).

Plate 10 The exterior façade of the Madukismo Sugar Factory (source: http://yogyes.com)

Plate 11 & Plate 12
The Interior views of the Madukismo Sugar Factor (source: http://yogyes.com)

These are promising examples of how industrial heritage can be presented for Industrial Tourism, despite the fact that Indonesia is not well renowned for a thriving industrial heritage.

The Industrial Heritage of Thailand

Thailand has *no* industrial heritage sites listed on the World Heritage List, nor on the Tentative List representing any category for Industrial Heritage.

The Industries of Thailand: In order to understand the extent of any industrial heritage it will be necessary to take a look at what type of industry Thailand has had over the years during my study period of 1850-1950. This 100 year period has naturally seen the economy evolve and mature, however the most radical and sustained change occurred only after the fall of the government which advocated state enterprise in 1959. The economy from the early 1960's moved into a period of import substitution industrialization. The National Economic and Social Development Board (NESDB) established as a planning agency produced its first plan in 1961, which was planned for a five year duration, before being updated and revised. At the same time the Board of Investment (BOI) was established to promote private investment. It was only in the mid 1980's that the manufacturing sector surpassed the performance of the agricultural sector in exports by a wide margin, a significant milestone marking Thailand's industry led economic development (Ajanant & Chunanunta 1996: p. 1)**.**

The economy pre 1960's was quite a different picture, there was little domestic investment and private foreign investment was not encouraged. Most industries were state owned enterprises, and largely inefficiently managed and run.

The term industry is a broad term used for economic activity and trade. Industry can be broken down into several categories:

- Primary sector – largely raw material extraction industries such as mining and farming
- Secondary sector – involving refining and manufacturing
- Tertiary sector – deals with services, and the distribution of manufactured goods.

Economies are also divided into either public sector or private sector, with industry normally associated with private sector. There is a strong link between industrialized nations considered developed nations, and industrializing nations considered as developing or semi developed.

Countries such as the UK are considered to be the pioneers of the Industrial Revolution, a time when technology meant that the manufacturing industry became the main source of production, and took over from a feudal style economy. Manufacturing industries such as the production of steel and iron led this change, and began a spiral of change affecting society and the way that people lived their everyday lives, such as the homes they resided in, the jobs they did, the food they ate and the way that they communicated. The UK, Europe and the US had huge extraction industries, with coal mining of primary importance. Steam powered factories and ships opened up the world in a whole new dimension.

Thailand was quite a different picture. Up until the 1960's Thailand could be described as having an agrarian economy. The vast majority of exports were derived from agricultural sources. During King Rama IV (1851-1868) a 'Tax House' was established to collect taxes and duties on imported goods. Toshiyuki Miyata is a Japanese researcher who is compiling information about trade statistics in Thailand from the period of 1854-1948. He explains the difficulties in locating the primary evidence as there appears to be paperwork missing for certain periods of time. Another problem is that no single organizations seems to be responsible for this type of archival material and is consequently spread out globally. He explains that the main source of the data has been found in Thai Customs Clearance Data, which provides the largest amount of information; however the earliest data seems to be from 1906. The British Consular Reports provide data from the late 19th century. He notes that caution must be exercised when reviewing this as a source as it may provide a viewpoint which was biased towards the British Empire and over inflating their trading position. In the book, *Twentieth Century Impressions of Siam*, published in 1903, Arnold Wright and Oliver T. Breakspear have included some tables which can indicate the industries that Siam was active in during the early 19th century.

A table extracted from the book shows the important exports from 1904 – 1907:

Names of Articles	**1904**	**1905**	**1906**	**1907**
		£		
Hides	58,215	71,288	119,323	92,943
Rice	**4,520,470**	**4,600,653**	**5,546,974**	**4,853,253**
Sticklac	28,516	48,330	43,480	22,893
Fish, Salt, Platu	20,739	38,750	63,297	43,212
Fish, Salt other than Platu	25,876	35,616	40,363	41,127
Pepper	72,560	55,145	67,494	57,265
Teak	**560,174**	**817,396**	**819,654**	**1,021,002**
Silk Piece goods	24,389	16,657	27,381	34,523
Treasure	84,414	21,075	21,235	139,226
All other goods	219,256	224,820	258,983	259,526
Goods re-exported	35,566	59,370	73,957	79,230
Total	5,650,175	5,989,100	7,082,141	6,644,200

Table 6 Siam's exports from 1904-1907
(Source: Twentieth Century Impressions of Siam, 1903: p 136)

We can see in Table 6 that the majority of Siam's exports at the turn of the 20th century are agricultural products, with Rice the largest export item by a considerable margin. Teak would be considered the 2nd largest export item. If we compare the same time period and look at the imports that Siam had (Table 7), we can start to see the way that Siam was heavily reliant on the import of certain key industries, namely steel, iron and machinery from the UK and Germany, cotton from UK, India, Switzerland and Holland and Oil from Sumatra (Twentieth Century Impressions of Siam, 1903, p. 139).

Names of Articles	1904	1905	1906	1907
	Value	Value	Value	Value
Cotton Goods	879,730	852,587	886,663	984,686
Cotton Yarn	87,648	119,015	136,213	109,310
Gunny Bags	168,219	205,761	223,877	196,249
Hardware and cutlery	65,937	67,299	113,885	98,422
Jewellery	49,793	61,545	130,886	112,772
Machinery	82,745	84,113	98,611	104,813
Matches	52,385	38,432	66,656	69,350
Steel and Iron	287,647	116,485	318,795	251,711
All other metal manufacturing	87,437	82,398	108,071	121,158
Oil, Petroleum	116,091	119,348	89,497	136,557
Oil, other sorts	57,031	62,340	70,818	104,466
Provisions	266,181	276,356	385,381	459,821
Silk Goods	151,875	122,382	157,967	215,012
Sugar	134,247	189,284	219,784	175,451
Spirituous liquor	84,803	102,447	111,956	119,527
Opium	257,044	149,532	65,489	137,356
Treasure	645,728	417,255	674,431	775,427
All other Goods	889,425	927,056	1,007,869	1,265,728
Total	4,363,966	3,993,635	4,866,849	5,437,816

Table 7 Siam's imports from 1904-1907
(source: Twentieth Century Impressions of Siam, 1903, p. 139)

Industrial Themed Sites on the National Thai Heritage List

The Office of Archaeology is under the jurisdiction of The Fine Arts Department, and both have prime responsibilities for the safekeeping of Thailand's national heritage.

It is the responsibility of the Office of Archaeology to;

1. Manage reserved National Cultural Heritage
2. Preserve and conserve as well as to undertake research on National Cultural Heritage with World Heritage site, Archaeological site, Ancient Monument and Arts Objects both from prehistorically and historical periods utilizing the technical process consisting of studying, researching and analyzing archaeological evidence for developing knowledge in social development and national culture
3. Protect, preserve and conserve to ensure sustainability of National Cultural Heritage
4. Disseminate and publicize archaeological data and information to the public

(source: http://archae.go.th)

The Act on Ancient Monuments, Antiques, Objects of Art and National Museums (1961) is the legislation that is used to protect and conserve national heritage. Thailand, rather surprisingly, has 51 nationally designated sites which fall under the umbrella of industrial heritage if we use the definition from *The Nizhny Tagil Charter for Industrial Heritage (2003):*

> Industrial Heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.

There is a diverse selection of properties types ranging from radio stations (communication) to bridges (civil engineering) and kilns; a breakdown of these types is shown in Table 8:

Type of property	Number of sites registered
Bridges	29
Kilns	7
Railway Stations	4
Printing Houses	2
Water Towers	2
Light house	1
Stone cutting site	1
Radio station	1
Chimney	1
Distillery	1
Cannon making site	1
Mint	1
Total	**51**

Table 8 Showing the number of sites and typology of properties of nationally listed industrial heritage sites (author)

The earliest listing dates back to 1935, when 3 of the kilns were listed. At first glance it appears that the list represents an interesting mix, however 56% of the sites listed are bridges.

The following pages show some examples of these sites, with The Kuru Sapha Printing House covered in more detail.

Bridges, Bangkok

All of the bridges which are nationally listed have been listed for their architectural and aesthetic value and historical connection to royalty rather than as a product of its civil engineering capability. This shows that despite the fact that bridges are generally classified as having an industrial theme; the bridges here are not acknowledged in the same way.

Chaloerm-La 56 belongs to a set of 5 bridges which span the Krung Kasem khlong. 'Chaloerm', meaning created by God, date back to 1895 when King Rama V (1868-1910) commissioned a new bridge to be built annually to celebrate his birthday (Figure 4). Thewakan Rangrak bridge also spanning Krung Kasem khlong at the junction of Nakhon Sawan rd was opened by King Rama V in 1900 (Plate 13 and Plate 14).

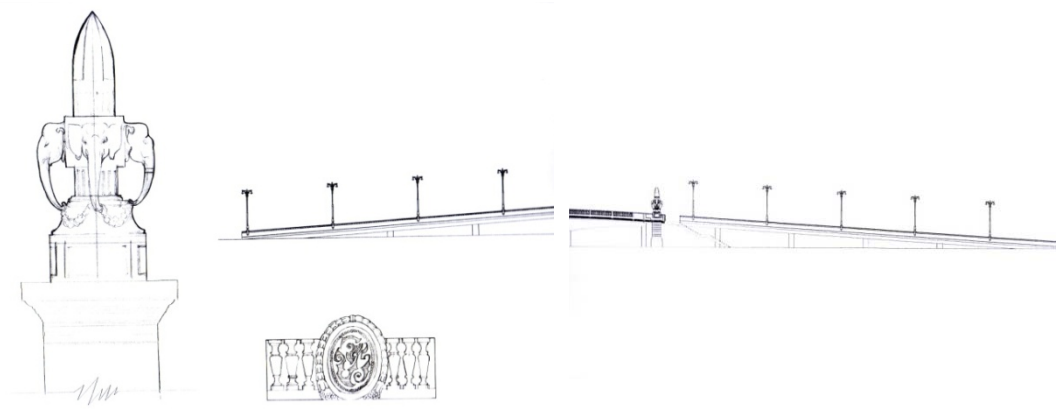


Figure 4 Chaloerm-La 56 bridge
(source: Architectural drawings of historic places in Thailand, 2008)

Plate 13 & 14 The Thewakan Rangrak bridge (author)

The ‘Charoenrat 31’ (Figure 5) was built in 1910 to celebrate King Rama VI (1910-1925) 31st birthday which was built during his 1st year as the reigning Monarch.

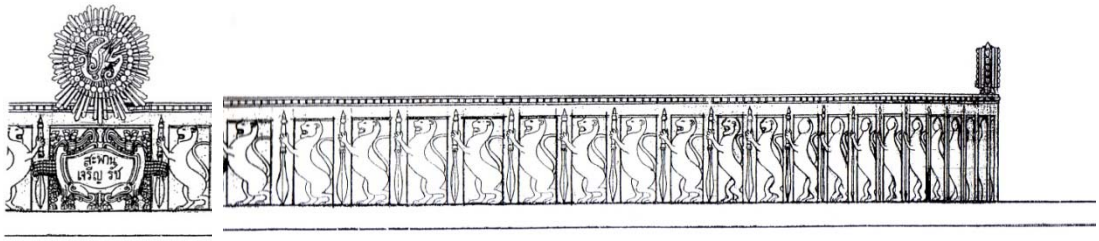


Figure 5 Charoenrat 31 bridge
(source: Architectural drawings of historic places in Thailand, 2008)

The detailing on the bridge Mahatthai Uthit was opened in 1914 and depicts people mourning the loss of King Rama V (1968-1910) in 1910 (Figure 6). Makkawan Rangsan bridge and Phan Fa Lilat bridge are both located at different positions along Ratchadamnoen. Makkawan Rangsan bridge (Figure 6a) was completed in 1903, and designed by Italian engineer Carlo Allegri, it allowed Ratchadamnoen to cross over Krung Kasem khlong. Phan Fa Lilat bridge (Figure 8) crosses over Bang Lamphu khlong, and was constructed in 1900-1903.

Figure 6 Mahatthai Uthit bridge
(source: Architectural drawings of historic places in Thailand, 2008)

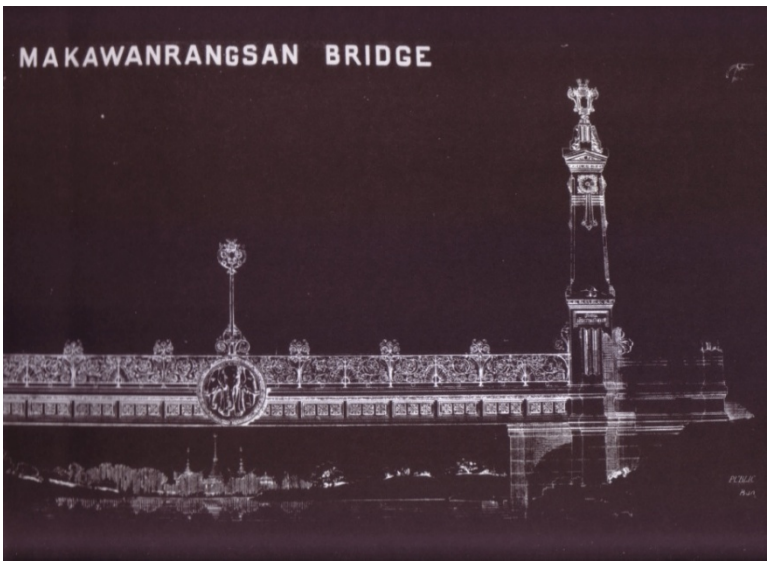


Figure 6a Makawan Rangsan bridge
(source: Architectural drawings of historic places in Thailand, 2008)

Radio Station, Lumpini Park, Bangkok

The radio station located inside Lumpini Park was listed in May 1983. The station was used for telecommunications purposes in the 1930's (Plate 15).

Plate 15 The Radio Station in Lumpini Park (author)

Metropolitan Water Authority (MWA), Water Tower at Maen Sri, Bangkok

The water tower in Maen Sri District, Bangkok was listed as a national monument in 2002, following a report and survey commissioned by the Fine Arts Department and completed by by the Office of Archaeology in 2001. The exact date of the construction is unknown but evidence of land rights show that the land belonged to King Rama VI period (1910-1925). We also know that King Rama VI attended the opening ceremony of the 1st water tower in Samsen district, Bangkok on November 14th 1914. We can assume therefore that the Maen Sri water tower is built between 1914 -1925. The older water tower in Samsen has since been demolished. The Maen Sri tower is significant for representing improvements within the infrastructure of the city of Bangkok in providing clean water which was established during King Rama V period. In 1903 the MWA employed a foreign specialist to help established a water system in Bangkok (Figure 7).

Figure 7 Plan of Maen Sri water tower and photographs (author)
(source: Floor plan FAD, photographs author)

The Kuru Sapha Printing House – A Case Study of National Value

Located within the Banglamphu district of Bangkok the Kuru Sapha Printing House is a building which has long been the focus of contention between local government and local communities. The site of the Kuru Sapha Printing House represents several important aspects both on a local level of significance and also on a national level of significance.

The printing house was the 1st printing school that existed in Thailand. From 1933 the building's function was to produce important books, documents, periodicals and newspapers for the local Wat Sangwetwisayaram and the Ministry of Education.

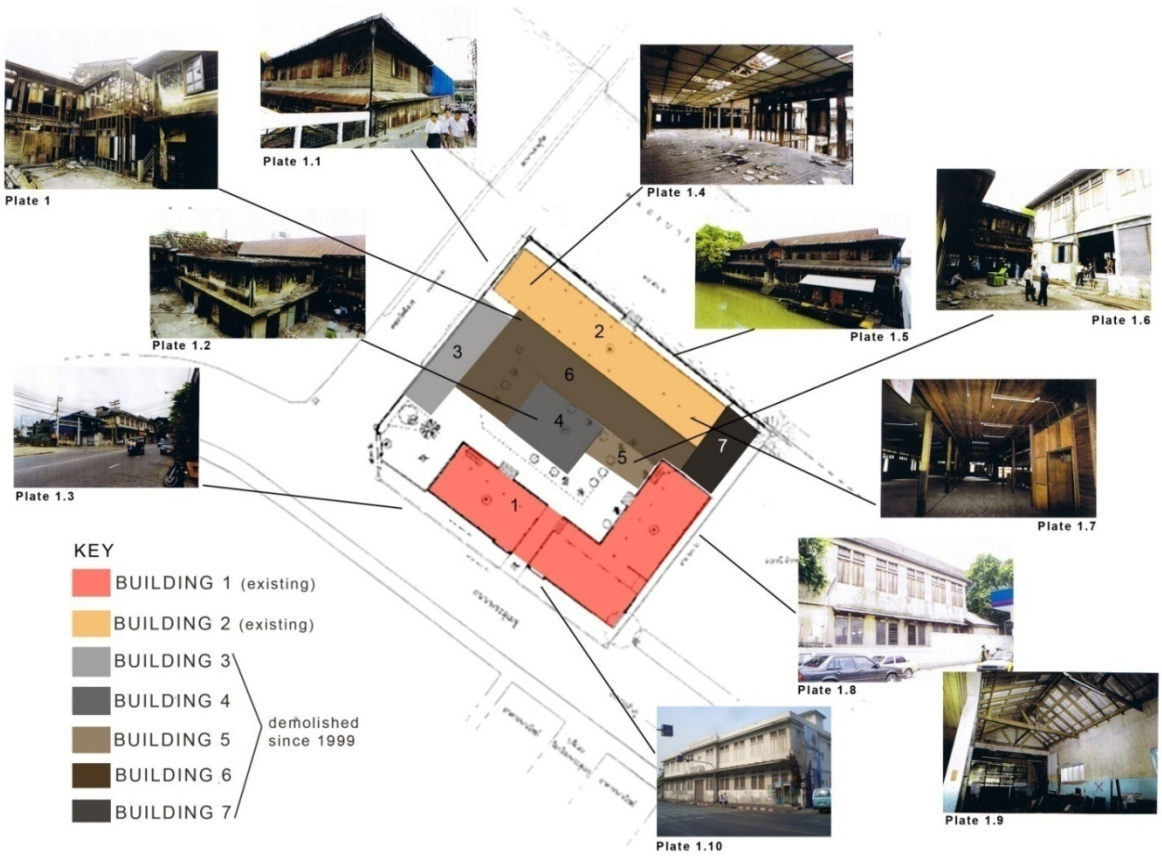
The growth of literacy levels and education were assisted by the growth of the press and printing industry. The social value of the printing industry also allowed for the freedom of ideas to spread throughout the nation. The rise of this new 'mass media' was crucial in the way that the printing industry was able to disseminate information relating to new cultural, political and social thoughts during the 1930's in particular.

The site also demonstrates a variety of architectural styles, each unique in their own way. The masonry building which is located along Phra Sumen rd dates back to 1925, and is a good example of an industrial building using western architectural elements. The simplicity of form reflects the economic state of Thailand during the construction period. There are not many buildings within Bangkok which have a similar architectural typology as this.

The timber building which runs adjacent to the Banglamphu khlong is a fine example showing traditional timber construction dating to 1933. It is also unusual to find a building of this size and in this condition. It is reputed to be the largest timber building in Bangkok.

The site has been under constant pressure since the late 1980's and its survival still appears to hang in the balance to the present day, despite its heritage listing by the Fine Art Department (FAD) in 2001.

Figure 8 shows the layout prior to the demolition of several buildings in 1999. The exact function of buildings 3,4,5,6 and 7 is not confirmed.



Key to Plates on Figure 2.8 (photos from FAD report)

Plate 1	View looking at the junction of building 2 & 3
Plate 1.1	View looking from the khlong bridge at building 2 & 3
Plate 1.2	View of building 4 taken from building 1
Plate 1.3	View looking down Phra Sumen rd at building 1
Plate 1.4	Interior of building 2 & 3
Plate 1.5	Rear view of building 2
Plate 1.6	Examining the area where building 5 once stood
Plate 1.7	Interior view of building 2 & 6
Plate 1.8	Side elevation of building 1 & building
Plate 1.9	Interior view of building 7
Plate 1.10	Exterior view of Building 1 (photo by author)

Figure 8 Floor Plan and photographs of Kuru Sapha Printing House prior to demolition (author)
(source: Floor plan and photographs from Office of Archaeology, FAD report 1999)

Analysis of 'The Printing Building' (Building 1)

When the building was constructed in 1925 it would have had a significant impact due to the fact there were very few other buildings in Bangkok with a similar architectural aesthetic, therefore standing out as having a unique appearance. There were other buildings in the vicinity which also contained western architectural influences , such as the Princes' Palaces along Phra-Athit rd however, these buildings were much more lavish in their appearance, and had much more detailing and decoration on them, compared to the stark and unadorned Printing House. The Thai architect who designed the building used western architectural elements with the flat roof being the most 'untypical' Thai element used.

The industrial nature and function of the building required it to have rows of large windows, and large entrances for the equipment to be easily transported into and out of the printing press. Heavy equipment also meant that the building needed to be able to support large loads. It is constructed of masonry (brick) and has a painted cement based render on the exterior whilst the interior has several timber elements such as the flooring, staircases and the window framing. The building is presently in a condition which could be improved and is currently unoccupied as it is being used by The Treasury Department as storage/warehouse space (Plate 16, Plate 17 & Plate 18).

Plate 16 & Plate 17 Front elevation of Kuru Sapha (author)

Plate 18 Inside the courtyard at Kuru Sapha (author)

The exterior finish (walls /roof):

The building is of brick construction which has had a cement plaster render applied to it. This would have been done for 2 reasons, to weatherproof the building and also to create a more aesthetically pleasing finish hiding the bricks behind.

As the purpose of this study did not go further than a visual inspection it is impossible to establish the exact physical components of this plaster finish. It is expected that it would have been either a cement/sand mix or a lime/sand mix or a cement/lime/sand mix however the proportion of those components is not known without undertaking a laboratory sample testing the material.

A higher content of cement to lime would result in a stronger plaster, and would have set much faster to a lime based plaster which is slower setting but provides a much more breathable finish, creating a healthier alternative in the long term.

It is presumed that due to the budget restrictions of the building the plaster would be a cement/sand/water mix, as lime based plasters tended to more expensive.

It is believed that sometimes sugar cane juice was added to retard the curing time of the cement allowing it be applied more freely. It is not confirmed however that the plaster at the printing house contains any sugar cane juice.

The images show that in certain places the walls need patching, and have indeed been patched at some point in the past. I have analyzed each elevation, including the roof of the building, and highlighted the problems that are occurring within the fabric of the building (Figure 9 - 12).

Considering the building has had little attention since the other buildings were demolished in 1999/2000 it appears to be in a reasonable condition, however if care and maintenance are not kept then the building could soon fall into serious disrepair. There are several small problems which I have noted on the images which could improve the buildings condition.

Figure 9 Kuru Sapha - Exterior east elevation wall details (author)

Figure 10 Kuru Sapha - Exterior north elevation wall details (author)

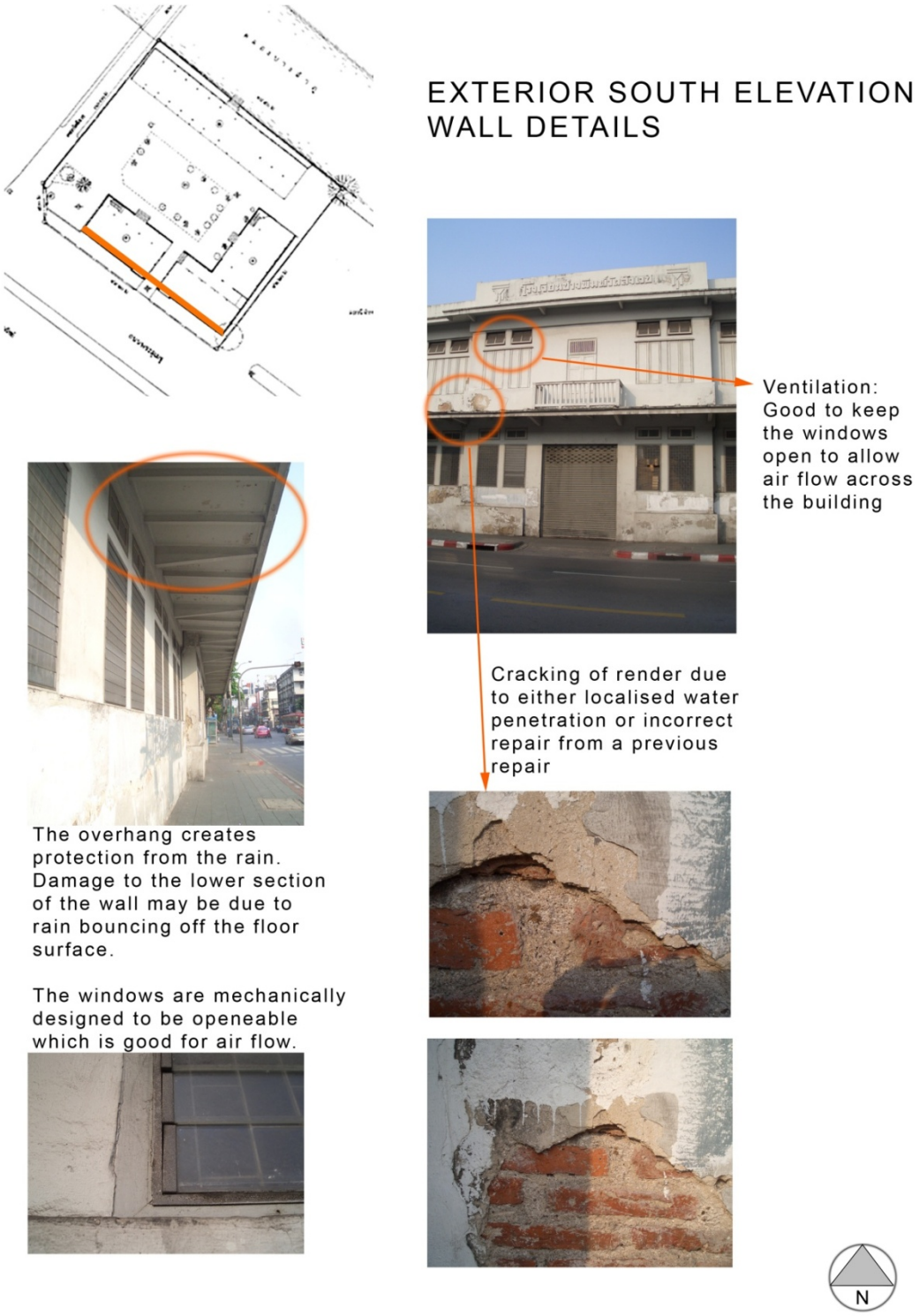


Figure 11 Kuru Sapha - Exterior south elevation wall details (author)

Figure 12 Kuru Sapha - Exterior roof details (author)

Figure 13 and Figure 14 provide information relating to the condition of the interior of the building.

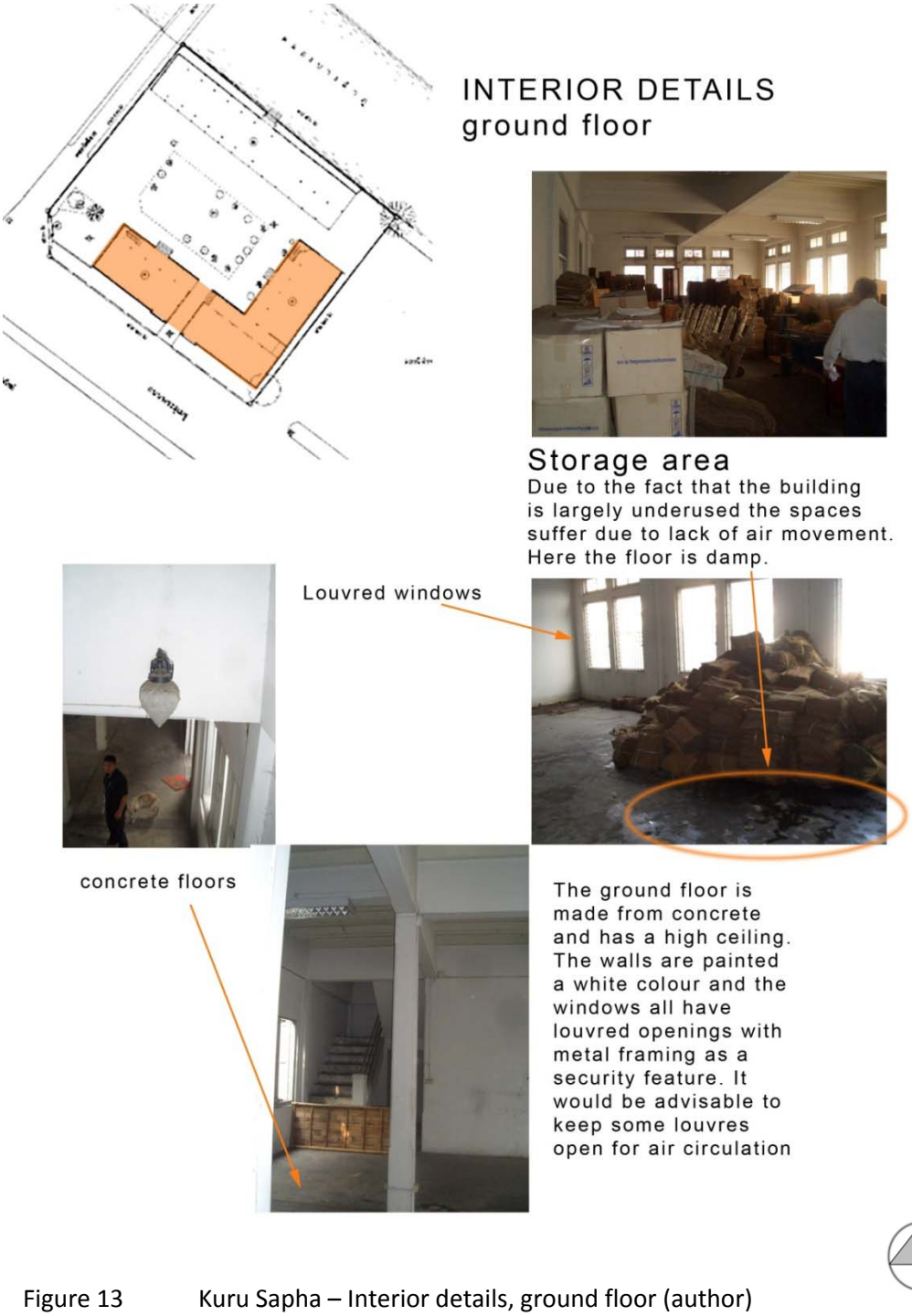


Figure 13 Kuru Sapha – Interior details, ground floor (author)

Figure 14 Kuru Sapha – Interior details, upper floor (author)

Analysis of 'The Printing School' (Building 2)

This building was constructed in 1932 and is a timber building with some concrete structural elements on the ground floor whilst the upper floor is an all timber construction. The dimensions for the building are 7m x 23m.

This building is hard to investigate as there is no access to the upper floor since the staircase was removed. It was believed to have been removed for safety and security reasons. There was some timber decay identified on the building, which was mainly along the underneath of the ceiling of the upper floor along the overhang which connects the building to the edge of the khlong. Several timber members are missing and several severely bowing. The structural failure at this point of the building could be attributed to biological decay from fungi from either moisture contributed by penetrating rising damp, condensation or a major leak which has occurred. This will have led to either dry rot or wet rot occurring. A high moisture content within timber (dry rot requires 20°c - 40°c and wet rot requires 50°c - 60°c moisture content) coupled with optimum temperatures between 20°c - 30°c will result in the growth of fungi. Wood boring insects such as woodworm, death watch beetles, moths, and termites are another concern. The larvae of these insects bore through the timber and whilst feeding off it causing huge damage to the strength of the timber. Without being able to identify the timber at a closer range it is hard to establish the exact nature of the decay.

The timber posts which run along the inside of the building appear to be sound and not suffering from structural failure or decay of any sort. The foundations are made from concrete footings to which the timber posts are bolted to (Figure 15).

The concrete post and beam construction which runs along the south elevation also appears not to be suffering from any soluble salts of any kind (Figure 15).

This could be due to the fact that the structural members are exposed and is subject to maximum air movement and relatively constant temperatures throughout the year.

The horizontal wood sidings which comprise of the walls on the upper floor appear to be in good condition with all the members present (Figure 16). This is partly due to the structure being designed with an overhang surrounding the building which keeps the rain off the walls of the building as much as possible (Figure 16).

There is some flashing identified at certain points which could be potential danger water spots. On the east elevation a down pipe seems to stop abruptly and some metal flashing inserted to keep water off the timber (Figure 16).

The gabled roof is designed to enable rain water to run off with ease. Examining the roof from building 1 the corrugated zinc roof appears to be in good condition. However it must be emphasized that without proper access to the upper floor it is impossible to know what the condition is like within this floor, and therefore how watertight the roof structure really is (Figure 16).

On the east elevation there is a temporary ‘home’ situated underneath which is where the security guard lives (Figure 15). It should be noted that this area should be kept as dust and dirt free as possible to prevent a haven for insects and fungi from developing.

Figure 15 Kuru Sapha - exterior wall + ceiling details (timber building) (author)

Figure 16 Kuru Sapha - exterior roof and wall details (timber building) (author)

There are several areas within both of the buildings which need attention, some more serious than others.

The buildings would need a detailed and extensive survey where the members are tested for moisture content. This can then be monitored over a period of time to see how the buildings are coping, or whether there needs to be some form of intervention. I believe also that as the building is empty then it is unlikely that the owner (The Treasury Department) will invest in repairs. They should however be cautious that if they leave any major problems unresolved then these will in turn deteriorate rapidly over time.

The future of the use of the building is still uncertain, however if the local communities can secure a new function such as a local museum or local community centre then the buildings will need to ensure that the occupants are safe, and this will definitely mean that the building will need some works carried out, depending on the use of the buildings this may be remedial or major (if using the timber building).

It may also be a useful suggestion that they place dehumidifiers inside the building. This may stabilize and lower the humidity content within the air, reducing moisture in the air. It is often useful for buildings which are unoccupied as the temperature is stable and fairly constant. Finally, an attempt should be made to eradicate any standing ground water and to keep all down pipes and gutters clear from debris.

The national listing of the sites mentioned here shows a positive and encouraging approach from the Fine Arts Department, however, at closer inspection the majority of the sites have reference or are connected by a royal theme. The majority of the bridges are royal commemorations built during King Rama V or King Rama VI period. Most of the railways have a royal connection, or were built as royal stations, such as Bang-Pa-In in Ayutthaya.

Despite a tendency for nationally registered heritage sites to emphasize and represent either a royal connection or to have a religious association, the Bangyikan distillery and the Kuru Sapha printing house are nationally listed heritage sites which are proudly representing a modern, Thai industrial architecture.

Chapter 3

Heritage Policy in Thailand

The heritage policy of Thailand is the critical driving force behind the legal protection of heritage sites. It is therefore important to understand the role that the national government plays, the evolution of the conservation movement, heritage policy today, and also what is being planned for the future. We saw previously in Chapter 2 that Thailand does have industrial heritage sites which are indeed valued as being significant through their national listing, however, the current heritage policy classification system does not allow them to be recognized as being 'industrial' as such, and therefore the value of the sites becomes unclear. Thailand is an active advocate of protecting its heritage resources, however the policies current in place do not always assist in both protecting the correct sites through having a rather narrow defined definition of what heritage is.

The ASEAN Declaration on Cultural Heritage was signed in Bangkok in 2000 by the foreign ministers of 10 ASEAN member countries (including Thailand) and states:

> To guarantee the protection, preservation and promotion of each Member Country's cultural heritages, **each Country shall formulate and adopt policies, programmes, and services and develop appropriate technical, scientific, legal, administrative and financial measures for this purpose**.

It clearly states that each member country should adopt its own policies, principles, guidelines or charters for the protection of their own cultural heritage.

The declaration raises some interesting points, notably:

- Asia has a vast resource of rich cultural heritage.
- These cultural resources are in danger from negligence, climatic conditions, illegal trading, natural disasters and human dangers (such as conflict and war).
- Heritage belongs to the people and communities and they need to empower this. Protection needs to start and be promoted at grassroots level.
- Assistance from the international community is required for economic and technical resources.
- Globalisation threatens the demise of cultural identities.

In the 9 years following the signing of this declaration, Thailand can be seen to have made some improvements and progress on heritage policy issues, however, the practical application of any amendments and changes often appears slow and convoluted. Several national laws and acts should be updated to be more inclusive of heritage sites not yet covered, and sometimes to simply update definitions and wording. The advancement towards a new Thai Heritage Charter is a major step forth in bringing Thailand into the 21st century and updating the current *Fine Arts Department Regulations on Conservation (1985)*.

Towards a New Thailand ICOMOS Charter

Charters can provide essential support in guiding principles for conservation issues. Charters are not legally binding in themselves, but several countries known for their progressive heritage policies have implemented their own heritage charters, such as Australia's *Burra Charter*, and China's *China Principles*.

In November 2005, ICOMOS Thailand held a seminar called '2 Decades of ICOMOS Thailand: Cultural Heritage Conservation'. It was an important milestone in the development of a charter which is specifically for Thai contexts. The president of ICOMOS Thailand is hopeful that "this charter will be a true reflection of ideas, ways of life, and culture of the Thai people; a guideline that is truly suitable for our country and people".

The aim of the seminar was to disseminate initial thoughts and stimulate discussions related to the content of the charter. A proposed draft charter is currently divided as follows:

Section 1: Background
Section 2: Definition
Section 3: Evaluation
Section 4: Protection
Section 5: Management
Section 6: Knowledge base and knowledge dissemination
Section 7: Participation

The outcome of the seminar provided some useful insights which should be included in the charter. I have tabulated these findings for ease of reference in Table 9:

Concerns / Problems / Issues	**Suggestions**
Human equality – The Thai identity can be described as an "integrated identity" coming from a diversity of ethnic groups and cultural backgrounds	• Must recognize cultural heritage from ethnic groups, and conserve with the same standards and rigour as you would for Thai cultural heritage.
Conservation Management Plans are not implemented correctly which leads to a lack of coordination amongst the stakeholders.	• Improve cooperation among conservation stakeholders and agencies involved and define the role of each participant.
Public participation is limited, through a lack of understanding	• Increase publicity through the media. • Improve relationships between the government and public. • Establish a system for feedback.

Fragmented information sources	• Registration of monuments, sites and craftsmen. • Set up a database listing the monuments and sites, a 'data centre'.
Conflicting and out of date Laws and Policies	• Need to make all relevant laws and regulations up to date, and ensure they are not in conflict with each other.

Table 9 Summary of key points for Thai Charter (author)

The following table is a summarised list extracted from Section H of *The Hoi An Protocols* which could be relevant and also useful to include within the Thai Charter (Table 10)

Concerns / Problems / Issue	Suggestions
Lack of education for conservation professionals and site managers.	• Improve training and develop programmes which are Asian in focus and content.
Natural and man made disasters are not carefully coordinated in the post disaster phase	• Implement the Kobe/Tokyo Declaration on Risk preparedness for Cultural Heritage of 1997
The Modernisation of road and infrastructure development in rural areas is endangering some cultural heritage and archeological sites.	• Impact studies must be carried out prior to beginning a project and then a post conservation study including evaluation and monitoring.
Within historic urban districts transport (traffic) poses an enormous threat in terms of pollution, access and encroachment and physical damage to heritage resources.	• A transport study should be undertaken to integrate conservation with infrastructure and urban planning.
Decline in traditional building crafts, artisan skills and material production.	• Provide training and institutional support to ensure these skills are continued.

Table 10 Summary of Section H, *The Hoi An Protocols*

The importance of heritage belongs to the values that we attach to places and things for the enjoyment of people. It is a way of enriching our society, it provides a link with the past, it can create an identity of 'who' we are, and 'where' we have come from.

In countries which have experienced continued conflict, and natural disasters such as earthquakes or the tsunami, then heritage is a way to bond the community. This appears more critical in South East Asia in the current spate of natural disasters. Ken Taylor discusses how popular heritage as a movement has become in recent times in Asia:

> Heritage is appealing and fashionable; it has the distinction now of embracing ideas of everyday ordinary heritage of people, events and places through time. People want to know about their history and want it interpreted in such a way that it suffuses their need for memory connections.

'Cultural Heritage Management: A Possible Role for Charters and Principles in Asia' provides a holistic and narrative account, and a perfect departure for the development of a Thailand Charter. It relates to charters and how they are used in assessing value and significance and also the notions of authenticity and integrity and how these terms must be used with caution and with an understanding from an Asian perspective.

The essay provides a useful historical overview of International Charters and then continues to explain the reason for the development for each. It summarises the key points and considers whether it is applicable and appropriate for the Asian condition.

Authenticity from a Thai Perspective

In dealing with specific issues such as Industrial heritage, then *The Nizhny Tagil Charter for the Industrial Heritage* is the most comprehensive document in guiding the preservation and conservation of a nation's industrial heritage. This international charter may need to be adapted for local Asian conditions as it states in Part 4 (iii) of *The Nizhny Tagil Charter for the Industrial Heritage (2003):*

> **The most important sites should be fully protected and no interventions allowed that compromise their historical integrity or the authenticity of their fabric**. Sympathetic adaptation and re-use may be an appropriate and a cost effective way of ensuring the survival of industrial buildings, and should be encouraged by appropriate legal controls, technical advice, tax incentives and grants.

The issue of authenticity is one which must be dealt with caution and sensitivity especially for Asian contexts. 'Authenticity' has become a word which is synonymous with heritage resources. A question which still remains an active topic of discussion is, how do you determine authenticity? It is widely acknowledged that the Asian view of authenticity varies from the Western notion of authenticity.

From an Asian perspective it is acceptable to replace the fabric as quite often the value resides primarily in the continued spiritual meaning and symbolic fabric. This is a critical point of departure for eastern and western views. *The Nara Document on Authenticity* was important in acknowledging the difference in eastern and western thinking. *The Hoi An Protocols* and *The China Principles* show that it is acceptable to accept and allow change over time:

> Physical remains must be in their historic condition. This includes a site's condition after undergoing repeated adaptations throughout history, or its condition as a result of deterioration or damage over a period of time.

The Hoi An Protocols stress the importance of the retention of authenticity. The definitions reveal that it is based upon *The Burra Charter* definitions, and the difference between Reconstruction and Restoration are important factors for authenticity:

> Reconstruction means, returning a place to a known earlier state and is distinguished from restoration by the introduction of new material into the fabric. (*The Burra Charter Article 1.8)*.
>
> Restoration means, returning the existing fabric of a place to a known state by removing accretions or by reassembling existing components without the introduction of new materials. (*The Burra Charter Article 1.7)*.

The term restoration is used different under the FAD's current regulations, and appears to pay homage to the Venice Charter whereby:

> Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original. (*The Venice Charter, Article 12*).

Authenticity must be seen as culturally relative, and therefore it must be defined for the Thai Charter specifically for Thai cultures and traditions.

For Thai's the spirit of the place is often much more significant than the actual physical fabric, and therefore to initiate change to the fabric does not alter the value of the significance. A good example can be seen in the case of Phra Phuttabat Buabok, which is a natural heritage site in Udon Thani, Thailand. The value of the site is significant because of the folk tales associated with Buddha. The site became a place of devotion and it was declared an Historical Park by the FAD, despite the fact that it contained neither historical nor artistic significance.

Under article 16 of the FAD regulations religious places or sacred sites are considered separately which allow more freedom for conservation policy. Article 16 states that:

> Living monuments are not required to keep their original features in case of additional functions or change of functions. It is acceptable for necessary additions or alterations; however the new parts should harmonise with the original and should not have damaging effects to the original values.

Living monuments is a broad term, which perhaps needs to be tightened to only include religious places, which are still functioning as places of daily worship.

Mr Vasu Poshyanandana (ICOMOS Thailand) suggests that a distinction should be made between 'living monuments' and 'dead monuments'. Article 11 of the FAD regulations states that:

> highly valuable art objects that should be conserved by preservation method so the object is not returned to its original state of newness, however, objects of worship are exempted from this rule because their values are beyond history, archeology and aesthetic.

It appears that this is not a new approach as in the past the Royalty and nobility bore the responsibility for the upkeep of temples and images where the main purpose of conservation was to preserve the intrinsic potency (saksit) rather than any historical value.

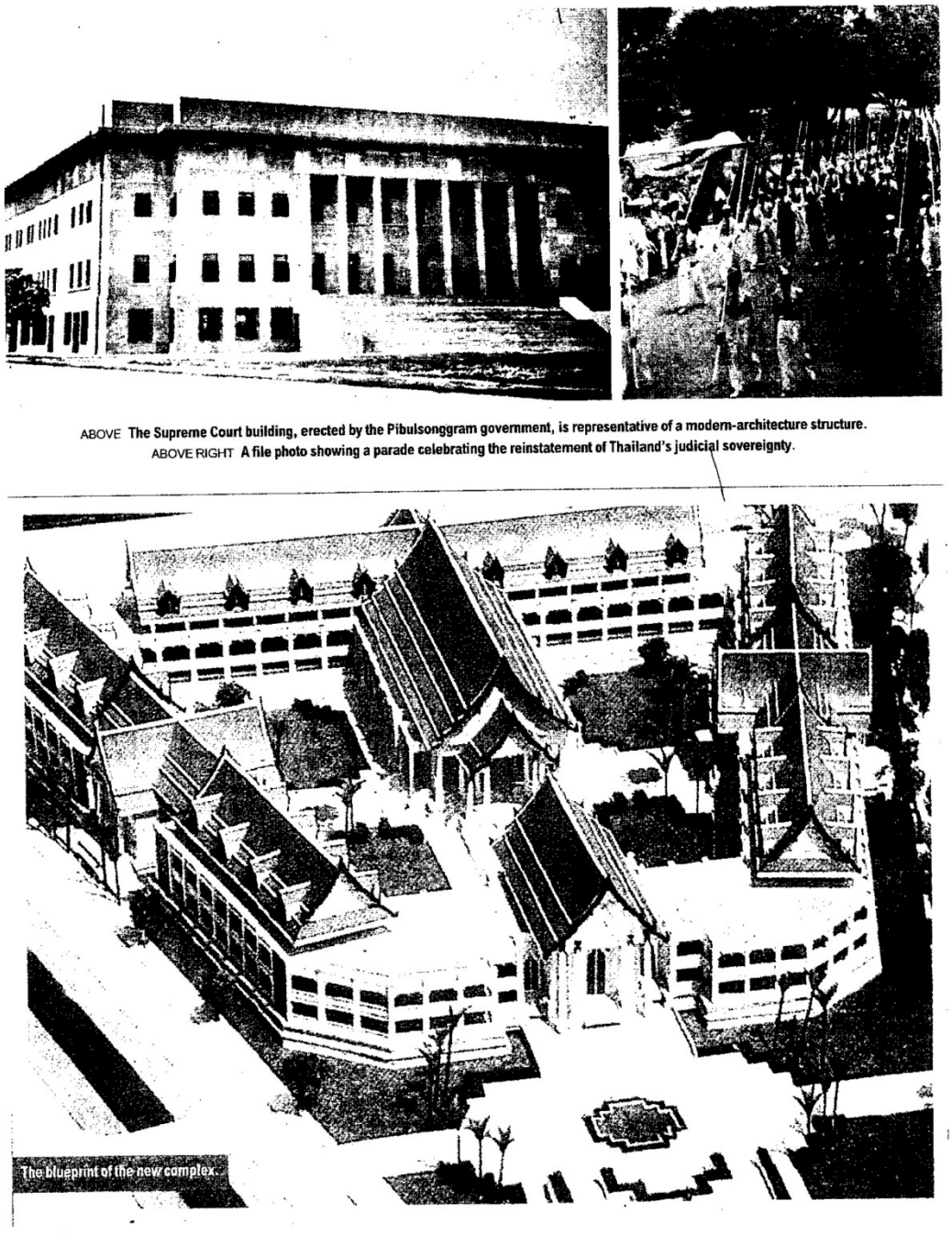
'*Moradok Chat*' - A Thai Heritage Aesthetic?

Historically speaking, we can see the way that architecture and urban planning has in the past, defined, and represented a particular political period. It is often manipulated at a later stage to either denounce a certain period, or used to glorify a certain era. The proposed demolition of the Supreme Court is a good example of using architecture as a scapegoat. The building was constructed over a number of phases from 1941 to 1963 whilst Field Marshall Phibun was in power. His nationalist regime represented a departure from any traditional or royalist symbols which lasted for about 20 years until 1957.

Ajarn Chatri Prakitnonthakarn from Silpakorn University believes that 'the plan to replace the current Supreme Court Building was another effort to remove symbols of the People's Party from Thailand's political history', (The Nation, Outcry over Supreme Court building, October 15th 2007). In the same article in The Nation newspaper, he describes:

> The government [led by the People's Party] used the simplicity of the modern architecture as a symbol of its political ideology - representing 'ordinary people' and 'equality' in a democratic system," said Chatri. The Supreme Court Building is one of historical symbols of the People's Party.

The Bangkok Post also featured the controversies of The Supreme Court in an article on 20th October 2008, "Protecting a Guardian of the Law", the photographs in the article show the building and depict an impression of how the new Supreme Court will look.



ABOVE **The Supreme Court building, erected by the Pibulsonggram government, is representative of a modern-architecture structure.**
ABOVE RIGHT **A file photo showing a parade celebrating the reinstatement of Thailand's judicial sovereignty.**

The blueprint of the new complex

Figure 17 Article from the Bangkok Post
(source:,'Protecting a Guardian of the Law', The Bangkok Post, 20th October 2008)

Ajarn Chatri has also been at the centre of other heritage related conflicts especially concerning issues which are related to or which threaten modern architecture especially from the period since Constitutional Monarchy was established in 1932.

The term 'Moradok Chat' was coined in the late 1970's as Bangkok was already preparing to celebrate her 200 year anniversary. The term describes a definition of a 'Thai Heritage' which embodies a nationalist and royal - centered historical narrative (Askew 2002, p. 288).

The Rattanakosin Conservation Project was endorsed which was initiated to conserve various parts of the traditional heart of Bangkok. Askew describes that the project was aimed at restoring a traditional Thai royal urbanism (Askew 2002, p. 291). The economics of the tourism industry were also a driving force behind this policy too. The main tourist attractions included the traditional royal quarters such as The Grand Palace and other Chakkri monuments which litter the inner parts of Rattanakosin. This process of 'beautification' included the controversial removal of the communities. One of these communities was the Tha Tien community who had resided in this area for hundreds of years. This community were deemed not to fit in with the master plan to establish parks and paths along the precinct's canals to allow local and foreign tourists to circulate through the zone (Askew 2002: p292).

The Kuru Sapha Printing House in Banglapmphu is another example of attempts to beautify and clear out buildings and communities that didn't fit the 'Moradok Chat' image. The architectural merits of the building were discussed previously in Chapter 2, but the journey to its national listing was not a smooth one.

Since 1998 the building has been under threat from demolition, and the suggested use would be to turn the land into a small public park. The site has been under constant pressure since the late 1980's. The Rattanakosin Committee were the advocates in the decision to demolition the building. Adul Wichiercharoen, a member of the committee was interviewed by The Nation newspaper. He stated:

> Historical buildings should be older than 100 years, have an important historical background or meet the fine art standard. The building is only an old wooden edifice that was built in 1932. Its unpleasant appearance just improved recently when the Treasury Department, which is responsible for the plot repainted it. (*The Nation*, September 6th 2004)

He continued to state that demolishing the building would improve the scenery around Phra Sumane Fort. The building was essentially 'saved' when a group of civic leaders who represented the local communities raised concern over the demolition plans. Orasiri Silpi an area resident and member of the Banglamphu civic net stated in the same article as above:

> The building has a very significant history. It was the first printing school. It is an example of the old wooden architecture. I don't understand why the committee cannot see that. (*The Nation,* September 6th 2004)

She continued to state that the building contained too much historical value to be demolished just for an open park. The central disagreement over the fate of the site lay between these 2 main components, the government led committee and the local community where the building is located.

Graeme Bristol presented a paper titled “Strategies for Survival; Security of Tenure in Bangkok” for a report “Enhancing Urban Safety and Security: Global Report on Human Settlements 2007”.. Graeme Bristol is an architect at King Mongkut‘s University of Technology Thonburi (KMUTT). His paper approaches the plight of the Pom Mahakan community from a slightly different angle of human rights and urban development as they faced the threat of eviction. Similar to Askew he points out that the community of the Mahakan fort area simply did not fit in with the Bangkok Metropolitan Authorities master plan for land development around Ratchadamnoen area. They wanted to increase the park land area around the Golden Mount (Wat Saket) which meant the destruction of traditional timber homes and the removal of the inhabitants (Figure 18).

Once again we see that the approach of conservation and preservation policy has been planned around protecting royal vistas, at any cost. The traditional vernacular teak homes dating back over 150 years appear worthless and would not provide so much tourist interest, or so they thought.

A key lesson learnt from this issue, is that there was very little public participation at the beginning of the proposal. Had the local government been able to consult with all the parties from the beginning then they would have not experienced so much resistance, and would have been able to adapt a plan for all.

There are valuable lessons to be learnt from the Mahakan community eviction case. Perhaps the saving grace came after they managed to gain international attention at the United Nations Committee on Economic, Social and Cultural Rights. The community amassed a lot of support from local academics, and NGO’s who each took up the struggle to fight for the people’s rights to stay. Eventually security of tenure was achieved in 2006, and Silpakorn University was asked to compile an inventory of the buildings and landscaping.

We can see that pressure from developing the economic potential of the tourism industry in Thailand has led to certain heritage sites being considered as invaluable. The heritage policy needs to address this issue, and ensure that a balance can be achieved where tourist industry development can continue without compromising or losing significant sites of the nation’s heritage.

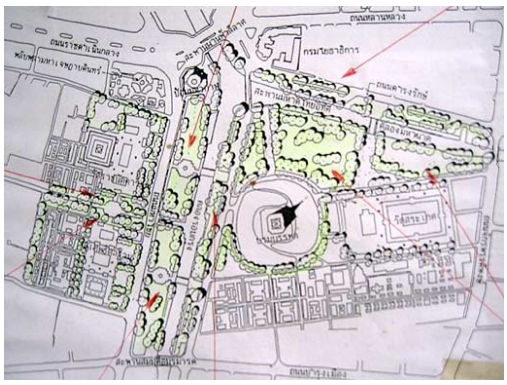


Figure 18 The BMA's park plan
(source: http://2bkk.com)

Historical Review of the Thai Conservation Movement

King Rama IV (1851 - 1868) under pressure from the imperialist powers commissioned a small museum which was established to display ancient objects for visiting European dignitaries to Siam. The main purpose was to demonstrate that Siam was a *civilising* nation, "in order to authenticate the culture, unity, continuity and legitimacy of the Siamese state and its rulers" (Askew 1996, p.18).

King Rama V (1868 - 1910) continued the modernization of the nation with a surge in European influences across Bangkok, the introduction of new building types such as shophouses, roads, railroads and trams dramatically changed the urban landscape.

In 1912 Rama VI (1910 - 1925) founded the Fine Arts Department which increased the desire to admire and reflect upon past cultural achievements. The Fine Art Department continues to remain as the most influential body in Thailand regarding conservation issues. In 1916 Prince Damrong Rajanuphab was appointed to head the National library. He worked extensively on recording a history of the ancient towns and cities of Thailand, such as Sukhothai, Lobpuri and Ayutthaya. In 1924 the Archeological Service was established to assist in the excavation of these ancient towns and cities. 1n 1935 the Fine Arts Department prepared the first legislation for the protection of ancient monuments, sites and artifacts. Shortly afterwards it gave the department the authority to designate sites they felt worthy of conserving.

The political climate of the 1930's under Field Marshall Phibun as nationalist prime minister and military dictator (1938-44, 1948-57) saw a move towards a new form of Thai nationalism which led to an increase in valuing 'treasures of national value' such as Sukhothai. It also led to a huge increase in monuments and commemorations which was aimed at instilling patriotism and loyalty. The UNESCO *Convention of the Protection of the World Natural and Cultural Heritage* in 1972, lead to heritage becoming an everyday term within the public domain. International tourism was also gaining momentum and there became a clear reality and understanding that the Thai nation contained a treasure trove of resources that they

could potentially use for economic gains as well as for cultural preservation. In 1987, Thailand accepted the terms of the World Heritage Convention (1972). The World Heritage listing of The Historic City of Ayutthaya, the Historic Town of Sukhothai and Associated Historic Towns, and Thungyai-Huai Kha Kaeng Wildlife Sanctuaries, all in 1991, was the result of a determined push by Thai conservationists and the government in the 1980's to ensure that heritage issues within Thailand were recognized at an international level.

The Key Players in Contemporary Thai Heritage

Heritage and conservation issues are influenced and affected from a variety of organizations, bodies and movements, often these are referred to as the 'stakeholders'. These stakeholders are generally a conglomeration of national governments, local governments, non-governmental organizations, private sectors and local communities.

National Government Agencies

The United Kingdom and Japanese case studies described in chapter 2 demonstrated that the support of the national government has been critical in fostering a healthy growth of their industrial heritage. Heritage is intrinsically part of a political spectrum, either at a provincial level or central government level. Heritage sites often require legal protection from being demolished or subject to changes that are detrimental to the value whether tangible or intangible. This protection often requires various national laws, which to be effective need to be enforceable.

There are several national governmental agencies which are related and connected in various ways to cultural heritage resources and management they include the following:

- Fine Arts Department (FAD), under the Ministry of Education
- The Department of Religious Affairs (DORA) under the Ministry of Education
- The Office of National Culture Commission (ONCC) under the Ministry of Culture
- Office of Environmental and Natural Resource Plan and Policy (ONEP)under the Ministry of Natural Resources & Environment
- The Department Public Works, Town and Country Planning (DTCP), under Ministry of Interior

The Fine Arts Department

The Fine Arts Department is a highly influential body, and the principal organization in charge of conservation, and the department who is essentially responsible for the registration of sites. Since the mid 1990's the National Constitution advocated a move towards decentralization of political power, handing much more power to the provincial governments. This has had a profound effect on decision making and policy formation. The FAD has regional archaeological units within Thailand, each one reports directly to the Directorate-General in Bangkok, rather than to the local or provincial governor.

The FAD has 7 separate divisions:

1. The National Archives Division is responsible for the preservation and restoration of archival materials in different forms.
2. The National Library Division is responsible for collecting, organizing and preserving printed materials and audio-visual productions. The Division regulates the implementation of the Printing Act B.E.2484 (A.D. 1941) regarding the deposit of printed materials issued by private sectors. There are four principal branches of the National Library.
3. The National Museum Division is responsible for the collection, preservation and restoration of archaeological artifacts and artistic works. It also regulates the implementation of the act on preservation of national heritage, regarding the exportation of archaeological and artistic objects. Under this division there are 32 national museums all over the country.
4. The Archaeology Division is responsible for the preservation and restoration of historical, archaeological monuments and sites. The Division operates 9 regional branches outside Bangkok.
5. The Traditional Arts Division is responsible for the preservation of traditional arts and crafts style and techniques.
6. The Architecture Division is responsible for the preservation of traditional architecture style and technique as far as practical. At the same time research and experiments have been undertaken to harmonize modern and traditional styles, utilizing new technology and new construction materials. This division is also responsible for the preservation and restoration of historical buildings in co-operation with the Archaeology Division.
7. The Performing Arts Division is responsible for the preservation of traditional, classical and ethnic dance, music and dance drama. The Division maintains the National Theatre in Bangkok, and its regional branch is in Chiang Mai.

(source: Cultural Policy in Thailand, Culturelink, The Institute for Cultural Democracy http://wwcd.org)

Registration of a Site

There are several stages that are required before the registration of a site is completed. Similar to most countries, Thailand has initiated a method for categorizing heritage sites. This became necessary after the decentralization of power was introduced. In 2001, a committee was established to establish this categorization, which basically divided heritage sites into 4 groups:

- National Assets (national importance)
- Important cultural heritage sites (regional importance)
- General cultural heritage sites (provincial importance)
- Preserved buildings (local importance)

The hierarchy of importance decides therefore who is responsible for the listing and registration process. Any sites with national, regional or provincial importance are registered and protected by national laws, with the last group of local importance being under the protection of local administration.

The Office of Archaeology working closely with the FAD is responsible for the practical applications in enabling a site to be registered. Firstly, A check on the land ownership, and a data search is completed. The office then requests permission from the land owner to survey the land and property. A detailed survey is carried out and complied in a report, with floor plans and photographs. The site is then assessed for the suitability for registration, with the final decision made by the Director General of The Fine Arts Department. After this confirmation it is registered under the *'Act on Ancient Monuments, Artifacts, Art Objects and National Museums' BE 2504 (1961), amended in 2535 (1992)*'. A notice is placed in the Government Gazette, and the land owners informed of the registration. Often a single site requires several laws to be enforced, such as planning acts, building control acts, conservation acts and land acts. If this is the case then other Ministries or departments will need to be involved too.

The '*Act on Ancient Monuments, Artifacts, Art Objects and National Museums' BE 2504 (1961), amended in 2535 (1992)* is the national law which is always required in the process for registering a heritage site. It can be seen to be written using similar language as *The Venice Charter (1964).* This Act can now be seen as vastly outdated in terms of global conservation ideologies, and administers a very narrow viewpoint, despite the fact that it was updated and revised in 1992. The definition provided in the Act for 'Ancient Monument' is the same definition as found in *The Venice Charter*:

> ancient monument means an immoveable property which, by its age or architectural characteristics or historical evidence, is useful in the field of art, history or archaeology and shall included places which are archaeological sites, historic sites and historic parks.

We know that by this definition that several areas of cultural resources such as cultural landscapes and intangible heritage are not recognized as the emphasis focuses on tangible and archeological property. Surely the '*Act on Ancient Monuments, Artifacts, Art Objects and National* Museums' needs to widen the scope for inclusion of these 2 important aspects of cultural heritage.

The main concern for the Act seems to be directed at issues such as permits, licenses and people who are acting illegal. On the 4th April 2007 there was an amendment to the Act made by the Ministry of Education which gave a mandate to the local administration officials to monitor ancient monuments. It also amended the Act conserving areas for antiques and art objects located under water and on land, and stricter laws on the illegal transportation of cultural objects. The minister announced that the changes were necessary to be in line with the changing society and international standards on ancient monument conservation.

A major problem with the Act is that it doesn't provide private owners with any support or incentive to have their properties registered. Unlike other countries the value of a property which is listed is generally considered more valuable, and therefore the monetary value increases. This naturally encourages private owners to want their properties listed. The

downside perhaps being that restrictions about changing or adapting the property will apply, and permits will need to be sought. In Thailand, private owners are not keen to co-operate with the authorities when they wish to survey a building to begin the registration process. They understand that there is no direct gain for them as it instantly places restrictions upon the building making it very difficult to sell in the future or to make changes to the site.

If Thailand is keen to encourage more private owners to list their properties then a system needs to be put in place which instead of penalizing is actively supporting and encouraging. Schemes such as offering tax incentives to look after their properties may be one suggestion.

Thai Heritage Resources

Cultural heritage resources are generally broken down into categories of types or themes. Currently, *The Fine Arts Department Regulations on Conservation (1985)* has 7 types of classification for registering heritage sites (Plates 19 – Plate 28). There is an example given to highlight each category.

- *National Historic Buildings*

Plate 19 Anantha Samakhom Throne Hall
(source: http://wikipedia.org)

Plate 20 Sino Portuguese mansion in Phuket (author)

- National Historic Monuments

Plate 21 Monument to King Rama I, 1932
(source: http://rama9art.org)

- *National Historic Districts (architectural, commercial, industrial, rural and archaeological)*

Plate 22 Shophouses along Nakon Sawan Rd, Bangkok (author)

- *National Historic Parks/Landscapes*

Plate 23 Phu Phra Bat Historical Park
(source: http://udon.loxifo.co.th)

Plate 24 Dong Phayayen-Khao Yai Forest Complex
(source: http://whl.org)

- *National Historic Towns, Cities and Communities*

Plate 25 Historic City of Ayutthaya (author)

Plate 26 Historic town of Sukhothai
(source: http://whl.org)

- Traces of National Archaeology (underwater archaeology + rock art)

Plate 27 Portuguese Settlement in Ayutthaya (author)

Plate 28 Ban Chiang Archaeological Site
(source: http://whl.org)

- National Historic Sites

According to the way in which the FAD categorises the sites for registration, we can see that intangible heritage and cultural landscapes are not mentioned or included.

Perhaps an explanation for this is that cultural landscapes are a relatively new concept, in Thailand. During the 1990's the term 'cultural landscape' was cemented when the World Heritage Committee accepted the universal value of cultural landscapes.

Intangible Heritage is another important aspect of cultural heritage. *The Hoi An Protocols* remind us that:

> by definition is not linked to specific monuments or places, but is stored in the minds of tradition bearers and communities and conserved in the continuity of practice.

Similar to cultural landscapes, the notions of intangible heritage is an enormous subject in its own right, and there is not enough scope to reach into such depth. I will however highlight some main points.

Intangible heritage are phenomena such as poetry, music, languages, traditions, family, society and customs. The big issue with intangible heritage is the notion of authenticity, and how do you place 'value' on this heritage. *The Yamato Declaration (2004)* claims that authenticity is not an important concern for intangible heritage, as it does not depend on specific places or objects. *The Hoi An Protocol* however would disagree stating that:

> Tangible cultural expressions of cultural heritage have their origins in the expression of intangible culture.

This is expressing the notion that both tangible and intangible heritage are closely related and interconnected. In Asia we need to raise the awareness of intangible heritage amongst the public and communities.

The Hoi An Protocols highlights the threat to authenticity for intangible heritage which fall into the following categories:

- Loss of knowledge
- Urban renewal
- Infrastructure construction
- Cultural tourism
- Decontextualisation and the loss of unique sense of place

Plate 29 Tak Bat Dok Mai Traditional, Amphoe Phra Phutthabat (source: http://tat.or.th)

It is crucial that *The Fine Arts Department Regulations on Conservation (1985)* are updated to cover an all inclusive and diverse selection of types of cultural resources and properties.

The Department of Religious Affairs (DORA)

This department was established to advise on the conservation of historical buildings connected to religion. This covers the traditional *Wat (temple)* which accounts for a vast majority of Thailand's cultural heritage. It is important that any art or antiques found within a Wat is conserved and protected appropriately by the head monk. The following are acts under DORA:

- Clergy Act,1962
- Clergy Declaration on the Control of Artifacts and Pieces of Art Works in Monasteries (1960)

The Office of National Culture Commission (ONCC)

This was established in 1979 to coordinate various agencies in promoting a national culture. Unlike the FAD department which reports directly to Bangkok, the ONCC reports directly to the provincial governor.

The Office of Environmental and Natural Resource Plan and Policy (ONEP)

The 'Enhancement and Conservation of National Environmental Quality Act of 1992', covers some broad environmental issues, but as a cultural heritage issue, Part 2, section 36 (3) is relevant:

> Conservation of natural environment, natural resources or cultural environment pertaining to aesthetic values.

Part 3, Section 42 to 45 discusses 'Conservation and environmentally Protected areas' and Part 4 outlines 'Environmental Impact Assessments'.

This Act can designate environmental conservation zones which can work with local authorities to launch local regulations to limit development in certain areas. They can also control the surroundings of a heritage site by implementing various degrees of control depending on what is required, from very strict control to control which allows managed changes.

It appears that the focus is on an area which has a monument present, and the 'nucleus' area or the place of the actual monument exercises the tightest control, with the cultural landscape or setting often not included to the same degree. It appears that a clearer interpretation of what is a cultural landscape may be required if they are going to be protected in the same manner as the site or monument.

The Department Public Works, Town and Country Planning (DTCP)

The Ministry of Interior is responsible for the enforcement of the *Act on Town and Country Planning 1975 (amendment 1992),* and the *Building Control Act 1979* both of which fall under the Department of Public Works, Town and Country Planning (DTCP). This extract highlights the aims of the dept:

> DTCP is responsible for assignments on town and country planning public works; building design and building construction control. Moreover, it carries out and supports local administrative authorities on town, area and rural development by formulating and supervising land use policies, relocation system and infrastructure. By complying with the good town and country planning system which will lead to sustainable development, it also prepares construction quality and standard on Architecture, Engineering and Town and Country Planning in order to get good environment, public safety standard and orderliness of towns and buildings.

The administrative organization of the DTCP comprises of 16 separate divisions, comprising architecture bureau, planning division, building control bureau, structural engineering bureau and several other. Within the DCPT there is a 'Specific Plan Division' which is a separate internal unit to set the land use and regulations as 'conservation areas':

It is responsible for formulating specific plans in accordance with Town Planning Act including other town plans at other levels assigned by governmental policy. It is charged with physical planning, designing on community plans, architectural landscaping, carrying out regulations by plans, promoting, supporting and inspecting the preparation on specific plans of local administrative authorities, setting up pilot projects on conservation and urban rehabilitation for local administrative authorities and cooperating with or supporting other related agencies.

Local Government Agencies

Thailand is divided into 76 (including Bangkok) provinces which is then grouped into 5 geographical regions, being, North, North East, Central, East and the South. Bangkok falls into the Central region, which has a different administrative system as the governors are elected. The governors for the other regions are appointed by the Ministry of Interior. The provinces are sub divided into 877 districts or *amphoe.* Further sub divisions are called tambons (communes) and muban (villages).

The *Thesaban* are the municipalities in Thailand. There are three levels of municipalities - city, town and village. Both Bangkok and Pattaya are special municipal entities outside the *Thesaban* system. The municipalities take over some of the responsibilities which are assigned to the districts (*Amphoe*) or communes (*Tambon*) for the non-municipal (rural) areas.

The Bangkok Metropolitan Area (BMA) is a large region which stretches from Samut Prakan in the South to Nonthaburi and has a population of approximately 10 million people. These local agencies and local administration offices need to coordinate with the National Agencies where cultural resources fall under their jurisdiction.

Tourism Authority of Thailand (TAT)

This is a government enterprise responsible for the promotion of domestic and international tourism. It has offices located overseas as well as 22 TAT offices in various provinces around Thailand. It also provides statistics on tourism numbers and expenditure of International and domestic visitors. It is critical that the TAT understands the impact of Cultural Tourism, and the role it should be playing within this as far as helping to facilitate the impact or overload of tourists at primary sites. TAT needs to liaise between governmental and private sectors in order to facilitate its operations. In 2005, Thailand attracted about 12.0 million international tourists, staying an average of 8.10 nights in the country. This accounts for 11.7% of the country's GDP, and is predicted to rise to 12.6% by 2014 (source: http://tat.or.th). This is higher than most other countries in South East Asia, and the rest of the world. This shows the significance and importance of the Tourism Industry to the Thai economy, and the need to implement control over site planning, tourist operators etc.

Board of Investment (BOI)

Responsible for setting and launching industrial incentives, mainly tax related. Development policies play a critical role in the safeguarding of heritage. In 1993 a new policy increased tax regions to the outskirts of the Bangkok Metropolitan region, and encouraged industry to be located in these areas and still receive tax incentives from the BOI. From this period the integrity of several cultural landscapes disappeared or became threatened.

Heritage Bodies - International Committee of Monuments and Sites (ICOMOS)

ICOMOS is an international organization composed of 87 national committees and several international technical committees. ICOMOS was founded in 1965 as an association of professionals to further '…the conservation, protection, rehabilitation and enhancement of monuments, groups of buildings and sites, on the international level…'

The combination of ICOMOS's mission, funding base and membership makes it unique. Through its international conferences, its publications and its advisory role to the United Nations Educational, Scientific and Cultural Organization (UNESCO) on World Heritage sites, ICOMOS is influential in developing policies and standards for historic preservation. The ICOMOS Secretariat in Paris is the head administrative office of ICOMOS.

ICOMOS has an important relationship to the UNESCO World Heritage, possibly the most important of the three advisory bodies (ICOMOS, ICCROM, and IUCN). ICOMOS serves as the principal advisor on cultural sites recommended for inscription in the World Heritage List.

ICOMOS is also involved in performing comparative studies, setting documentation standards, and recommending policies concerning cultural heritage preservation. ICOMOS has several international scientific committees which devote their attention to specific aspects of cultural heritage: Underwater Heritage, Wood, Stone, Earthen Architecture, Architectural Photogrammetry, Historic Gardens and Sites, Historic Towns, Vernacular Architecture, Cultural Tourism, Training, Economics of Conservation, Archaeological Management, Analysis and Restoration of Structures of Architectural Heritage, Stained Glass, Wall Paintings, and Rock Art. The members of these committees provide expert assistance in matters pertaining to these aspects of the World Heritage.

The FAD is an institutional member of ICOMOS and together they are working closely on developing the Thai Charter. The Draft Charter proposes that ICOMOS would continue to support the Charter in the following way:

- Set up the data centre
- Set up the endowment for research program
- Provide advisory services
- Act as the network manager/project manager
- Start a pilot project

United Nations Educational, Scientific and Cultural Organization (UNESCO)

> UNESCO Bangkok promotes international co-operation, sets standards and disseminates information in the fields of education, natural sciences, social and human sciences, culture and communications in the Asia and Pacific region. The sectors at UNESCO Bangkok work together on special programmes relevant to the Asia and Pacific region and beyond. (http://.unescobkk.org)

The World Heritage Convention of 1972 outlined the need to protect Heritage sites globally. Currently there are 878 inscribed properties, of which only 182 are in the Asia and Pacific region. The Culture department within UNESCO Bangkok runs programmes and projects related to areas such as 'Empowerment of the Culture profession', 'Sustainable Cultural Tourism and eco tourism' and 'Culture Conflict Resolution'. The regional office for Asia and the Pacific is based in Bangkok. Globally UNESCO is responsible for raising the standards and awareness of heritage sites, and conservation issues.

Southeast Asian Ministers of Education Organization (SEAMEO) / Regional Centre for Archaeology and Fine Arts (SPAFA)

SEAMEO-SPAFA, like other SEAMEO Centres, operates as an autonomous, international institution, and is hosted by the Government of Thailand. The Main Objectives taken from their website are to:

- Promote and help enrich archaeological and cultural activities in the region
- Further professional competence in the fields of archaeology and fine arts through regional programmes and activities and through sharing of resources and experiences
- Advance mutual knowledge and understanding among the countries of Southeast Asia through regional programmes in archaeology and fine arts.
- Cultivate awareness and appreciation of cultural heritage through collaboration in information dissemination and other relevant programmes of activities

(source:http://seameo-spafa.org)

Asian Academy for Heritage Management

The Asian Academy is a network of institutions throughout Asia and the Pacific offering professional training in the field of heritage management. It is aimed at providing a platform for institutional training, research and exchange. It is under the guidance of UNESCO and ICCROM, and promotes:

> Integrated, holistic and multidisciplinary management of heritage resources, including both tangible and intangible expressions of culture.

The network was founded in Bangkok in November 2001, following a Seminar on Network and Curriculum Development.

The seminar highlighted the plight of deterioration of Asia's cultural heritage due to environmental degradation, rapid infrastructure development and mass tourism. It is not a physical structure, but is a network of institutes and individual experts related to cultural heritage conservation and management (source:http://unescobkk.org/culture/asian-academy).

Private/Public Partnership - Princess Sirindhorn Anthropology Centre

The centre was initiated in 1991, upon the wishes of the Princess to have a place responsible for systematic gathering, processing and servicing of anthropological data. The centre became an independent agency under the Ministry of Universities in 2000. It promotes research within the social sciences, and is currently attempting to make its resources available to foreign scholars and researchers, by translating the material from Thai into English.

The databases contain information on several aspects, including:

- Ethnic Groups in Thailand
- Local Museum Databases
- Thai Folk Literature (Western region)
- Thai Inscriptions
- Encyclopedia of Old Folk Toys
- News clipping
- Sukhothai Art
- Archaeological sites in Thailand

Private Ownership

This group includes all land owners. Whether they own land which is on a restricted site or whether they own property which could be deemed as a historic building. These groups of stakeholders are influential and play an important role of protecting and conserving heritage. Awareness through information and knowledge dissemination of cultural resources is the key to providing a good understanding for private ownership stakeholders.

Crown Property Bureau (CPB)

The CPB was established by the Constitution but acts independently of the Thai Government. All profits and wealth resulting from property is owned by the royal family. They own large parts of the main industrial companies such as Siam Cement and construction company Christiani & Nielsen. They own about 36,000 properties in Bangkok alone, and 40,000 acres in the provinces. They are the largest owners of real estate in Thailand (source: http://wikipedia.org).

Communities

Local communities are at the heart of heritage. *The Burra Charter* preamble reminds us of this, '*…Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences…'*

The Hoi An Protocols (4.4.1) also tells us of the importance of the community having a sense of ownership of heritage properties, and to ensure that they understand the qualities, and in return will support efforts to preserve it.

This is an area which definitely needs to be emphasized within a Thai Charter, but specifically the nature of how to involve the participation of the local community should be made clear.

There are several points of contact for local communities depending on the symbiosis of the community in question. Sometimes there is a village headmen, who is normally a prominent and knowledgeable individual member of the community. They are often voted in. They will act as a spokesperson for the community. This person could be a useful way for disseminating information relating to conservation and heritage issues.

In some instances the Wat (temple) is the focal point of the community, and is the place around which the village/town/area has grown. The Abbott is the head of the Wat, and again would be the first point of contact. It has been known that the temple can sometimes provide resistance and not understand the reason for conservation under the current regulations and policies. Provision must be made to understand the importance of conservation of sacred sites and places of worship.

Chapter 4

Thailand and her Economy

An Historical Glance at the Primary Industries of Rice, Teak and Tin

The economic development of Thailand has been written about specifically by only a handful of academics, including James C. Ingram (1955), David Feeny (1982), Ian Brown (1988) and Sompop Manarungsan (1989). In the book *History of Thailand* by Baker & Phongpaichit (2005) the economy of Thailand is intricately woven as a theme throughout the book, as it is an integral part of looking at the history of the country.

A general observation from all authors is that despite Siam's international free trade agreements since the 1850's, Thailand never really generated significant economic development. Each author offers an insight and explanation for the reason and cause of this slow economic development. Even in 1903, A. E. Stiven, Manager of The Borneo Company in Bangkok, wrote about the rice Industry in *Twentieth Impressions of Siam*, and he described the state of affairs at the beginning of the 20th century:

> Twenty years ago Siam rice was little known to the outside world, and the rice crop was significantly small; but now the export on one year is nearly one million tons of milled grain. When it is remembered that the staple trade of the country has increased as it has done *with very little help from the Government*, one is struck with the great possibilities of the future. (Breakspear & Wright 1903, p. 144).

As far as studying the industrial heritage of Thailand this is an important aspect to understand as it shall indicate the amount of support the government sector had, and also how much involvement the private sector had too. This shall in turn affect the degree or the amount of industrial heritage one can expect to be visible today either as a physical entity or otherwise. It can also tell a story about the relationship that the country has had with industry over the years.

The beginning of Sompop Manarungsan's book *The Economic Development of Thailand, 1850-1950* provides a useful overview of the main points and theories from previous author's writing about the economic development of Thailand. He summarized that James Ingram concluded that despite Thailand's economy was changing since the 1850's, it however did not show much progress as far as the "utlilisation of more capital, relative to labour, and of new techniques" (Manarungsan 1989, p. 4). He explains that David Feeney (1982) also believed that the economics of a nation are connected to the development of new technologies and is also related to supply and demand and innovation:

> Feeney concluded that important productivity-increasing changes had not been undertaken in Thailand because the potential suppliers of such changes (in this case the Thai elites) would not gain enough to make their effort worthwhile. (Manarungsan 1989, p. 6)

This notion that the Thai administrative elite made economic policies dependant on personal gains is widely discussed in Brown's *The Elite and the Economy in Siam c.1890-1920*'. Feeney and Brown both believe that the 'irrigation versus railway' controversy can sum up the administrative elites attitude and approach to economic policy at the end of the 19th century and beginning of the 20th century. Brown (1988) describes in detail 5 key areas of governmental economic policy and looks at the response that the elite administrative government makes. The first policy he discusses is the large scale irrigation proposal in the lower Chaophraya delta.

J. Homan Van Der Heide was a Dutch engineer who arrived in Bangkok in 1903 as an advisor to The Royal Irrigation Department. During this period there were several key advisors employed by the Government to lend their expertise within several key departments, such as The Royal Department of Mines. Van Der Heide conducted extensive surveys on the topography, geography and climate of the central plain region of Thailand. Van Der Heide proposed a large scale irrigation system of the central plain region which would have provided a constant water supply for the paddy fields resulting in stablised growing conditions and higher yields of rice paddy. In brief, the proposal was rejected by the administration in favour of financing large scale infrastructure such as railways (Manarungsan 1989, p. 4).

Brown summarise Feeney's arguments for the reasons why Thailand never managed to develop a strong economy from its rice cultivation:

> Railways provided more in national security, political development, and public administration benefits than irrigation, and because the capital budget of the government was particularly limited, little was left over after military and public administration projects were pursued. The interests of the landlords at Rangsit and the Bangkok elite favoured railway over irrigation investments, despite the fact that irrigation investments were more beneficial than the railways to the society as a whole. The divergence between the rate of return to the society and the rate of return to the policy makers, as well as the divergence between the economic rate of return and the over-riding goal of maintaining national independence explain a great deal about the failure of Thailand to develop through rice exporting . (Feeney cited in Brown 1988, p. 35).

Despite the fact that the Van Der Heide's irrigation project would have benefitted a large proportion of the agricultural growing population of Thailand it was never implemented.

By the 1900's rice accounted for about 70% of all exports with tin and teak accounting for 10% each (Brown 1988, p. 94). The remaining goods being a mixture of rubber, fish products other mainly agriculturally based products.

The following table is extracted from Manarungsan (1989) and shows figures for rice exports (Table 11).

Year	Rice exports in metric tons)
1857-1860	62,000
1861-1865	89,000
1866-1870	129,000
1871-1875	129,000
1876-1880	208,000
1881-1885	220,000
1886-1890	375,000
1891-1895	455,000
1896-1900	513,000
1901-1905	768,000
1906-1910	929,000
1911-1915	935,000
1916-1920	784,000
1921-1925	1,301,000
1926-1930	1,344.000
1931-1935	1,651,000
1936-1940	1,475,000
1941-1945	592,000 (Japanese occupation)
1946-1950	733,000
1960	1,203,000
1970	1,064,000
1980	2,797,000

Table 11 Rice exports
(source: Manarungsan 1989, p. 49)

The increase in rice exports was due to an increase in demand worldwide especially from China, and development of modern transportation such as the steamship and the opening of the Suez Canal in 1869 which dramatically reduced the time for journey time from Europe to the east. Despite the figures for the rice industry showing an increase every 5 yr period (except for the period during WWI and WWII, and the post war period), the export figures could have been much greater had the Government embarked on a much larger scale irrigation project, like the one proposed by Van Der Heide at the beginning of the 20th Century.

The tin and teak industry is discussed in Chapter 3 of Brown's *The Elite and the Economy in Siam c.1890-1920*. It charts the rises and falls of both industries, and explains some external factors for this, for example when the teak forests were closed in Burma in the 1880's the export of teak from Siam increased. With the tin industry there was a large expansion of trade from the 1850's to the 1870's then a decline after that. Both industries had very different concerns from the Government. The teak industry had largely Western interests with most of the concessions dominated by the British, so how was the government going to control this foreign domination? The tin industry had quite different issues with the government facing issues of shortage of labour and capital (Brown 1988, p. 95).

The tin industry located in the South of Thailand faced stiff competition from British Malay. The output of tin in the 1870's was 6,450 tons, whilst in 1890 it dropped to 4,250. If we compare the same period the average output for Malaya was 36,300 tons (Brown 1988, p. 95).The Director of Mines was an English gentleman called H. Warington-Smyth. He visited the mines in the mid 1890's and noticed that there were several key reasons for the low output one being that the communication systems were very bad. Few roads meant it was hard to work productively, and also the harbor in Phuket was very silted. There was also a huge labour shortage which was another reason for the under utilization of tin. It was not until the Chinese migrated to Phuket that this eased the situation, and also when the southern railway arrived to the south in the 1920's that the tin output really increased considerably.

The Mining Act in 1901 led to improved conditions and the tin output increased slightly in the period 1910-1914 with 5,776 tons (Brown 1988, p. 100). This period was when the bucket dredge was introduced to Thailand in 1907 from a western company; this was the main reason for the increase in tin output.

Whilst the tin industry was much more protected from foreign capital involvement, (the government was suspicious and rather nervous about foreign presence in the southern peninsular being so far from Bangkok), the teak industry had much more western involvement financially. By 1890 there were 5 big European companies who were operating in the forests of Northern Siam. This included the Bombay Burmah Trading Corporation, Anglo-Siam Corporation, Louis T Leonowens, (Danish) East Asiatic Co, French East Asiatic Co.

The Forestry Department was established in 1895 to ensure stricter controls on an industry that was 85% dominated by Europeans (Brown 1988, p. 119). The government felt that it was easier to regulate the teak industry as only a few major companies dominated this industry, so the threat was much more reduced.

An overview of each primary industry Rice, Teak and Tin follows. These are the industries which had a most significant impact, however it must be stated that there were several others industries that Siam was also exporting such as pepper, fish products and hides (see Table 6) however these shall not be discussed at length as their significance was much lesser.

The Rice Industry in Thailand

The importance of rice amongst the Thai people cannot be emphasized enough. It has affected the country's economy, politics, social and cultural traditions. The Thai Rice Foundation is concerned that today's globalised society will simply forget the way that rice has been an integral part of Thailand's rich cultural heritage. The objective of the Foundation, under Dr Kwanchai Gomez, is to ensure that through projects and activities working with various parts of our communities from academics to the general public that the importance of rice as part of Thailand's cultural heritage will continued to be appreciated and nurtured.

Thailand has a world-wide reputation for the quality and abundance of this major export commodity, and it exports more rice than any other country in the world. Traditionally rice has been the main occupation of the Thai people, and is why Thailand was described as having a largely agricultural economy right up until the 1980's, which is when manufacturing exceeded the export of rice in monetary value. This is quite typical for countries of developing countries to rely on agricultural resources over industrialization.

The central plain is the region in Thailand where the vast majority of rice is grown and harvested. This land with its fertile soil and heavy rainfall are perfect conditions for rice growing, it has become known as the 'rice bowl' of the country. It is however not the only region that grows rice as some parts of the north east and the south regions also produce rice, but not on the same scale as the central plain (Figure 19).

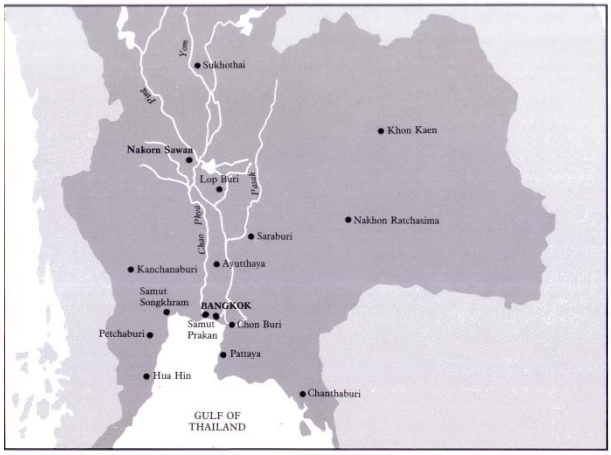


Figure 19 The central plain region of Thailand
(source: A View from Above, by William Warren)

Prior to the signing of The Bowring Treaty in 1855 most rice produced was used for domestic consumption. The main crop exported between 1855-1875 was sugarcane. There was a huge

decrease in the 1870's export figures of Thai sugarcane due to the Dutch in Java producing a sugar boom. Thailand then turned its attention to rice, which then became the main exportable crop from the mid 1870's (Owens, 1971).

The main reason for the surge in rice exports came from the demands and needs of the presence of the European colonies within South-East Asia and the opening up of free international trade through a series of treaties and trade agreements.

An article published in The New York Times on July 30th 1893, titled "An American in Bangkok", describes several interesting events connected to the progression and introduction of technology to Siam. It describes the way in which Capt Thomas Miller brought the steam engine to Siam:

> In the course of his many subsequent visits to Siam Capt. Miller introduced and applied the steam engine to several different Siamese industries in Bangkok, and in this way contributed largely to the commercial and industrial progress of the country.

It continues to explain that he built and owned the first large steamer on the Menam River (former name of The Chao Phraya), and also built the first steam sawmill and the first sugar mill. Capt Miller's first trip to Siam was in 1857, but the article does not give specific dates for when the steamer, sawmills and sugar mills were constructed. The article also explains that:

> Capt Miller (said he) was also on the point of building a steam rice mill, but that two other Americans from this city named George A. Dunn and Michael Gervey built one before he could perfect his plans. Their rice mill still stands alongside the Presbyterian mission at Bangkok.

Again no dates were given for this steam rice mill in the article, however, in Sompop Manarungsan's book *The Economic Development of Thailand, 1850-1950* p. 68, he explains that the first mechanized rice mill was established by an American company in 1858, and by 1867 there were 5 more. In the book Twentieth Century Impressions Of Siam, 1903, it explains that A. Markwald & Co. Ltd built their 1st rice mill in 1866 and they were one of the earliest European companies established in Siam in 1850 (Plate 30). The New York Times article describes that the first steam powered rice mill was located next to the Presbyterian mission. On a map dated to 1870's by Dr Dan Bradley's Mission Press, it shows a rice mill with the initials 'AM' located next to the mission. It may be that the A. Markwald Rice Mill was the first steam powered mill in Siam. On the map (Figure 20) we can see that by the 1870 there were several rice mills which were being powered by steam. The map shows the concentration, and the amount of European and Chinese interest in Siam.

Figure 21 shows the location of the various industries and commercial interests in Bangkok, 1905. We can see they are concentrated around the southern part of Charoen Krung rd.

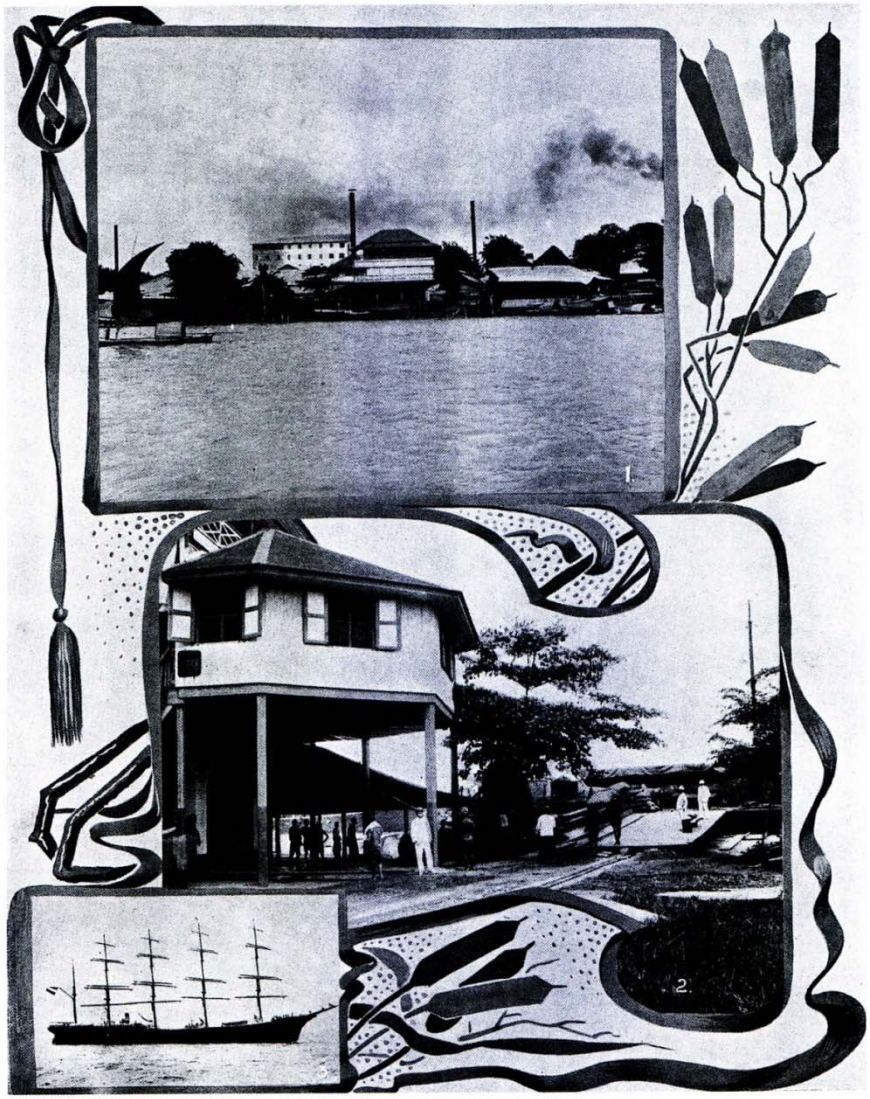


Plate 30 A. Markwald & Co. Ltd rice mill
(source: Twentieth Century Impressions of Siam, 1903, p. 153)

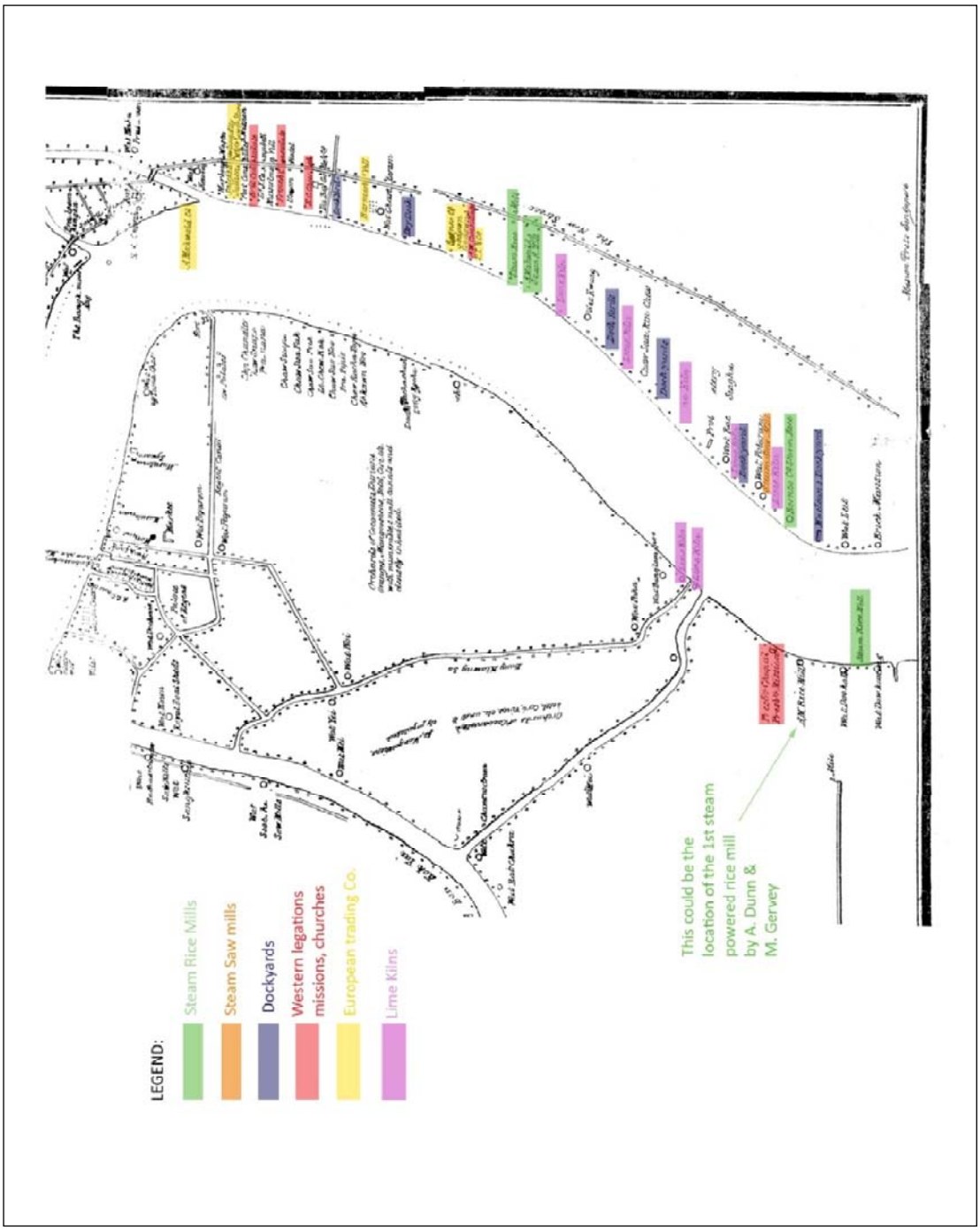


Figure 20 Map adapted and extracted from a map by Dr Dan Bradley's Mission Press in 1870
(source: Map from National Archives, Bangkok)

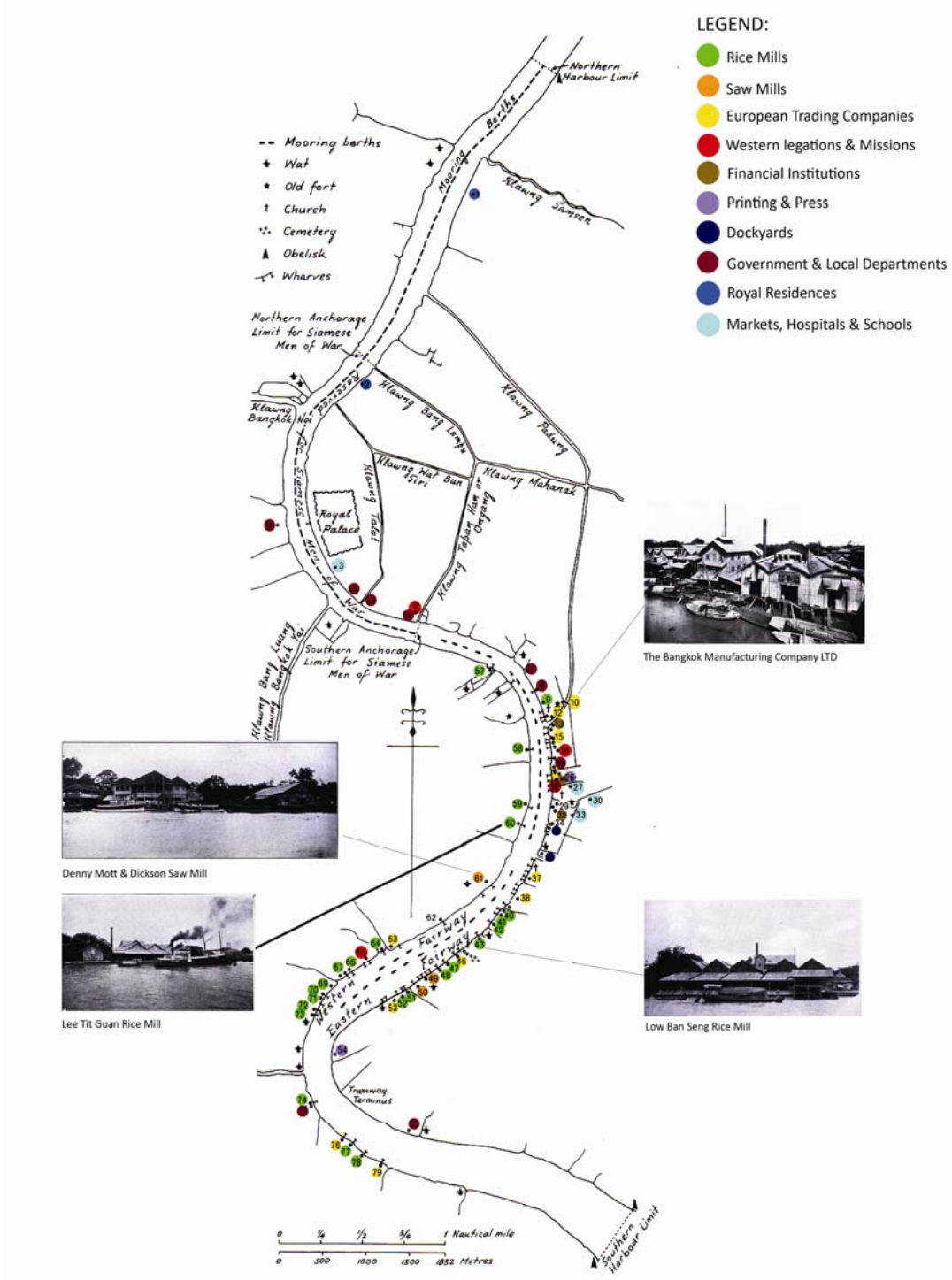


Figure 21 Map adapted and extracted from a map drawn in 1905 (source: original map National Library, Bangkok; Map reproduced in portrait of Bangkok p. 25) Adaption by author.

During the time period between 1870 and 1905 you can notice that there was a large increase in the number of industries that were active, in particular the number of rice mills (Figure 21) In the book *Twentieth Century Impressions of Siam*, they indicate that the number of rice mills in 1893 was 23, and by 1903 there was an increase to 49. It also explains that the Chinese were hugely dominate within the rice trading, explaining that a reason may be that most of the crop was exported to Hong Kong or Chinese ports (Wright & Breakspear, 1903, p. 146).

The Chinese domination of the rice industry can be seen on the legend of the map in Figure 22 where a vast majority of the rice millers were of Chinese descent.

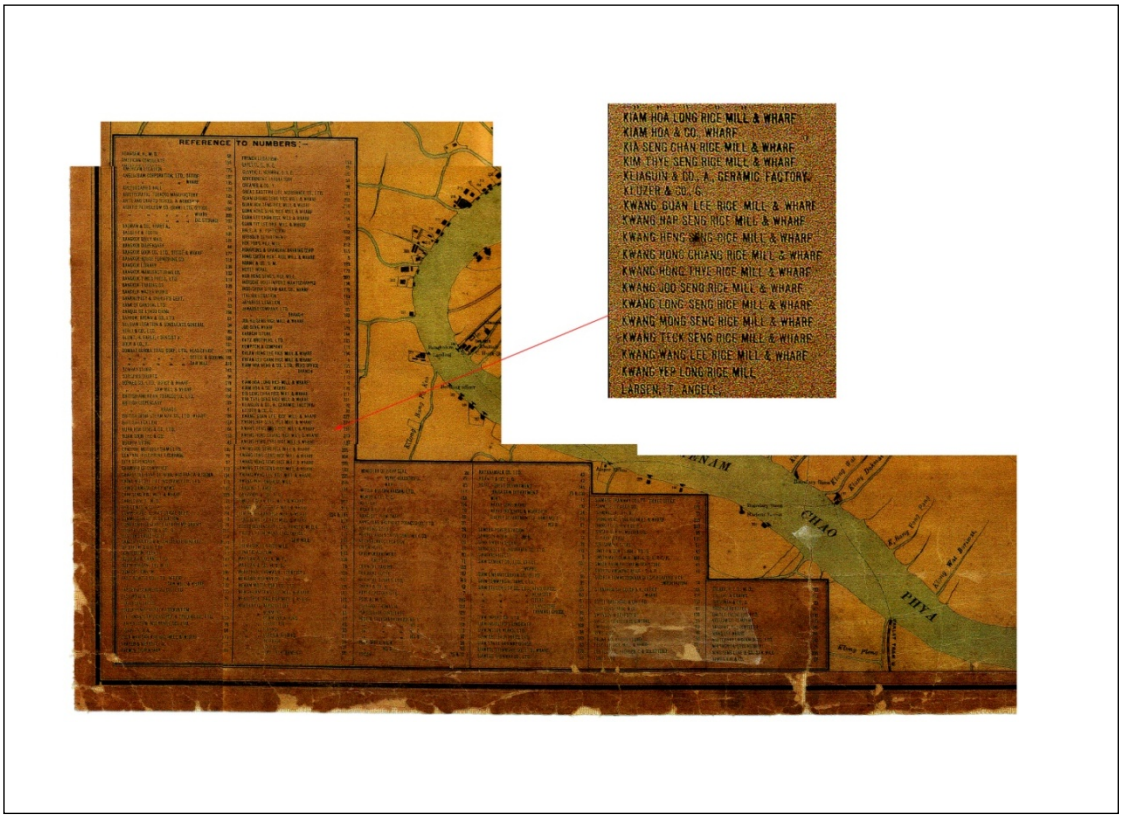


Figure 22 Extract from Map 'Map of Bangkok - Bangkok Tramways' (no date) (source: National Archives, Bangkok)

In Chapter 5, one of the sites which is chosen to represent the rice industry industrial heritage is the Wang Lee rice trading family. The archival map shown in Figure 23 shows the location within Bangkok during the early 20th Century.

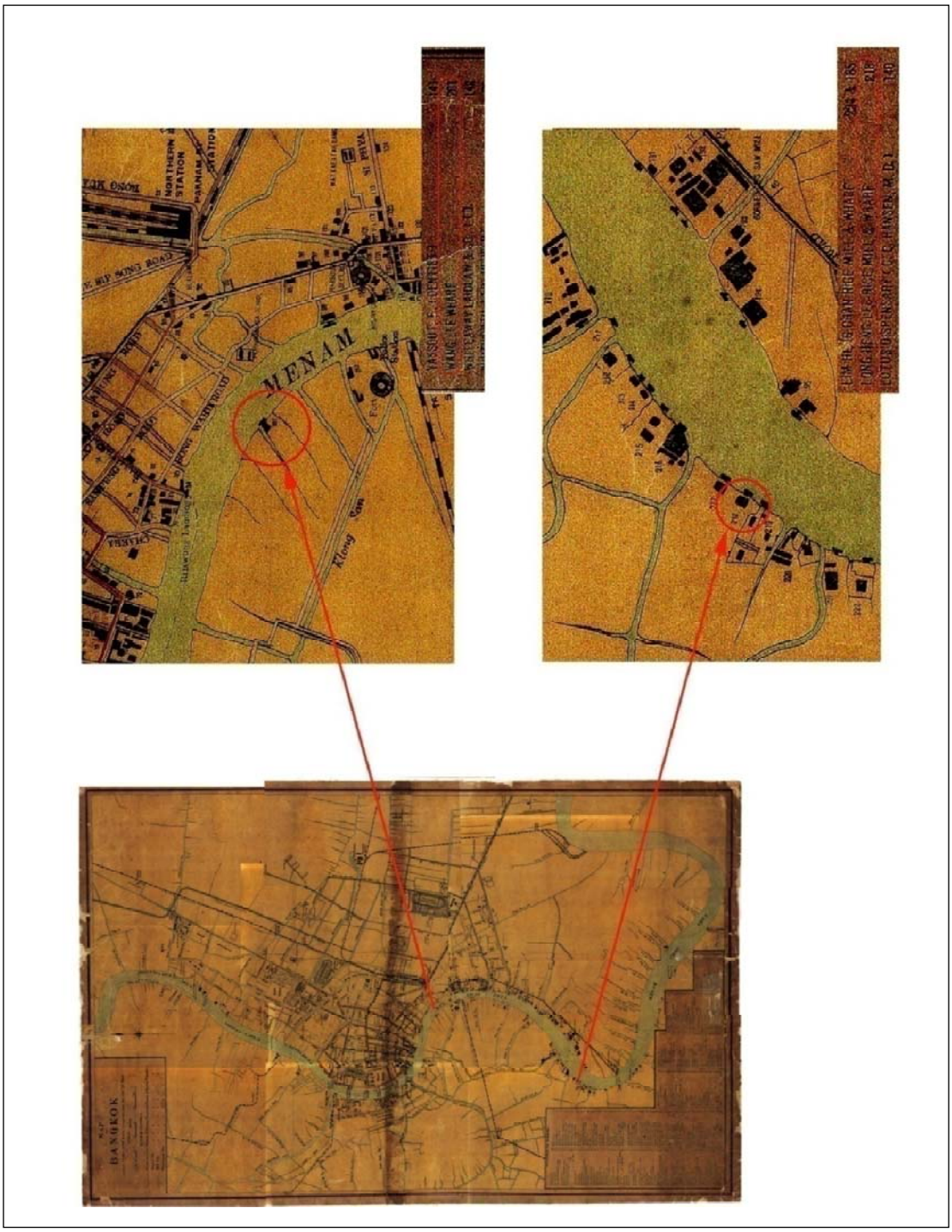


Figure 23 Map showing details of location of the Wang Lee rice mills in early 20th Century
(source: 'Map of Bangkok - Bangkok Tramways' National Archives, Bangkok)

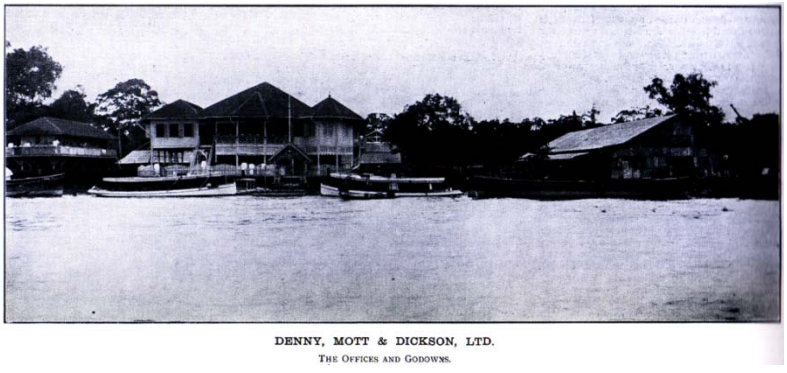
The Teak Industry in Thailand

In 1883 a treaty was signed between the British and Siamese government called *The Chiang Mai Treaty*. This treaty essentially opened up extra territorial rights already established within *The Bowring Treaty* for British subjects residing in the North of Siam. It was not until 5 years later however that the first forest was under European control. In 1896 the Forestry Department was established which was run by British management, and hence the majority of the teak industry was controlled by the British. Companies such as Denny, Mott & Dickson Ltd established in Siam in 1894 (Plate 31) and The Borneo Company Ltd, established in Bangkok in 1856 were both exporting large quantities of teak to Europe. Teak was considered an exotic and valuable material, often replacing oak for shipbuilding in the UK.

In the past all the teak logs would have been floated down the river on a long journey from the forests surrounding Chiang Mai (Plate 32)**.** This process would generally have taken approximately 2 to 4 years depending on the amount of rainfall.

The majority of the sawmills were strategically placed along the river banks of The Chao Phraya, and generally found south of the Customs house, allowing a shorter journey on the outward bound journey to Europe, yet close enough to the main commercial centre and to the residential communities of the European traders clustered along and surrounding Charoen Krung rd (New Rd).

There was generally a small khlong (canal) running down the side of the sawmill to which the logs were floated up and then placed into a dock where they were then raised onto the mill floor. The majority of the machinery used within the sawmills during the end of the 19th and beginning of the 20th century were of British origin. The machines used in the mills belonging to Denny, Mott & Dickson Ltd were Scottish, from a company called McDowall & Sons (Twentieth Century Impressions of Siam, 1903, p. 175). The mills were powered by steam, and inexpensive to run using sawdust and off cuts as fuel to power the engines (Plate 31).



DENNY, MOTT & DICKSON, LTD.
THE OFFICES AND GODOWNS.

Plate 31 The office and godown of Denny, Mott & Dickson Ltd
(source: Twentieth Century Impressions of Siam, 1903, p. 174)

Plate 32 Teak logs being floated down the river
(source: National Archives, Bangkok. Date unknown)

In Chapter 5 the site chosen to represent industrial heritage from the teak industry is the East Asiatic Company Ltd. Using archival maps and photographs we can trace how the visual appearance of the site and buildings has changed over the years to its present condition (Figure 24 & Plate 33 - 36).

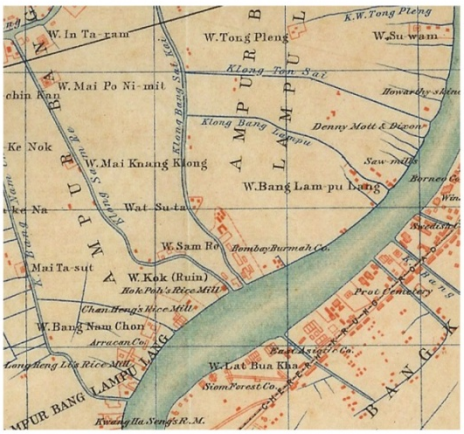
MANUFACTURING: **EAST ASIATIC COMPANY LTD**

Archival maps

The original map was drawn in 1917 and taken from *An Official Guide to Eastern Asia: East Indies* which was written by the Imperial Japanese Government Railways, Japan.

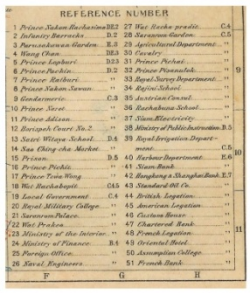
The detail taken from the entire map marks clearly the position of the East Asiatic Co.Ltd, which is still to be found in the same position. Unfortunately the quality of the entire map was not clear to read.

This copy of the map was retrieved from www.2bangkok.com



Detail marking the site of the East Asiatic Co Ltd

The entire map



The legend

This map has been redrafted from an original map drawn in 1901. The original map is held at The National Library, Bangkok and measures 60cm x 100cm.
The re draft, shown as an extract and part of the legend was reproduced in the book, 'Portrait of Bangkok, 1982'.

The legend indicates that at position marked nuber '122' lies the East Asiatic Co. Ltd

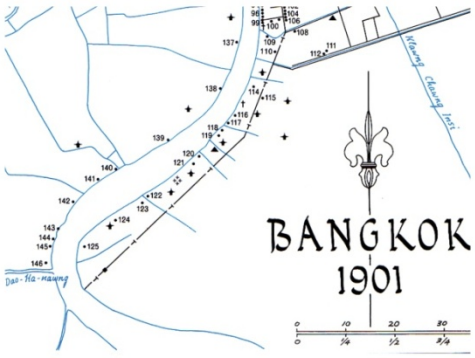


Figure 24 The East Asiatic Co. Ltd (sources: various depicted on archival maps)

MANUFACTURING: **EAST ASIATIC COMPANY LTD**

Archival photographs:

EAC as seen today
(author)

Plate 33 and Plate 34 A steamship docked at the pier of The East Asiatic Co. Ltd
(source: National Archives, Bangkok (date unknown)

MANUFACTURING: **EAST ASIATIC COMPANY LTD**

Archival photographs:

EAC as seen today
(author)

Plate 35 View looking towards the river
(source: National Archives, Bangkok)

Plate 36 Interior view of the sawmills, The East Asiatic Co. Ltd
(source: Twentieth Century Impressions of Siam, 1903, p. 180)

The Site History: The East Asiatic Co Ltd has a prominent and strategic position along the river bank of the Chao Phraya. Running parallel to the river, at the top of the warehouse complex is Charoen Krung rd, which was then the first and only road, built in the 1860's. As described earlier, the saw mill has a small khlong running along the side of the mills (Figure 25), and has a large pier for the arrival and departure of steamships.

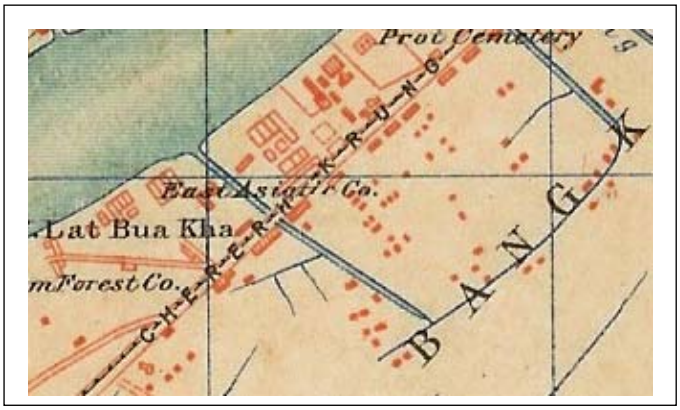


Figure 25 Detail of map from 1917
(source: An Official Guide to Eastern Asia: East Indies, retrieved from www.2bangkok.com)

The Tin Industry in Thailand

The relationship between industry and the geographic and socio-economics of the island of Phuket is a very special and interesting one.

It can be stated that no other place in Thailand has been as affected and changed by a single industry like Phuket has, which makes it a very unique place to examine.

The tin industry has had a remarkable impact upon the island in terms of the way that the Chinese migrants coming predominantly from Malaysia settled here and came to infuse Chinese traditions and cultures with the local indigenous Thais. The arrival of the Europeans in the early 20th century also had an impact too, however not as significant as the Chinese.

The tin industry has shaped the island geographically; altering the landscape dramatically with large 'pond like' waters doted throughout the island. These in land bodies of water, are the remnants of the man-made 'pits' left over from the tin mining as there are no naturally occurring bodies like these in Phuket (Plate 37).

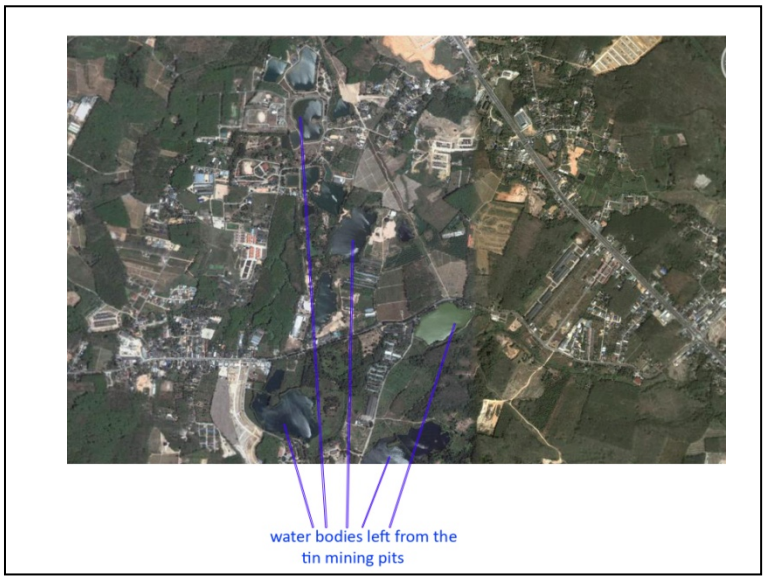


Plate 37 Phuket 'pits'
(source: http://earth.google.com)

Tin has been mined in Phuket since the 16th century, however it was only in the 1890's that the tin mining industry had a significant effect upon the island. Several factors aided this, one being that under Rama V reign the region was regionally independent, with the administration being under control from an appointed Governor, and that improved communications opened up better infrastructure and transportation with the South.

The Governor, called Khor Simby Na Ranong, was a Fujian Chinese Thai from descent who made positive changes to control and develop the tin mining industry. In 1901 the '*Tin Mining Act*' made legally binding laws to protect the Chinese business owners, whilst at the

same time opening up the tin mining to foreigners. The tin mining industry was growing and with it the Chinese population swelled enormously.

The economy of the island rose considerably in the beginning of the 20th century. The way that this was shown was through the built environment. Lavish mansions emerged in Phuket Town, which was the main area where the Chinese settled, and shophouses sprung up along the main busy shopping and market areas in the town. Several of these mansions and shophouses still remain today, however before the conservation zoning of the city began in 1993 some of the haphazard development can be seen with new 'infill' buildings seen amongst a row of shop houses (Plate 38).

Plate 38 Infills shown in row of traditional shophouses, Phuket (author)

Plate 39 Captain Edward T. Miles
(source: http://.Tongkahharbour.com)

It was in 1907, that Captain Edward T. Miles (Plate 39) from Tasmania introduced the first offshore tin dredger. During 1905 he observed the ineffective and labour intensive technique of tin extraction that the Chinese were using. The Tongkah Harbour Tin Dredging Company was founded, and upon agreement of the Governor he began to use his latest piece of technology in Phuket Bay. It was to be the world's 1st sea going bucket dredger (Plate 40).

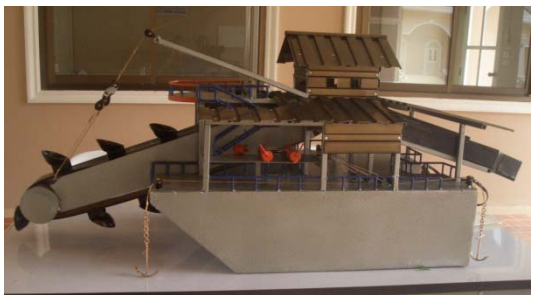


Plate 40 Model of the Tin dredger at Kathu Tin Museum (author)

The advent of this new technology was to increase the productivity of the tin industry once again. The tin industry was unique in that it was constantly evolving in terms of changing technology and processes. The industry began in a very primitive format hundreds of years ago as panning, then progressed into ground sluicing, shaft mining, open cut mining, hydraulic mining and finally dredging mining. The following Plate numbers 41 - 44 show a series of different mining techniques used throughout the years in Thailand. Unfortunately, the National Archives had no information related to the date of the images, and the location within Thailand.

Plate 41 Tin Mining technique (source: National Archives, Bangkok)

Plate 42 Tin Mining technique (source: National Archives, Bangkok)

Plate 43 Tin Mining technique (source: National Archives, Bangkok)

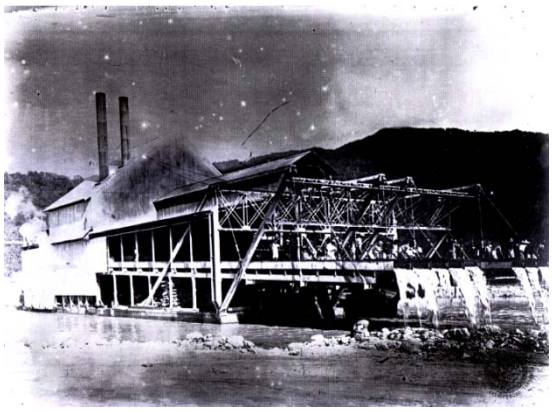


Plate 44 Tin Mining technique (source: National Archives, Bangkok)

The tin industry continued until 1992, which is when the last mine closed down. The price of tin had been in decline for years, as there was little demand worldwide for it. Fortunately Phuket had been nurturing a growing tourism industry which essentially replaced the Phuket economy previously supported by the tin industry.

Phuket seemed to realize the dangers of being reliant on just one industry and since the first rubber trees were planted in 1903 it has been able to expand this profitable industry too.

The recent opening of the Kathu Tin Mining Museum and the Phuket Thaihua Museum are some ways in which Phuket is showing to international and local tourists that Phuket has had a rich and colourful past before tourism, and that the cultural aspects of the tin mining industries of Phuket are as important as it natural beaches, and numerous golf courses.

Chapter 5

Recording and Documentation of Sites

The recording and documentation of industrial sites will often follow a lengthy process of tracing and locating the exact whereabouts of these places, or indeed uncovering possible locations of sites. They are often to be found in places which have been slowly forgotten due to the demise of industry and the growth of a new form of urbanism has taken place. They may be under flyovers, along river banks and down deserted soi's (streets). Chapter 5 should be seen as the beginning of a document which should be ongoing, revised and amended as more places and sites are uncovered.

Primary, secondary sources and lots of walking were the main resources required for uncovering some of these places. Historical maps from the National Archives in Bangkok were used to pinpoint original geographical locations, then history books, and interviews helped to gain a clearer understanding about the places from the past to the present day.

It must be stated that the recording and documentation stage has at this point limitations, mainly in labour resources and support from state local, and state owned industries. In order to carry out an extensive and comprehensive survey, several bodies, agencies and academic institutions would need to co-ordinate an effort together. This database can then be used to gain a clearer understanding of Thailand's industrial heritage resources.

The United Kingdom began in earnest their identification and recording process in the 1960's and 1970's. They employed the help of local enthusiasts who helped in having local knowledge, which ultimately took years to compile an exhaustive database. The types of field survey techniques that the UK have employed include electronic surveys allied to GPA and CAD, which can then produce accurate 3 dimensional imagery of large sites, which otherwise would have taken much more time and resources to complete. Air photograph is also used in order to locate and map sites which no longer exist, but have left marks on the landscape. The UK is also recording through filmic and photography techniques industries that are still in operation. This is particularly important for sites, industries and crafts which may not exist in the near or distant future.

We must also consider the way that the information about these sites is made accessible to the public domain, and that any archival materials whether architectural drawings, photographs or oral evidence is stored in appropriate archival conditions.

The sites that have been documented here have been selected to show that Thailand has diverse and varied types of industrial heritage. There were other sites that would equally have merited being included, but also a time resource limitation prevented further inclusions.

A classification was suggested and compiled by TICCIH to aid in any documentation process. For now, I have used the same system to classify the sites for Thailand. This may need to be amended over time as it may not be so relevant or as applicable for Asian contexts.

The classification that will be used is as follows:

I. Extraction
- 1.1 Coal
- 1.2 Metal
- 1.3 Non-metal (stone, oil, salt)
- 1.4 Timber

2. Mettalurgy

3. Textiles

4. Manufacturing
- 4.1 Food
- 4.2 Paper
- 4.3 Glass, ceramics, cement

5. Mechanical engineering

6. Transport
- 6.1 Railways
- 6.2 Roads
- 6.3 Canals
- 6.4 Airports
- 6.5 Ports, harbours + Shipbuilding
- 6.6 Bridges

7. Communications, post and telecommunications

8. Energy
- 8.1 Electricity
- 8.2 Gas

9. Chemicals, Oils + Plastics

10 Water + Waste

11 Industrial settlements

12 Industrial architecture

THE SITES:

MANUFACTURING PROCESSES AND PRODUCTIONS:

1 **WANG LEE RICE TRADING COMPLEX**, BANGKOK
WAREHOUSES, ANCESTRAL HOME AND WORKERS RESIDENCE

2 **RAT BURANA SOI 3, RICE MILL AND WHARF No. 43 & 45**, BANGKOK

3 **THE EAST ASIATIC COMPANY LTD**, BANGKOK
WAREHOUSES, RESIDENTIAL UNIT AND HEADQUARTERS

4 **THE TIN INDUSTRY OF PHUKET** MANSIONS AND SHOPHOUSES

5 **THAI TOBACCO MONOPOLY**, BANGKOK

INFRASTRUCTURE/TRANSPORT/COMMUNICATIONS:

6 **THE PLAYING CARD FACTORY**, BANGKOK

7 **ASSUMPTION PRESS,** BANGKOK

8 **THAI WATTANA PANICH**, BANGKOK

9 **RUNG RUANG AKSORN TYPE FOUNDRY**, BANGKOK

10 **STATE RAILWAYS THAILAND**, BANGKOK
GODOWN, HEADQUARTER BUILDING, RAILWAY COMMUNITY HOUSING

11 **MAKKASAN TRAIN DEPOT**, BANGKOK

12 **BANG SUE RAILWAY COMMUNITY**, BANGKOK

BUILDINGS ASSOCIATED WITH INDUSTRY:

13 **THE CUSTOMS HOUSE**, BANGKOK

14 **OTHER SITES IN BRIEF: JIM THOMPSON + BAN KRUA MUSLIM SILK WEAVING COMMUNITY AND THE BANGKOK DOCKYARD COMPANY**

WANG LEE RICE TRADING COMPLEX, BANGKOK

WAREHOUSES, ANCESTRAL HOME AND WORKERS RESIDENCE

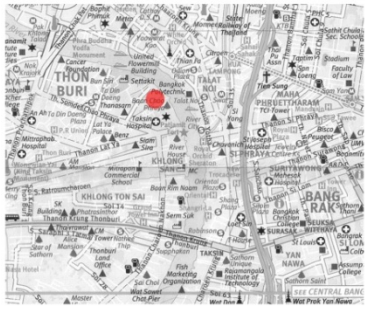
MANUFACTURING: **WANG LEE RICE TRADERS**

General details:

Location:	248 Chiangmai Rd, Thonburi. Bangkok
Industry:	Rice
Present ownership:	Private ownership, Wanglee family
Type of Site:	Mixed - warehouses & residential
Classification:	4.1 (Manufacturing food)

Location in Thailand:

Location In Bangkok:



Aerial view of site:

Figure 26 General details for Wang Lee Rice Traders

Overview and significance of the site: The Wanglee family complex contains important historical traces of Chinese immigrants who came to Thailand in the mid 19th century. The site contains a unique mixture of industrial, residential and sacred places. Architecturally, the site contains residential workers housing which dates to King Rama III (1824-1851) from the late 1820's.The ancestral house was constructed in 1881 during Rama V (1868-1910). This house represents a unique Sino-Portuguese architectural style, which has period detailing and original fixtures and furniture in situ. The social value of the site is related to the shrine which has been a place of importance for the Chinese immigrants and settlers in Bangkok to come and pay their respects. The entire site is still operational and the industrial element can still be seen each day as trading with rice continues. The owner is currently undertaking architectural conservation work on the ancestral house.

Company history: The Wanglee family has been operating as rice millers for 5 generations**.** During the period of October 2008 to January 2009 I conducted two interviews with the current owner of the company Mr Vuttichai Wanglee. The following information was given during these interviews.

The first ancestor, Tan Chu Huang was the founder of the company who came to settle in Bangkok in the early 1870's from Swatow in China. He married into the Posyanon family and established a rice mill which used the most modern technology of that time. In the book *Twentieth Century Impressions of Siam*, p. 169, it describes his mill as:

> In Bangkok the firm owned two mills – one known as Long Heng Lee mill and the other known as Khian Lee Chan mill – both large and well equipped with modern and economical machinery, and have a combined capacity of 2,000 piculs of No.1 rice per day. They are lighted throughout by electricity and have the latest type of furnaces, which burn paddy husks as fuel.

The location of the Long Heng Lee rice mill can be seen in Figure 23. Over the years the company expanded to eventually own 5 rice mills throughout Bangkok, most of them were located near the vicinity of the Long Heng Lee mill.

The site located at Soi Chiangmai originally belonged to the Phisalbutr family, and in Chinese the original site was known as 'Huay Jung Long', meaning 'Steamboat pier'. According to an article in the Nation newspaper on March 14th 2004, this was the pier where Chinese immigrants arriving in Bangkok from China would disembark from their junks during King Rama III period. Tan Chu Huang eventually bought the entire site from the Phisalbutr family, after beginning his rice trade by renting out just a single room from the family when he arrived in Bangkok. The ancestral home which can be seen on the current site today was built for Tsu Chang Huang, and was completed in 1881. A picture of the house appeared in the book Twentieth Century Impressions of Siam, 1903, p. 169 (Plate 60). The workers housing dates to the late 1820's and was present already on the site when Tan Chu Huang acquired it.

By 1903, Tan Chu Huang had handed over the running of the business to his son Tan Lip Bouy (Plate 45). The current owner Mr Vuttichai Wanglee took over the running of the company when his father passed away in 1982.

Plate 45 Tan Lip Buoy
(Source: Twentieth Century Impressions of Siam, 1903, p. 168)

The Rice Mills:

Rice Mill 1 was located in the north of Bangkok. It is not confirmed but it could have been located around Samsen and called the Khian Lee Chan mill.

Rice Mill 2 stood on the site which is now the Marriott Riverside Hotel. The original mill was burnt down in 1976 (Plate 46).

Plate 46 View of the Marriott Riverside Hotel (author)

Rice Mill 3 was located next to rice mIll 2. The mill was demolished, and there stands a large empty plot of land (Plate 47) The original residential home still exists here, and is planned to be renovated in due course (Plate 48).

Plate 47 The empty plot next to the Marriott Riverside hotel (author)

Plate 48 The residential home due for renovation (author)

Rice Mill 4 is located not so far away from rice mill 2 and 3. It has been renovated and converted into a restaurant (Plate 49 & Plate 50). A sign indicating the former owner hangs proudly in the restaurant (Plate 51). The residential home is also still present on the site (Plate 52), and renovated also. This restaurant is located on the former site of the Long Heng Lee rice mill, which dates back to about the 1870's/1880's (Plate 53).

Plate 49 & Plate 50 Shows the rice mill converted into a restaurant (author)

Plate 51 Signage indicating the former company s. Heng Lee Limited (author)

Plate 52 The residential home (author)

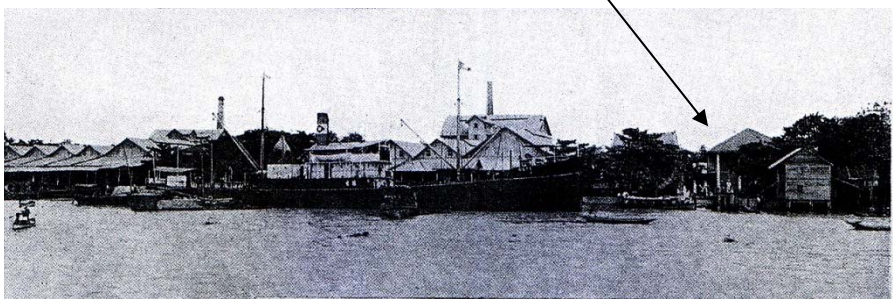


Plate 53 The Long Heng Lee Rice Mill
(Source: Twentieth Century Impressions of Siam, 1903, p. 168)

A further discussion will take place in Chapter 6 about the adaptive re-use of this rice mill.

The Site

Rice Mill 5 is located at 248 Chiangmai rd, Thonburi, which is the site for the study of the Wang Lee Rice Company.

The location of this mill is directly opposite Thanon (road) Song Wat which is on the other side of the Chao Phraya River (Plate 54). It is a road which is lined with traditional Chinese communities and shop houses trading and exporting rice and other goods. The area today has retained similar trading characteristics to how it operated over 100 years ago (Plate 55 & Plate 56).

Plate 54 View looking back across the river to the Wang Lee site from Song Wat rd (author)

Plate 55 & Plate 56 Traders and Chinese shop houses along Song Wat rd (author)

The site study shall be divided into the following parts:

- Overall site plan and views across site
- The workers housing
- Shrine building
- The office
- The warehouses
- The ancestral home

Figure 27 Aerial overall site plan and views across the site

The overall configuration of the site is similar to two deep ‘u’ shapes with buildings surrounding the perimeter and an open courtyard in between the buildings. The left hand side of the site which has the pier at the river front has the main warehouses, the offices, the workers housing and the shrine. The right hand side contains some warehouses, and the ancestral house. The entrance into the site is a narrow driveway located in between 2 buildings located near the office photo in Figure 27. The flagstones which line the floor within the courtyard were brought over from China as ballast in the junk ships (Plate 57). Silk goods were imported by the company and then the junks returned to China full of rice.

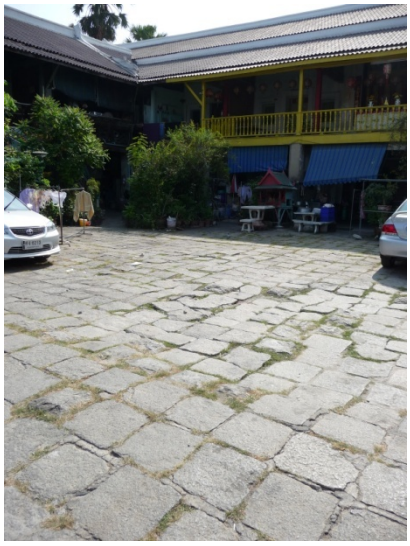


Plate 57 Flagstones from China line the floor of the courtyard (author)

The Workers Housing: These building are still being used as housing for the employees of Wang Lee. The owner estimated that the building is about 180 years old, dating it to the late 1820’s. The building has Chinese elements, in particular the shape of the roofline (Plate 58).

Plate 58 The roof line has Chinese characteristics (author)

The building is a two story brick construction with stucco façade, and timber elements, such as the staircases, balustrade and window shutters. The entire building is divided into smaller units, with the upper units accessible via a timber staircase leading from the ground floor in the courtyard. There is a small house which is situated in between the brick/stucco rows

housing which is visually and structurally different. It has a timber façade and has large coloured glass windows and a decorative ventilation panel running underneath the roof structure.

The building requires some attention as the stucco has weathered badly in parts, exposing the brickwork which will eventually allow it to deteriorate (Figure 28).

Figure 28 The workers housing

Shrine Building: The shrine building is located directly at the top of the site facing the river (Figure 27). This shrine is located on the upper floor of this two story building and is considered to be a very special and sacred place for the family and the Chinese community. The name of this shrine is called 'San Chao Mae Tap Tim', which is where the Chinese arriving at the pier would have paid homage to the Goddess of the Sea for their safe passage. The shrine must have an unobstructed view of the river, and there must be no buildings built which is higher than it stands in the vicinity. In 2001, Princess Sirindhorn visited the San Chao, and every January and April there is a ceremony where the Chinese community pays their respects to the Goddess (Plate 59).

Plate 59 Photograph showing the visit of Princess Sirindhorn (author)

The exterior of the shrine building is painted a vibrant yellow colour which stands out from the rest of the buildings on the site (Figure 29).

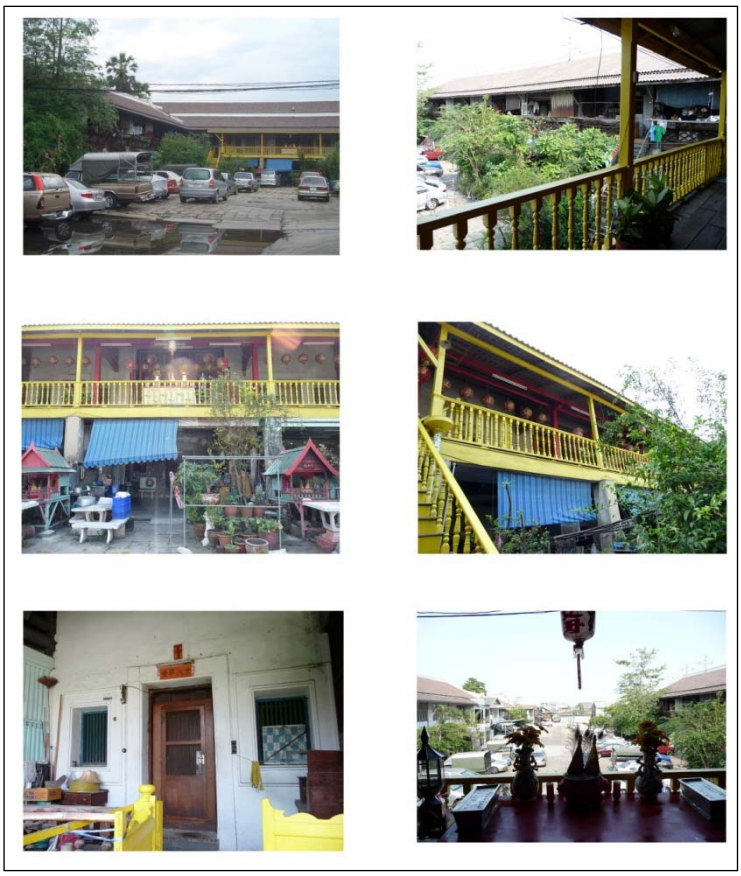


Figure 29

The exterior façade of the Shrine building (author)

The interior of the shrine can be seen in Figure 30, it has traditional Chinese elements such as red lacquered screens and furniture.

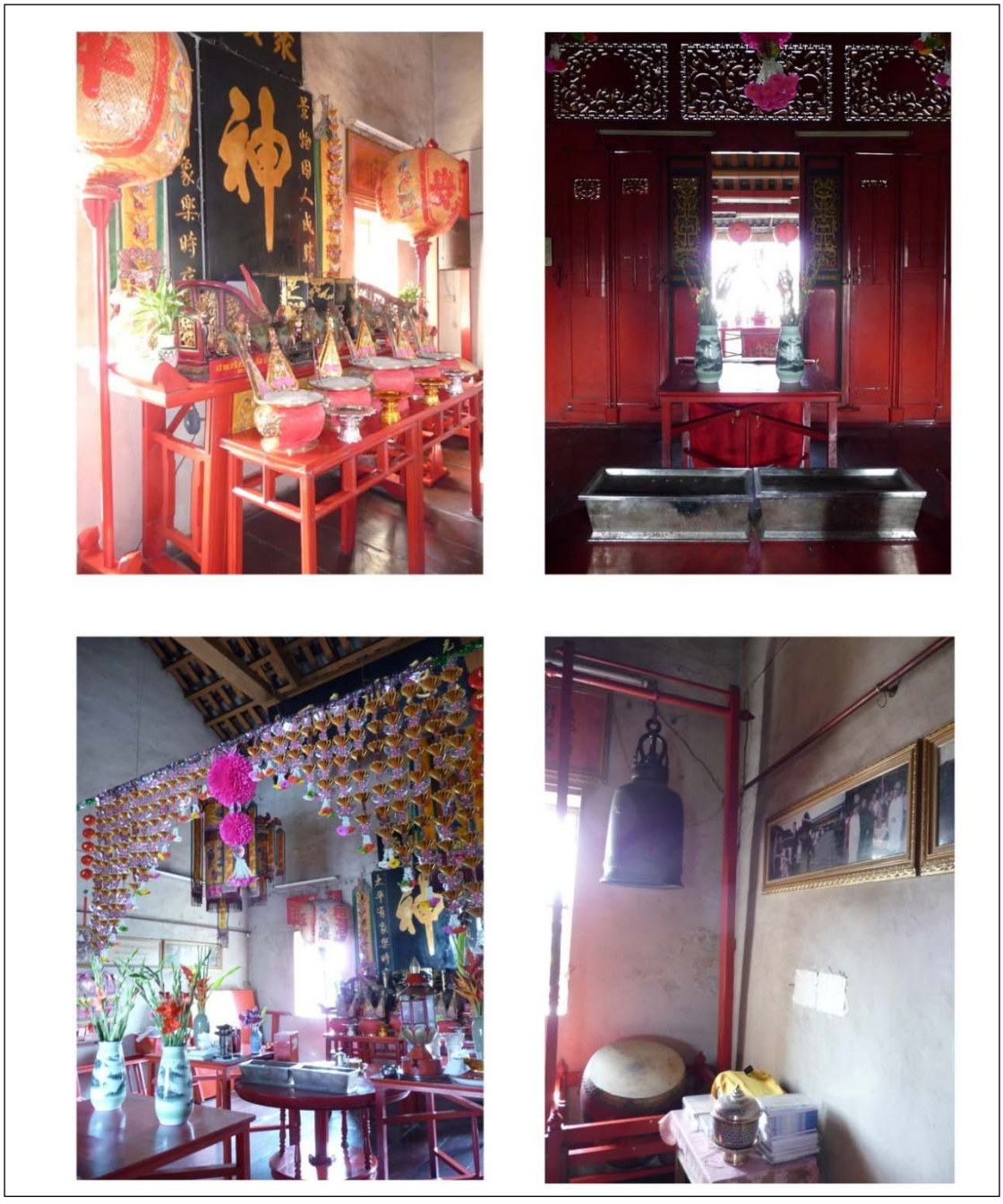


Figure 30 The interior of the shrine (author)

The Offices: These are running down the site on the opposite side of the workers housing, and can be seen to have undergone some renovations to make them more comfortable for a modern working environment. You can see that on Figure 31 the windows have been replaced to ensure more efficiency for the air conditioning units. The style of these windows does not sit comfortably with the overall feel of the building. Some original elements do however remain such as the decorative circular motif near the entrance. The interior of the building has also retained several original features such as the heavy timber door, and the patterned tiled floor.

Figure 31 The exterior and interior details of the current offices (author)

The Warehouses: There are several different warehouse constructions across the site. The dominant 'saw tooth' style construction facing the river is an austere concrete building, built when the original warehouse burned down 50 years ago. These warehouses are still being used for storage purposes.

Figure 32 The concrete warehouse facing the river (author)

The warehouse on the right side of the site consists of a mixture of utilitarian sheds some constructed purely from corrugated metal and others from timber.

Figure 33 The corrugated metal and timber warehouse (author)

The Ancestral House: The ancestral house dates to 1881, and is designed by a Chinese architect. The name of the architect is not identified.

Figure 34 The exterior of the ancestral home (author)

When I visited the house again in January 2009 the house was undergoing renovation works on the exterior façade of the building. The architectural conservationist, Khun Wathanyu was stripping back the paintwork to the original paint, which dates back to the 2nd Generation, when Tan Lip Buoy was running the company. The original house can be seen in Plate 60, where it is represented in the book Twentieth Century Impressions of Siam.

THE RESIDENCE OF TAN LIP BUOY.

Plate 60 The front of the ancestral home
(source: Twentieth Century Impressions of Siam, 1903, p.160)

The detail on the exterior of the entrance door way to the building is delicate and shows various scenes, many portraying animals to protect the house. The house is built in a 'U' shape with an internal courtyard. It is in Sino-Portuguese style, with large covered walkways on the ground and upper floors flanking the house. There is a decorative timber screen which is placed at the entrance to ward off the evil spirits. Materials such as mosaic tiles (Figure 35) and marble would have seemed opulent in its day, however mixed with a design which is using simple geometries and symmetrically balanced the overall look is remarkably understated, serene and elegant (Plate 60).

Figure 35 The patterned mosaic tiled floors of the ancestral home (author)

The interior of the house has some exquisite period detailing which has been conserved in fairly good condition. Original features such as light fittings, furniture and fittings as well as artwork and accessories have been carefully kept in place. The interior will also be renovated and work has begun on some areas already. Figure 36 shows the ground floor bathroom, and internal stairs leading to the upper floor, whilst Figure 37 shows the dining room.

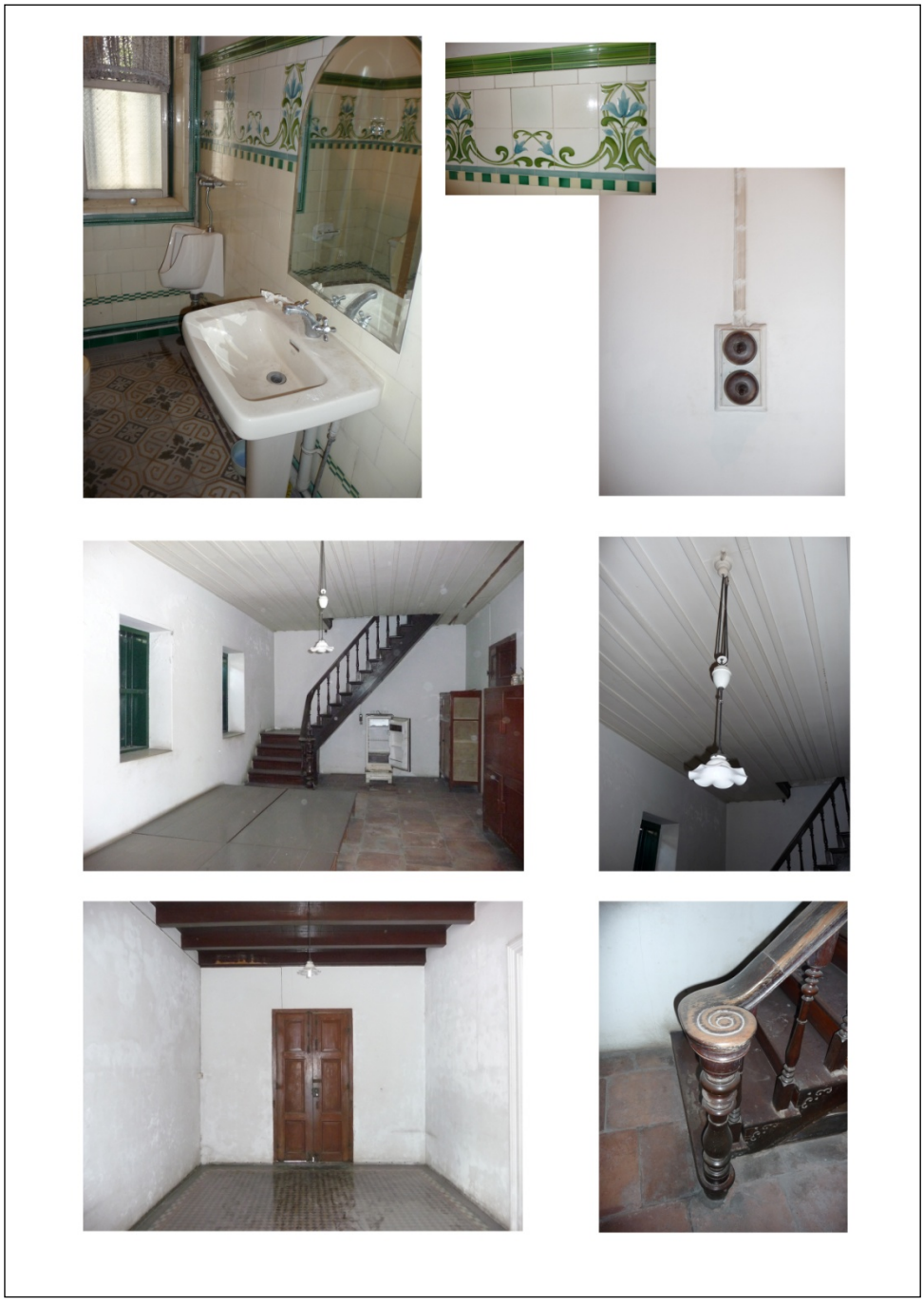


Figure 36 The ground floor of the ancestral home (author)

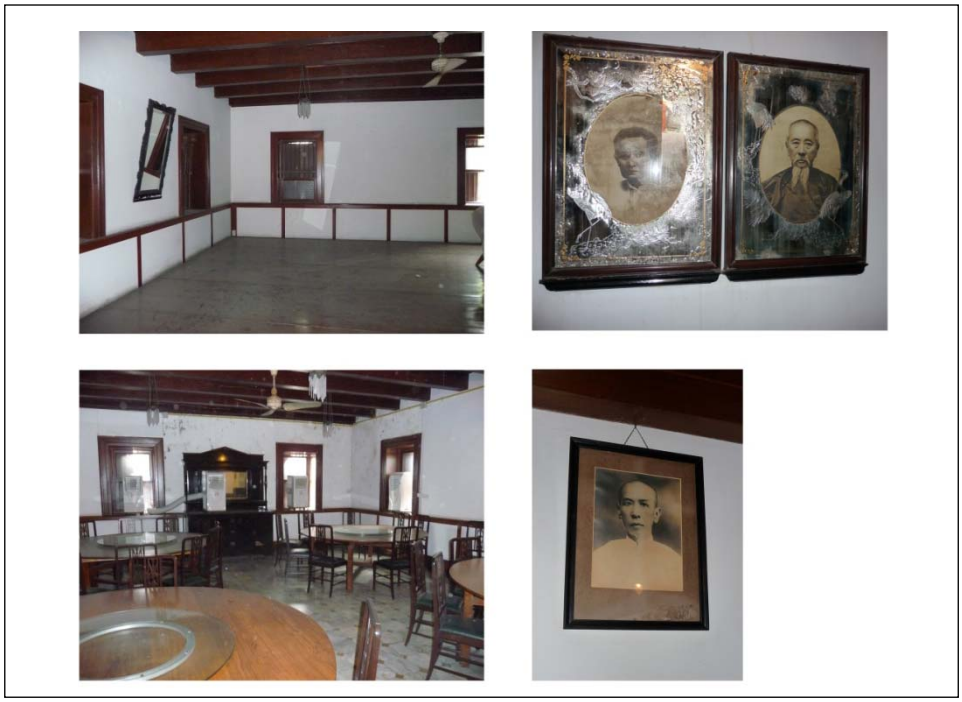


Figure 37 The dining room and photographs of ancestors (author)

The upper floor corridor and bookcase, which features a door opening onto a ‘secret room’ is shown in Figure 38.

Figure 38 The upper corridor of the ancestral home (author)

The original timber furniture items are still to be found located in the bedroom which shows a high level of craftsmanship (Figure 39).

Figure 39 Bedroom on the upper floor of the ancestral home (author)

RAT BURANA SOI 3, RICE MILL AND WHARF No. 43 & 45, BANGKOK

MANUFACTURING: WHARF No. 43 & 45

General details:

Location:	Rat Burana Soi 3, Bangpakok. Bangkok
Industry:	Rice
Present ownership:	Private -
Type of Site:	Rice Mill
Classification:	4.1 (Manufacturing food)

Location in Thailand:

Location In Bangkok:

Aerial view of site:

Figure 40 General details of Wharf No 43 & 45

Overview and Significance of the Site: The rice mills and wharves located at Rat Burana soi 3, represent an industrial architecture which was prevalent along parts of the Chao Phraya river in Bangkok since the 1860's. These buildings reflect a typical timber construction which functioned as rice mills and wharves for the rice industry of Thailand. The site is estimated to date to about the 1880's or 1890's. The architectural significance is increased as very few of these buildings remain today as land prices increase, older buildings such as these are being demolished in place of hi rise condominiums or hotels. The current status of the site is not confirmed, or what the function is today but it appeared like it was vacant.

Company History: The owners of the mill at Wharf 43 and Wharf 45 belonged to Lee Cheng Chan and Tom Yah. They were located slightly further down the river to a cluster of other mills in the area, however they are strategically located opposite Bangkolem point (Figure 41), which was at the end of Charoen Krung Rd.

According to *Twentieth Century Impressions of Siam*, 1903, p. 161:

> At the present time few rice mills are in a more flourishing condition than those owned by the partners (in the above firm). The mills are two in number and are both of comparatively recent foundation. They are situated at Bangpakok, a short distance nearer to the mouth of the river than the foreign business quarter of Bangkok, and consequently are in a very favourable locality for the unloading of paddy and shipping rice.

The mills can be estimated to date to the late 19th century or very early 20th century (the book in which the extract came from was written in 1903).

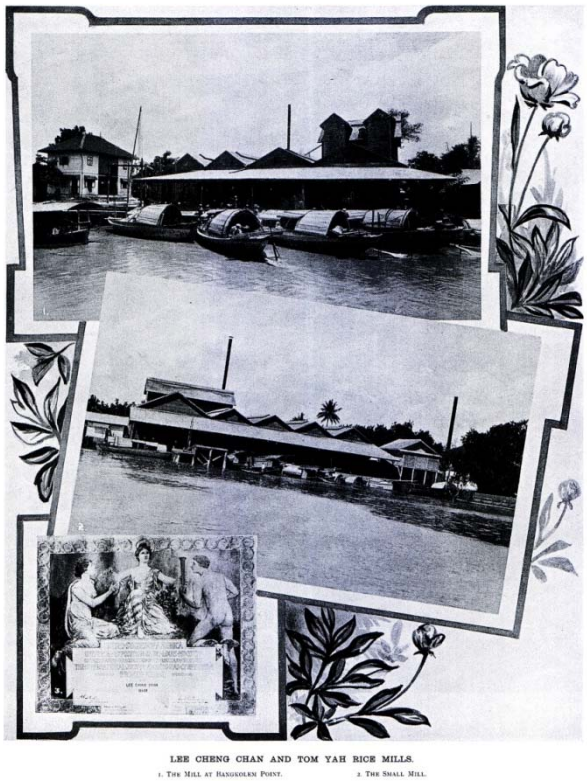
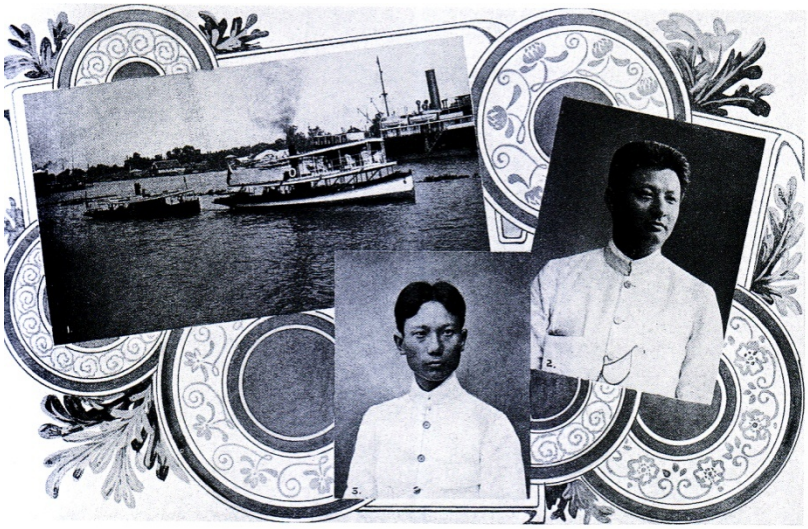


Plate 61

The Lee Cheng Chan mills
(source: Twentieth Century Impressions of Siam, 1903. p. 164)



LEE CHENG CHAN AND TOM YAH RICE MILLS.
1. The Steam Launches. 2. Tom Yah. 3. Leang Chai Chaninan Niti.

Plate 62 The owners of the mills
(source: Twentieth Century Impressions of Siam, 1903, p. 161)

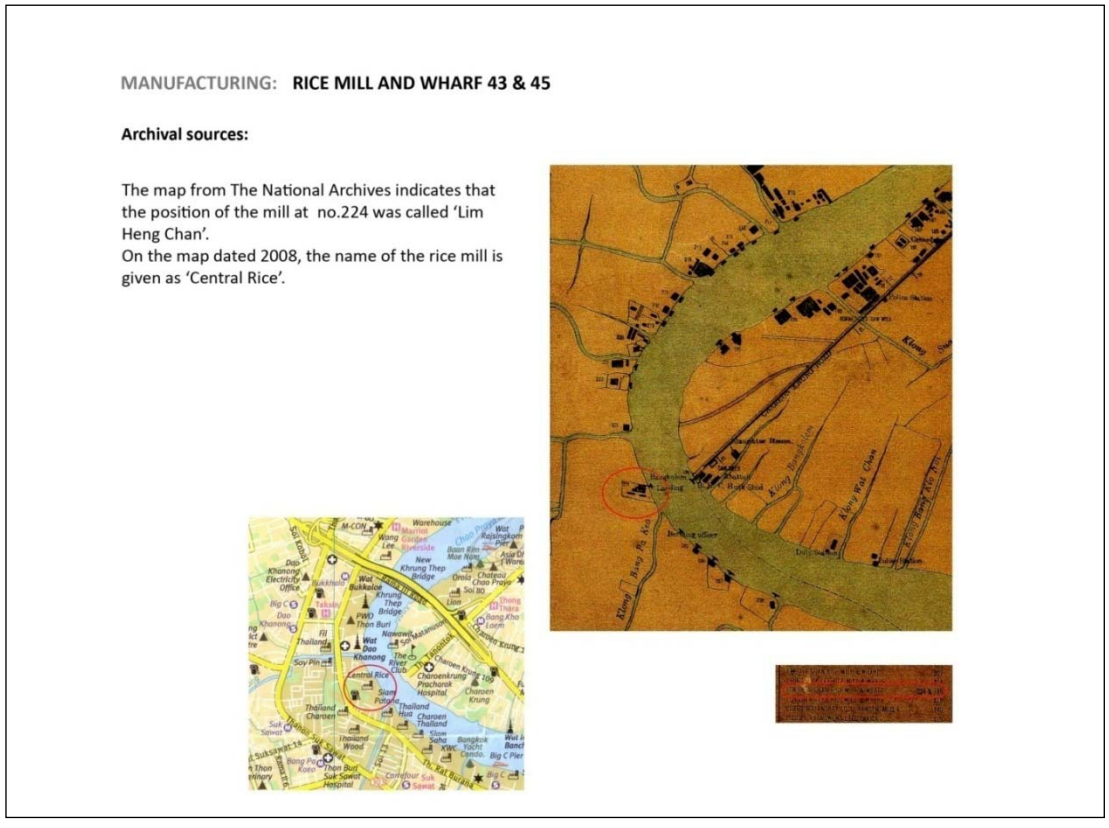


Figure 41 Archival map from The National Archives showing the position of the mill and wharf, compared with a mill marked at the same location from a recent map.

Figure 42 Site plan view and exterior views from the river (author)

The mill at Wharf No. 45 is accessed down a narrow soi, Rat Burana soi 3. There are several buildings on the site, however permission was not granted to go inside some of them.

The structure of the mills is a mixture of materials. Some of them are corrugated metal, however, the others are timber construction, presumed to be teak, with supporting posts with a centre distances of about 100cm.

Figure 43 Mill at Wharf No. 45 (author)

Figure 44 Rice Milling equipment (author)

THE EAST ASIATIC COMPANY LTD, BANGKOK

WAREHOUSES, RESIDENTIAL UNIT AND HEADQUARTERS

MANUFACTURING: EAST ASIATIC COMPANY LTD

General details:

Location:	2194 Charoen Krung Rd, Bang Kho Laem. Bangkok
Industry:	Teak Trading
Present ownership:	Private
Type of site:	Warehouse
Classification:	1.4 Timber extraction / 4 Manufacturing

Location inThailand:

Location in Bangkok:

Aerial view of site:

Figure 45 General details - The East Asiatic Co. Ltd

Overview and Significance of the Site: The site represents the trade relationships that were established under King Rama IV (1851-1868) and King Rama V (1868-1910). This European company was established in Bangkok at the end of the 19th century, and the site contains an interesting legacy related to the teak industry of Thailand. The architecture of the warehouses represents a western approach to industrial architecture in the heart of Bangkok. The site also contains traces of machinery and equipment used in the production and processes of the saw mills. The residential house which stands next to the warehouses demonstrates a European architectural sensibility mixed with elements seen throughout colonial South East Asia of the late 19th century and early 20th century. The site is also reputed to be the place of the first passenger pier, and one where King Rama V would depart from on his many journey's abroad.

Company History: In 1884 Capt Andersen from Danish origin establishes his own teak trading company after settling in Bangkok (Plate 63). The East Asiatic Co. Ltd (EAC) was founded by Messrs. Andersen & Co. in January 1897. They were one of the leading exporters of teak who were granted concessions from the Thai government to log some of the most abundant forests in Siam. The EAC was the first company to ship teak from Siam to Europe by steamship also exporting several other important commodities such as rubber, hides and horns, however, teak was the most valuable export commodity. They soon moved into shipping and by 1904 they had 5 steamships, which plied the routes from Bangkok to Copenhagen, Middlesborough, London and Antwerp carrying all sorts of exportable goods. The steamship company was called The Siam Steam Navigation Company. The EAC also owned the Oriental Stores, which was an early department store located near The Oriental Hotel, and the company headquarter building also located in the same area (Twentieth Century Impressions of Siam: Its History, People, Commerce, Industries, and Resources.1903: p. 143).

The EAC can be described as hugely important in opening up the trade between the South East Asia and the Western nations in the early 20th century.

Plate 63 H.N Andersen the founder of The East Asiatic Co. Ltd
(source: http://www.eac.dk)

The Site: The site occupies a large area and comprises of a series of warehouses each used for a different process related to the teak industry.

The architectural style of the warehouses varies across the site as can be seen in Figure 46. The central warehouses which face the river (C-5, C-6 and C-11) comprise of 5 concrete framed arched brick structures, with the middle arch slightly smaller than the other ones. These warehouses are the most substantially constructed ones on the site, and were intended to project the European identity of the company in terms of the materiality and the style of the architecture. The interior detailing of the warehouse shows some interesting details too, with steel trusses and decorative concrete framing around the brickwork (Figure 49). During an interview with the current owners on 15th December 2008, I was informed that all the brick and steel work was imported from Middlesborough in the UK.

The other warehouses display a much simpler style being a rectangular shed, sometimes with double bays (warehouse A-12). The warehouse at location A-5 and A-6 still contain the lifting machinery required for the sawmills (Figure 47). The construction of this structure is a mixture of concrete columns, timber members and corrugated metal panels with some reinforced steel at the column bases. The interior and exterior of these warehouses are quite different from the warehouse at C-5, C-6 and C-11.

Figure 46 The exterior façade of buildings on The East Asiatic Co. Ltd site (source: Floor plan courtesy of Bangna Glass, all photos by author)

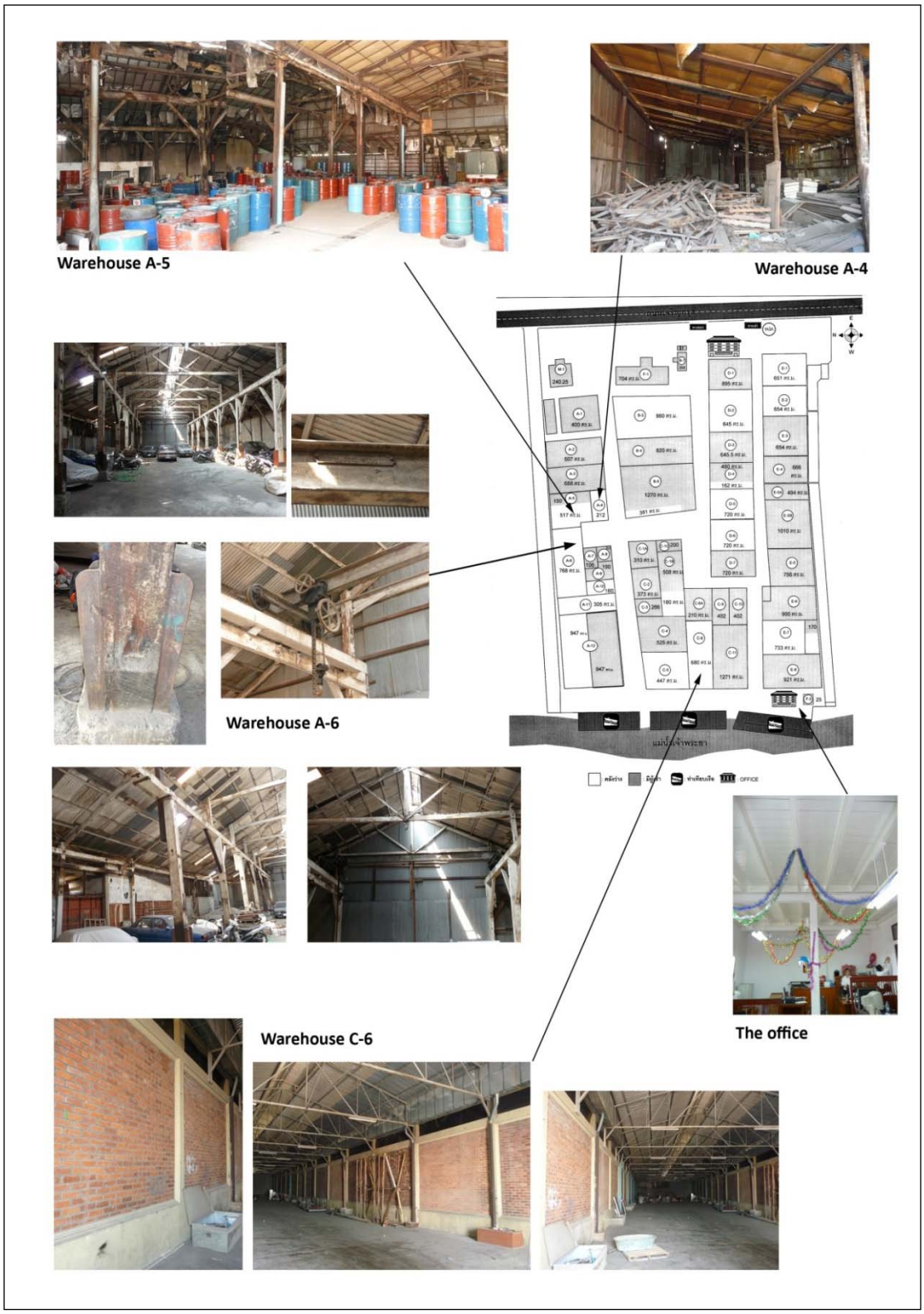


Figure 47 The interior of some buildings - The East Asiatic Co. Ltd,
(Floor plan courtesy of Bangna Glass, all photos by author)

Brick details taken from the exterior facade of warehouse C-6.

Brick details taken from the interior of warehouse C-6.

The type of brick bond used is called 'running bond', where only stretchers are used. One reason for this simple undecorative bond type is that it is economical as all the bricks used were imported from Europe.

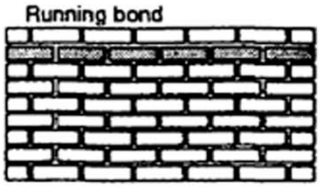


Figure 48 Brick detail – East Asiatic Co. Ltd (author)

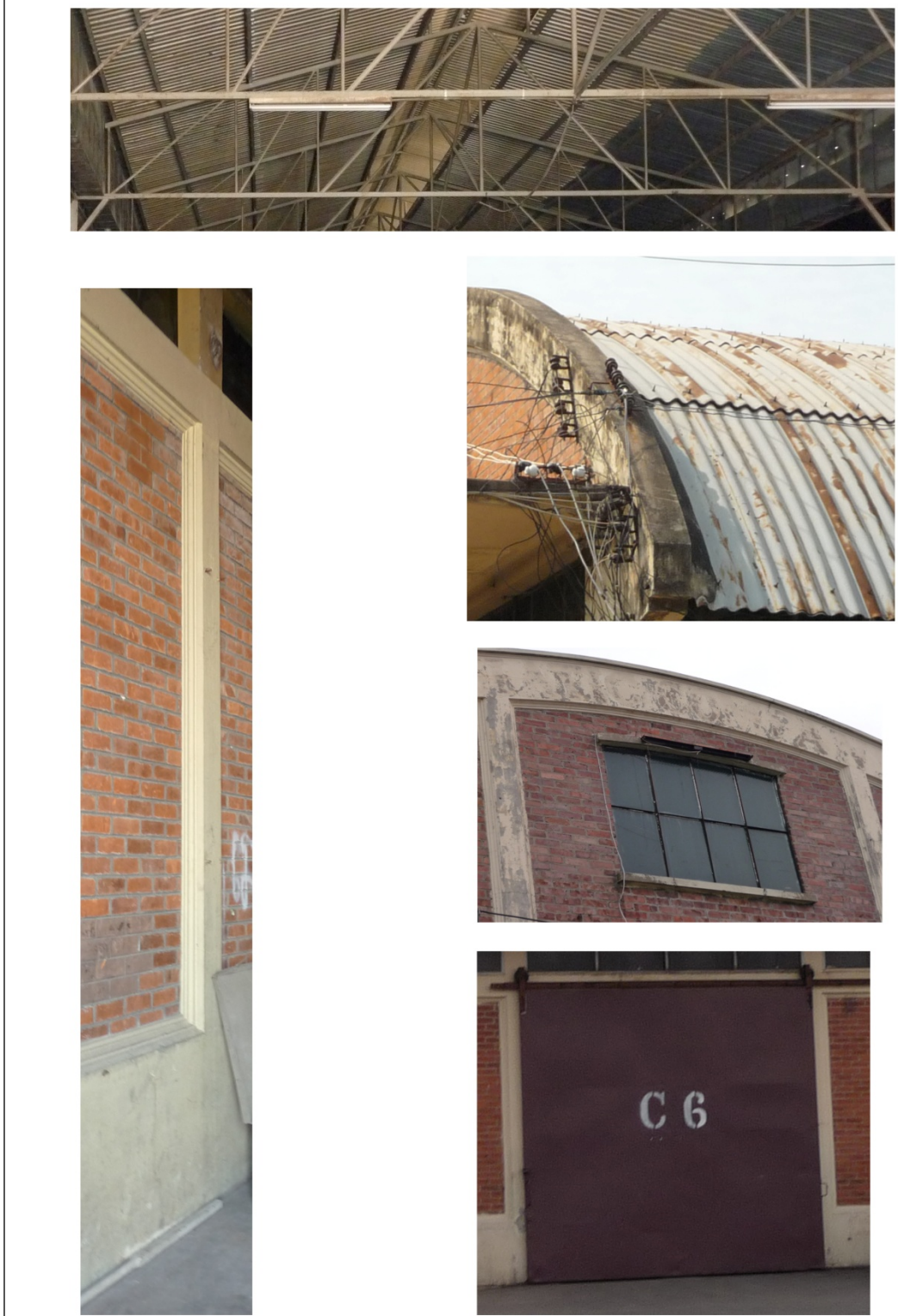


Figure 49 Detail of main architectural elements for Warehouse C-6 (author)

It was reported, during the interview, that the teak posts which are still visible in front of the office used to belong to the old pier (Plate 64), which is reputed to be the first pier in Bangkok where King Rama V (1868-1910) would take a steamship to Singapore, and then change to a larger ship on his journey's to Europe. The hoist which can be seen is still in the same position which connects to a small set of tracks on the floor (Plate 65). This hoist also dates back to the 1890's and has information on it stating that the manufacturer is from Middlesborough in the UK.

Plate 64 Showing the teak posts and hoisting machinery (author)

Plate 65 Showing the tracks which connect to the river front (author)

The manager of the East Asiatic Co Ltd was reported to have lived in the residential house which is adjacent to the warehouse at A-12. This house is in quite a bad state of structural damage, and requires conserving sensitively to retain the original features. The architectural style is similar to other European dwellings in Asia at the same period at the close of the 19th century, especially in colonial Singapore and Malaysia. The covered verandah on the front provides shade and the shutters to keep the home cool (Plate 66 & Plate 67). The detailing on the house is simple and unadorned using timber (Plate 68).

Plate 66 Front elevation of residential home of East Asiatic Co. Ltd (author)

Plate 67 Detail of side elevation (author)

Plate 68 Side elevation of residential house (author)

The current owners of the property are currently using it for various storage purposes and there is no manufacturing presently taking place on the site.

They were discussing possible plans for the site which may take place over the next 2-3 years. They would like to change the residential home into a restaurant, and perhaps the warehouses into a retail shopping complex.

It seems that the owners are aware and understand the significance of the history of the site, which will hopefully take the East Asiatic Co. Ltd warehouses and residential unit into a new chapter in its interesting historical journey so far.

ASSOCIATIONS WITH INDUSTRY: **EAST ASIATIC COMPANY LTD**

General details:

Location:	Oriental Lane off Charoen Krung
Industry:	Import/Export
Present ownership:	Private
Type of Site:	Office Headquarters
Classification:	none industrial

Location in Thailand:

Location In Bangkok:

Aerial view of site:

Figure 50 General details for East Asiatic Co. Ltd headquarter building

Despite the fact that this building cannot be classified as an industrial building it has such strong presence and represents the growth and the opening of the international trade links between Siam and the European markets.

The building was completed by the beginning of 1901. It is designed in a neo-Palladian architectural style, and its prominence along the stretch of the Chao Phraya consisting of the Oriental Hotel, foreign legations and the Customs House is testament to the sheer importance of the East Asiatic Company Ltd at the turn of the 19th century. The EAC building still stands tall and proud, despite it being overshadowed by surrounding buildings as developments have changed the area into a shopping and leisure zone for tourists (Plate 69 and Plate 70).

Plate 69 View looking towards the East Asiatic Co. headquarters (left building) (author)

Plate 70 The skyline surrounding the East Asiatic Co. Ltd (author)

The photographs shown within Figure 51 indicate that the building fabric requires some attention to prevent the structure from decaying and cracking further. The building has a brick structure and a stucco finish.

Figure 51 Photographs showing damage to the building fabric (author)

Plate 71 is an undated image from the National Archives in Bangkok, and Plate 72 is a photograph shown in *Twentieth Century Impressions of Siam*, 1903: p. 141. Once again this is not dated, however it is presumed that it is taken at the beginning of the 20th Century.

ASSOCIATIONS:
WITH INDUSTRY

EAST ASIATIC COMPANY LTD / HEADQUARTER OFFICE

Archival photographs:

Plate 71 View of EAC headquarters from The Chao Phraya river (Source: National Archives, Bangkok)

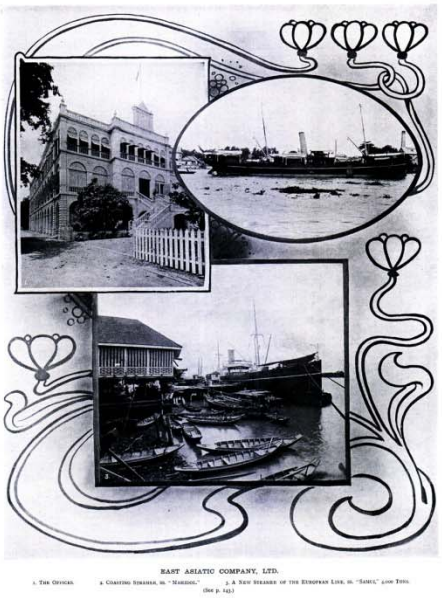


Plate 72 View of EAC headquarters
(Source: Twentieth Century Impressions of Siam: p. 141)

THE TIN INDUSTRY OF PHUKET
MANSIONS AND SHOPHOUSES

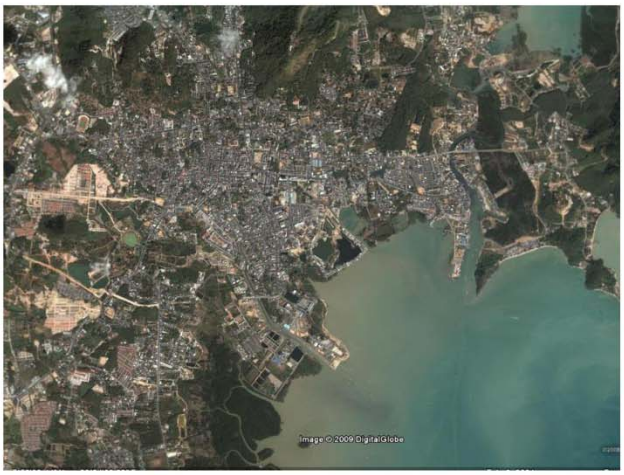
ASSOCIATIONS WITH INDUSTRY: THE TIN INDUSTRY OF PHUKET

General details:

Location:	Various
Industry:	Tin Industry
Present ownership:	Mixed
Type of Site:	Residential + commercial (Mansions + shop houses)
Classification:	not applicable

Location in Thailand:

Aerial view of site:



Google earth showing Phuket Town

Figure 52 General details of Phuket

Overview and Significance of Sites: Phuket is unique in the way that it is embracing and celebrating a heritage which revolves largely around the tin industry. Despite the fact that the industry has left a landscape scarred with the remains of the deep pits, the memory of this landscape has been turned into a positive and interesting heritage for Thailand. It is unique as this heritage has no connection or relationship with royalty or nationalism, and is paying respect and homage to the migrant Chinese who turned Phuket into the thriving province it was of yesteryear and still is today. The Province of Phuket should be praised for its approach and enthusiasm for the conservation of both the tangible aspects of its architecture and the intangible aspects in keeping traditions, rituals and cultures alive. Both the private and public sector are both successfully raising the public awareness of the tin industry by promoting story telling through the Kathu Tin Mining Museum and the Phuket Thaihua Museum. The private sector is also helping too. The hotel project 'Indigo Pearl' has concentrated their entire design around the tin mining industry. Phuket manages to use a multi participatory approach for these projects and the methods could be used for best practice examples for future projects throughout Thailand.

The Sites: The legacy left behind from the tin mining years of the late 19th century and early 20th century can be seen in the properties and dwellings of the predominantly Hokkien Chinese residents who were frequently involved within the tin mining business in some way. This style of architecture was seen throughout colonial South East Asia, such as Singapore, Malaysia, especially in Penang and Malacca, and further afield in Hong Kong and Macau. The western coastal cities of Thailand such as Ranong, Krabi and Phuket have many examples of this architectural type. In Bangkok the traditional Chinese area located around Yaowarrat and Song Wat rd also have streets lined with these shophouses which mix Chinese and neo-classical European elements. In Chinese the name for the shophouse was called 'Tiam Choo', and the large mansions built by wealthy patrons were called 'Angmor-lao' translated as 'large house of the red hairs' (foreigners were generally referred to as 'Angmor' or 'red haired people').

A map titled 'Phuket Town Treasure Map' is a map given to tourists visiting Phuket. It gives an excellent guide to the historical buildings, and provides an overview about the position of the shophouses and mansions which shall be mentioned (Figure 53).

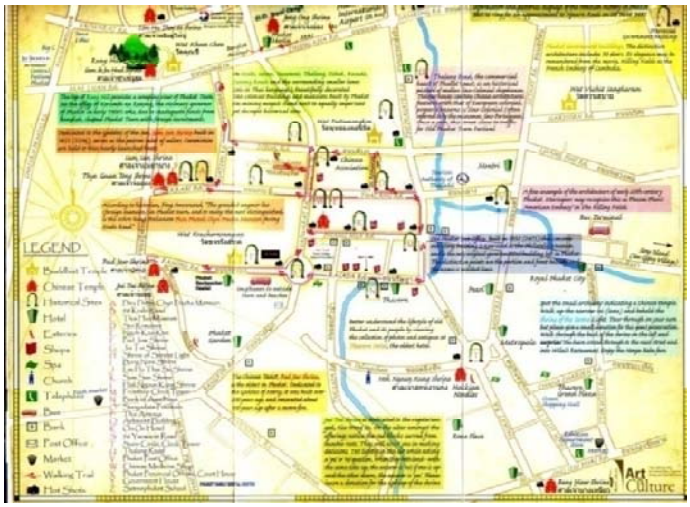


Figure 53 Map of historical buildings and streets in Phuket (source: Art and Culture Asia)

The Shophouses: These buildings are concentrated around the central shopping zone of Phuket town, namely Krabi rd, Yaowarat rd, Thalang rd and Dibuk rd. As the name suggest the buildings were divided into a work/live zone. This was not only economical, but allowed the entire family to stay together all the time. These masonry shophouses had unusual proportions, having notably narrow bays, and deep lengths in proportion to the width. The reason for this is because properties were taxed due to the amount of street frontage it occupied. Therefore the narrower the property the cheaper the tax would have been.

As the properties were joined in a row and unless you occupied a corner position then very little sunlight would be able to reach the centre of the house. To solve this problem an opening in the roof allowed not only sunlight to enter but often rainfall too, which would be collected in a 'pond 'at the ground floor and drained away, in Chinese this is called the Chim Jae (Plate 73 & Plate 74).

Plate 73 The 'Chim Jae' at The China Inn, Thalang rd, Phuket (author)

Plate 74 The 'Chim Jae' at The Thai Hua Museum, Krabi rd (author)

The older shophouses were normally just 2 storey's high, but some later types became 3 storey's. The level of detailing on the property also indicated the wealth of the occupant and also can indicate the general economics of the time. During the harsher economic periods such as the inter war years and the early 1930's adornments were much more limited. Another key feature of the shophouse style was the arcade created on the street. This created shade from the sun, and protection from the rain, in Chinese this is known as Ngah-Kaa-Kee (Plate 75).

Plate 75 Ngah-Kaa-Kee or the arcade connecting the shophouses externally (author)

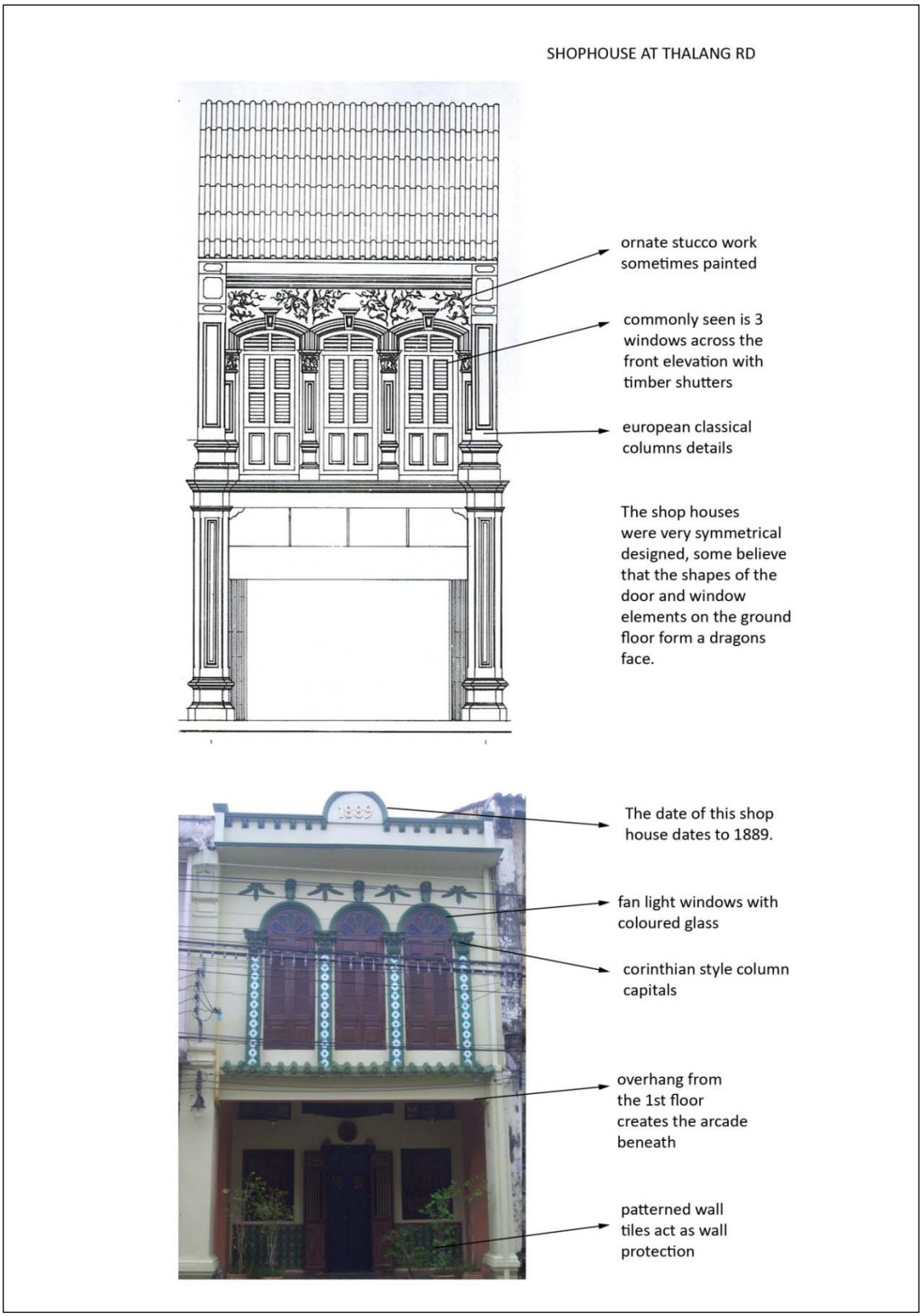


Figure 54 Elevation of a shophouse showing the various components
(Source drawing: Dr Yongtanit Pimonsathean, 1996. Photograph: author)

Dr Yongtanit Pimonsathean of Thammasat University has been working for numerous years on the conservation of Phuket. In 1996 a detailed inventory of many of the historic shophouses were completed which resulted in a series of drawings and detailed information about the Sino-Portuguese architecture in Phuket.

In 1997 parts of Phuket Town were protected legally from development, much of which is attributed to the work of Dr Pimonsathean. The owners of the buildings were encouraged to conserve their buildings, and in 2002 the Phuket municipality granted several of them awards for their restoration work.

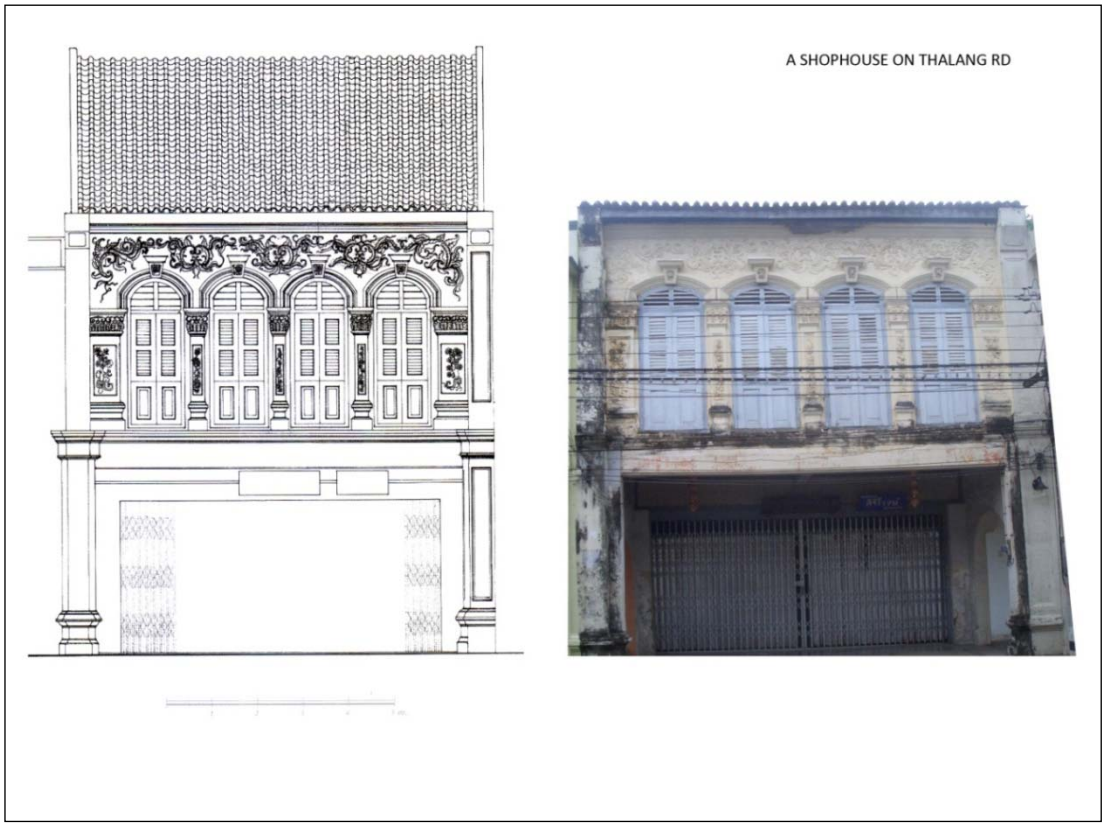


Figure 55 Elevation drawing of a shophouse on Thalang Rd and photograph
(Source: Architectural Drawings of Historic Buildings and Places in Thailand, 2008. Dwg by Dr Yongtanit Pimonsathean, 1996. Photograph: author)

Figures 56 to 57 show the streetscape and details of some shophouses in Phuket Town.

STREETSCAPE IN
PHUKET TOWN

Thalang rd

Soi Romanee

Thalang rd

Paving detail on Thalang rd

Thalang rd

Figure 56 Streetscape in Phuket Town (author)

Figure 57 Details and decorations on shophouses (author)

The Mansions: There are several magnificent examples of these large residential properties still in Phuket Town. These properties were built largely on the fortunes made by tin mining and were owned by the Chinese. The architectural style of these resembles the shophouses and features a mixture of Chinese and neo-classical European elements, however due to their size they often feature several internal courtyards created from the Chim Jae.

There are 2 fine examples situated close together on Krabi rd, one at 9 Krabi rd (Plate 58), and the other at 98 Krabi rd (Plate 59). They both belong to the Chinpracha family, who named the mansions after their family names.

THE PHRA CHINPRACHA MANSION AT 9 KRABI RD

The mansion is estimated to date to the late 19th century, and is a fine example of a Sino-Colonial style mansion house.

It rests in fine grounds, yet it is uninhabited, however it is not open for the public.

Figure 58 The Phra Chinpracha mansion at 9 Krabi rd (author)

Baan Chinpracha belonged to the eldest son of Phra Pitak Chinpracha, it is believed that he built it in about 1905 (Figure 59).

Figure 59 Baan Chinpracha at 98 Krabi rd (author)

The Thaihua Museum: This museum is located at 28 Krabi rd is a building which is notable not only for its architectural qualities, but also for the function that it serves today. In March 2008 the museum opened following funding and planning by The Lok Xian Kok Foundation. The main objective of the museum is to provide an insight into the culture and lifestyle of the Chinese Phuketians, and to show present and future generations about the ways that they influence and affected Phuket today. The museum is an important reminder about the way that the educational system was introduced to Thailand, as it was formerly a school before becoming a museum.

The site has gone through several transformations over the years since it was originally built in 1911. The building which stands today was constructed in 1934, however it seems that it is often dated to 1911, but that is the date when a school was first in operation on the same location. In 1926, a new 6 classroom building at the same site was built to increase the facilities and to cater for more students. The school was called the Hua Bun School, and taught Chinese for the children of the Chinese population in Phuket. This building was designed by Mr Aiew Ngha Aian and was built by Mr Jian Wanit. The new school was officially opened on October 1st 1934 (Guidebook to The Thaihua Museum, 2008, p. 72). The remnants of the building constructed in 1926 are still visible in the cement walls at the rear of the building.

Finally the school was moved to a new site in 1995, the building became a place where the Chinese community would meet and discuss the history of the Chinese people in Phuket. In 2001 the idea of using the building as a museum became a reality in 2002 with a detailed plan for the project submitted. Work eventually began in earnest in 2006, and by March 2008, the building was complete. The same year the building received an award from the Architectural Siamese Association (ASA) for outstanding architectural conservation.

Interpretation: The museum is divided by themes**,** beginning the museum experience with a video briefing area, you then move through the building as follows:

- Chinese of Phuket
- Tin Mining
- Off China to Phuket
- Local Apparel
- Master Soonpin's room
- The Chinese Schools (Mini theatre)
- Imaging room
- The Old Buildings
- Vegetarian Festival
- Local Cuisine

The interpretation shows the way in which the Chinese culture has been infused within the Thai culture, and how important it is that the traditions of certain rituals and traditions are kept alive today.

Figure 60 Floor Plan of Thaihua museum and the exhibition material (Source: Floor plan from Guidebook of Thaihua Museum. Photograph: author)

The Kathu Tin Mining Museum: This museum has still not been officially opened to the public; however it is possible to visit via an appointment. The museum is a local government project which was conceived in 1999. The museum is located in the heart of the tin mining region of Phuket called Torsung in the Kathu district.

The project required a new building to be built to house the exhibition, which was designed by a local architect called Mrs Punjaphat Churaj. The objective of the museum is to tell the story of the tin mining industry and to show how much influenced it has exerted upon the province. Similar to the Thaihua museum the municipality is encouraging educational based activities for tourists, and the tin industry provides much material to present to the visitor.

The building is designed to replicate the Sino-Portuguese architecture, and references can be drawn to some of the architectural styling of the mansion houses seen in Phuket Town. It is not the purpose of the discussion here to comment on the viability and suitability of the architectural aesthetics, but to comment on the interpretation techniques used (Figure 61).

Figure 61 The surrounding landscape and the Kathu Tin Mining Museum building (author)

The Interpretation Techniques: The museum has used several different ways to engage the visitor with the museum, and the material is stimulating and interesting. The layout of the building ensures that you view the exhibition in an order that is appropriate to understand the story. The models are particularly well crafted and the 1:1 scale mock up rooms showing various scenes from the beginning of the 20th century are authentically recreated (Figure 62).

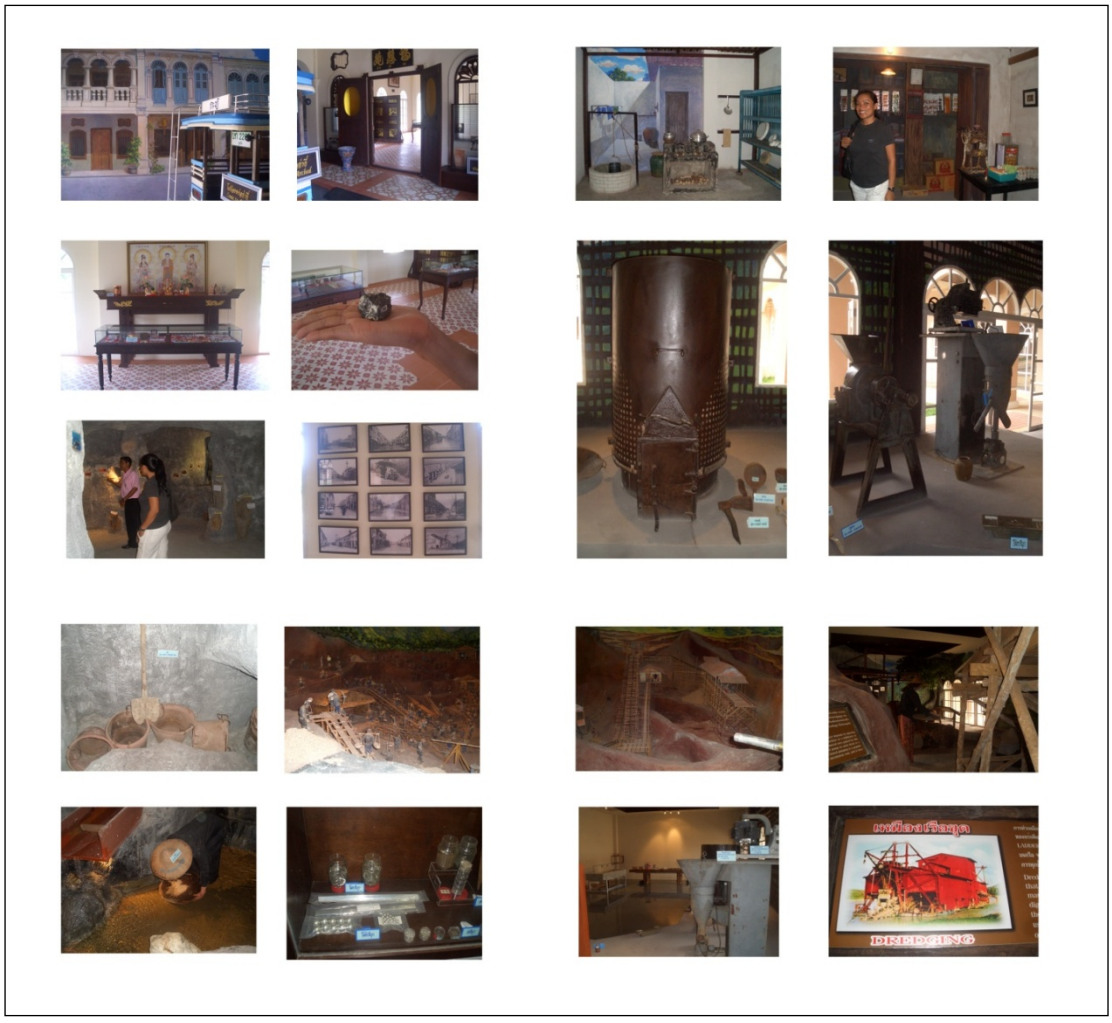


Figure 62 The various interpretation methods used in the Kathu Tin Mining Museum (author)

Indigo Pearl Hotel: The Indigo Pearl hotel shares an interesting relationship with industrial heritage of Thailand, in particular the tin industry. The hotel evokes images related to the tin mining industry as the owner's family the Na Ranong's had previously owned mines, and were connected to the industry for many years.

The hotel provides a good way of raising the public's awareness of Phuket's tin mining past and providing a link between the industry and translating that story through the use of design as a means and form of visual representation. This hotel can be a good example in the way that Thailand can use the industrial past and present the interpretation of it through a medium which is actually 'experienced'.

The hotel opened in December 2006 to much acclaim. The designer for the hotel and landscaping is a renowned architect in Asia called Bill Bensley, who worked closely with John Underwood who manufactured and produced most of the furnishings and art pieces.

The mining theme is carried through from staff uniforms to minute details in every part of the hotel complex. The materials used lends an industrial aesthetic to the design, however softer elements ensure that the comfort of the hotel is not compromised (Figure 63 & Figure 64).

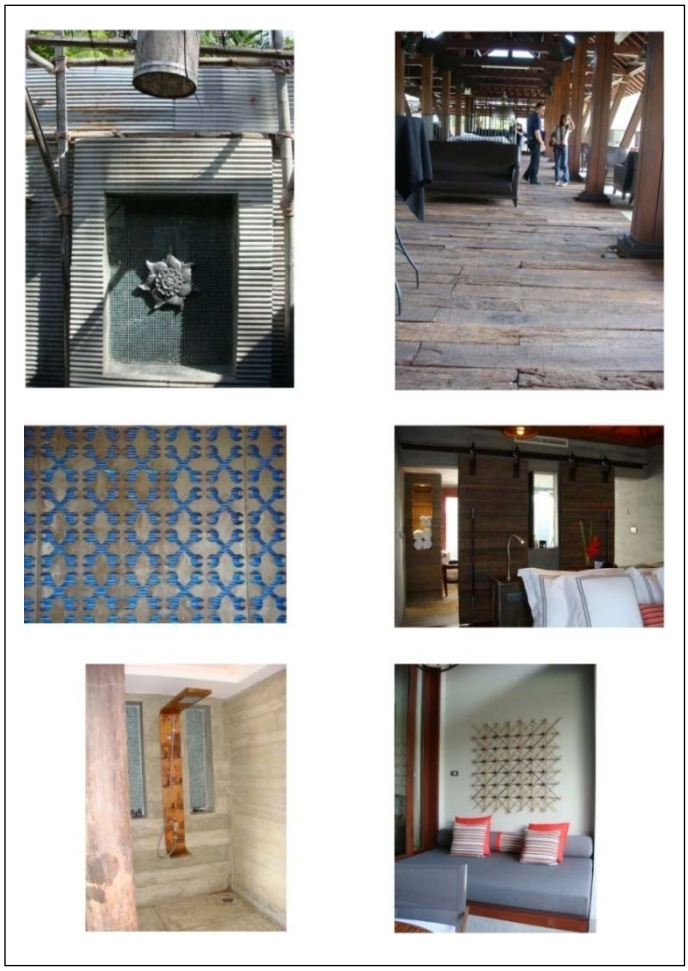


Figure 63

Interior of Indigo Pearl Hotel, Phuket (source: Suzana Zainal)

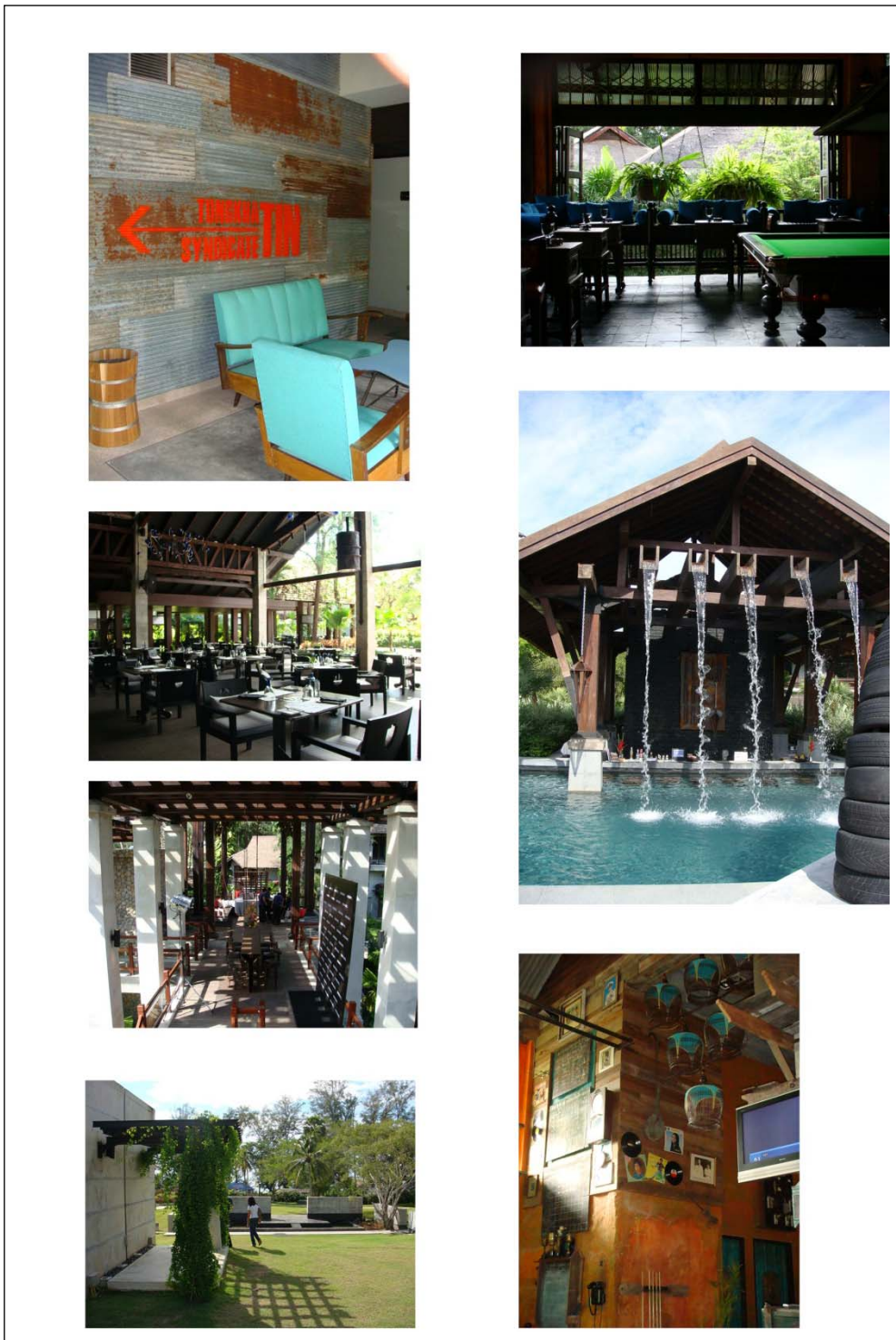


Figure 64 Exterior of Indigo Pearl Hotel, Phuket
(source: Suzana Zainal)

THAI TOBACCO MONOPOLY, BANGKOK

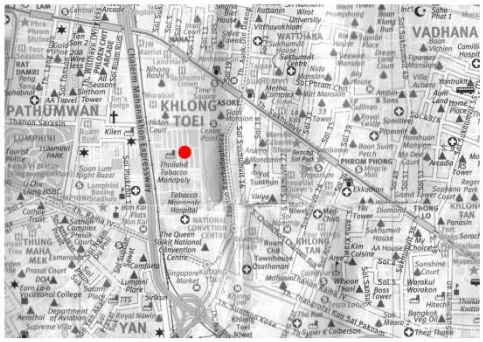
MANUFACTURING: THAI TOBACCO MONOPOLY

General details:

Location:	184 Rama IV Rd, Khlong Toei, Bangkok
Industry:	Tobacco Manufacturing
Present ownership:	Ministry Of FInance
Type of Site:	Factory/Warehouse/Workers housing
Classification:	4 (Manufacturing)

Location in Thailand:

Location In Bangkok:



Aerial view of site:

Figure 65 General details of the Thai Tobacco Monopoly

Overview and Significance of Site: The Thai Tobacco Monopoly (TTM) contains architectural and social significance. The warehouse brick buildings are nearly 60 years old, dating back to the early 1950's. They are a good example of functional industrial architecture which has provided employment to many people over the years, and has contributed to the economy of Thailand. When the site was constructed it was in a predominantly agricultural area of Bangkok, but the urban sprawl has completely surrounded it with hi-rise structures and several forms of infrastructure. The site has a serene and calm quality to it, and the landscaping amongst the warehouses is well kept. The workers housing is traditional timber construction and the community have lived here for many generations. The site is under threat as the TTM plan to relocate to the periphery of Bangkok, and certain elements of the site should be retained. Suggested adaptive re-uses for the warehouses include either craft based retail units, artist studios, or small office units for designers, like the Van Nelle Design Factory in Rotterdam (Figure 120).

Industry History: On April 19th 1939 the tobacco industry came under state ownership. The Thailand Tobacco Monopoly (TTM) came into being when the government took over the Burapha Tobacco Company Ltd in 1939. Subsequently the government took over 3 further cigarette companies, the Kwang Hok and the Hoffun Companies, and the British American Tobacco (BAT) Company who had a large factory in Ban Mai district in the North East of Thailand.

In 1943 the government passed the Tobacco Monopoly Act making cigarette production a state monopoly, under the Excise Department.

In 1950 the Excise department purchased a large 640 rai plot of land from the Crown Property Bureau (CPB) which is the present location of the TTM. The department needed to relocate 750 households who were occupying the land at that time. By 1953 the TTM had completed all the factory buildings on the site. Therefore the date of the buildings on the site varies from 56 to 59 years old.

A meeting with the engineering and architecture department at the TTM on 26th November 2008 revealed that the TTM have plans to relocate to an industrial park which is located 200km north west of Bangkok. This new facility will house the offices, factories, warehouses, laboratories, and maintenance departments. An estimated date for the move will be in 2013. The plans for the site appear to be sketchy and unsure. Fifteen years ago part of the site was sold off to construct The Queen Sirikit Convention Centre, and about 3 years ago Phase I which includes a green area situated around the lake was finished. One proposal was that once the facilities are relocated then the buildings shall be demolished and Phase II shall be completed which includes more park land. An idea mentioned during our meeting was that perhaps one of the factories (number 5) would be turned into a museum. This was not confirmed by the Ministry of Finance or by other officials at the TTM (Figure 66).

Figure 66 Future zoning proposals for the TTM site
(source: Floor plan from engineering dept at TTM, adapted by author)

The Site: The site has a diverse range of architectural building types on it, which can be seen clearly in Figure 67. According to the floor plan The TTM is divided into 6 zones which shows the functions of the buildings in each zone (Figure 68)**.**

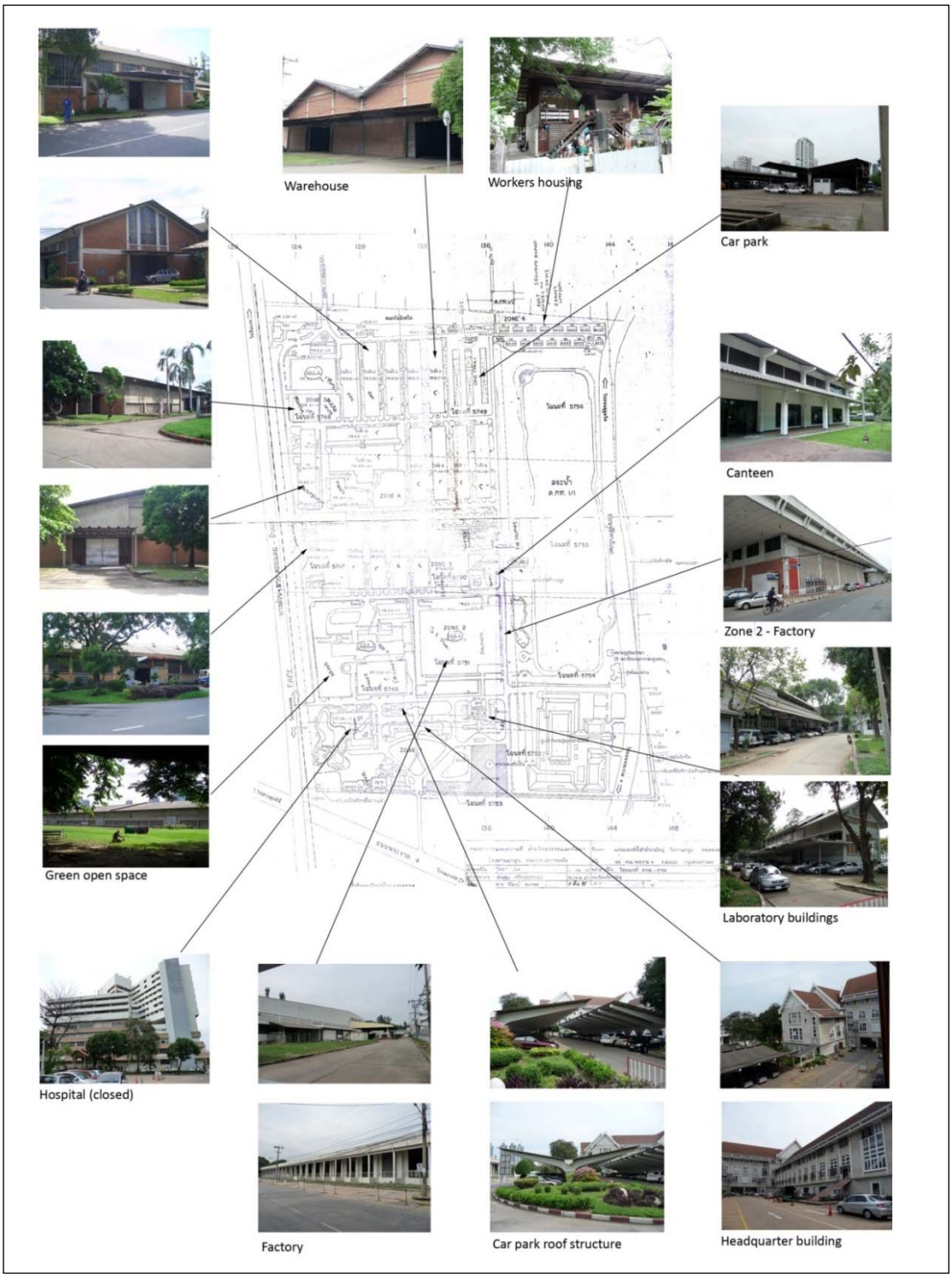


Figure 67 Shows the overall plan layout with photographs (author)

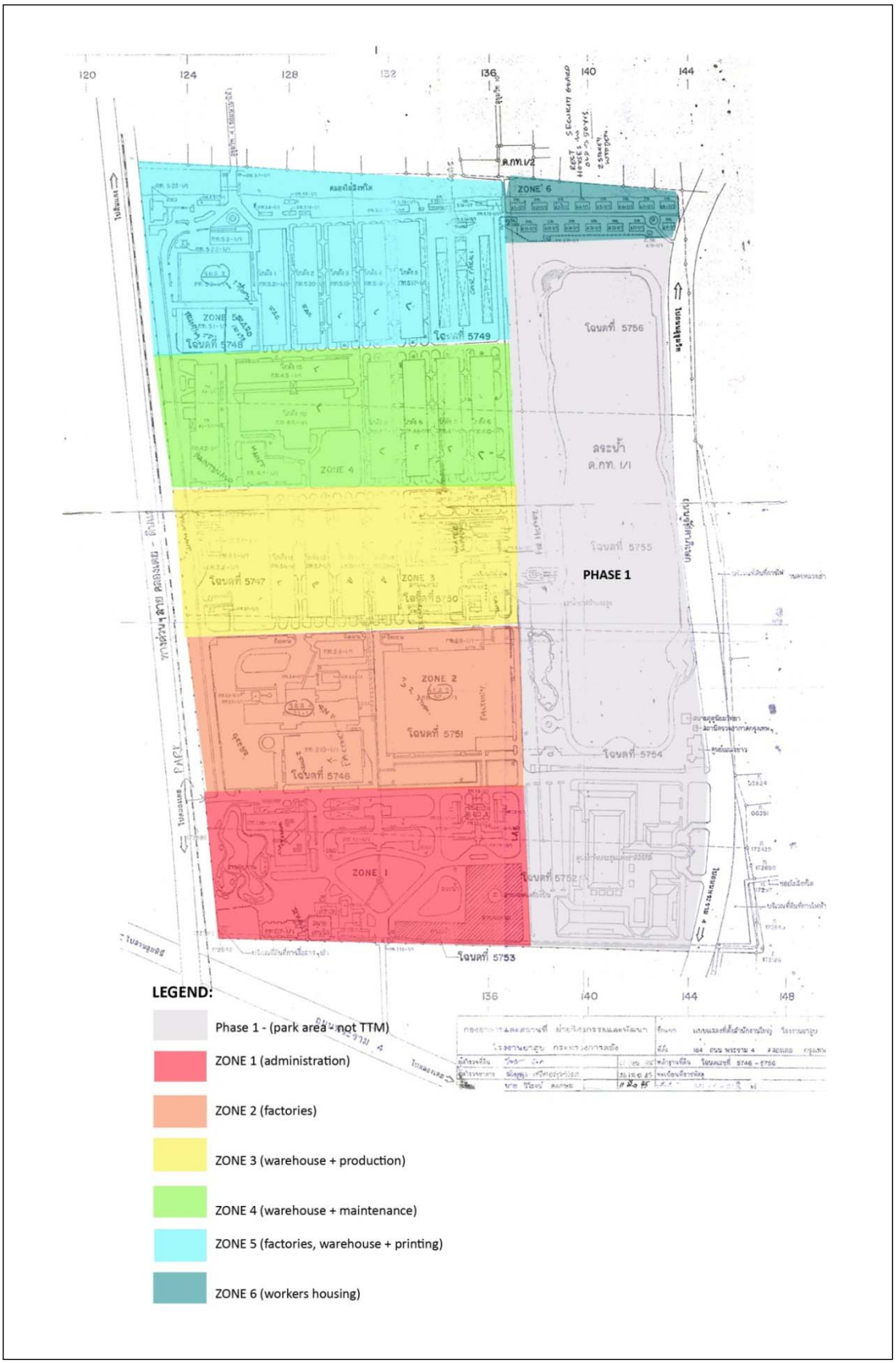


Figure 68 Shows the zoning divisions of the TTM site (author)

The warehouse buildings are the most dominant type on the site, these buildings house the raw materials before it goes into the factory to be processed into cigarettes. The warehouses were built between 1950 and 1953, the exact date has not yet been confirmed.

The construction of the buildings is a concrete frame with brick in fills. The form of the building is a simple rectangular shed with a double bay (Figure 69), and a low pitched gable roof structure with drainage channels in between the roof (Plate 76). The internal structure uses a truss system, which ensures a large clear span in the warehouse (Plate 77). The roofing material is made from corrugated metal sheeting, which is efficient and inexpensive for industrial buildings.

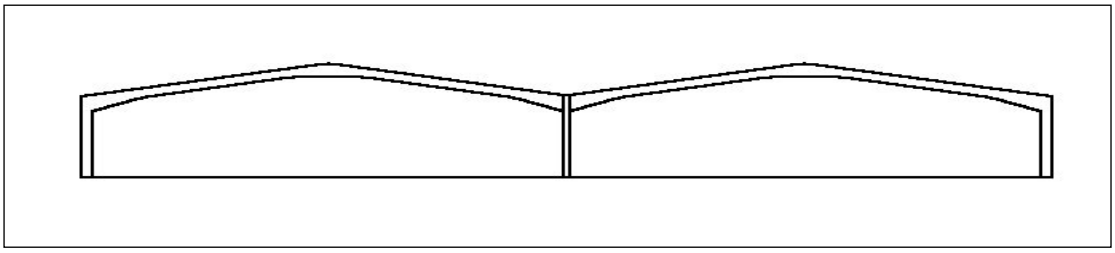


Figure 69 Shows a double bay form (source: http:// esdep.org)

Plate 76
Drainage exterior of warehouse (author)

Plate 77 Showing the structural trusses inside the warehouse (author)

Location of warehouse 6

Figure 70 Exterior and interior of warehouse 6 (author)

Located on the TTM site are workers housing, which is located at the top right hand corner, near Ratchadapisek rd. The workers housing is constructed entirely from timber elements, and there are 15 buildings in total, which are subdivided into 4 individual units. The exact age of the buildings is unknown and it may be that the buildings existed before the buildings for the TTM were constructed, as the site used to house 750 dwellings. The houses are 2 storeys and are built in a traditional Thai style with a simple staircase leading up on the external façade to the 1st floor (Figure 71).

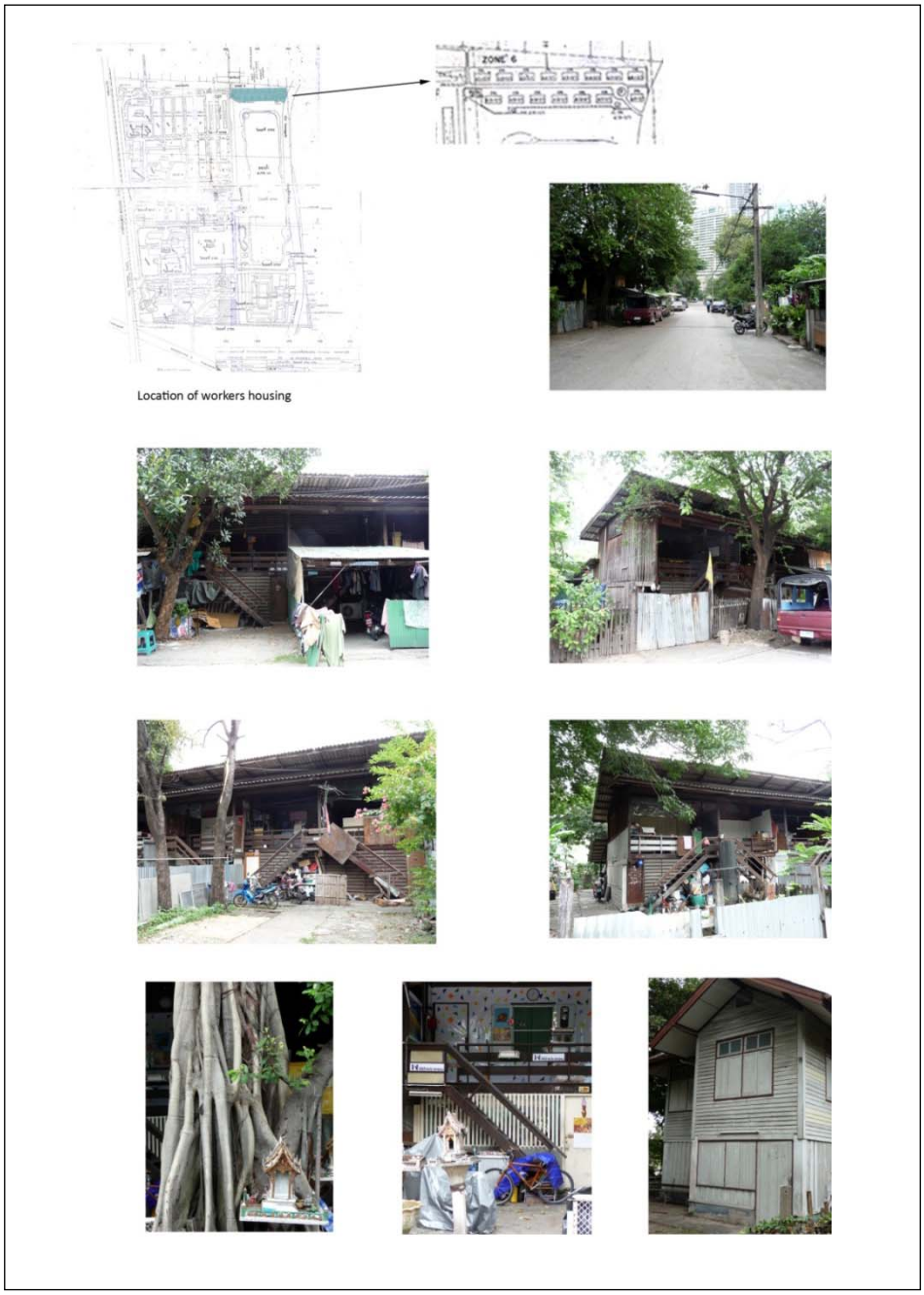


Figure 71 The workers housing on the TTM site (author)

The TTM also have a second warehouse building which is located along the Chao Phraya River, at Charoen Krung soi 74. The year of construction for this building is unknown, but is expected to be older that the buildings on Rama IV site. The position of for this warehouse would have been strategically located for the raw tobacco materials arriving from the tobacco growing fields around Chiang Mai and Chiang Rai, via The Chao Phraya River. There was no access given to examine these warehouses, however fortunately there is a temple, Wat Rajasingkorn, which runs adjacent to it, so I was enabled to take some photographs from here. I also managed to take some photographs from the Chao Phraya River (Figure 72).

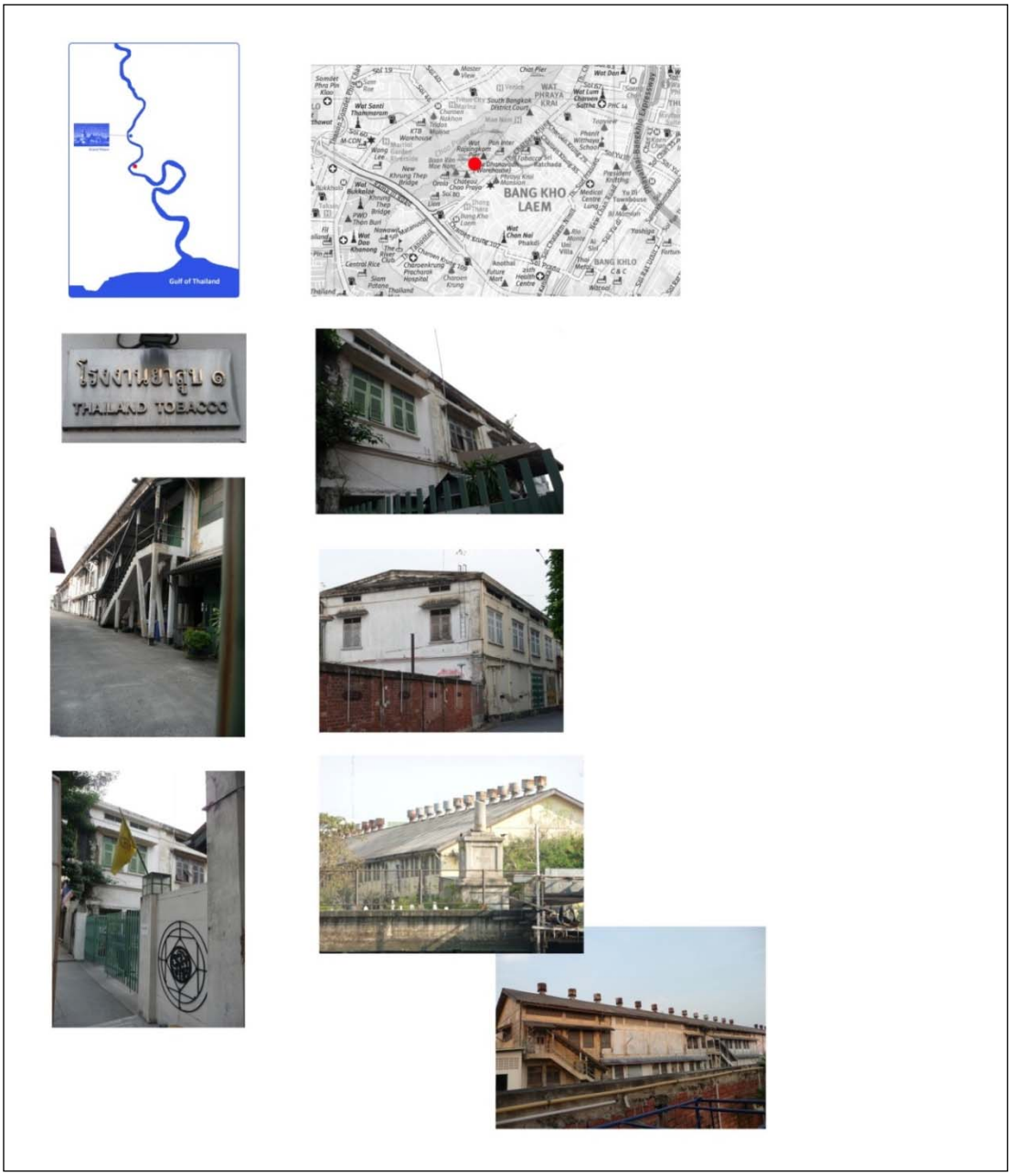


Figure 72 The warehouses on Charoen Krung rd (author)

THE PRINTING INDUSTRY

THE PLAYING CARD FACTORY, BANGKOK

ASSUMPTION PRESS, BANGKOK

THAI WATTANA PANICH, BANGKOK

RUNG RUANG AKSORN TYPE FOUNDRY, BANGKOK

The Printing Industry: The printing industry holds special significance for industrial heritage in Thailand, especially in the way that it utilized new technologies and machines to ensure that information and ideas were disseminated to the general public. The buildings still standing today that housed the printing industry can be seen as the receptacles for the machines that were so important in the mode and process of reproduction. The rather distant relationship that Thailand has with the printing industry today could be attributed to the fact that traditional methods of printing and reproduction such as typecast are still being used today.

The introduction of printing to Thailand can largely be attributed to the Western missionaries who started coming to Thailand in the 1830's during the reign of King Rama III. The American protestant missionary Dr Dan Bradley had a huge influence within the printing industry. Bradley's press published books on Christianity, modern medicine, science and astronomy. The primary task on for the missionaries was to spread Christianity; however their roles and influences often became much more diverse than this. Bradley is also credited for establishing the first newspaper, *The Bangkok Recorder* (Figure 73), which began in July 1844, and continued monthly for 18 issues (Winship, 2007).


หนังสือจดหมายเหตุ

THE BANGKOK RECORDER.

Vol. 1 [illegible] May 15th 1865. [illegible] No. 6

Figure 73 The Bangkok Recorder
(source: The National Archives, Bangkok)

The American protestant missionary building still stands proudly along the bank of The Chao Phraya on the Charoen Nakorn rd. The dates shown on the exterior of the building are 1860, 1910 and 1912, presumably when renovations, or extensions to the buildings took place (Plate 78).

Plate 78 The American Protestant Mission, Bangkok (author)

It was in the 1880's that printing became more popular as the first independent printing companies started. In *A History of Thailand* by Baker and Phongpaichit (2005) they describe a new breed of citizens called 'commoner intellectuals'. One of these was a Siam born Chinese called Kulap Kritsanon (1834-1921) who was the first to start an independent press. He essentially 'borrowed' manuscripts from the palace from contacts that he had made, and then went about writing his own version of history. He published them in his journal called "The Siam Prabheth" (Figure 74), to which he was eventually arrested by the court for publishing material which was supposed to be secret.

Figure 74 The cover of the weekly journal by Kulap Kritsanon
(source: The National Archives, Bangkok)

By the 1890's several newspapers and journals were already freely available to buy. By the early 1900's there was a desire for new popular cultures, such as film. The first screening was in 1897, which became a regular occurrence by 1910. By 1927 there were 127 printing presses and 14 publishers (Baker, Phongpaichit, 2005, p. 107). One such owner of a printing press was Luang Damrong Thamasar who began his business in 1895, his company, The Bamrong Nikul Kitch Printing Office was printing a vast majority of the governments material. The property was registered with the FAD as having national significance in 1999 (Figure 75).

It was these new urban intellects that began to challenge the royal family and institution, the main tool that enabled this to happen was through journals, newspapers and books, the printed medium was crucial in aiding this new thinking.

Figure 75 The Bamrong Nikul Kitch Printing Office
(source: Twentieth Impressions of Siam, 1903, p. 262)

The sites chosen to represent the printing industry are significant not only for any architectural merit but also for their technology and innovative machinery that was introduced, and in some cases are still present and in use on the site.

INFRASTRUCTURE/ TRANSPORT/ COMMUNICATIONS

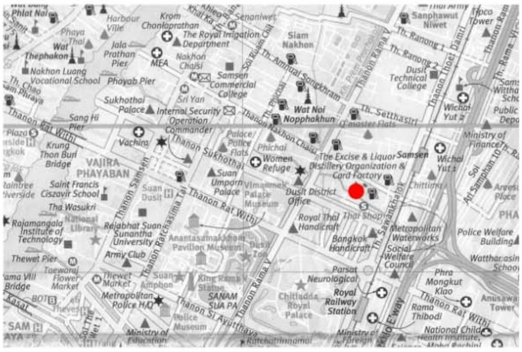
THE PLAYING CARD FACTORY

General details:

Location:	Nakhorn Chaisi, Bangkok
Industry:	Bangkok
Present ownership:	Department Of Excise
Type of Site:	Factory
Classification:	7 (Communications, post and telecommunications)

Location in Thailand:

Location In Bangkok:



Aerial view of site:

Figure 76 General details of The Playing Card Factory

Overview and Significance: The site is a good representation of architectural industrial style from the 1930's. The building is in good working condition, and the printing press machinery used states that it was bought from The Oriental Stores, which was owned by The East Asiatic Company Ltd. The machine has been imported from Germany, and is a 'Heidelburg'. The date of this printing press is not known.

Company History: The Playing Card Factory was established in 1938 when The Excise Department established a Playing Cards Act. This was part of the governments venture into new 'national' industries, and during this period the government imposed monopolies on certain industries. The Playing Cards Factory is responsible for producing all kinds of playing cards, printing excise stamps and printing documents for the government sector. In 1992 the factory became under The Ministry of Finance.

The Site: The site sits within the compound of the Customs and Excise Department. It is hidden away and not visible from the street, from which it sits on in Nakhorn Chaisi. Plate 79 shows the factory taken on 28th May 1946.

The Playing Card Factory

Plate 79 Aerial view of The Playing Card Factory
(source: National Archives, Bangkok)

The factory is a brick building with a render exterior surface (Figure 77). We can see that at some parts that the render has come away leaving the building structure vulnerable for moisture. Upon visiting the factory there appeared some degree of confusion over which parts were the original building, and then some parts which had been added at a later date, however in the same style, using a classical arch effect running down the length of the buildings. This makes it look elegant, and provides a small adornment on an otherwise utilitarian building. The roofing material is corrugated metal sheets.

Figure 77 The exterior of the Playing Card Factory (author)

The interior of the factory has been well kept, however access was only allowed in certain areas. There have been amendments to the internal layout as there is still visible tracks running the length of the corridor which at some point would have been used for moving materials around. This is no longer used, but is kept as a feature. The machinery used are original pieces imported from Germany, the date is unknown but are still functioning perfectly (Figure 78).

Figure 78 The interior of The Playing Card Factory showing the presses (author)

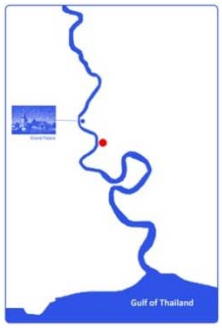
INFRASTRUCTURE/
TRANSPORT/
COMMUNICATIONS: **ASSUMPTION PRESS**

General details:

Location:	Oriental Lane, Bangkok
Industry:	Printing
Present ownership:	Private
Type of Site:	Factory
Classification:	7 (communications, post and telecommunications)

Location in Thailand:

Location In Bangkok:



Aerial view of site:

Figure 79 General details for Assumption Press

Background and Significance: The printing press is part of a complex of buildings which includes Assumption Cathedral (Plate 5.36 and Plate 5.37) (of which the original church was built on the same site in 1821) Assumption Convent, Catholic Mission of Bangkok, and the Rectory. The printing press played an important role for the Roman Catholic missionaries visiting Bangkok from the 19th Century.

Assumption Press is an impressive neo-classical style building, which does not reveal what the function of the building is. Inside the printing area, which is still active today are old pieces of printing technology (Figure 80 and Figure 81).

Plate 80

Exterior view of Assumption Cathedral (author)

Plate 81

Interior view of Assumption Cathedral (author)

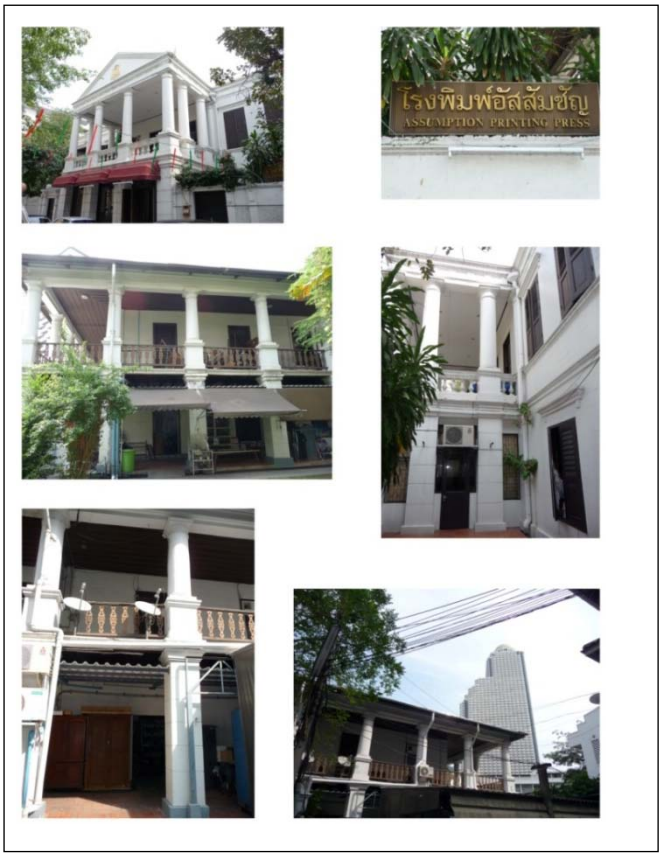


Figure 80 Assumption Press (author)

Figure 81 The interior and the traditional printing machines (author)

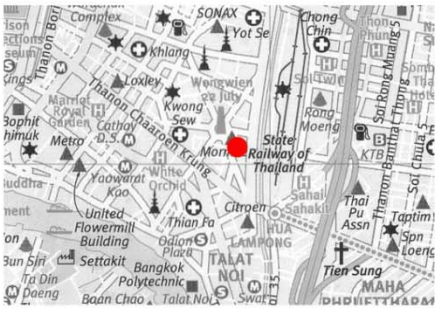
INFRASTRUCTURE/ TRANSPORT/ COMMUNICATIONS: **THAI WATTANA PANICH LTD**

General details:

Location:	Maitrijit Road, Bangkok
Industry:	Printing
Present ownership:	Private
Type of Site:	Factory/Warehouse
Classification:	7 (communication, post, telecommunications)

Location in Thailand:

Location In Bangkok:



Aerial view of site:

Figure 82 General details for Thai Wattana Panich Company Ltd

Background and Significance: The Thai Wattana Panich Co. was one of the largest independent, modern printing companies in Thailand. The building located near Hualamphong station on Maitrijit rd stands in a prominent position on a busy intersection. The present owner of the building is the granddaughter of the original owner who built the building in the mid 1950's. The building was unfortunately damaged in a fire several years ago, and the building has been vacant ever since. The use of glass blocks on the corner of the building shows an innovative use of materials for the period. In 1957 the company partnered with the Monotype Company of England to develop a suitable typeface for the new printing technology it used. This is an important development for the printing industry as this new technology enabled a machine to cast the type automatically, rather than previously done by hand (Figure 86).

Figure 83 Exterior view of The Thai Wattana Panich printing company (author)

INFRASTRUCTURE/ TRANSPORT/ COMMUNICATIONS: RUNG RUANG AKSORN TYPE FOUNDRY LTD

General details:

Location:	516 Larnluang rd, Bangkok
Industry:	Printing
Present ownership:	Private
Type of Site:	Factory
Classification:	7 (communications, post, telecommunication)

Location in Thailand:

Location In Bangkok:

Aerial view of site:

Figure 84 General details of Rung Ruang Aksorn Type Foundry Ltd

Background and Significance: The Rung Ruang Aksorn Type Foundry Ltd contains the largest collection of original metal typecast settings to be found in Thailand. This was the original method used for printing, before new automated machines took over. The workshop is still in use, and contains a wealth of interesting traditional printing methods (Figure 85).

Figure 85 Interior of the Rung Ruang Aksorn Type Foundry Ltd

Pracha Suveeranont has been studying Thai typefaces and fonts for several years. In 2002 he held an exhibition in Chiang Mai and at Chulalongkorn University, called “10 faces of Thai type and the Thai Nation”. He has traced the evolution of the Thai typeface, and has made connections and relationships to politics, economic and social conditions during the time when each typeface was developed. This is also an important aspect of industrial heritage, the evolution and development of printing technology heavily influenced the appearance of fonts and typefaces (Figure 86).

Figure 86 The Typefaces featured in Preecha Suveeranont exhibition (source: The exhibition catalogue of 10 faces of Thai type and the Thai Nation 2002)

TRANSPORTATION HISTORY

STATE RAILWAYS THAILAND, BANGKOK

GODOWN, HEADQUARTER BUILDING, RAILWAY COMMUNITY HOUSING

Transportation History

During the period 1860 – 1900 there was a desire to improve and extend the transportation and communication routes around Bangkok, and also across Siam. It followed a progression seen throughout the colonial era, where roads, canals and railroads were emerging and expanding. They were used for transporting goods, labour and moving military personnel. Industrial buildings emerged along the intersections of these transportation routes notably, along the banks of the Chao Phraya river stretching from Bangkok down to Samut Prakan.

Geographically positioned at the mouth of the Chao Phraya river to the Gulf of Thailand, Samut Prakan province was strategically placed as the sea port of Siam, which was fortified with town moats and walls. It dates back to 1819, when King Rama II completed the fortification originally begun by King Taksin. The region was commonly referred to as Pak Nam, translated as 'mouth of the river'. Phra Chulachomkloa Fort (Plate 82) was built in 1893 to protect the waterways leading up to Bangkok. Historically it has been an important and memorable place for Thai people.

Plate 82 The remains of the fort as seen today
(source: http://prakan.com)

The Pak Nam Railway was opened in 1893, this was a private railroad which ran 21kms from Bangkok to Pak Nam (Samut Prakan) (Plate 83 and Figure 87). Historically important as it was the first railroad in Thailand. During this period larger ships could not navigate up the river, so the railway was critical in transporting the goods from the Bangkok to the port and vice versa.

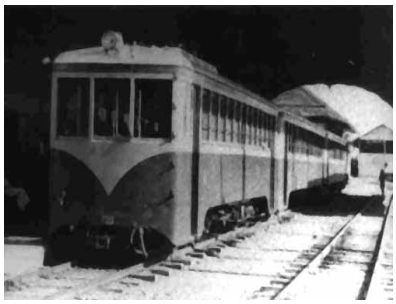


Plate 83 Train on the Pak Nam railway
(source: The Railways of Thailand by R. Ramer)

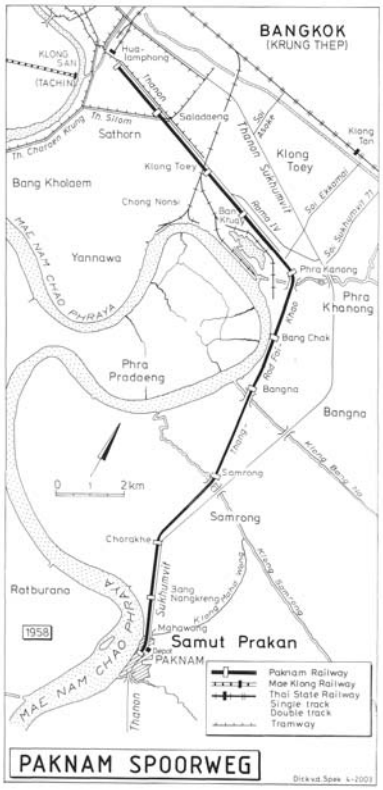


Figure 87 Map of the Bangkok – Pak Nam route (source: http://thai-schick.de)

Tramlines in Bangkok

The first trams were pulled by horses which opened in September 1888, it took passengers from the City pillar to Thanon Tok. The tracks became electrified in 1893, and continued to extended its network until 1925 connecting Hualamphong, Sathorn, Khlong Toey and Pratunam to Silom lines. The trams eventually ceased to function in 1968.

Plate 84 Horse drawn tram in 1892.
(source: http://2bangkok.com.The engravings based on photographs taken from 'Bangkok in 1892' written by Messr. Lucien Fournereau)

Plate 85 Photograph Showing trams and carriages in 1896 along Charoen Krung Road (source: http://2bangkok.com. From the collection of Ric Francis)

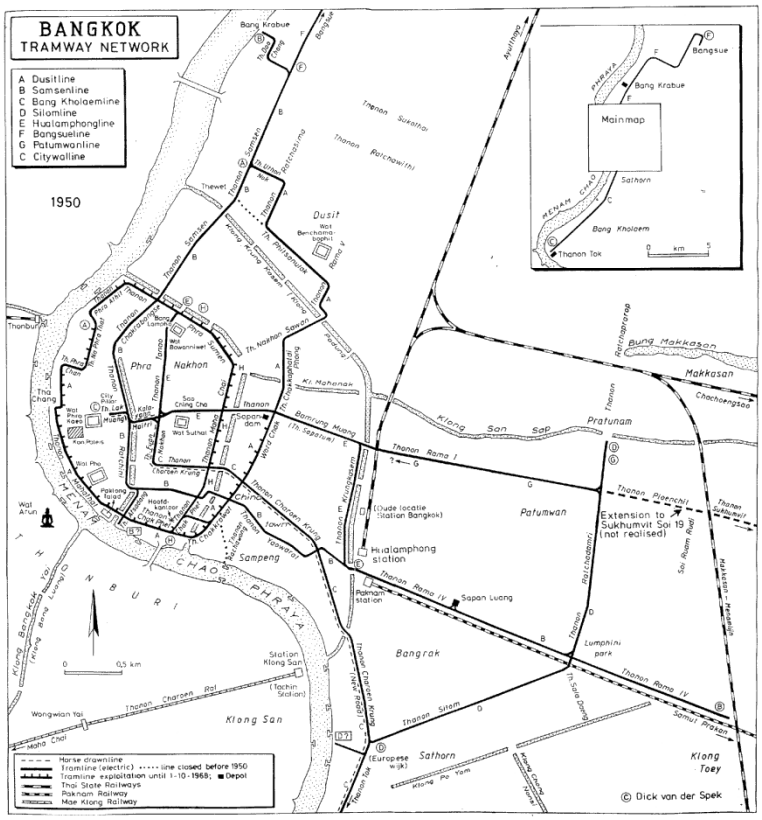


Figure 88 This map shows the extent of the Tram/rail network by 1950 (source: http://2bangkok.com)

Railroads

The first state operated railway line in Siam, as opposed to the privately run Pak Nam line, was established connecting the capital to Ayutthaya which opened on March 26th 1894. It continued to be extended to the North West to Nakhon Ratchasima in 1900. There was concern about advancing French forces moving through Lao towards Siam, and also as there was unrest in the region due to resistance against the Kingdoms central administrative policy. Other rail routes followed to include Chiang Mai, and the South connecting Phuket and onwards down to Penang. The rail routes helped to open up the rice markets of the north, and the tin mining of the south.

Transportation systems were responsible for many of the industrial buildings, such as the railways depots and the warehouses located along the Chao Phraya, and along the along the canal network. On completion of the first stage of the project to Ayutthaya, Rama V transferred the newly created State Railway Department into German hands. He was somewhat afraid and suspicious of a growing British interest in the Railways of Thailand. In 'Power, Identity, and the Rise of Modern Architecture: from Siam to Thailand', Koompong Noobanjong records the names and dates of Foreign architects and engineers working within the various state departments, such as The Department Of Public Works, and The Department of Civil Engineering during the period of Rama V (1868-1910). The Italians dominated both departments, with the likes of Mario Tamagno responsible for designing Hualamphong station, which opened in 1916 (Plate 86 and Plate 87), A. Rigazzi designing the State Railway Hotel in Hua Hin and Carlo Allegri an engineer who worked closely with Tamagno. Karl Dohring, a German architect also used to work for the State Railways of Thailand and G. Cannova was listed as working as a mechanical engineer for the State Railways too (Noobanjong 2003, pp. 349-351). The heavy influence of these western architects and engineers can be seen within the buildings across the country from palaces to civilian buildings which they designed.

Plate 86

Hualamphong Station (source: The National Archives, Bangkok)

Plate 87 Hualamphong Station, 2008 (author)

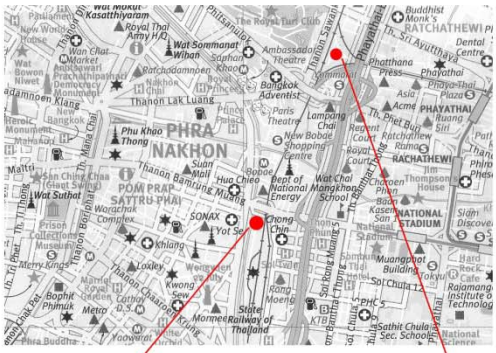
INFRASTRUCTURE/ TRANSPORT/ COMMUNICATIONS: STATE RAILWAY OF THAILAND (SRT)

General details:

Location:	Thanon Krung Kasem (Godown + Headquarters) Thanon Sawankhalok (workers housing)
Industry:	Railway
Present ownership:	State Railway of Thailand
Type of Site:	Mix - warehouse/office/housing
Classification:	6.1 (Railways)

Location in Thailand:

Location In Bangkok:



Aerial view of site:

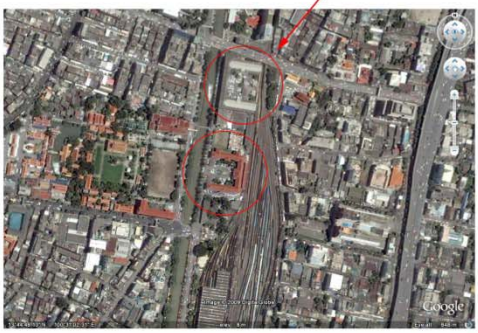


Figure 89 General details of SRT sites

The Site / Godown

The plan of the building is in a 'U' shape configuration, with the front facing Thanon Krung Kasem, and the open 'U' facing the railway tracks. The building was built as a godown or warehouse for storage purposes. The building was originally built as a 2 storey building, but there was a 3rd floor added on at a later date. On the ground floor, the long sides of the building housed a runway with electrical hoists, which can be seen on the interior photograph from The National Archives (Plate 88 and Figure 93).

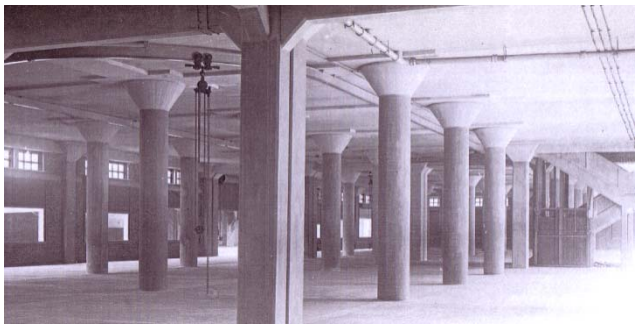


Plate 88 The ground floor of the godown showing electric hoist
(source: National Archives, Bangkok)

The building has a concrete framed structure, some steel joists as supporting members (Figure 91 & Figure 92) and brick walls faced with plaster, the brick bond used is 'Flemish' (Figure 80).

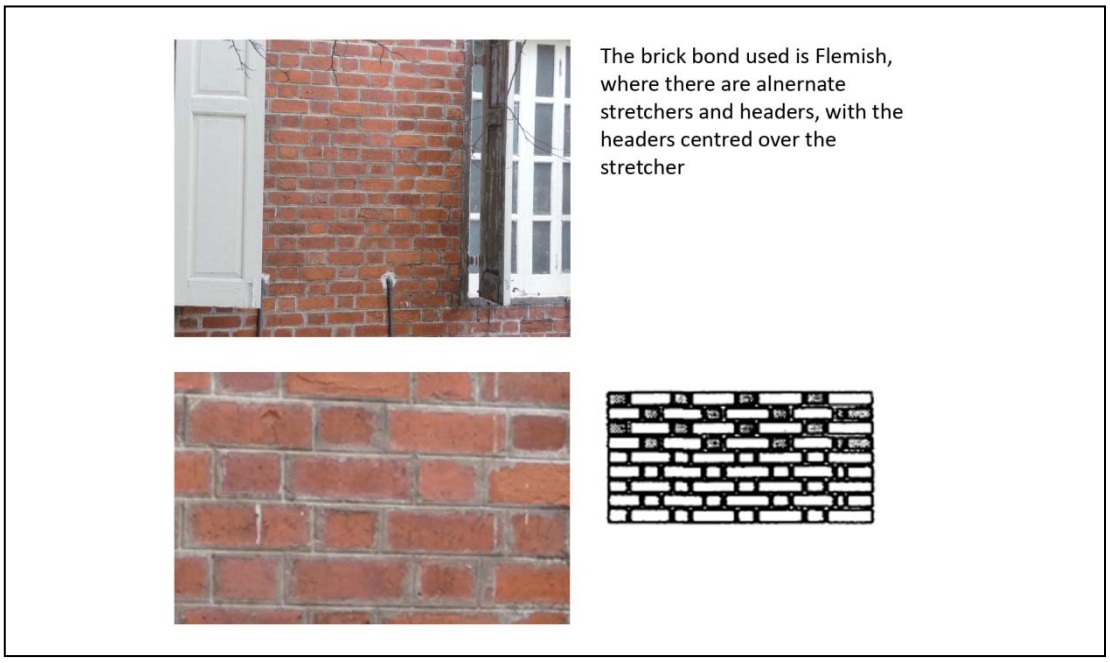


Figure 80 Brick bond (author)

Photographs from The National Archives, Bangkok
Date unknown

Figure 91 The exterior façade on Thanon Krung Kasem side (author)

Figure 92 Exterior façade facing the railway tracks (author)

The building, today, is used as an office and some of the internal spaces have been re configured to house a partial change in function. Most of the original materials, fixtures and fittings are still present, and have been kept in fairly good condition (Figure 93). The architect/engineer of this building has not been confirmed, however a set of floor plans have an English name on them, G.A.SMYTH, and the floor plans are written in English. Several of the building materials have English company names, on them, so they must have been imported (Figure 94). It may be assumed that the architect/engineer may have been English.

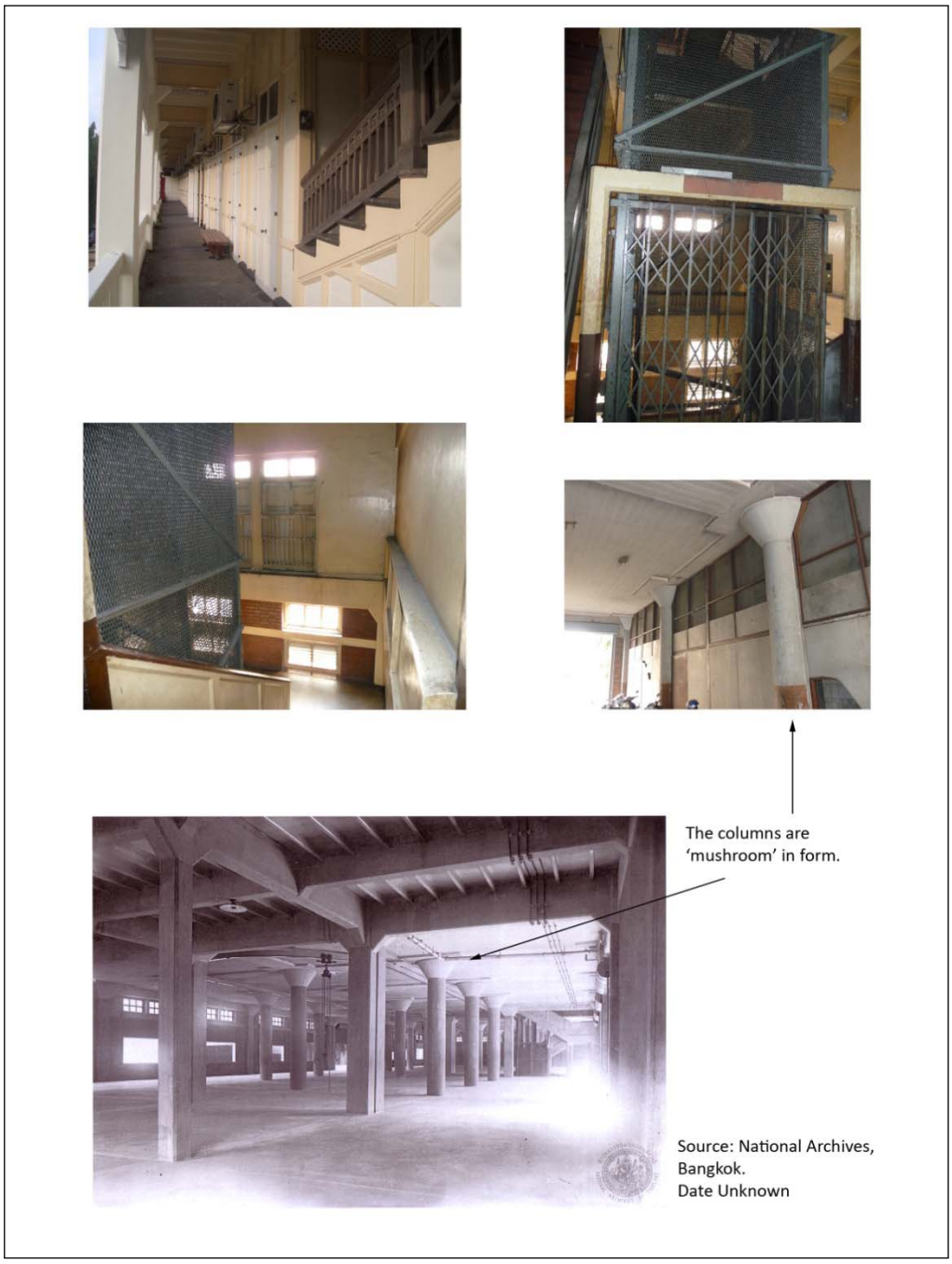


Figure 93 The interior of the godown building (author)

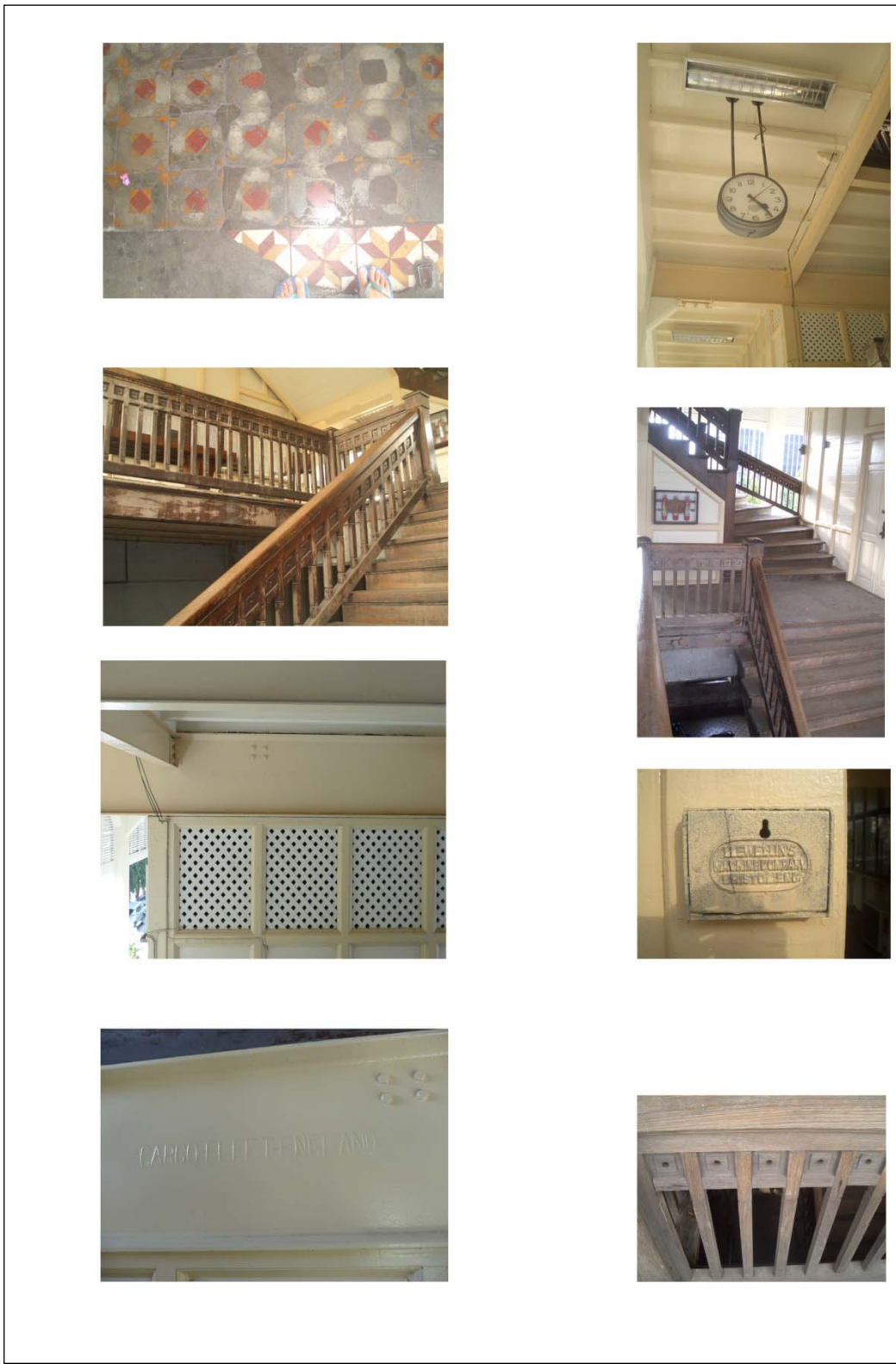


Figure 94 Details of fixtures, fittings and materials (author)

The Site / Headquarter Building

The headquarter building is located close by to the godown building. We can see that the headquarter building mirrors the shape of the godown, however the 'U' shape is inverted, creating an impressive open front area, whilst the back is closed against the railway tracks (Figure 95).

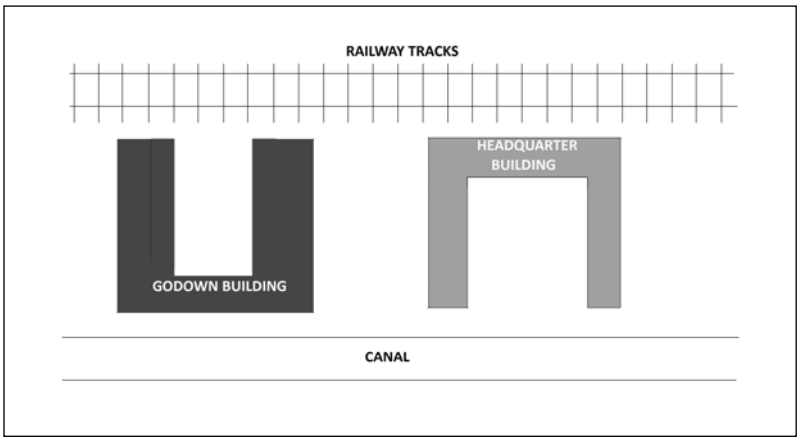
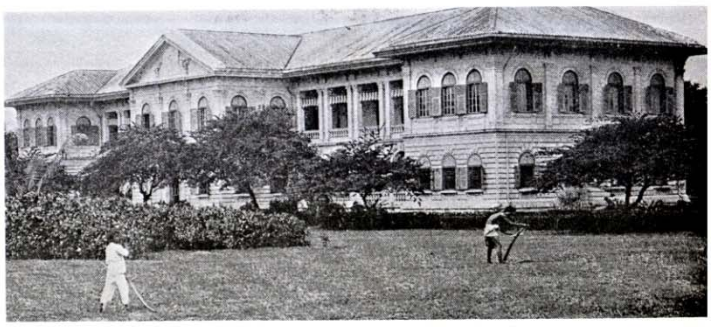


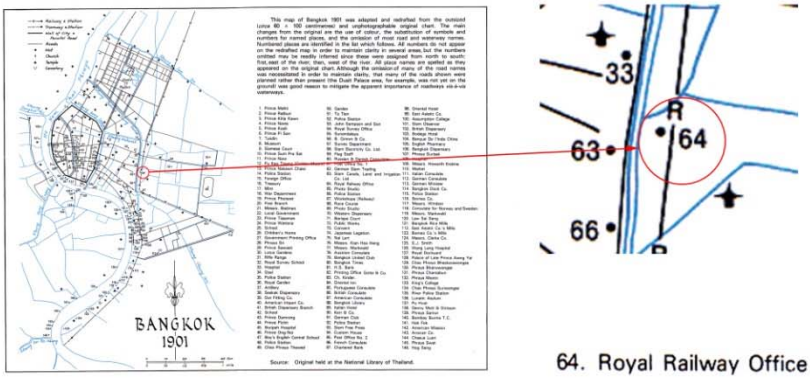
Figure 95 The relationship and configuration of the SRT buildings (author)

This was built as the administration building which it is still used as today. The architectural style demonstrates a less functional aesthetic to the other building, with neo-classical columns and arches. An architect working at the Engineering Department of the SRT informed me that they believed that the architect was Thai, and that the building was built in between 1928, and completed in 1931 (Figure 97).

There was however a building which preceded the current building located on the same site which can be seen in Figure 96. It has not been confirmed what happened to this building however it was recorded on a Map of Bangkok drawn in 1901 that the building was called the Royal Railway Office.



The original building of The State Railways of Thailand
(source: Portrait of Bangkok, p. 34)



(Source: Portrait of Bangkok, pp. 28-29)

The rear of the original building
(source: The National Archives, Bangkok. Date unknown)

Figure 96 The original SRT office building (source: various)

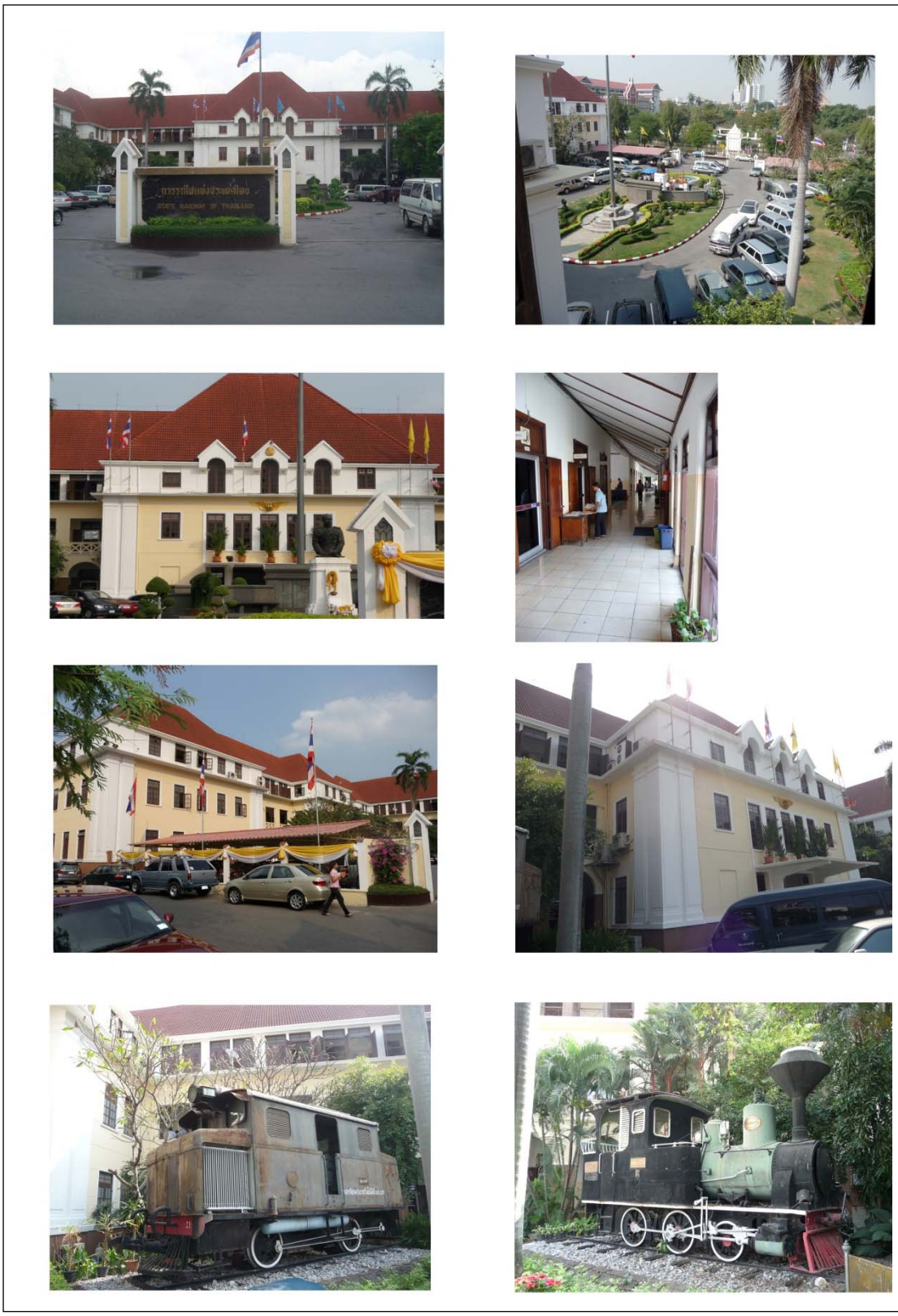


Figure 97 Exterior façade and train memorabilia at the SRT headquarter building (author)

The Site / Railway Community

The railway community housing is situated north of the SRT office buildings near Yommarat junction off Thanon Sawankhalok. The housing complex is completely surrounded by railway tracks on 3 sides, and the housing forms a triangle inside (Figure 89). The centre of the site has a large pond, to which the houses fan off from this feature. The date of the housing is estimated to be 70 years old, but this is still to be confirmed (Figure 98).

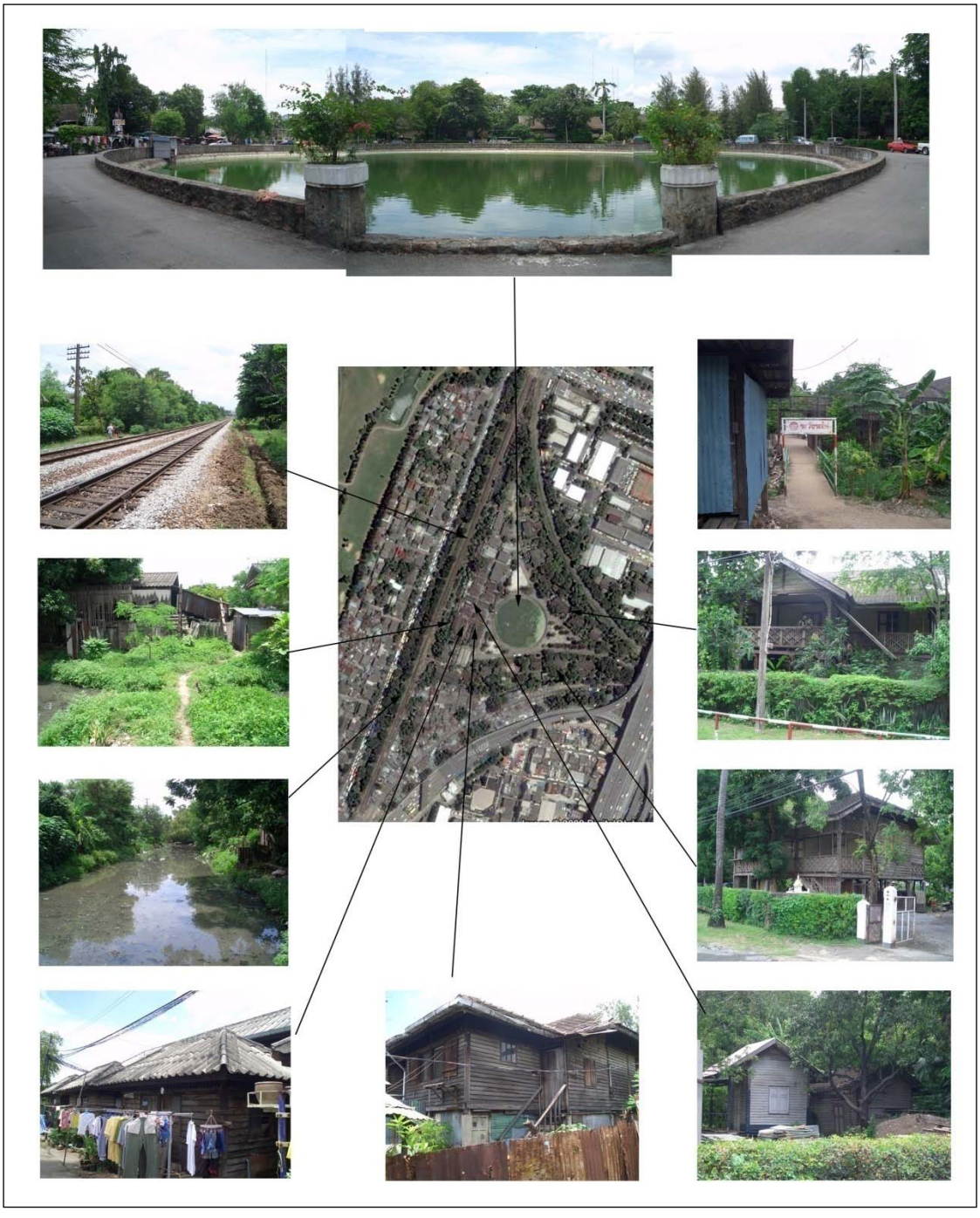


Figure 98 SRT housing community

MAKKASAN TRAIN DEPOT, BANGKOK

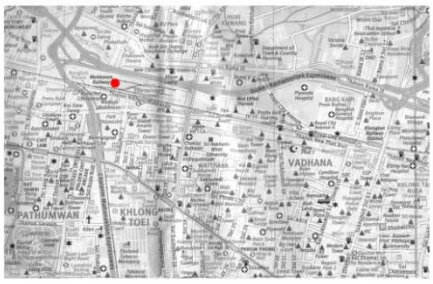
INFRASTRUCTURE/ TRANSPORT/ COMMUNICATIONS: MAKKASAN TRAIN DEPOT

General details:

Location:	**Thanon Nikom Makkasan**
Industry:	**Railway**
Present ownership:	**SRT**
Type of Site:	**Warehouses**
Classification:	**6.1 Railways**

Location in Thailand:

Location In Bangkok:



Aerial view of site:

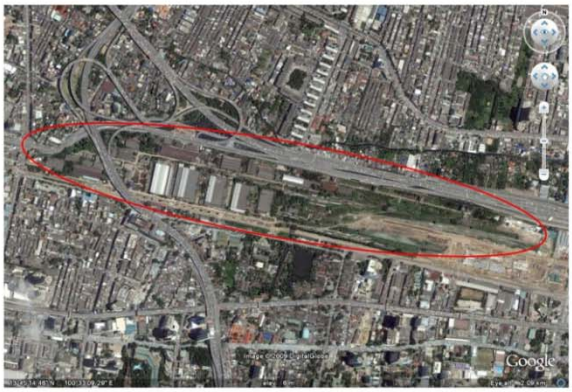


Figure 99 General details of Makkasan Train Depot

The Site:

The Makkasan train depot was established in 1910, and occupies a large site in the centre of Bangkok. Its primary function was to repair and fix the SRT's rolling stock. The buildings on the site vary in age and construction type, but all are industrial sheds. The aerial photograph and image taken from the Baikoye Tower shows the layering and age of the various buildings (Figure 100).

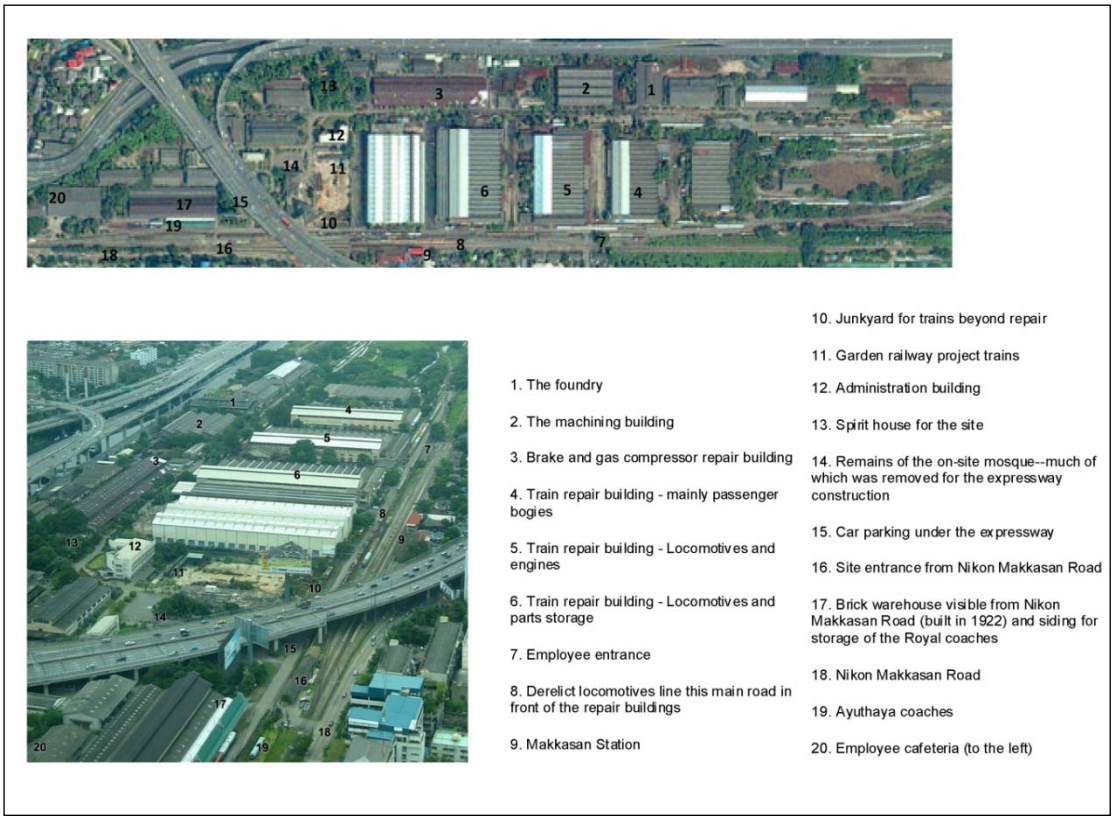


Figure 100 View of the Makkasan train depot
(source: adapted from http://2bangkok.com)

The National Archives have been a great source of archival photographs for the Makkasan train depot, unfortunately once again there is no date provided, but the date on the buildings, indicate the year of construction. There are 2 buildings with which to focus on, as they are some of the oldest buildings remaining on the site. The brick warehouse shown in Figure 100, location number '17', which dates to 1922, and The Foundry building, which is located at position number '1', which dates to 1928.

The 1922 Brick Warehouse.

This warehouse is currently standing derelict with vegetation surrounding the building. The bricks are configured in a simple 'running' bond formation. The building allows for a huge open expanse inside enabling a large working area. The gable roof has a 'tiered' effect, allowing daylight to enter through the roof, good for maximize natural light sources. The proportion of the warehouse is elegant, and the arched windows make it still appear majestic and refined. There are no unnecessary adornments and the windows are frameless (Figure 101 and Figure 102).

Figure 101 The 1922 Brick warehouse is surrounded by vegetation
(source: The National Archives, Bangkok. Date unknown)
(photograph: author)

Figure 102 The end facade of the 1922 warehouse
(source: The National Archives, Bangkok. Date unknown)
(photograph: author)

The 1928 Foundry Building

This building was built to hold heavy carrying equipment, and similar to the building in 1922 it has a concrete frame and brick infills the construction process can be seen in Figure 103. In Figure 104 we can see that the roof structure uses a steel truss system, which allows for heavy loads to be supported in a column free space.

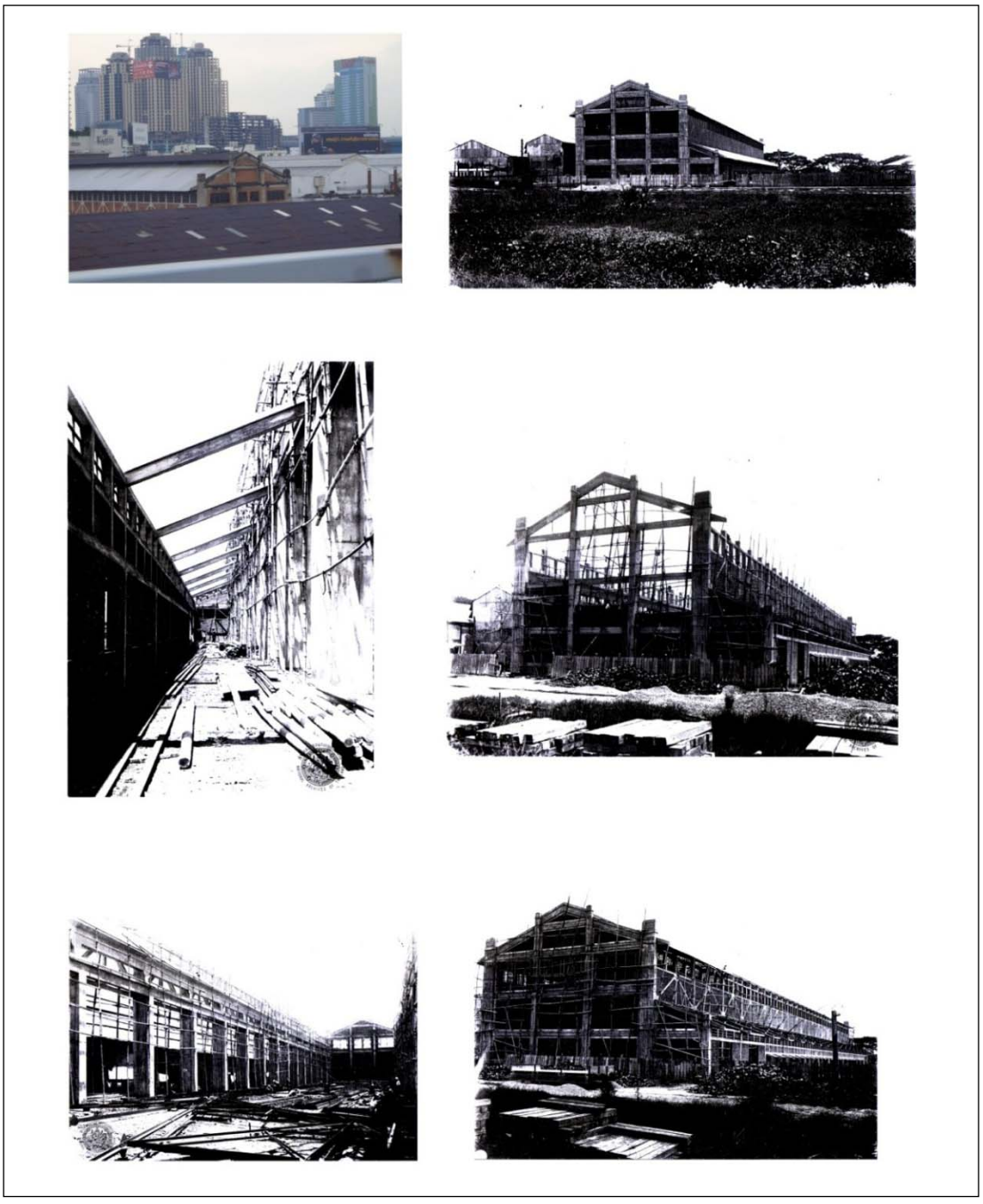


Figure 103 The Foundry building seen in 2009, and under construction (source: The National Archives, Bangkok. Date unknown) (photograph: author)

Figure 104 Showing the interior of The Foundry building containing the trains carrying the RSR emblem (Royal State Railways)
(source: The National Archives, Bangkok)

Other Buildings and Views across the Site

A variety of different industrial architectural styles exist across the site (Figure 105).

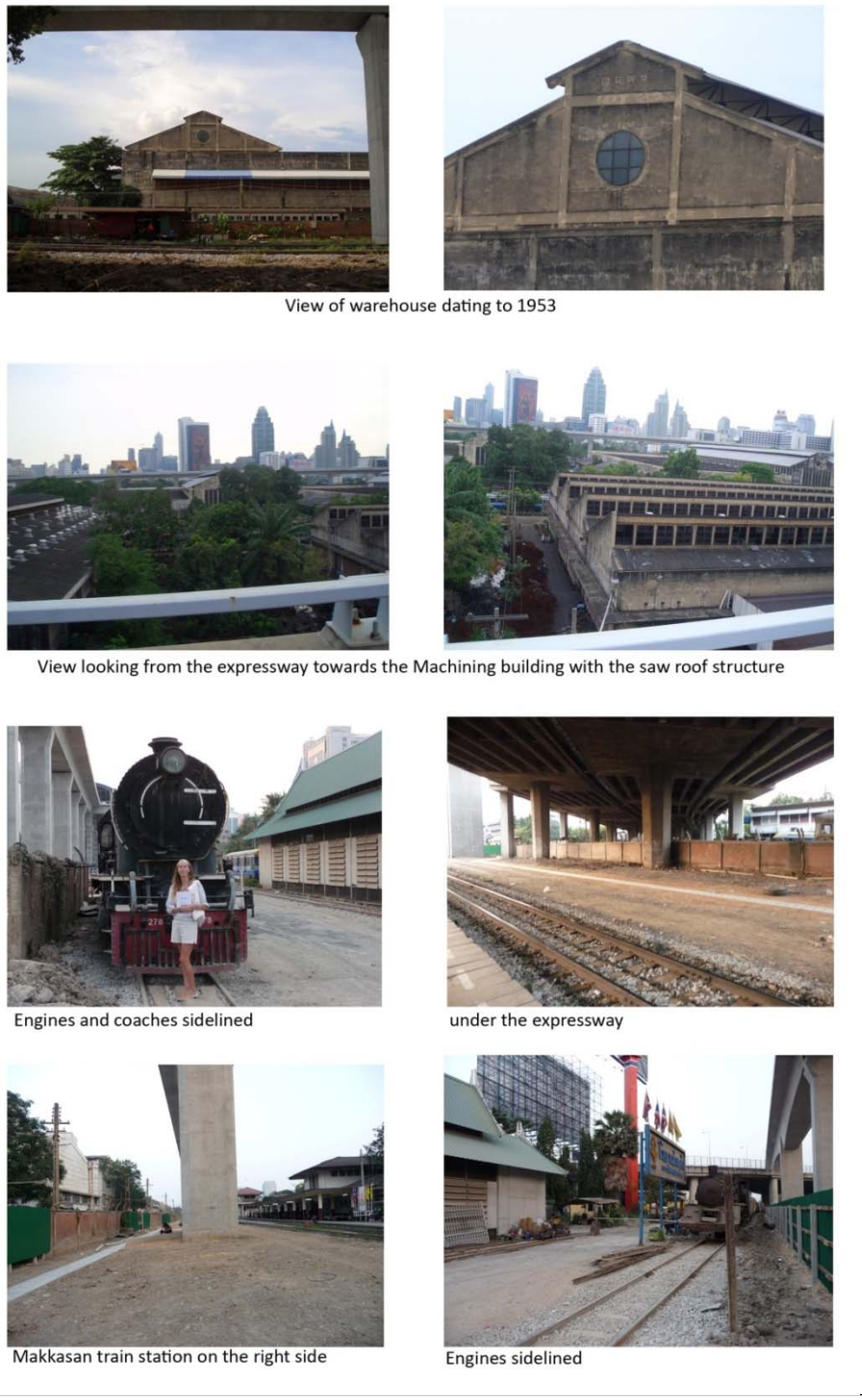


Figure 105 Buildings and views across Makkasan train depot (author)

BANG SUE RAILWAY COMMUNITY, BANGKOK

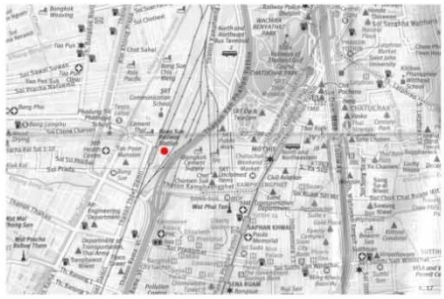
INFRASTRUCTURE/
TRANSPORT/
COMMUNICATIONS: **BANG SUE RAILWAY COMMUNITY HOUSING**

General details:

Location:	**Underneath Thanon Yan Phahon Yothin, near Bang Sue Railway Station**
Industry:	**Railway**
Present ownership:	**Mixed**
Type of Site:	**Residential**
Classification:	**n/a**

Location in Thailand:

Location In Bangkok:



Aerial view of site:

Figure 106 General details for Bang Sue Railway community

The Site

There are 2 communities which are residing on the land surrounding the train tracks near Bang Sue junction, and the expressway overhead. This is a large area of land, which is an intersection of large scale infrastructure, railways and expressways. Consequently this has created pockets of land which has been used for small slum type dwellings, but there is also a community living in timber housing which are the homes of some of the Bang Sue railway workers, and also a community living in converted train carriages.

The Timber Housing Community

The location of the housing is seen highlighted in red on Figure 106, it nestles in between the train tracks, and is accessible by walking over them. The date of the housing is not confirmed as yet, but the construction is mainly timber with corrugated metal roofing and walling elements.

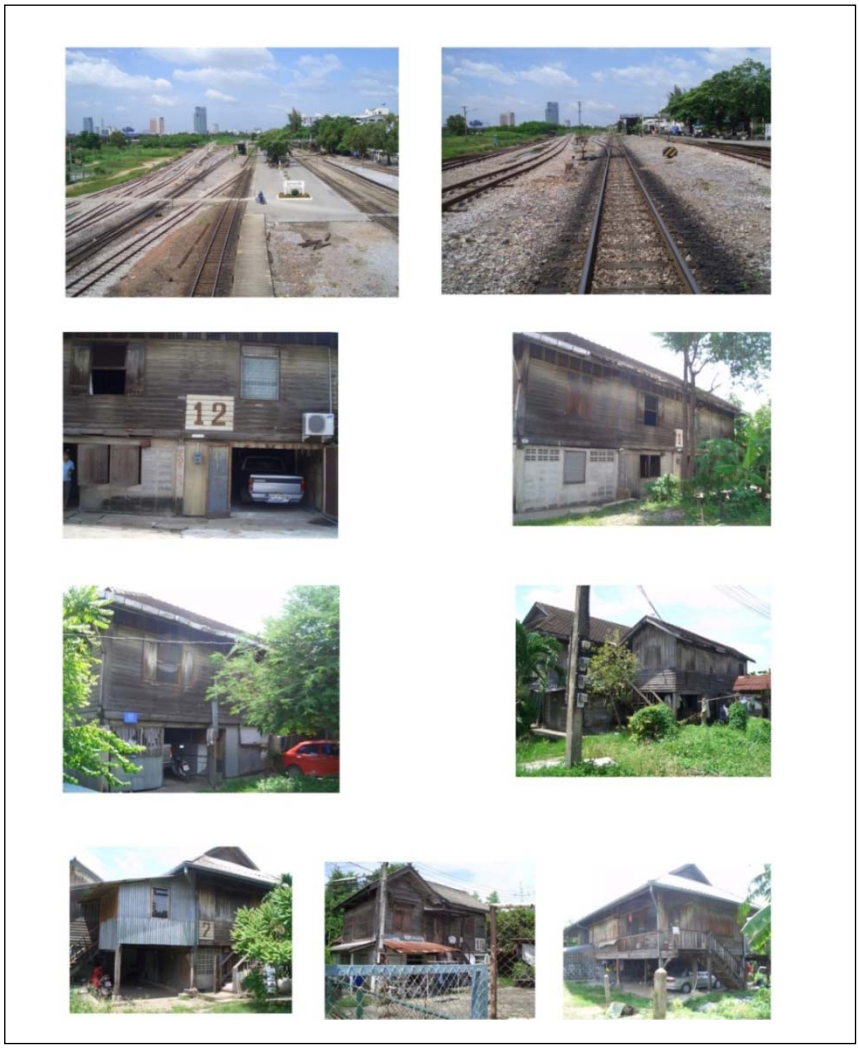


Figure 107 The railway workers housing at Bang Sue Junction (author)

The Train Carriage Community

Under the expressway, just further along from the timber housing community exists a community containing unique residential dwellings (Figure 108). The homes have been converted from old train carriage compartments, and the materials used to make walls and flooring include old railway sleepers (Figure 109). The homes have been carefully converted with attention to details such as mail boxes and small fences around each individual dwelling. A corrugated roof structure has been placed over top of the buildings connected 2 carriages together.

Figure 108 The surrounding area of the Bang Sue train carriage community (author)

Figure 109 The train carriage dwellings (author)

THE CUSTOMS HOUSE, BANGKOK

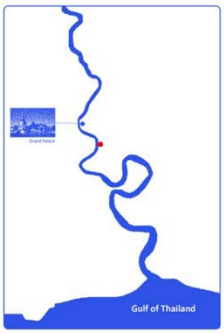
ASSOCIATIONS WITH INDUSTRY: **CUSTOMS HOUSE**

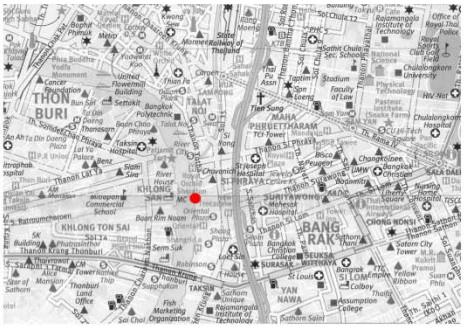
General details:

Location:	**Charoen krung Soi 36**
Industry:	**Tax collection**
Present ownership:	**Bang Rak fire station**
Type of Site:	**Office**
Classification:	**n/a**

Location in Thailand:

Location In Bangkok:





Aerial view of site:

Figure 110 General details of The Customs House

The Site

The building is located along the bank of The Chao Phraya, in the Bang Rak district, a very prestigious part of Bangkok. The building marked the point where all cargo entering via the Chao Phraya River into Bangkok must declare their goods and pay an inbound customs tax.

The building was constructed in 1890, and was designed by an Italian architect Mr Grassi. The building represented an impressive and grand building structure not seen before in Thailand. It also represents the opening up of international trade between Thailand and the rest of the world.

As Bangkok urbanized, the Customs Department moved to Khlong Toei in 1954 and a newly formed Port Authority was established here.

Presently, the building is used by the Bang Rak fire brigade station, and is in desperate need of repair and maintenance, as noticeable vegetation is present on the building. The building is configured in a 'U' shape form, with side wings, connected to the main section via bridging devices. The building has neo-classical features, such as archways and columns; overall the building has strong colonial influences. The entrance of the site is seen in Figure 111.

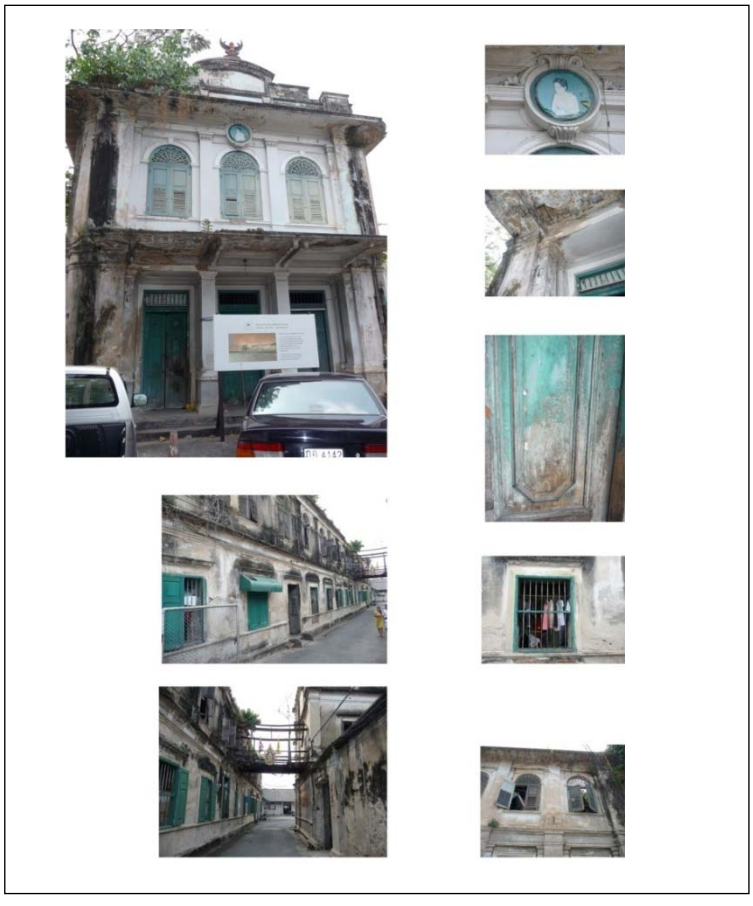


Figure 111 Entrance to the site via the road (author)

The building is orientated to be viewed from the river as this was the main access point to the building (Plate 89).

Plate 89 View of The Customs House from the river (author)

The building is made of bricks, which can be seen where the rendered surface of the building has eroded through weathering (Figure 112).

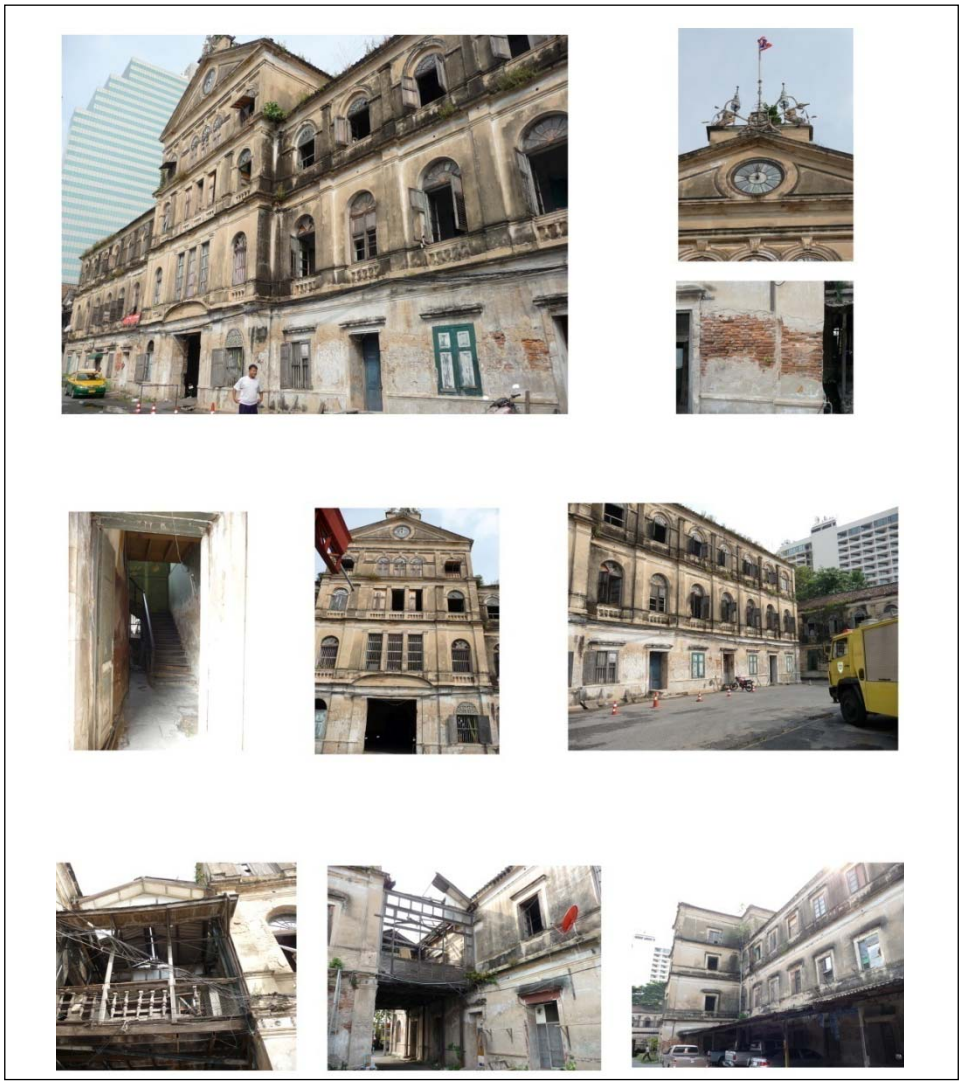


Figure 112 The front view of The Customs House (author)

OTHER SITES:

JIM THOMPSON + BAN KRUA MUSLIM SILK WEAVING COMMUNITY

BANGKOK DOCKYARD COMPANY

Chapter 5 is an ever growing resource. There are several others places not yet covered in detail, however these sites and places require a mention before more research has been completed.

Jim Thompson + Ban Krua Muslim silk weaving community, Bangkok (Figure 113).

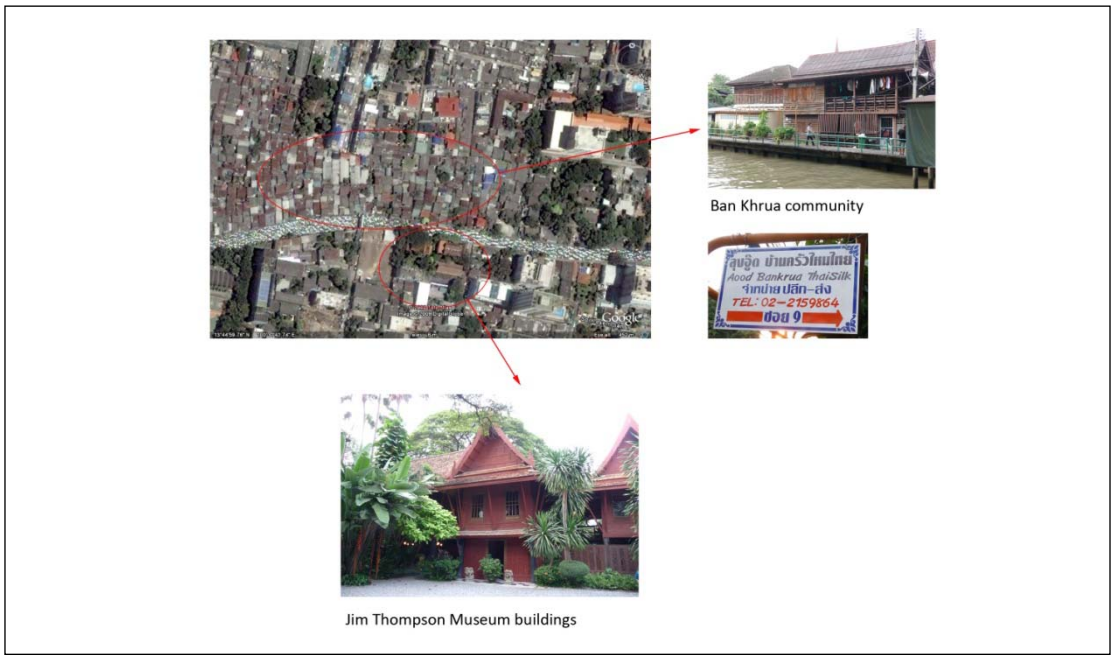


Figure 113 Location and images of Jim Thompson + Ban Krua community (author)

Bangkok Dockyard Company Ltd (Figure 114).

Figure 114 Location and images of Bangkok Dockyard Co. Ltd (author)

Chapter 6

Industrial Heritage as a Tool for Social and Economic Change

Questions such as, why do we keep industrial heritage sites? What use is industrial heritage? Or; what do we do with industrial heritage sites? All are frequently asked questions when discussing industrial heritage, especially when it may be hard to understand the initial value or significance of a site. Industrial heritage has often been linked to the economic revitalization of areas or sometimes entire regions. This can be partly attributed to the fact that often industrial heritage sites are located in areas frequently regarded as 'derelict', 'vacant' or in 'urban voids'. These terms have been described by urban planners, and government agencies worldwide. Pagano and Bowman 2000 cited in Aruninta 2005, gives a definition of vacant land to be the following:

> Vacant land includes not only publicly owned and privately owned unused or abandoned land or land that once had structures on it, but also the land that supports structures that have been abandoned, derelict, boarded up, or partially destroyed or razed.

It is common therefore for industrial buildings and areas to be located on 'vacant land' or old industrial areas can also cause 'urban voids', which is an urban phenomena described when:

> The voids of the city are spaces which disrupt the urban tissue, leaving it incomplete and throw into question the use of those spaces. Sometimes called urban ruins, they are at the limit between public and private space, without belonging to either one or the other. Urban voids are containers of memories, fragments of the built city and the 'natural' environment; memories of the city which cause a random, unplanned garden. (Noll & Scupelli 2002, cited in Aruninta 2005)

The UK Environment Agency in 2005, defined 'derelict land' as areas containing the following conditions:

> land so damaged by industrial or other development as to be incapable of beneficial use without treatment'. It is often associated with redundant coal mining areas and railways. (cited in Aruninta 2005).

In the paper by Ariya Aruninta, 2005 there is no mention of the way in which any buildings containing industrial value or significance shall be integrated into an urban land planning project for under- utilization of vacant land in Bangkok. It also mentions a report carried out by an MIT Consultant Team who conducted a report in 1994 for the BMA's Policy and Planning Department (PPD). The report was trying to establish the amount of under-utilised

vacant land in Bangkok and studied the location of vacant land in Bangkok and their physical characteristics. It was carrying out the report to try to establish the possibility of converting land for public park use. It mentioned that potential areas suitable for conversion into parks would be:

- Disused housing and factories
- Storage facilities and waste disposal areas
- Interstitial spaces in industrial sites or new development not suitable for housing
- Land in abandoned areas
- Pond, or water retention areas
- Land created along canals or rivers
- Land along railways, roads and expressways, both old and new.

It mentions that industrial sites and factories are potential candidates for conversion into park areas. It should be brought to the attention of any future urban land planning policies that consideration must be made for vacant spaces in Bangkok containing industrial sites of value and significance which should not be simply removed, but treated in a way to stimulate economic or social revitalisation of an area.

The author A. Aruninta provides some suggestion for potential uses of publicly owned vacant land. Once again the adaptive re-use potential of industrial structures is not mentioned here:

- Aesthetic approach (city beautification such as sculpture installations, ornamental gardens and water features etc)
- Transport purposes (parking such as park 'n'ride)
- Recreation purposes (passive or active, jogging or bird watching etc)
- Commercial uses (shops, kiosks, malls, flea markets etc)
- Environment purposes (storm drainage, water retention etc)
- Social Welfare (social housing, police station, museum etc)

The paper mentions The Viaduc des Art in Paris and the Promenade Plante which contains a 1.5 km elevated walkway which weaves its course through various neighbourhoods in the 12th arrondissement . The original railway line was built on top of the Viaduct Daumesnil and was constructed in 1859. The railway line was eventually discontinued in 1969, and since that period it lay abandoned.

It was saved from demolition when a plan which began in the early 1990's was turned into reality when it opened in the late 1990's. On the top of the viaduct the railway tracks were removed and replaced with a garden winding above the city (Plate 90). Underneath the viaduct along the Avenue Daumesnil the arches were converted into a mixture of art galleries, and art and craft retail units. It is a huge success combining an element of park space and cultural/retail units (Plate 91). This could be an excellent idea for the Thai Tobacco

Monopoly by converting the warehouses in to a mixture of small retail units and art studios for students and artists.

Plate 90 The Promenade Plante
(Source: http:// luxurylink.com)

Plate 91 The restored Viaduct Daumesnil
(Source: http:// luxurylink.com)

The Nizhny Tagil Charter for the Industrial Heritage (2003) states in Part 5.5 that industrial heritage can aid and play an important role in economic regeneration of areas:

> Continuing to adapt and use industrial buildings avoids wasting energy and contributes to sustainable development. *Industrial heritage can have an important role in the economic regeneration of decayed or declining areas*. The continuity that re-use implies may provide psychological stability for communities facing the sudden end of a long-standing source of employment.

Part 5.5 also raises another important issue which mentions how sustainable development can be attributed with the conservation of industrial heritage. This is another positive reason for the conserving of a Nations valuable industrial heritage resources.

The Suzhou warehouse in Shanghai, China is a good example where industrial heritage has aided in the economic and social regeneration and revitalization of an area, which was previously abandoned and neglected for many years.

Since the 1930's the Suzhou River in Shanghai was a major industrial area. Warehouses and factories lined the riverbanks as a convenient place for exporting and importing goods. As the city grew the area gradually became abandoned and neglected when factories and industry became located in different regions outside of the city. The Chinese government decided in the early 1990's that in order to revitalize the area then the old warehouses dating back to the 1920's and 1930's should be removed.

However, over the next decade the area underwent a transformation in which the old warehouses slowly began to be occupied by artists. This was reminiscent of areas such as London's East End area Hoxton which started its 'unplanned' revitalization in the 1990's following the arrival of artists such as Tracey Emin and the newly formed Young British Artist (YBA's) movement who descended upon the run down industrial warehouses which lined the edge of the City of London. In Shanghai, a Taiwanese designer/artist called Deng Kunyan occupied the premises of an old grain warehouse which he converted into a work/live space. The warehouse was an impressive building from 1923 in an Art Deco style. The space he occupied soon gained popularity as others followed in a similar way, and the warehouses along the Suzhou River became an artist colony of studios and galleries (Plate 92).

The area remained under threat for some years, but after continued media attention and lobbying to save the buildings, the government eventually relented and eventually the area was designated and protected as a modern heritage zone. Deng Kunyan is currently working on a project along the Huangpu River, where he is converting an old GE factory into a cultural park.

In 2004, the Deng Kunyan warehouse received an honorable mention in the UNESCO Asia-Pacific Heritage Awards for the adaptive re-use of the warehouse.

Plate 92 Warehouses along the Suzhou River, Shanghai
(source: http://.ieas.berkeley.edu)

Susan Balderstone's introduction in the 2007 UNESCO publication 'Asia Conserved - Adding New Elements' provides an insight into the considerations that need to be made when undertaking a project which involves a major change of use from the original function of the building. It explains that in particular industrial structures face challenges and difficulties when adapting old functions into new ones. It provides some useful ideas for retaining the significance of the spaces within a new function, whether architectural, historical, social or scientific (showing a particular technology or industrial process).

The Japanese Government as we saw in Chapter 2 is also realizing the potential benefits of industrial heritage and the role within its society. In the Kyushu and Yamaguchi regions the governors association of Kyushu met in June 2006 and discussed the importance of the '…preservation and use of industrial heritage of modernization in Kyushu Region…' which shall be a policy coordinated amongst the Governors of the Kyushu region. The Kyushu region is the place where the industrial revolution began in Japan, and this area contains several unique sites worthy of national and international recognition. In January 2009 the Japanese delegation to UNESCO submitted the 'The Modern Industrial Sites in Kyushu and Yamaguchi' as a nomination which is now on the UNESCO World Heritage Tentative list.

Adaptive re-use of Industrial Structures

We have already briefly introduced the term adaptive re-use, which is the process of adapting old structures for new purposes. This can naturally include all types of buildings, and not only industrial ones, however it is industrial buildings that we will be focusing on.

Part 5.4 of *The Nizhny Tagil Charter for the Industrial Heritage* (2003) discusses this issue of adaptive re-use:

> The adaption of an industrial site to a new use to ensure its conservation is usually acceptable except in the case of sites of especial historical significance. New uses should respect the significant material and maintain patterns of circulation and activity, and should be compatible as much as possible with the original or principal use. An area that interprets the former use is recommended.

Mentioned earlier is the notion of 'unplanned adaptive re-use' as opposed to 'planned adaptive re-use'. We can start to see that some sites have had a 'planned approach' where a site has been chosen specifically for their value or significance by heritage practitioners, urban planners or private owners. A different form of adaptive re-use occurs when an area or building is changed by an 'unplanned' effect. The adaptive re-use in this case is normally the outcome of a practical or functional intervention. We shall look at the differences between 'planned adaptive re-use' and an 'unplanned' approach of adaptive re-use.

'Planned' Adaptive Re-use Case Studies:

Industrial buildings can provide perfect opportunities for adaption into a variety of new functions. The following different building types shall be studied:

Art Galleries	Massachusetts Museum of Contemporary Art, USA
	The Tate Modern, London, UK
	CaixaForum, Madrid, Spain
	Saltaire Mill, Yorkshire, UK
Museums	Memories at Old Ford Factory, Singapore
Hospitality	De River Restaurant, Bangkok, Thailand
Offices	Van Nelle Design Factory, Rotterdam, Holland

Massachusetts Museum of Contemporary Art (MASS MoCA), USA

The large cavernous spaces required for machinery often provide versatile gallery space normally with excellent natural daylight perfect for art galleries (Plate 94).

The site of the MASS MoCA is located on a sprawling area composed of 26 buildings which are connected by bridges, viaducts and elevated walkways, all the buildings are registered on the National Register (Plate 96). The entire site is a unique testament to the mill industry, "The history of MASS MoCA's site spans more than two hundred years of economic, industrial, and architectural development that traces the trajectory of industrialism in New England" (http://massmoca.org/history).

The buildings for the art galleries began life in 1860 as the Arnold Print and Dye Works, and they eventually became the largest producers of printed textiles in the world, before closing down in 1942 and then taken over by Sprague Electric Company in the same year (Plate 93). The Sprague Electric company continued operations until 1985. A plan to turn the site into a cultural factory for the 21st century began. The architects responsible for the final design were a practice called Bruner/Cott & Associates, and their concept for the gallery was:

> they proposed exploiting the unparalleled scale and versatility of the complex's industrial spaces, while establishing a dialogue between the facilities past and the new life it would have as the country's largest center for contemporary visual and performing arts.

The art galleries were finally completed in 1999, and have taken the complex into a brand new and exciting 3rd generation of usage.

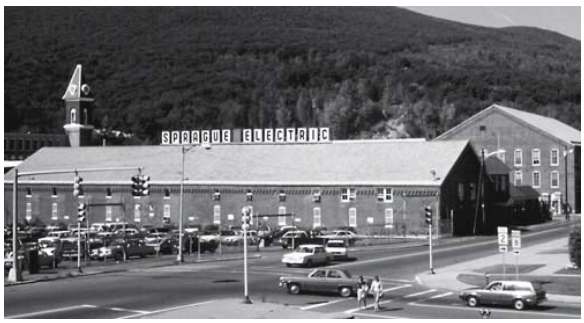


Plate 93 The building as Sprague Electric Company (source**:** http://massmoca.org)

Plate 94 The interior of Building 5 Gallery (source: http://massmoca.org)

Plate 95 Building 5 before the floor was removed (source: http://nwphoto.com)

Plate 96 Showing the bridge connections between the buildings (source: http://nwphoto.com)

The Tate Modern, London, UK

The Tate Modern is a famous example of the adaptive re-use of the Bankside Power Station into an art gallery to house their international collection of modern art. Designed by the Pritzker Prize winning architects Jacques Herzog and Pierre de Meuron, the gallery was opened in 2000.

A number of architects submitted proposals for the new museum, but they planned to demolish much of the power station. Among the six finalists, Herzog & de Meuron was the only firm that suggested reusing a significant portion of the plant. Left intact, the 500 foot turbine hall became a dramatic entrance for the museum. The industrial flavor of the building is reflected in the taupe walls and black steel girders. A new glass ceiling floods the austere space with natural light, creating an ideal environment for viewing art (Plate 97 – 99).

Plate 97 Exterior view of Tate Modern (source: http:// aboutarchitecture.com)

Plate 98 Aerial View of Tate Modern (source: http://pro.corbis.com)

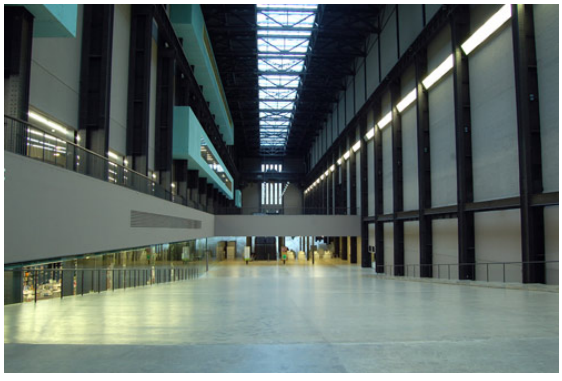


Plate 99 The impressive scale of the Turbine hall (source: http:// aboutarchitecture.com)

The Power Station was built in 1947, and was designed by Sir Giles Gilbert Scott. The station was finally closed in 1981, and lay as a controversial ‘eye sore’ for many years along the South Bank on the River Thames. Rowan Moore an architecture critic was quoted as describing the building as:

> It's a space you never could ever have achieved with a new building. For one thing they'd never get the money for it, but even if they did it would seem like a bombastic gesture because there's all this empty space here (http://aboutarchitecture.com).

The Tate Modern has become one of the top 3 tourist attractions in the UK, and has exceeded all expectations for the number of visitors. It has been a major part of the revitalization of the London Borough of Southwark, and has created 4,000 jobs in the area.

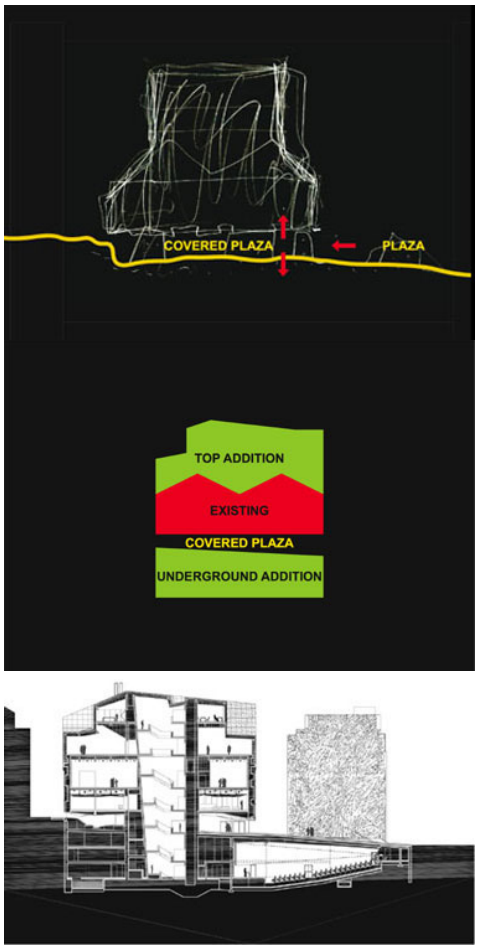
CaixaForum, Madrid, Spain

The original building belonged to the former Mediodia Power station, dating to 1899, and is one of the few remaining examples of industrial architecture in Madrid today (Plate 100 & Plate 101). The new spaces contain events and programmes for music, literature, film and art, and was opened in February 2007.

Plate 100 The original power station (source: http://arcspace.com)

Plate 101 Aerial view of the power station (source: http://arcspace.com)

The architects were the same Swiss team of Herzog & de Meuron, who were responsible for The Tate Modern in London. Their latest power station conversion is quite different from the previous project. Herzog & de Meuron describe the concept behind the unusual treatment of the base of the original structure, allowing it to float above the floor (Fig. 115 & Plate 102 & Plate 103)



*"**T**he only material of the old power station that we could use was the classified brick shell. In order to conceive and insert the new architectural components of the CaixaForum Project, we began with a surgical operation, separating and removing the base and the parts of the building no longer needed. This opened a completely novel and spectacular perspective that simultaneously solved a number of problems posed by the site. The removal of the base of the building left a covered plaza under the brick shell, which now appears to float above the street level. This sheltered space under the CaixaForum offers its shade to visitors who want to spend time or meet outside and is at the same time the entrance to the Forum itself. Problems such as the narrowness of the surrounding streets, the placement of the main entrance, and the architectural identity of this contemporary art institution could be addressed and solved in a single urbanistic and sculptural gesture".* (source: http://arcspace.com)

Figure 115 Sketches and section of building (source: http://arcspace.com)

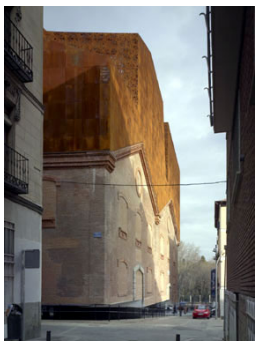


Plate 102 Exterior of CaixaForum (source: http://arcspace.com)

Plate 103 View under the 'plaza'

Saltaire Mill, Yorkshire, UK

Sir Titus Salt built Saltaire Mill in 1853. It was a unique project as he continued to build schools, churches and housing for the workers of his mill. This entire village became known as Saltaire. The mill was built from warm, yellow sandstone (Plate 104).

In the 1980's Salt's Mill was converted by the late Jonathan Silver into the "1853 Gallery" which houses a collection of the works of the famous artist, David Hockney who was of course born in nearby Bradford (Plate 105).

Plate 104 The exterior of the woolen mill (source: http://saltsmill.com)

Plate 105 Inside the galleries at Salts Mill (source: http://saltsmill.com)

Memories at Old Ford Factory, Singapore

Museums can be a successful way to tell the narratives about the previous life of the building. A museum with good interpretation can be beneficial and interesting for local communities and visitors.

Memories at Old Ford Factory was officially opened on 16 February 2006 but strictly speaking this site is not a museum, but a place of memories.
It is now under The National Archives of Singapore, part of the National Heritage Board. They restored this gazetted national monument, and turned it into a permanent gallery featuring the exhibition 'Syonan Years: Singapore Under Japanese Rule, 1942-1945' (Plate 109 & Plate 110). The site has strong historical significance related to the surrender of the British to the Japanese which marked the beginning of the occupation in 1942. Plates 106 - 108 Shows the exterior of the building (author)

Plate 106

Plate 107

Plate 108

Plate 109 Interior Gallery (author)

Plate 110 Interior Gallery (author)

De River Restaurant, Bangkok, Thailand

This restaurant and bar is situated along the bank of The Chao Phraya very close to the Rama III Bridge (Plate 111). The project was briefly mentioned in Chapter 5, under the Wang Lee Rice trading family site as this restaurant was the former rice mill owned by the Wang Lee family.

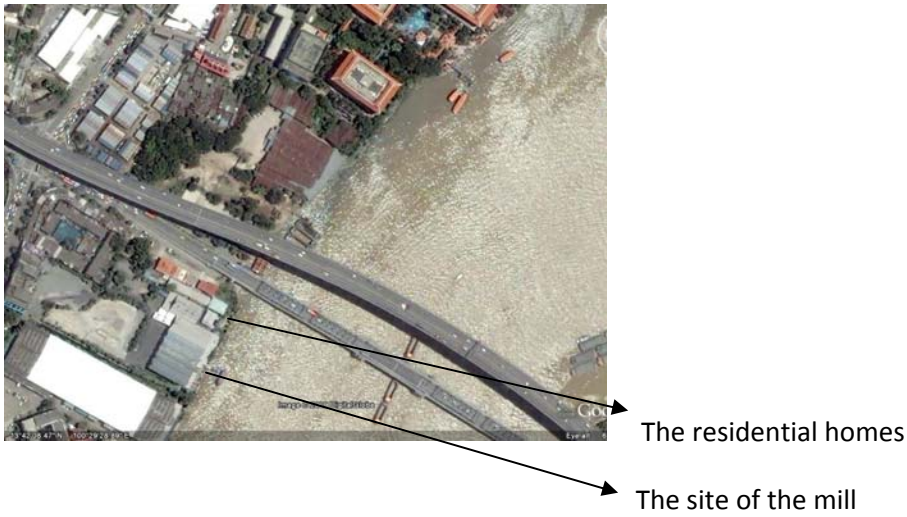


Plate 111 Aerial map showing location of mill/restaurant
(source: http://earth.google.com)

The owner explained that the mill had a sprinkler system installed when it was constructed so he estimated that the original mill dates to the early 1900's;but the exact date is unknown. The Wanglee family is still the landowners where the restaurant sits, but they have leased out the building. In 2002, the current lessees converted the mill into a restaurant, called De River. Also situated on the site are 2 residential homes, one of which has already been renovated, and the other property is currently under renovation.

The rice mill has undergone considerable adaptive re-use, however the architects have managed to retain a lot of the original structural timber elements and have cleverly opened up the space by removing the roofing material in order for the light to enter into the centre of the buildings. Any rain water would be collected in the large pond underneath the open section (Figure 116). The materials used have been sensitive in keeping with the materials, and no adverse add-on's inserted. The site also manages to interpret the former use not only by the architectural structural qualities, but also by displaying equipment and machinery which was previously used in the rice mill (Figure 117). This adds to the heritage experience of the place, and makes an interesting connection. It even has some antique rickshaws, the traditional method of transportation around Bangkok for the Chinese community in the late 19th century.

The 2 residential properties on the site are unique examples of architecture of the wealthy Chinese of the early 19th Century. The roof structure on the entrance of the first home is

very similar to the roof line of the workers housing at the Wanglee family complex seen in Chapter 5 (Figure 118 & Figure 119).

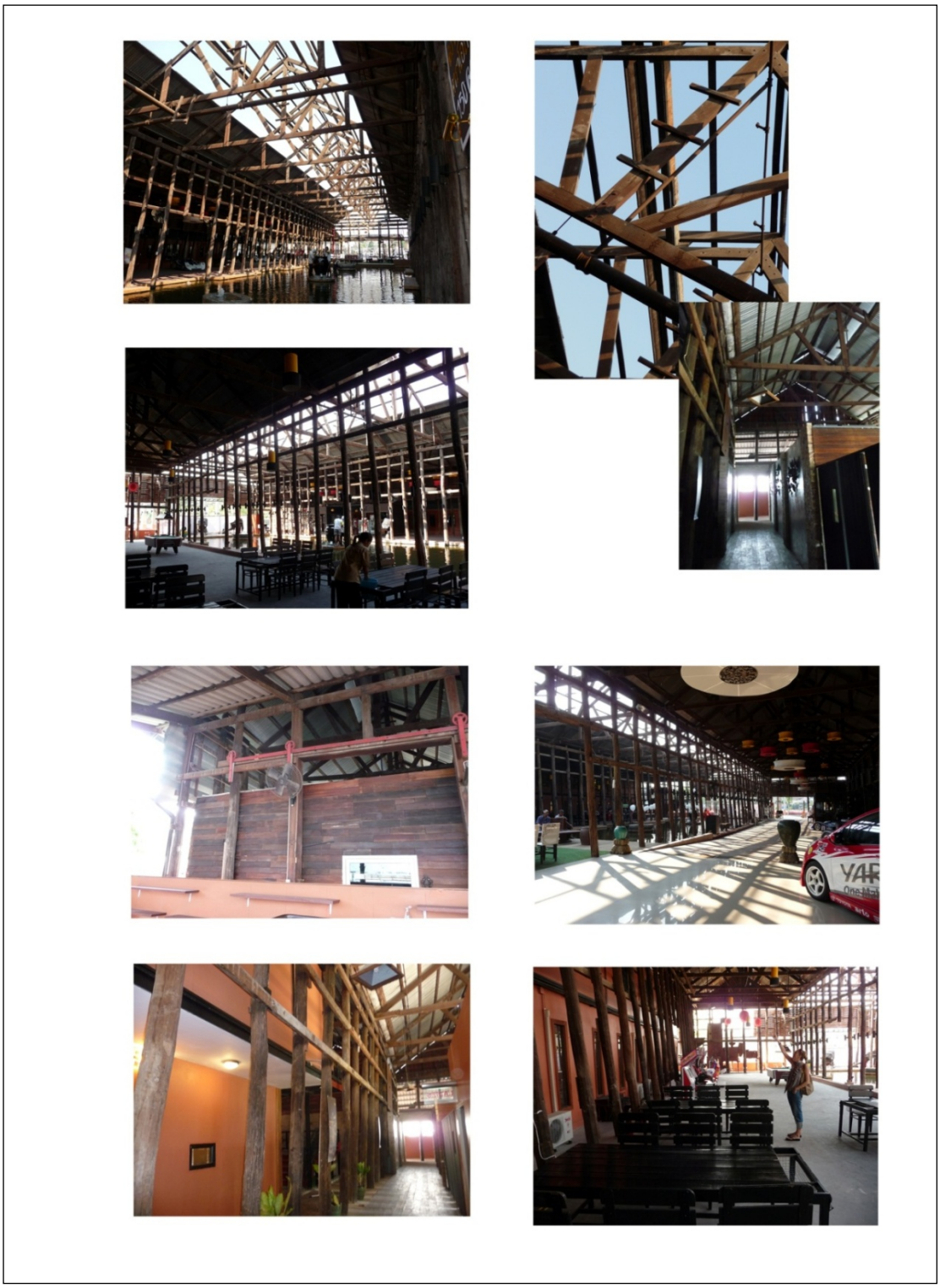


Figure 116 Showing the centre of the building with the exposed roof structure (author)

Figure 117 The equipment and artifacts used as interpretation methods (author)

Figure 118 Exterior images of the old rice mill and the residential properties (author)

The roof structure of the workers housing at the Wanglee family complex in Soi Chiangmai

The residence at The East Asiatic Company Ltd

The house is balanced between European elements, and traditional Chinese architectural elements. The roof structure in particular is Chinese, and we can see that it closely resembles the roof of the workers housing at the Wanglee family complex. The house has similar qualities to the residential house found on the East Asiatic Company property.

Figure 119 The residential house being renovated (author)

Van Nelle Design Factory, Rotterdam. Holland

The Van Nelle Factory has been on the UNESCO tentative World list since 1995. It was inscribed as being one of the world's finest examples of modernist industrial designs. The design of this factory began in 1914, and was finally completed in 1931, by architect Johannes Brinkman and L.C. van der Vlugt. The owner of the original building was called CH Van der Leeuw who was the visionary behind the project, and the collaboration with the architect resulted in this structure which was designed for the refining and packing of coffee, tea and tobacco. The building was designed so that each floor would perform a different process, beginning with the raw material on the top floor. The structure is a reinforced concrete, glass and steel frame, with exposed mushroom shaped columns for support.

There was a great concern for the human factor element within the building, and for a design completed in the 1930's the thinking was very cutting edge and innovative. The open and airy spaces combined with a bold use of colour such as ochre cement, ultramarine rubber floors, and light green walls were not common for factories of the 1930's. The welfare of the staff also extended to social spaces such as bathrooms, showers, canteens, libraries and tennis courts.

The company moved out of the factory in the 1980's. By 1998 a private owner had purchased the factory, however 2 years later it was passed to the Van Nelle Foundation, and a new function for the building began, turning the space into a factory full of about 100 creative design businesses (Figure 120).

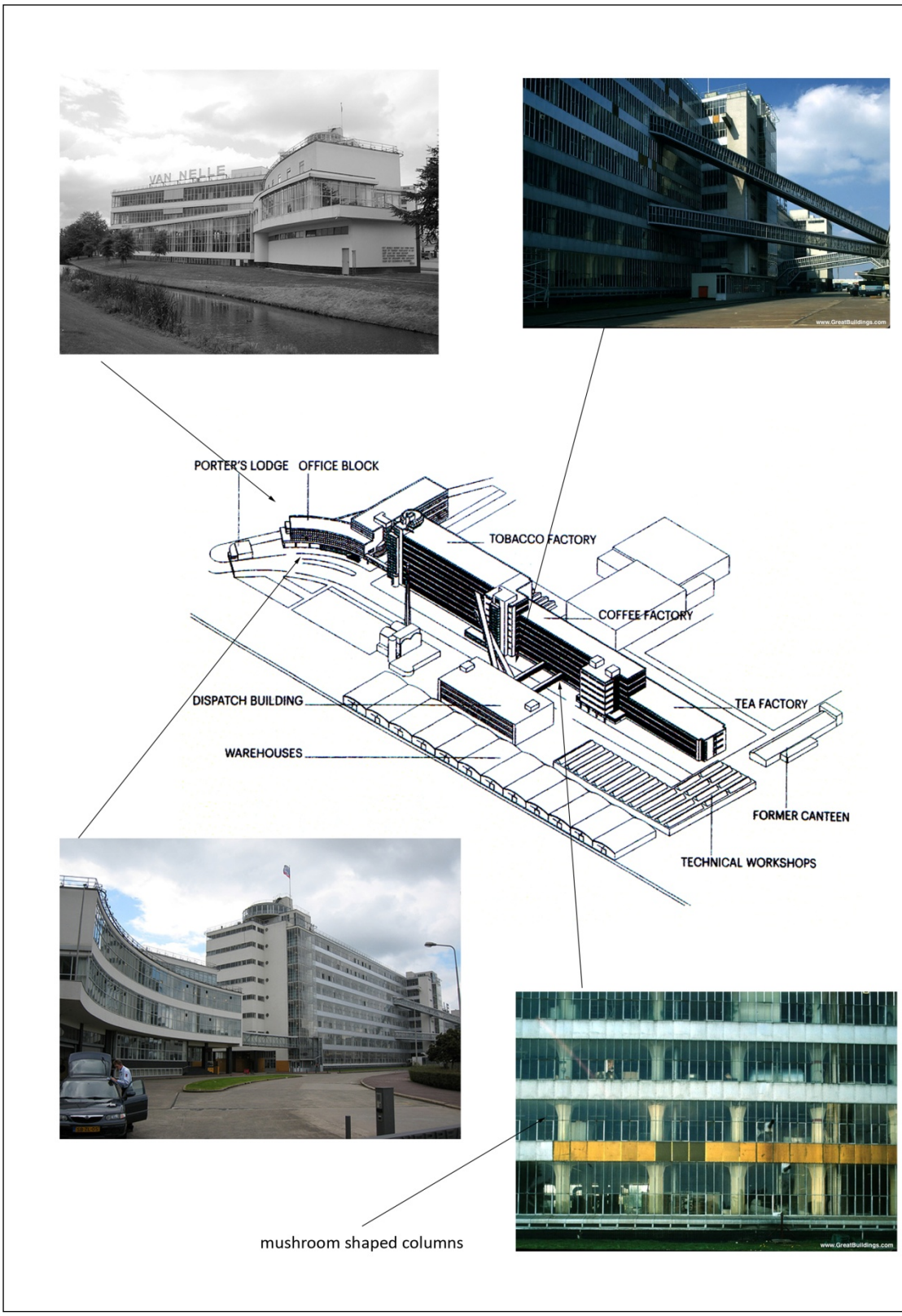


Figure 120 Axonometric view of Van Nelle Factory with images
(source: Wallpaper magazine 2007.
Photograph source: http://greatbuildings.com)

'Unplanned' Adaptive Re-use Case Studies

The notion of 'unplanned' adaptive re-use of industrial buildings has been a phenomenon which has occurred throughout major western cities since the 1960's. It normally involves groups of individuals (normally artists) who move into a run-down area because it has cheap accommodation, and normally is epitomized by vacant industrial buildings. These places provide good sources of work/live space, due to flexible spaces, and good natural daylight. Over a period of time the social dynamics of the area change as more amenities move into the area to provide for the new 'tenants'. In turn this has led to a revitalization of the area with an influx of private capital. Restaurants, bars, and shops open and money pours into the area. Eventually the original tenants and communities find that they can no longer afford to stay in their own communities, and are often forced out. This is a process called 'gentrification':

> Gentrification or urban gentrification, is a phenomenon in which low-cost, physically deteriorated neighborhoods undergo physical renovation and an increase in property values, along with an influx of wealthier residents who may displace the prior residents. (source: http://wikipedia.org).

There have been numerous studies and theories surrounding gentrification since the term was coined in 1964 by Sociologist Ruth Glass, who used the London Borough of Islington in London as her example in describing these phenomena. Since the 1960's cities across Europe and the US such as London, Manchester, New York and San Francisco have all witnessed parts of their cities being 'gentrified'. For each case a slightly different reason can be attributed. However there is a repeating pattern in each instance. Greenwich Village in the 1960's saw students and hippies moving in to occupy the empty industrial buildings, as the character of the neighbourhood changed it began to appeal to the middle class. Eventually the original students and hippies could no longer afford the increase in rental prices, and were edged out. This is an all too familiar story. London's East End, when artists found the spaces of the industrial warehouse perfect spaces to work & live, cheaply. The vast spaces with natural daylight were perfect for their creativity. This 'artist colony' around Shoreditch & Hoxton saw an enormous change as the area suddenly became desirable. Bars, restaurants, loft living and art galleries transformed the neighborhoods. Once again, the original inhabitants who unconsciously managed to change the perception of a run down, crime ridden, dangerous area into a prosperous and thriving one were forced to move on to new places.

There are many questions which relate to the notion of gentrification, such as, Is gentrification a purely western phenomena? How has it been adapted to post industrial cities in South East Asia?

Could gentrification stimulate and provide economic and social change in areas such as Banglamphu and Rattanokosin, Bangkok without displacing the original community?

Perhaps an approach could be used which is sensitive to the community, combined with a vision of future urban development using vacant industrial buildings from the past such as buildings shown in Chapter 5 like the Makassan Train depot buildings. Would it be possible to establish an 'artist's enclave' through providing subsidized rent agreements between the property owners and artists in order to transform and protect the removal of the Thai Tobacco Monopoly? How would this be beneficial to the heritage of the building, and would it promote tourism to this area?

The preamble in the *Seoul Declaration on Tourism in Asia's Historic Towns and Areas* mentions the relationship between tourism, heritage and gentrification:

> 2.1 Establishing a balance between Tourism and Conservation
>
> The impacts and benefits of Tourism are being felt increasingly on the fabric and identity of many historic towns and areas of Asia, through gentrification and replacement of community functions with tourism services. These benefits and impacts are particularly felt at World Heritage Sites where greater incentive for adequate management and conservation is given, as well as greater tourism interests and pressures. It is felt that it is important to disseminate widely and adapt as regionally relevant cultural management guidelines such as ICOMOS Cultural Tourism Charter to assist communities, governments and tourist operators when working in heritage places.

The declaration clearly indicates that gentrification is an Asian issue, and must be treated with caution to protect the original communities who are the ones at risk. They can also be the beneficiaries too as an area which is revitalized normally can see that the general living conditions and standards can improve also.

Industrial Heritage Tourism

This is a form of tourism which is generated from the interest of visitors wishing to experience an industrial site whether having local, national or international significance and recognition. In Europe the act of visiting an industrial site as an educational or leisure activity is more commonly done than in Asia, mainly because there are more industrial sites which have been conserved and managed appropriately to receive visitors. In terms of Thailand's heritage tourism attractions the Thai state tourism agency the Tourism Authority of Thailand (TAT) is the body which is responsible for the promotion of cultural tourism. This is closely linked to the heritage policy and needs to mirror the way in which it is promoting a national identity.

Presently, there is no industrial heritage tourism in Thailand. However, an interesting case study is the historical factories tour in Yogyakarta**,** Indonesia which has already been previously discussed in Chapter 2. The local tourism agency has coordinated a tour to 3 factories of local significance, all of which are still in operation (Plate 112).

Plate 112 Advertisement for the historical factory tour in Yogyakarta (source: http://yogayes.com)

Industrial heritage tourism could provide support for local communities and also for national governments if sites are conserved and managed in appropriate conditions to cater for domestic and international visitors.

Chapter 7

Conclusions, Recommendations and Future Research

Conclusions

In order to conclude we need to be reminded what the goals and objectives were at the outset of the project, and then to see whether they have been achieved, or not.

- To identify the extent , nature and type of industrial heritage that exists in Thailand
- To record, document and classify potential sites in Thailand, with the focus of research to be based in Bangkok
- To suggest policies and guidelines for the protection of these sites

At the beginning of the project I was under the belief that there were very few records of industrial heritage sites in Thailand. This proved not quite correct when I discovered that 3 kiln sites (industrial themed) had been nationally listed as far back as 1935. This was quite a unique find which led to further research about other nationally listed sites which had an industrial theme to them. Thailand now has 51 sites listed, however, 56% of these sites are listed as bridges with a royal connection to them, making the representation of an industrial heritage very narrow indeed.

The Kuru Sapha Printing House site, discussed in Chapter 2 embodies a perfect example about the relationship between current Thai Heritage policy thinking and practice and industrial heritage in Thailand. Despite the fact that the building finally achieved a national listing in 2001 it epitomizes the desperate struggle that sites need to overcome in order to gain recognition, appreciation and finally protection through legal means. This site represents a modern Thai industrial aesthetic, one which is rarely appreciated and accepted through the heritage policies currently in place.

Chapter 5 has identified, recorded and classified 14 sites with industrial heritage significance. Each site has a unique set of values attached to it, some for their architectural merit, others for their social significance, whilst some contain a certain process or manufacturing method of production which is providing a narrative about technological innovations in the country. Industrial heritage at a global level is frequently referred to as providing the foundations of the modern architecture movement, through its simple, unadorned and undecorated approach. The quality of the spaces created within these industrial buildings reflects the way that the early Modernists, such as Le Corbusier was thinking about a new architectural typology. In Thailand therefore the industrial buildings are important as a representation of the seeds of early modern architecture in Thailand, despite the fact that these buildings, sites and places, are rarely connected to modern architecture in that way. Several of the buildings mentioned had a connection or a relationship to Western ideologies, whether in the building materials being used (such as at

the State Railway of Thailand building), through the architect or engineer being Western (such as Mario Tamagno designing Hualamphong station), or a process or technology imported from overseas (such as the Tin Bucket Dredger in Phuket). These places often represent an amalgamation and combination of western influences within a Thai society and cultural framework.

The scale and degree that these industrial heritage sites exist was examined. In order to do this a comparative study was made of other countries industrial heritage from the UK, Japan and China. It was established that it is unreasonable to simply compare Thailand with the UK's position, as it has the most established industrial heritage both theoretically and in terms of practical application. The Japanese recently have made significant steps forward in understanding their industrial heritage and ensuring that local officials are educated in understanding the significance of conservation issues. China has also made considerable efforts in making World Heritage List submissions on the Tentative List. Thailand meanwhile is seen as doing very little about this valuable resource, as far as using it as a social or economic tool. We cannot compare the scale of Thailand with the UK, for example. Thailand never had a large extraction industry such as coal mining, or steel production, however the industries mentioned in Chapter 4, such as the primary industries of Rice, Teak and Tin played a hugely significant role in developing and opening up the market economies of Thailand since the 1850's.

The heritage policy was closely examined and scrutinised for not being supportive in recognizing industrial heritage as a cultural resource. However, it is recognized that the Thai Government acknowledge that several laws, and acts are in need of revising and updating, and hopefully that may mean that in the future industrial heritage is recognized and appreciated for the richness it has to offer for the Thai Nation.

The messages that the sites contain in Chapter 5 should be conserved in some way, either as documentary evidence through filmic or photographic techniques, or through the adaptive re-use potential of certain sites. This was examined in Chapter 6 which may provide some initial thought, ideas and suggestions for the future of some of the sites that were mentioned in Chapter 5.

To conclude, Thailand has an abundant and diverse selection of industrial heritage sites and places. It is essential that some form of government intervention is made in order to elevate the understanding, appreciation and recognition of Thailand's industrial heritage before they disappear all together.

Recommendations and Future Research

The process of identification, recording and documentation has only just begun. Each day there are fresh leads for potential new sites such as rice mills in the province of Ayutthaya, gold mines near Bang Saphan and numerous other sites which require investigation, surveying, historical data uncovered, all of which takes resources of time, money and labour.

The sites which have been discussed in Chapter 5 require extensive survey's to be carried out, which will provide a permanent and official recording of the site should it for any reason cease to exist. It is also recommended to use filmic methods to document the processes and operations on industrial sites which are still in operation. These sites could be large scale processes down to smaller cottage style industries, such as the silk weaving communities of Bang Khrua.

A questionnaire will be an essential method to establish a public's response to industrial heritage in Thailand. The perception, awareness, appreciation and understanding of industrial heritage as a theoretical discourse, and also as a practical application must be determined. The questionnaire will be disseminated amongst a wide cross section of the community in Chiang Mai, Bangkok and Phuket, involving international and domestic tourists too. This will also help to establish whether there exists a geographical variation in response amongst the participants surveyed. The questionnaire will be visually based, with the participants asked a specific question relating to a set of images. The questions will cover topics such as, 'What represents a Thai heritage site to them?' (Figure 121). The questionnaire shall then proceed to show images of adaptive re-use of some industrial heritage projects such as The Tate Modern, UK and the CaixaForum in Madrid and ask whether they find the project to be successful, interesting and engaging.

Q. Look at the photographs, which picture represents Thai Heritage to you? (You may indicate as many as you like)

☐ **Shophouses along Nakhon Sawan rd, Bangkok**
(Source:Julia Davies)

☐ **The Anantha Samakhom Throne Hall**
(Source: Wikipedia)

☐ **A salt farm in Samut Songkram**
(Source: TAT)

☐ **The Grand Palace, Bangkok**
(Source:http://creativecode.com)

☐ **Khao Yai National Park**
(source: nakon-nayok.com)

☐ **East Asiatic Company Ltd, Charoen Krung rd, Bangkok**
(Source: Julia Davies)

Figure 121 A sample question from the questionnaire (author)

The results of the questionnaire will need to be analysed before being able to fully plan and schedule the applied part of the project. It is assumed, but not proven as yet, that the results from the questionnaire will indicate that industrial heritage sites are not generally considered part of the heritage aesthetic here in Thailand. It shall be interesting to see whether a socio-economic factor is related to this, or whether the working classes of Thailand have a closer affinity to these sites as opposed to the middle and upper classes. It shall also be interesting to see whether the effort in Phuket to stimulate an understanding of the tin mining industry has managed to heighten the understanding and importance of the industrial heritage there.

The Nizhny Tagil Charter for the Industrial Heritage (2003) makes some references to the way by which the public can be the surest way in helping to conserve the industrial heritage:

> Associations and societies of volunteers have an important role in identifying sites, promoting public participation in industrial conservation and disseminating information and research and as such are indispensable actors in the theatre of industrial heritage. (The Nizhny Tagil Charter for the Industrial Heritage (2003), Part 4.7)

The final section in The Nizhny Tagil Charter for the Industrial Heritage (2003) discusses 'Presentation and Interpretation' as an important issue, and it is this which shall form the central axis for a continuation of the applied research:

> Public interest and affection for the industrial heritage and appreciation of its values are the surest way to conserve it. Public authorities should actively explain the meaning and value of industrial sites through publications, exhibitions, television, the internet and other media, by providing sustainable access to important sites and by promoting tourism in industrial areas. (The Nizhny Tagil Charter for the Industrial Heritage (2003), Part 7.1)

It is stating that the use of popular forms of culture such as television and internet can be a useful way in raising a public awareness and appreciation. A few suggestions for this could include film projects and documentaries, such as a feature length film made in China called the *Suzhou River* by director Lou Ye which was released in December 2000. This film was never shown in China as the director screened the film abroad without the permission of the Chinese authorities, and he was subsequently banned from film making for 2 years. The film is a contemporary love story featured against a backdrop of the old factories and warehouse buildings along the Suzhou River. Another film which truly has 'industry' at the heart of the documentary is *Manufactured Landscapes* by Edward Burtynsky. The film crew follows Burtynsky as he travels through China and Bangladesh in 2006 in his passionate quest to represent through the medium of film and photograph the harsh realities of the modern industrial revolution as it is unfolding in China, and the adverse effect is it having on nature. The sheer scale of the sites shown gives the places a surreal and haunting appeal, yet so

fascinating to view. His photographs have been exhibited worldwide since the early 1980's (Plate 113, Plate 114 & Plate 115).

Plate 113 Old Factories #1
Fushun Aluminum Smelter, Fushun City,
Liaoning Province, 2005
(source: http:// edwardburtynsky.com)

Plate 114 Old Factories #3
Tiexi District, Shenyang City,
Liaoning Province, 2005
(source: http://edwardburtynsky.com)

Plate 114 Old Factories #9
Fushun Aluminum Smelter,
Fushun City, Liaoning Province, 2005
(source: http://edwardburtynsky.com)

L.S Lowry was an English painter who is famous for depicted scenes of industrial landscapes. He was painting from the beginning of the 20th Century until the late 1960's. He developed his distinctive style whilst studying at the Salford School of Art, which he completed in 1925. The areas he painted were around the industrial towns of the North of England, and depicted human figures and industrial scenes and landscapes. Most of his paintings are now in The Lowry Centre in Salford Quays (Plate 116 – 118).

Plate 116 L.S Lowry - A Cricket Match, 1952 (source: http://independant.co.uk)

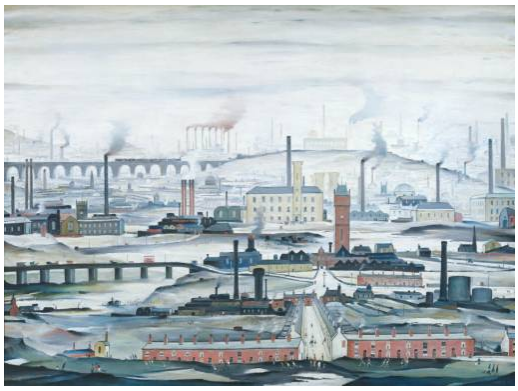


Plate 117 L.S Lowry – Industrial Landscape, 1955 (source: http://tate.org.uk)

Plate 118 L.S Lowry – Industrial Landscape, 1950 (source: http://artrepublic.com)

The photographs by Burtynsky could be viewed as a contemporary 1990's version of a 1950's Lowry painting where both are depicting scenes of industrial landscapes, and in Lowry's case a humanized element too. Could it be possible that these forms of visual representation have aided somehow in the way that the public view, and are connected to these industrial landscapes and places. If this is true then has art subconsciously led to the protection of some significant industrial sites by raising the profile of them?

Could art or another form of visual representation, like film or photography assist in the survival of industrial sites in Thailand through raising the awareness and appreciation, by allowing the viewers to understand and see these spaces in a different way?

An idea is to select 3 sites one in Chiang Mai, Bangkok and Phuket each of which are threatened or one in which its existence seems to go 'unnoticed'. Then, in order to stimulate an awareness, the use of visual representation methods such as paintings/photography/film/sculpture and drawings shall be used. This shall be done by the local community, at school or in a community centre, or by local artists following a workshop to introduce the project. Eventually an exhibition of the work created which connects the site to the community shall be held for all the community and public to view.

The aim and objective is to introduce industrial heritage into the realm of the community, rather than for the community to have distain for these buildings and sites, it is to show them that these buildings and sites have potential to be useful additions for their communities, whether social or economic, or simply to tell a historic narrative.

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APPENDIX A

THE NIZHNY TAGIL CHARTER FOR THE INDUSTRIAL HERITAGE

The Nizhny Tagil Charter for the Industrial Heritage

The International Committee for the Conservation of the Industrial Heritage (TICCIH)

17 July, 2003

TICCIH is the world organisation representing industrial heritage and is special adviser to ICOMOS on industrial heritage. The text of this charter was passed by the assembled delegates at the triennial National Assembly of TICCIH held in Moscow on 17 July, 2003.

Preamble

The earliest periods of human history are defined by the archaeological evidence for fundamental changes in the ways in which people made objects, and the importance of conserving and studying the evidence of these changes is universally accepted.

From the Middle Ages, innovations in Europe in the use of energy and in trade and commerce led to a change towards the end of the 18th century just as profound as that between the Neolithic and Bronze Ages, with developments in the social, technical and economic circumstances of manufacturing sufficiently rapid and profound to be called a revolution. The Industrial Revolution was the beginning of a historical phenomenon that has affected an ever-greater part of the human population, as well as all the other forms of life on our planet, and that continues to the present day.

The material evidence of these profound changes is of universal human value, and the importance of the study and conservation of this evidence must be recognised.

The delegates assembled for the 2003 TICCIH Congress in Russia wish therefore to assert that the buildings and structures built for industrial activities, the processes and tools used within them and the towns and landscapes in which they are located, along with all their other tangible and intangible manifestations, are of fundamental importance. They should be studied, their history should be taught, their meaning and significance should be probed and made clear for everyone, and the most significant and characteristic examples should be identified, protected and maintained, in accordance with the spirit of the Venice Charter[1], for the use and benefit of today and of the future.

[1] The ICOMOS 'Venice Charter for the Conservation and Restoration of Monuments and Sites', 1964.

1. Definition of industrial heritage

Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.

Industrial archaeology is an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes[2], created for or by industrial processes. It makes use of those methods of investigation that are most suitable to increase understanding of the industrial past and present.

The *historical period* of principal interest extends forward from the beginning of the Industrial Revolution in the second half of the eighteenth century up to and including the present day, while also examining its earlier pre-industrial and proto-industrial roots. In addition it draws on the study of work and working techniques encompassed by the history of technology.

2. Values of industrial heritage

i. The industrial heritage is the evidence of activities which had and continue to have profound historical consequences. The motives for protecting the industrial heritage are based on the universal value of this evidence, rather than on the singularity of unique sites.

ii. The industrial heritage is of social value as part of the record of the lives of ordinary men and women, and as such it provides an important sense of identity. It is of technological and scientific value in the history of manufacturing, engineering, construction, and it may have considerable aesthetic value for the quality of its architecture, design or planning.

iii. These values are intrinsic to the site itself, its fabric, components, machinery and setting, in the industrial landscape, in written documentation, and also in the intangible records of industry contained in human memories and customs.

iv. Rarity, in terms of the survival of particular processes, site typologies or landscapes, adds particular value and should be carefully assessed. Early or pioneering examples are of especial value.

[2] For convenience, 'sites' will be taken to mean landscapes, complexes, buildings, structures and machines unless these terms are used in a more specific way.

3. The importance of identification, recording and research

i. Every territory should identify, record and protect the industrial remains that it wants to preserve for future generations.

ii. Surveys of areas and of different industrial typologies should identify the extent of the industrial heritage. Using this information, inventories should be created of all the sites that have been identified. They should be devised to be easily searchable and should be freely accessible to the public. Computerisation and on-line access are valuable objectives.

iii. Recording is a fundamental part of the study of industrial heritage. A full record of the physical features and condition of a site should be made and placed in a public archive before any interventions are made. Much information can be gained if recording is carried out before a process or site has ceased operation. Records should include descriptions, drawings, photographs and video film of moving objects, with references to supporting documentation. Peoples' memories are a unique and irreplaceable resource which should also be recorded when they are available.

iv. Archaeological investigation of historic industrial sites is a fundamental technique for their study. It should be carried out to the same high standards as that of sites from other historical or cultural periods.

v. Programmes of historical research are needed to support policies for the protection of the industrial heritage. Because of the interdependency of many industrial activities, international studies can help identify sites and types of sites of world importance.

vi. The criteria for assessing industrial buildings should be defined and published so as to achieve general public acceptance of rational and consistent standards. On the basis of appropriate research, these criteria should be used to identify the most important surviving landscapes, settlements, sites, typologies, buildings, structures, machines and processes.

vii. Those sites and structures that are identified as important should be protected by legal measures that are sufficiently strong to ensure the conservation of their significance. The World Heritage List of UNESCO should give due recognition to the tremendous impact that industrialisation has had on human culture.

viii. The value of significant sites should be defined and guidelines for future interventions established. Any legal, administrative and financial measures that are necessary to maintain their value should be put in place.

ix. Sites that are at risk should be identified so that appropriate measures can be taken to reduce that risk and facilitate suitable schemes for repairing or re-using them.

x. International co-operation is a particularly appropriate approach to the conservation of the industrial heritage through co-ordinated initiatives and sharing resources. Compatible criteria should be developed to compile international inventories and databases.

4. Legal protection

I. The industrial heritage should be seen as an integral part of the cultural heritage in general. Nevertheless, its legal protection should take into account the special nature of the industrial heritage. It should be capable of protecting plant and machinery, below-ground elements, standing structures, complexes and ensembles of buildings, and industrial landscapes. Areas of industrial waste should be considered for their potential archaeological as well as ecological value.

II. Programmes for the conservation of the industrial heritage should be integrated into policies for economic development and into regional and national planning.

III. The most important sites should be fully protected and no interventions allowed that compromise their historical integrity or the authenticity of their fabric. Sympathetic adaptation and re-use may be an appropriate and a cost-effective way of ensuring the survival of industrial buildings, and should be encouraged by appropriate legal controls, technical advice, tax incentives and grants.

IV. Industrial communities which are threatened by rapid structural change should be supported by central and local government authorities. Potential threats to the industrial heritage from such changes should be anticipated and plans prepared to avoid the need for emergency actions.

V. Procedures should be established for responding quickly to the closure of important industrial sites to prevent the removal or destruction of significant elements. The competent authorities should have statutory powers to intervene when necessary to protect important threatened sites.

VI. Government should have specialist advisory bodies that can give independent advice on questions relating to the protection and conservation of industrial heritage, and their opinions should be sought on all important cases.

VII. Every effort should be made to ensure the consultation and participation of local communities in the protection and conservation of their local industrial heritage.

VIII. Associations and societies of volunteers have an important role in identifying sites, promoting public participation in industrial conservation and disseminating information and research, and as such are indispensable actors in the theatre of industrial heritage.

5. Maintenance and conservation

I. Conservation of the industrial heritage depends on preserving functional integrity, and interventions to an industrial site should therefore aim to maintain this as far as possible. The value and authenticity of an industrial site may be greatly reduced if machinery or components are removed, or if subsidiary elements which form part of a whole site are destroyed.

II. The conservation of industrial sites requires a thorough knowledge of the purpose or purposes to which they were put, and of the various industrial processes which may have taken place there. These may have changed over time, but all former uses should be examined and assessed.

III. Preservation *in situ* should always be given priority consideration. Dismantling and relocating a building or structure are only acceptable when the destruction of the site is required by overwhelming economic or social needs.

IV. The adaptation of an industrial site to a new use to ensure its conservation is usually acceptable except in the case of sites of especial historical significance. New uses should respect the significant material and maintain original patterns of circulation and activity, and should be compatible as much as possible with the original or principal use. An area that interprets the former use is recommended.

V. Continuing to adapt and use industrial buildings avoids wasting energy and contributes to sustainable development. Industrial heritage can have an important role in the economic regeneration of decayed or declining areas. The continuity that re-use implies may provide psychological stability for communities facing the sudden end a long-standing sources of employment.

VI. Interventions should be reversible and have a minimal impact. Any unavoidable changes should be documented and significant elements that are removed should be recorded and stored safely. Many industrial processes confer a patina that is integral to the integrity and interest of the site.

VII. Reconstruction, or returning to a previous known state, should be considered an exceptional intervention and one which is only appropriate if

it benefits the integrity of the whole site, or in the case of the destruction of a major site by violence.

VIII. The human skills involved in many old or obsolete industrial processes are a critically important resource whose loss may be irreplaceable. They need to be carefully recorded and transmitted to younger generations.

IX. Preservation of documentary records, company archives, building plans, as well as sample specimens of industrial products should be encouraged.

6. Education and training

I. Specialist professional training in the methodological, theoretical and historical aspects of industrial heritage should be taught at technical and university levels.

II. Specific educational material about the industrial past and its heritage should be produced by and for students at primary and secondary level.

7. Presentation and interpretation

I. Public interest and affection for the industrial heritage and appreciation of its values are the surest ways to conserve it. Public authorities should actively explain the meaning and value of industrial sites through publications, exhibitions, television, the Internet and other media, by providing sustainable access to important sites and by promoting tourism in industrial areas.

II. Specialist industrial and technical museums and conserved industrial sites are both important means of protecting and interpreting the industrial heritage.

III. Regional and international routes of industrial heritage can highlight the continual transfer of industrial technology and the large-scale movement of people that can be caused by it.

Eusebi Casanelles
President TICCIH

Eugene Logunov
TICCIH XII International Congress

Nizhny Tagil, 2003

Biography

Julia Jane Davies

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2008	MA, Architectural Heritage Management and Tourism, International program, Silpakorn University, Bangkok, Thailand
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