

## Analyzing the Space Composition and Community System of the Sustainable Village along the Mae Kha Canal

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### Abstract

Chiang Mai is a city that has evolved along with the river and canals. One such waterway is the Mae Kha Canal. In the past, it was a main stream supporting the city. However, the canal was polluted after motorization, and the relationship between humans and water was lost. When the government proceeded with the project to improve the environment, it became important to understand the living space and community system along the canal. Therefore, we investigated the space composition of the canal side village and community system of inhabitants. Then, we grasped the characteristics of the living space and community system along the Mae Kha Canal. Findings revealed that many houses and shophouses were built among the embankment near the canal. Furthermore, inhabitants set up a strong community along the canal. We divided the architectural structures into four types based on access from the town side. Next, we investigated one area comprehensively and grasped some important elements of the community system. Especially, the walkway and shared space are unique and semi-public. Finally, we interviewed inhabitants about their consciousness and found that they adhered to original rule and organized by themselves. Moreover, they hoped for improved water.

**Keywords:** Mae Kha canal, Space composition, Semi-public space, Shared space, Community

### 1. INTRODUCTION

Chiang Mai is a city that has evolved with the river and canals. The two main rivers of Chiang Mai are the Ping River and Mae Kha Canal. In the past, the Ping River was used as a major transport route between Chiang Mai and other cities (e.g., Ayutthaya, Bangkok). On the other hand, the Mae Kha Canal was a main stream supporting the city of Chiang Mai. However, after motorization, the increasing number of people and cars polluted the city's air, and the waterways became heavily polluted as well. Furthermore, urbanization has affected the ecology of the river spaces. Fortunately, the Chiang Mai government has become aware of the problems. Some research publications have addressed the pollution of rivers. We not only perceive an environmental change but also a change in the culture of a city.

The culture based on the relationship between humans and water has been lost. Although many heritages are preserved in the town, which has become popular with tourists, it is not enough to know the characteristics of Chiang Mai. When the government proceeded with the project to improve the environment, it became important to understand the living space and community system along the Mae Kha Canal, as these characterize the town. Therefore, we examined the features of the living space and community system along the Mae Kha Canal (Image 1). The concrete objectives of this study were to investigate the space composition of the village as well as the utilization of the canal and community system by the inhabitants.

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Image 1. Mae Kha canal side village

## 2. LITERATURE REVIEW

In this review, we refer to certain studies of existing scholars and make the position of this study clear. We describe studies related to the Mae Kha Canal and the surrounding community. Finally, we describe some studies about the relationship between water and the community in this overseas city.

There are many studies about water problems in the Mae Kha Canal, meaning that it is important for Chiang Mai. For example, Zhenbo (1997) investigated metal in the Mae Kha Canal and Ping River. Gustavo (2005) studied an environmental project and its political influence. Furthermore, Harmony (2006) conducted a study regarding the relationship between environmental issues and the community, suggesting that a close relationship between the government and community is important. Christie (2014) insisted that it was necessary to recognize the cause of environmental corruption and an unofficial house. The importance of understanding community characteristics has also been emphasized (Apichoke, 2006).

There are studies about space recognition of the city; for example, Umpiga (2012) provided a case study about the community in the Wualai District. Elena (2010) cited a case study about the wide area of the city of Chiang Mai and discussed sustainable design. There are many overseas cities experiencing problems with waterways and human living space. For example, there are studies regarding a waterway in Lijiang, an old city in Yunnan Province, China (Kuroyanagi, 2012; Ichikawa, 2012). In sum, there are many studies about city waterways. We have analyzed the relationship between human living space and a canal that is not well-known but

important for Chiang Mai.

## 3. STUDY AREA

The area of this investigation is along a branch of the upper reaches of the Mae Kha Canal (Fig. 1). It is a natural and small river, though we refer to it as a canal in this article because most people recognize it as such. The Mae Kha Canal originates from the Huay Chang Kian and Huay Keaw canals of the Doi Suthep confluent area in the forested area. It is in the south part of the Wualai District, which is famous for the production of silver wares. In the past, the Mae Kha Canal was a beautiful stream connecting a vegetable farm and cities. The people used the water for washing clothes and transport. An embankment was constructed north of the canal; it is known as an old city wall. As the city grew, many people moved into that canal side. Then, many houses and shops were built among the embankment and canals. Furthermore, people established a strong community along the canal. By the way, most people knew the importance of the Ping River but did not know the importance of the Mae Kha Canal; consequently, it became an open sewer. As a result, the water flow has almost stopped completely but there still seems to be a sense of community.

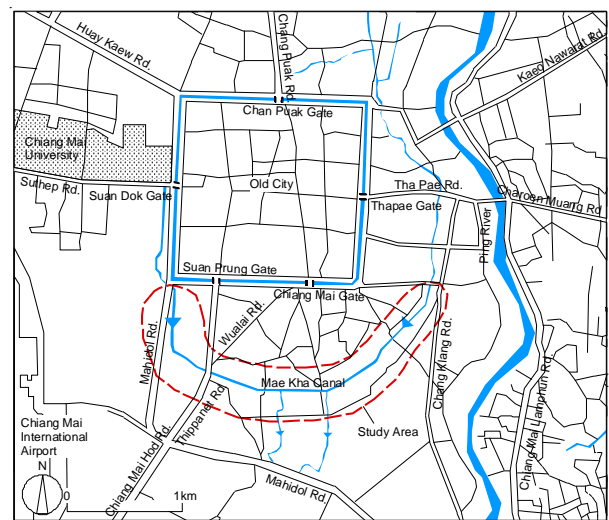


Fig. 1. Study area

## 4. METHODOLOGY

One researcher stayed for a month in the study area for observations in Chiang Mai. Initially, we went to the study area and observed all houses and shops along the Mae Kha Canal. Then, we selected a strong community area and measured the space composition. We also interviewed inhabitants. The

interview contents included local history, jobs, community space, original rule, use of water, and demands to the government. The field investigation was scheduled from April 2016 to May 2016. Finally, we analyzed the characteristics of the space composition and the community system.

## 5. RESULTS AND DISCUSSION

### 5.1 USE OF ARCHITECTURE AND ACCESS TYPOLOGY

We observed the architecture along the canal in the study area, which included many houses and shophouses. Interestingly, there were few factories. A public building and temple do not exist along the canal. In the area facing a road, there were many shophouses. In another area, there were many houses. We divided the architecture into four types (A, B, C, D) based on access from the town side (Fig. 2, 3) (Images 2–5).

A-type, “Facing the road”: People enter an architectural structure from the road side; the canal is on the back side of such a structure. Therefore, the waterside is personal use space. In this investigation area, the most A-type structures could be found. There were also many shophouses in the A-type area as well.

B-type, “Crossing a bridge”: Walkers cross a bridge from the road to access an architectural structure. The waterside of the architectural side is private space for inhabitants. There are many houses of this type.

C-type, “With walkway”: There is a walkway among the architectural structures and the canal. Inhabitants can use the walkway as a private garden because it is very narrow and cars cannot go through it. Therefore, the relationship between houses and the canal is close. Furthermore, inhabitants of a neighborhood can go through, too. Thus, the space is not just public or private; it is a semi-public space important for maintaining relations within the neighborhood. In other words, it is community space. There are many houses of C-type.

D-type, “No relation with canal”: People enter an architectural structure from the road and do not have relations with or use the canal. The dike of a canal is made of concrete. An area of the upper canal can be classified as D-type. Inhabitants are not

interested in a canal if they do not have a relationship with it. In addition, there are many shophouses in D-type areas.

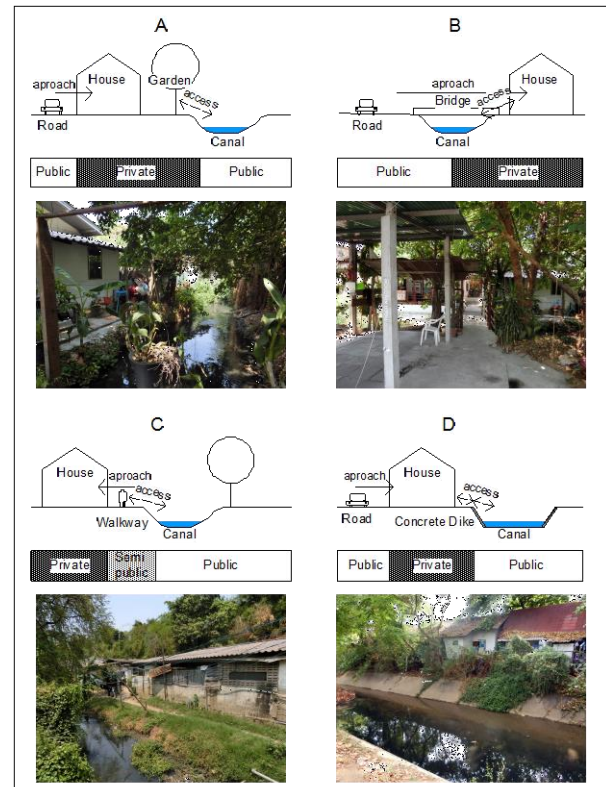


Fig. 2. Access typology

### 5.2 SPACE COMPOSITION OF THE VILLAGE

We investigated the space composition of the Kampaeng Ngam District because its community was very strong. In this district, there is a canal on the southeast side and an embankment (old city wall) on the northwest side. The building in this district is like a house. Access type of this district is C-type. Therefore, the main elements of this district are the house, walkway, entrance, and shared space. In this section, we describe the characteristics of these elements.

#### (1) Houses

About 40 houses were constructed in this district. Some of those houses face the canal, and some face a small street connected with a walkway along the canal. We divided those houses into three types: one-story houses; soft, first-story houses, and two-story houses. Roof types vary as well. Therefore, a waterside scene is not simple. As for



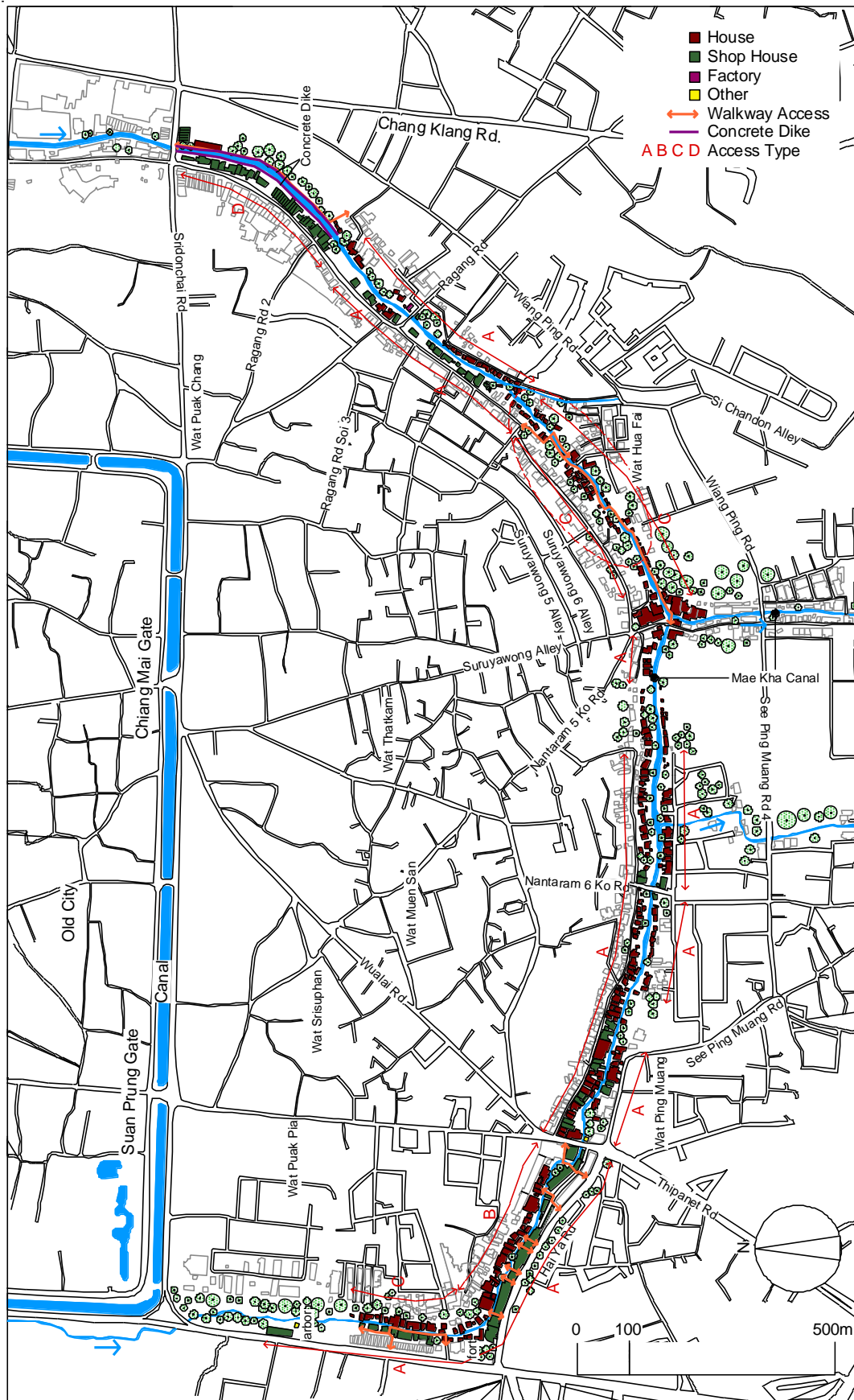


Fig. 3. Use of architecture along the Mae Kha canal

house plans, some houses have terraces for communication and some have their living spaces on the walkway side (Fig. 4). A house seems to exist in the shade of a big tree because no house is higher than two-stories.

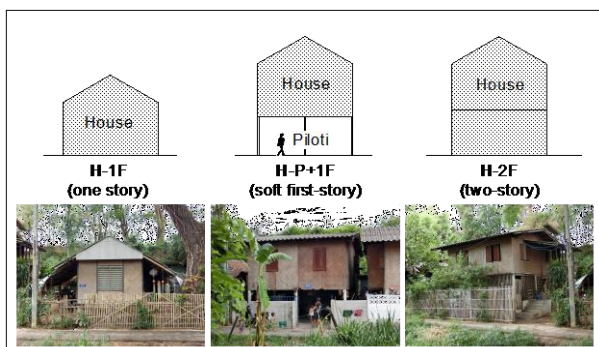


Fig. 4. Typology of house

## (2) Walkway

The width of the walkway is about 2m and on a scale for humans. It can be found connecting houses and the canal (about 6m wide), and inhabitants can go through on foot or a motor bike. Inhabitants must go through this walkway to access their homes. In addition, inhabitants can use the walkway for gardening in front of their homes. They use it for laundry, as a play space, and so on. Children and dogs can walk safely along the walkway, too. It is a semi-public space maintained by the residential community (Fig. 5) (Images 2–3).



Image 2-3. Walkway along the Mae Kha canal

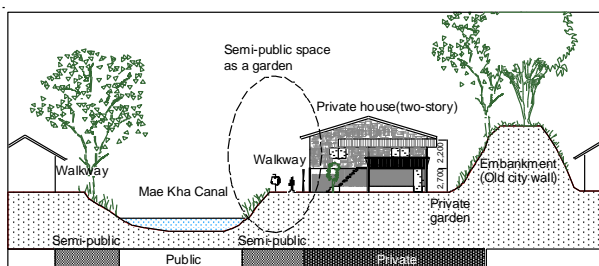


Fig. 5. Section of “Kampaeng Ngam” district

## (3) Entrance

There are three entrances to this district: a gate on the northwest side and two bridges on the south side. Inhabitants go through these entrances but cars are unable to do so. Other people do not go through unless there is a special reason. Dogs frequently bark at other people going through the village. Hence, security of the village is maintained by the entrance (Fig. 6) (Images 4–5).



Image 4-5. Entrance gate and bridge

## (4) Shared space

There is a small shared terrace and a small shop run by inhabitants of this district. The terrace and shop are in the center of the district. Some benches and terraces of houses are positioned by the walkway and conversations among inhabitants take place there. Residents do not only use it; they also manage it together. This feature is an important characteristic of this village (Fig. 6) (Images 6–7).



Image 6-7. Shared terrace and benches

## 6. CONSCIOUSNESS AND SITUATIONS OF INHABITANTS

We interviewed 12 inhabitants of the village to grasp their consciousness and individual situations (Fig. 6). Seven Thai students assisted in conducting interviews with inhabitants. Topics included village history, their jobs, community space, original rule, use of water, and demands of the government. The number of years that the respondents had lived in the village varied from one year to more than 50 years. Their jobs were also various: trishaw driver, salesperson, maker of crossbows to sell at Tha Pae night market,



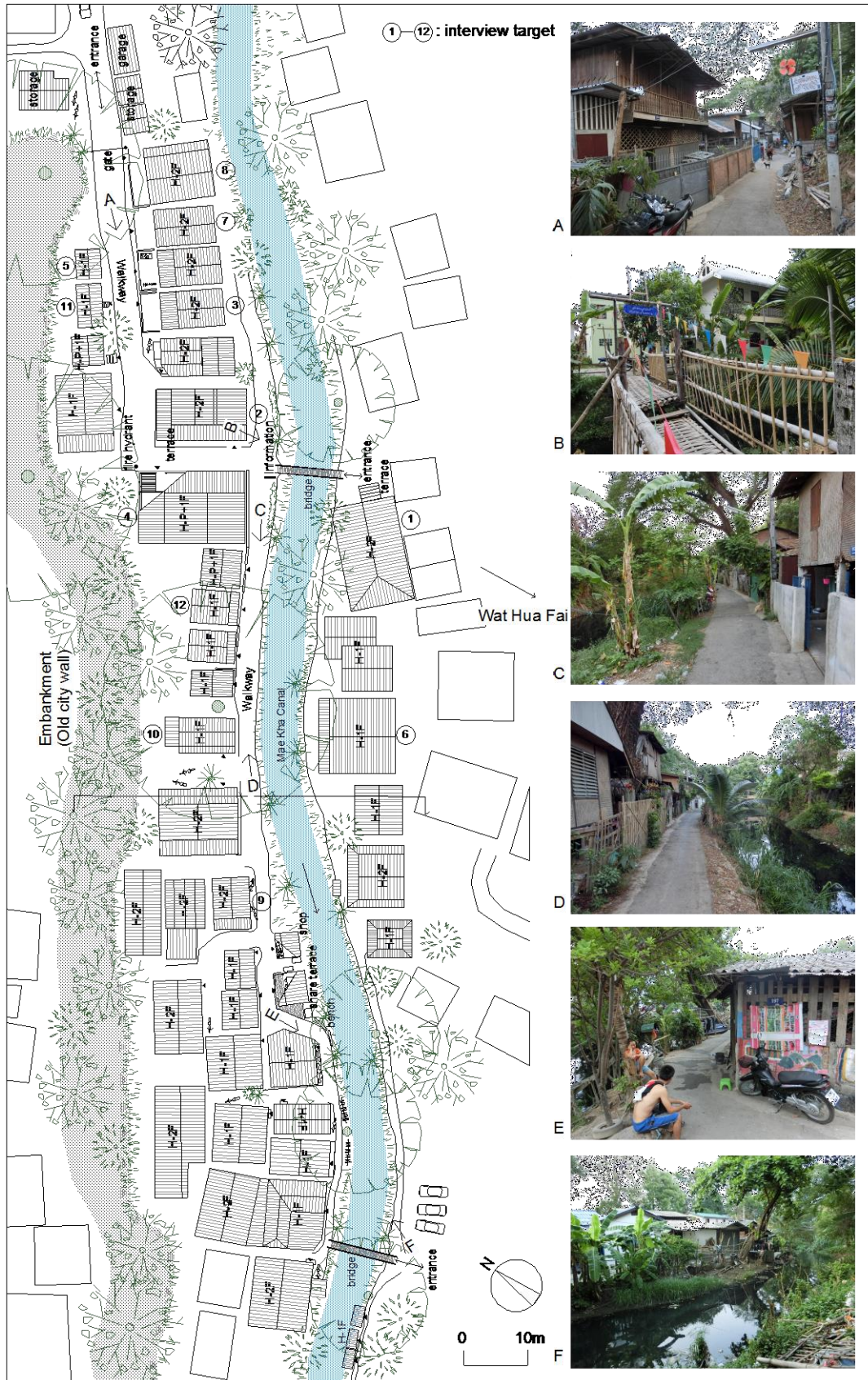


Fig. 6. Site plan of "Kampaeng Ngam" district

contractor (a leader of the village), employee, key ring maker, and student. The findings of our investigation follow.

### (1) Village history

The community was established in 1967. Over the last 40 years, people had come to pioneer a residential area along the canal to engage in contract farming. Inhabitants in the community are from Arkra, Monk, Meao, and Leeso, among others. The typical lifestyle of the inhabitants who live along the canal is simple dependence on nature. Their livelihood does not affect the environment, but they have ties to the traditional culture. Originally, the community was called Wat Hua Fai (Image 8). However, its name was changed to Kampaeng Ngam later (Image 9). Then, the government allocated space and divided the community. Accordingly, some inhabitants rent houses from the municipality. The annual rent is 2 baht per square, and the price is set based on the size of the rental area.

In the past, inhabitants were professionals. However, the nearby slaughterhouse changed the area into another entity. The community decided to sell souvenirs at the market bazaar. They usually go to the Hua Fai temple to make key rings because there is space there for making articles by hand. As a result, the Mae Kha current is not exploited.



Image 8-9. Wat Hua Fai and information board

### (2) Village community

Inhabitants said that most of the area is community space (Images 10–11). In addition, they have a shared space in which to relax (Image 6). It is called a pavilion. Many inhabitants like to relax and talk with friends at the pavilion. They also like to share ideas and help each other. For example, they help with wedding ceremonies and funerals. Furthermore, in this community, they have weekly meetings and share ideas for improving the community. They also have certain procedures in place for resolving problems and contributing to healthcare. Community leaders also coordinate with other organizations.



Image 10-11. Community terrace

### (3) Utilization and inhabitants' perspectives regarding the Mae Kha Canal

Inhabitants explained that the water of the Mae Kha Canal is unusable because the nearby factory let rotten water seep into it. In fact, the water is heavily polluted and the color is black. Many inhabitants rely on the water supply. Others use groundwater from an artesian well. One individual was using the canal side as a laundry or kitchen space, draining used water into the canal. By the way, inhabitants meet to consider benefits of the canal in terms of the Loy Krathong Festival. In sum, the problem for this community is that the canal is not useful because the water is heavily polluted. Most inhabitants hope that the government will make improvements to clean the water. Moreover, they have demanded that the government dig or dredge canals because the Mae Kha Canal does not drain from flooding during the rainy season.

## 7. CONCLUSION

The Mae Kha Canal was a main stream supporting the city. However, the canal is currently polluted because of motorization, and the culture characterized by relations between humans and water has been lost. Therefore, we investigated the living space and community system along the Mae Kha Canal. We grasped the following facts.

Many houses and shophouses were built among the embankment and canal. We divided the architectural structures into four types based on access from the town side. As explained previously, the “Facing road” type allows inhabitants to enter houses from the road side, with the canal in the back. Therefore, the waterside is personal use space. The B-type—“Crossing a bridge”—involves crossing a bridge from the road; the waterside of the house is private space. C-type architecture (i.e., “With walkway”) means that inhabitants walk among their houses and the canal. Therefore, the walkway is semi-public space. D-type—“No relation with canal”—means the dike of a canal is made of concrete. Inhabitants do not use the canal. Hence,



we understood that semi-public space is important for maintaining relations with a neighborhood.

Next, we investigated the Kampaeng Ngam District in detail and interviewed inhabitants about their consciousness. In that area, they had set up a strong community along the canal. We grasped some important elements of the community: house, walkway, entrance, and shared space. The elements walkway and shared space are unique as community spaces. Because the walkway is positioned among houses and the canal, inhabitants can go through on foot or via motor bike. They can also use the walkway for gardening in front of their homes, and they can maintain them autonomously. There is a small shared terrace, small shop, and benches. Many inhabitants like to relax and talk with friends in the shared space. As well, neighbors enjoy sharing ideas with each other and helping one another. Furthermore, they abide by original rule, which is different from governmental law. Thus, they solve their own problems.

We think that these facts are very important characteristics of the sustainable village. Hence, we hope that our investigative findings help with the renovation of Chiang Mai.

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