

チャオプラヤー川流域とその周辺河川における 伝統的な水辺集落の価値に基づく評価と保存に関する研究

Value Based Conservation and Evaluation of the Traditional Waterfront Community
in Chao Phraya River Basin and Related Tributaries

ヨードスラーン パティポン
YODSURANG Patiphol

1. Introduction

Thailand plans to nominate the new possible “The Cultural Landscape of Chao Phraya River” to the World cultural heritage tentative list. However, the proposed cultural significant of Chao Phraya River was focused only the areas of central Bangkok where the golden pagodas and the national historic places were located. Life along the river, including local people who make the river home, modest irrigation works for agriculture, indigenous fishing traps, and different use of water has been overlooked.

Thus, research provided the fundamental information on the interaction between human settlement and the natural environment along the Chao Phraya River throughout the river basin. The understanding of their natural environment and its efficient adaptation to their way of life reflects in the architectural and built heritage, in the cultural landscape, which is considered a genuine and an outstanding model for sustainable way of life. This is an important inventory accumulation contributing to waterfront community preservation measure in the future. This research is expected to be an example of a well preserved traditional riverside space and river environment which to be considered as a part of “The Cultural Landscape of Chao Phraya River” nomination dossier.

2. Research method

The research posed systematic description of the cultural and natural phenomena in motivated mixed method which conducted at both macro (large-scale river basin) and micro (buildings, community and their

surroundings) levels. In macro scale analysis, this research identifies the complexity of traditional waterfront communities using statistical method. To classify the waterfront community, the rapid survey of structural remaining in Chao Phraya River basin has been implemented through qualitative methods using hierarchical clustering and decision tree analysis. Then principle component analysis has been employed to grasps complex variations in each cluster.

The case study analysis will be employed to analyze micro level approach to socio-economic and cultural background, through the quantitative survey of the visual data and secondary documentation. The matching case selection was based on a study by Kwansuwan (2014) which mentions the spatial configuration of a typical traditional village, revealing the association between agricultural area, village, and waterbody. The sampling selection was screened for either an actual or probable match in the traditional conditions.

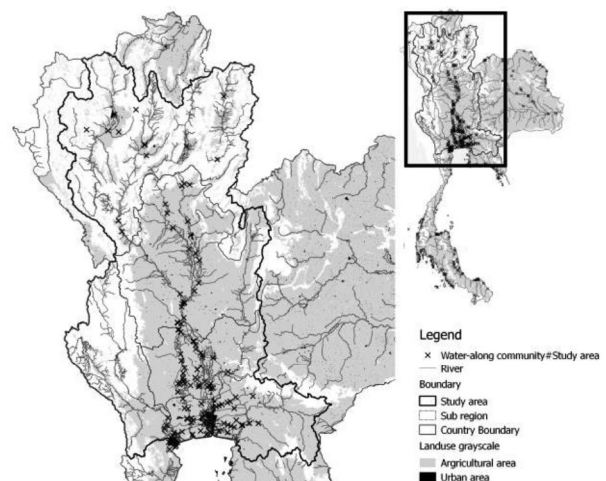


Figure 1 location of traditional waterfront communities

3. Characteristics and classification

This section gave a systematic overview of the traditional waterfront community complex in the Chao Phraya River Basin to identify the phenomenology and salient features characterizing the waterfront community. Macro scale analysis was used to focus on the bigger picture of community complexity and vernacular architecture throughout the river basin to encode the association of socio-economic activities, environmental features, and physical structure. Contextual characteristics, including specific features and components, also provide practical ways to monitor and safeguard the traditional community and related cultural activities *in-situ*.

The evaluation criteria covered four domains to reveal the complexity of urban organisms, including the broader urban context in the setting of its geographical waterfront community.

- (1) Features of geography and waterbodies,
- (2) Cultural landscapes and agricultural activities,
- (3) Urban components, and
- (4) Architectural features

A total of 138 traditional waterfront communities was selected using the purposive sampling method. Quantitative data collection was conducted using field investigation to collect and evaluate the validity of properties in actual conditions. The data were analyzed using a statistical analysis program to examine the similarity and correlation of the data set. To identify characteristics, hierarchical clustering and decision-tree analysis were used to group similar communities together and classify the complexity of a traditional waterfront community. Principal component analysis was then used to detect the true association between the relevant variables. In addition, qualitative assessment of secondary document collection, legislation, previous and present public policies, research, and criticisms were used to support the argument for statistical analysis.

The results provided seven clusters based on common preferences. These clusters show diversity in the cultural landscape, with agricultural activities exerting influence on the community complex, creating both direct and indirect association, with several significant variables.

(1) Riverport town

The Riverport town is characterized by traditional double-floor wooden row houses with a central market

where the public pier is located at the waterfront. The cluster is settled in single-centric (nucleated) plan surrounded by agricultural areas of paddy fields and post-agricultural products (rice mills) and the center for trading along the main river. The settlements are along the main transportation route running through the north-south corridor of the Chao Phraya River and influenced by activities for economies of scale.



Figure 2 Riverport town of Sriprajan community

(2) Paddy village

Granary stores, barns, and other agricultural related structures (including fish trapping) are the main features of the community cluster. The agricultural activities associated with housing and the environment were built using vernacular and/or a traditional Thai house structure, on land with a raised floor on high stilts. The houses were clustered around the community space which contained a Buddhist temple.



Figure 3 Paddy village of Bangbaan community

(3) Raft community

The raft community was very popular, especially during the Ayutthaya and early Rattanakosin periods. Raft houses were very practical for the flooding conditions of the central flood plain (Panin, 1998). As the only on-water-surface structure it can be easily transportable

up and down the river. Due to the temporary nature of the raft house, it can easily be destroyed. Since 1945 the raft house clusters in Bangkok have disappeared (Denpaiboon et al, 2000). Only four authentic raft house clusters were accepted as traditional settlements under threat.



Figure 4 Raft house of Sakeakrang River

(4) Canal trading village

Typical single-floor wooden row houses were clustered on the east-west corridor of the lower basin. The houses were positioned along one-side or both-sides of the waterways of the commercial hub. The cluster was built adjacent to the canal, with the walkway running in-between. This corridor served as a common/shared veranda, one of the smallest public spaces, and connected to the row houses. Functionally, the housing combined a shophouse and residential unit, connected to the agricultural landscape and product suppliers at the rear.



Figure 5 Canal trading village of the Raheang canal

(5) Estuarine agricultural village

The estuarine-agricultural activities and associated structures, including shrimp farm shelters, coconut farms and processing plants, nipa shingles, mangrove wood charcoal plants, and salt paddy plants, were important

features of the Estuarine agricultural village. The community of single-centric wooden houses were built on land and clustered around a Buddhist temple, surrounded by agriculture.



Figure 6 Estuarine agricultural village of Bangkeaw salt paddy

(6) Orchard village

The Orchard village combined orchards, shophouses, row houses, and a market. The clusters subsisted on the agricultural activities of the orchard landscape complex which exerted influence on material cultural design. Dispersed settlements were associated with the orchardist agricultural landscape and salt paddy agricultural areas. Land use and area consumption based on function illustrated a long distance association between agricultural areas, processing plant, community, and market.



Figure 7 Pradoo canal Orchard village

(7) Coastal fishing village

The amphibious vernacular community housed on high stilts in the fishing village demonstrated outstanding fishing activity in the lower delta and related estuary areas. Fishing and fish processing related structures were a result of important activities related to the wetland culture. It was primarily used for wetland resources vulnerable to conversion for global environmental reasons. A series of wooden houses with an attached pier were aligned

along the canal network, connected to offshore fisheries and 'Krateng'. The 'Krateng' architecture involves a wooden shelter for local fisheries built on high stilts to monitor the cockle farms. However, most of the remote and isolated 'Krateng' are currently used by tourists as an exotic destination.



Figure 8 Leam yai fishing village

The community-based agricultural clusters were culturally landscape oriented, where the clusters and associated structure ensembles took a different form depending on specific agricultural activity. The cluster accommodated a variety of agriculture and storage structures characterized by the diverse cultural landscape, especially in the lower basin. Diversity of the cultural landscape and agricultural activities exerted influence on the settlement pattern and architectural design.

4. Influence of Water Circulation on the Living Culture

This section provided information on the significance of water to the cultural human living pattern. Based on contextual characteristics of the waterfront community complex, it reveals the influence of water-to-landscape through analyzing the relationship between settlement patterns, way of life, and environment. The perspective narrows down to the community level, where the selected twelve case studies were investigated. The section was based on a qualitative approach, to examine the general pattern of amphibious livelihoods from past to present, including changes and processes of adaptability to decline. Investigation was implemented by reviewing secondary data collection and oral history and collective memory by the interview method. The results found that water circulation patterns have exerted influence on traditional daily life over several decades:

(1) River overflows in paddy villages

The indigenous people of the Chao Phraya River Basin were predominantly reliant on rice cultivation, covering over half of the total land use. However, the villages and associated structures were represented the modest cultural practices related to their agricultural activities. The surrounding environment exerted influence over settlements and livelihoods, not religions or beliefs (Muadthong, 2005).

(2) Irrigation network of ditches in orchard villages

The unique socio-economic activities in the orchard village complex, consisting of the isolated orchard with the local-made processing plant, marketplace, floating market, and traditional housing, were completed within a canal system. Agricultural and post-processed agricultural products were usually self-marketed. The orchard villages were scattered in the lower delta, located in brackish water territory. Agriculture and water management relied extensively on natural water circulation.

(3) Brackish water circulation in estuarine agricultural villages

Estuarine agricultural villages along the coastal region were influenced by seawater interpenetration, covering larger areas along the Gulf of Thailand coastline. The associated coastal vegetation of the settlement, such as mangrove forest, and *Nypa* palm, was extremely important to the indigenous environment. Mangrove forest remains important since it has an indirect impact on local livelihoods.

(4) Wetland fishery in coastal fishing villages

The coastal fishing village demonstrated an outstanding culture-based fishery in the related offshore area. The village, with its offshore fishing shelter was a prominent tangible structure representing a plentiful sea resource. Indigenous people relied on fishing and fish processing, which were important cultural modes of living in the wetlands. Since wetland resources are very sensitive to changes in the global environment, the lifestyles of the indigenous people were under threat and vulnerable to fluctuations in traditional socio-economic activities.

(5) North-south corridor river trading in riverport towns

The riverport town was an urban commercial distribution/collection center for the agricultural products of the neighboring village. The settlement was scattered along the main river running north-south of the basin,

commonly found at the point of convergence where the traditional cart track meets the river.

(6) East-west canal network trading in canal trading villages

The canal trading village was a smaller trading center in the peri-urban area on the east-west canal network of the lower delta. During and after agricultural reformation as a result of the Bowring Treaty, the man-made canals developed substantially and expanded towards the agricultural frontier from Bangkok to neighboring regions. New canals reached remote areas, providing off season farming possibilities. As a result, new developed land, particularly rice fields, became prosperous as the new breadbasket of the Central Region, creating an easier connection to Bangkok and other urban areas. The trading center settlement was located at the point where several canals crossed. New water transportation and irrigation systems have helped much in achieving global development.

(7) Surface water livelihoods in the raft community.

The unique and still existing raft community is an outstanding community of the basin. Over several generations of raft people have settled here and made their living by mixing trading, agriculture, and fishery (Kritsanapan, 2012). Traditional skills relating to water and water circulation have continually passed from generation to generation. Floating farms and net cage fishing attached to the raft house were a result of that. Yet, most of the inhabitants have adapted modern equipment and machinery to traditional living methods in response to market capitalization.

5. Appraising Cultural Value

This section was appraising and synthesizing of heritage value of the properties, which represented the global significance of traditional waterfront communities complex in Cha Phraya River basin and its tributaries.

The study was based on the examination of architectural and community survey records and documentation. The first was carried out through on-site observation, architectural survey, and supporting interviews to address the current traditional building techniques still in existence for historical structures and the reasons behind them. While documentary studies were implemented, multi-disciplinary approaches

employing primary and secondary documentation analysis were also used to support/argue the findings.

As a result, the sites are considered as the outstanding example of;

(1) Human settlement and indigenous resources usage of the flood plain

This response to human settlement significance for natural or cultural influences in building a heritage which aims to protect and enhance places of vernacular and tradition. It represents geographical and environmental significance in response to human settlement and indigenous resource usage of the flood plain, including the land and river scape, applied to areas of specific environmental importance, including land subject to inundation, identifiable by land in a flood storage or flood fringe area and liable to inundation by overland flow from drainage systems.

(2) Cross-culture influence on local economy of the river-based transportation network

Cross-cultural significance responds to the tangible or intangible heritage of cultural origin with an indigenous context. It has also adapted an indigenous form but retains the concept of space and functionality.

(3) Interconnection of community network

The interconnection significance of the river corridor responds to the river-based transportation network which aims to protect the river and canals.

They are indispensable for understanding man's adaptation and interaction with their natural environment, using the canal and river system for the historical development of human technology related to agriculture, trading systems and transportation. The understanding of their natural environment and its efficient adaptation to their way of life reflects in the architectural and built heritage, in the intangible cultural heritage, which is considered a genuine and outstanding model for sustainable way of life. This is also explored the existence of traditional structures and building techniques in the waterfront wooden housing standard of the Chao Phraya River Basin and its vicinity, in order to identify the current state and condition of traditional structures, processes of change, and the effect on its overall integrity. The results indicated that patterns of traditional building techniques remain in community typology.

Table 1 summary for conservation of cultural landscapes and their features

Cluster type	Critical area	Counter measure: general outline
Paddy village	Watergate and dam	Naturalized river overflow
Orchard village	Ditches network	Zoning and rehabilitation/protection of irrigation orchard ditches
Estuarine agricultural village	Mangrove forest	Sustainable estuarine resource management
Fishing village	Wetlands area	Community based fisheries management
Riverport town	Riverbank	Reconnecting/reclaiming the waterfront
Canal trading village	Canal route	Revitalizing local economies
Raft community	Community forest	Revitalizing community forest for domestic use

6. Discussion

The result led to discussion of the possible of measure or program to protect cultural landscape of the Chao Phraya River and its associated traditional waterfront community complex, drawing from latest theoretical developments in heritage studies and literature reviews, and formulate the objects of protection relevant to cultural landscape and its settings. The principal focus of the conservation and management of waterfront communities involves the attributes and features associated with or conveyed by the value of the properties. This is to ensure that the value, authenticity, and interiors of the properties are sustained for the future through effective management of the attributes.

A brief conservation measure for cultural landscapes and their features was summarized in table 1. The result revealed a simple concept of a “landscape overlay control” which provided numbers of option for managing landscape significance targeting specific type of community. Further conservation policy and implemented programs could go straight to the point focusing on “their issues” in “their critical area”. These counter measure model could be implemented in spatial planning practice, initially on both national level, provincial, and municipal level.

However, in describing the waterfront community complex as part of “The Cultural Landscape of the Chao Phraya River” for nomination to the list of World Heritage Sites, Thailand government must be confident that the property will be effectively protected and managed. There must be an appropriate management plan or other documented management system which specifies how the value of a property should be protected, presented, and transmitted to future generations,

preferably through participatory means. Besides, it is essential to encourage the preparation of tentative lists with the participation of a wide variety of stakeholders, including site managers, local and regional governments, local communities, NGOs, and other interested parties and partners. However, in describing a legal mechanism in the conservation of a traditional.

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