Chapter 1
Introduction

1.1 Background and Rationale

A weir is a construction to obstruct waterway. Built with bamboos, wood or rocks, a weir raises the water level in order to deliver water to rice fields through irrigation ditches. The congregation of local people as an organized group for running water management is called ‘Mueang Fai’ in Lanna term. Mueang Fais have existed for more than 800 years as mentioned in the Legend of Singhawati Kumara that in Year 512 (B.E. 1693/ A.D. 1150), Phaya Chueang (Lord Chueang) of Yonok Nakhon (Yonok City) which situated by Mae Sai River (the current Mae Sai District in Chiang Rai Province) had people dig a big ditch to transfer water from Mae Sai River to agricultural fields in Sai Region, “.and Lord Chueang ordered people to dig a ditch to connect to Mae Sai River to transfer water to nourish agricultural fields in Sai Region. (Department of Fine Arts, 1973: 67).” Also, in the Local Legend of Chiang Mai, Phaya Mang Rai (Lord Mang Rai) (B.E. 1804 – 1854/ A.D. 1261 – 1311) had Lua Ai Fa work as a spy at Hari Phunchai City and Phaya Yiba (Lord Yiba) greatly trusted Ai Fa, so Ai Fa tricked Phaya Yiba to have Hari Phunchai citizens dig a ditch in a dry season to link Ping River to Kuang River.

The ditch was named Mueang Khaeng, but later, in the reign of Phaya Mueang Kaeo (B.E. 2038 – 2068/ A.D. 1765 – 1795), the name was changed to Mueang Kaeo (nowadays, it is Mueang Kaeo Sub-district, Mae Rim District, Chiang Mai Province). This ditech is a legendary one with the length of 17,000 wa (34,000 meters). In the legend, it is mentioned, “I (Ai Fa) have seen that the agricultural fields in the area are not well-irrigated and rice plants have died because of the draught, so I should dig a ditch from Ping River to Kuang River in order to direct water to rice fields in Chiang Ruea so that people can transfer water to their rice fields thus, Ai Fa announces to all the people to dig the ditch from Ping River to the east side of Mae Taeng River for 17,000 wa (Aroonrut Wichienkeeo, 2000: 28). The excerpts from the aforementioned legends show the Mueang Fai (Irrigation) - related wisdom that has existed for a long time. Water management is run by an organized group in order that the allocation of water is fair.

People are aware of the vitality of forests, wellsprings and rivers that nourish plants and crops like blood that nourishes a human body.

A wellspring in a forest is called 'Khun Nam', the water from which runs into water streams which meet with one another to form a river. Farmers implement their knowledge to build irrigation ditches to transfer water to their rice fields. An irrigated rice field is called a 'Na Fai' or 'Na Nam Mueang'. Farmers are gathered together as a group, each member of which is called a 'Luk Mueang Luk Fai'. The members will choose a leader, called 'Kae Fai', to control the water distribution. A Kae Fai will have assistants and an announcer to inform members of the appointments, the mobilization of labours, the schedules of water control, and the mobilization of materials and instruments for the annual dredging and repair of the ditch. This announcer is called 'Lam Fai'. The committees who work with Kae Fai on the allocation, control and inspection of water amount in order to ensure the fair allocation to all members. A committee is called a 'Liap Nam' who looks on the flow and the control of water towards rice fields.

The main irrigation ditch (Lam Mueang) is dug to link with an upstream major river in the northern side of the weir, and to direct water to agricultural fields. A main ditch can be divided into multiple minor ditches or may be divided into 2 or 3 minor ditches depending on the rice fields in that network. From the main ditch, farmers will create waterways by using bamboos, called 'Tae' or 'Khon Tae', to direct water to their fields. The spot where the water from the main ditch is directed by Taes is called 'Pak Mueang' and each of minor ditches is called a 'Mueang Soi'. From a Mueang Soi, a farmer will dig a waterway called 'Pak Tang' (Phonphilai Leotwicha, 2003: 80) to direct water to his/her field. Water will run to the fields that are located in areas with different elevation levels. The excessive water will be drained to the end of the main ditch which is called 'Mueang Sia' or 'Mueang Long'. The drainage of water out of the fields in a Mueang Fai system is advantageous for the management of water circulation system because most rice fields in the basin in the North of Thailand are located on the plains on basements of mountains. Thus, water flow runs fast and strong. Farmers have to dig ditches to spread water throughout their rice fields as wide as possible in order to slow down the water flow and to retain the possible greatest amount of water before draining the water to the end of the river.

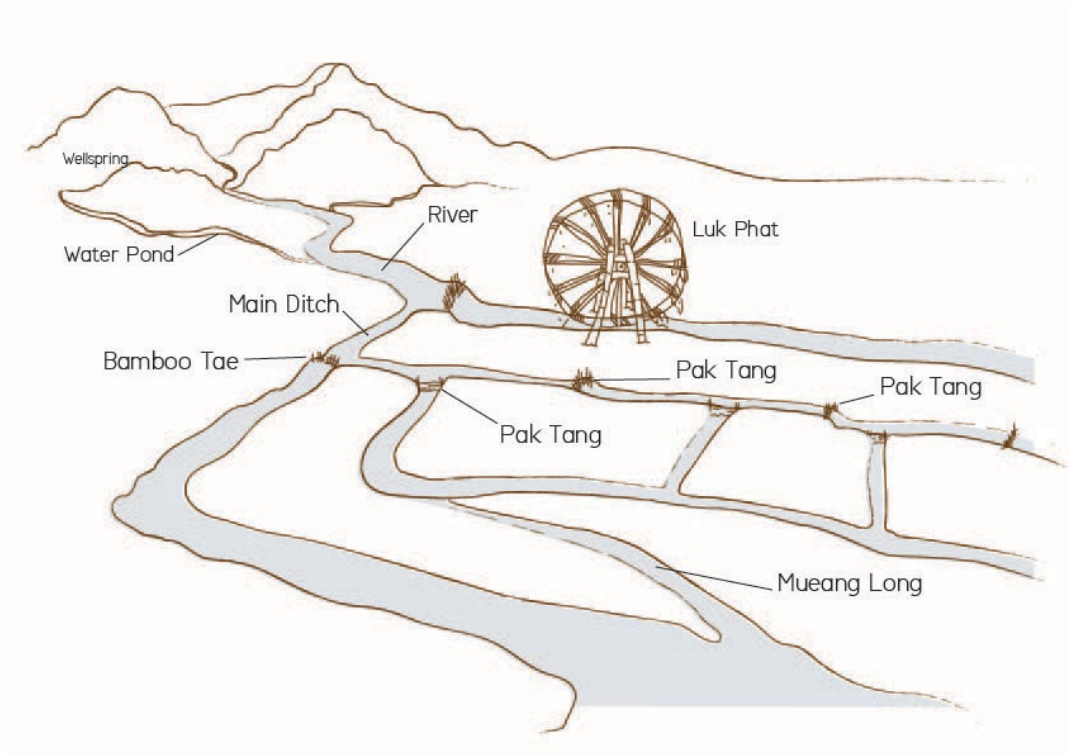

Figure 1.1 Model of Lanna 'Mueang Fai' System

A Mueang Fai system is a local irrigation system the core of the management of which is the ' unity and collaboration' in sustaining Mueang Fai and allocating water in the fair manner with the compliance with management rules and regulations that suit the terrain features of the agricultural fields, and with generosity among all the people, which is called ' Pan Ta' or the thorough allocation of water to all the people. Without collaboration and responsibility to the natural resources that belong to the public, problems related to the fights over water, which are critical, will follow. Thus, Mueang Fai is the reflection of the changes in village - level communities, the current members of which have left ancient Mueang Fai system under the responsibility of governmental agencies. In addition, the locals have forgotten the Long Mueang Ti Fai custom or the custom to dredge and repair the weirs and ditches, which directly affects the local farmers. Furthermore, the need for water is consistently increasing and many agricultural areas have been turned into residential estates, hotels and resorts. This means the main ditches (Lam Mueangs) that used to run to rice fields are blocked and in a rainy season, the strong water flow causes floods every year. As for farmers who still grow crops, they focus on growing crops that can be sold. They accelerate the growth of their crops and thus need

more water. In a dry season, problems related to the fight over water happen and cannot be solved. Such problems stem from community level to national level. Mueang Fais that used to be repaired annually with the collaboration and unity of the locals are currently replaced with the water management by the state, and have been abandoned. Traditional assumptions on water consumption and the respect to the nature through the worship of Phi Fai (Dam Spirit) that the locals used to have are now dissolved together with the rules and regulations on water sharing. All of the aforementioned phenomena lead to chaos, selfishness and the abandonment to principles of social justice and nature rules.

Mae Sa River in Mae Raem Sub-district, Mae Rim District, Chiang Mai Province, is a branch of Ping River. Mae Sa River Basin is located in the northern side of Chiang Mai City and has an ancient weir built by Princess Dara Rasami, a royal consort, from B.E. 2460 to 2476 (A.D. 1917 – 1933), who worked with the locals in Mae Rim District to build the weir and dig the ditch from Mae Sa Waterfall to Darabhiromya Chateau and rice fields of the locals in the eastern side of Mae Rim District (Chulalongkorn University, 2014: 207). The aforementioned ancient ditch has been called 'Mueang Chao' or 'Mueang Chao Dara Rasami' (Weir of Princess Dara Rasami) up to the present time. This ancient ditch is divided into three waterways, namely, Mae Sa Stream, Mueang Chao Ditch and Lam Mueang Khong (the bending ditech), the total distance of which is 8 kilometers. This ditch allocates water to users in 3 sub-districts, namely, Mae Raem, Mae Sa and Rim Tai (Southern Rim), covering the space of 5,000 rais (around 800 hectares) 1,500 rais (around 240 hectares) from which are agricultural areas wilst the rest are hotels, resorts, orchid yards and tourist attractions (Porntip Tianteerawit, 2000: 7).

At present, the level of water consumption increase every year, especially during dry seasons when water in the main ditch dries off and the ditch becomes shallow until water flow is hindered because the ditch is not well maintained and managed. Such problems cause loss and damage to people. On the other hand, during a flooding season, water floods over villages and agricultural areas. These problems stem from the lack of water management. Governmental agencies may have received budgets for developing roads and electricity, but most o the locals are farmers growing rice, soy bean and chili in a year to make their livings. Compared with other infrastructures, water sources and irrigation ditches have not received good management from in-charge agencies (Faculty of Engineering, Chiang Mai University, 2010: 26 – 27).

Part from being the main water source for the irrigation ditch system as in the past, Mae Sa Waterfall is a natural tourist attraction. Since A.D. 1958, people from all over Thailand recognize this waterfall as a beautiful one that has 10 floors and is located not so far from Chiang Mai City. His Majesty King Rama IX and Her Majesty Queen Sirikit, King Rama X and many other members of Thai Royal Family have visited this waterfall and used this waterfall as a place to welcome royal guests since A.D. 1962. In A.D. 1982, Royal Forest Department has included the area of Mae Sa Waterfall in the Mae Sa Waterfall National Park under the responsibility of Doi Suthep – Pui National Park, National Park Division, with the Doi Suthep – Pui National Park Unit 3 taking care of forest, water sources and Mae Sa Waterfall (Kulpol Amata-achachai, 2006: 32 – 33). Thus, Mae Sa Waterfall has been a major tourist attraction of the province, and a major source of water for agricultural works, utilization and consumption by communities in Mae Rim District from the past up to the present.

Recently, people and farmers in Mae Sa River Basin who still use ancient weirs and irrigation ditches have faced with problems concerning water shortage during a dry season when there is insufficient water for producing pipe water for people. On the contrary, in a rainy season, a great amount of water floods over agricultural areas and villages. These phenomena cause the problems related to the fights over water and the lack of the maintenance for water sources for communities. If the collaborative management by communities and governmental agencies is still absent, the problems will expand from the community and village level to the national level. Therefore, knowledge on Mueang Fai (Irrigation) System is vital for the management of water sources and the building of the collective conscious of members of communities to maintain Mueang Fais and water sources of communities to become usable again and agreeable to the modern way of life instead of just leaving the matter to a governmental agency. This emphasizes on the power of collaborations to solve the water crises. Knowledge attained from this study is used as the inspiration for the creation of contemporary art works that manifest the collaborations in creating a water management system and conscious of community members to treasure Mueang Fai Wisdom.

1.2 Research Objectives

1.2.1 To study on Mueang Fai Wisdom of people in communities in the area of Mae Sa River Basin, Mae Raem Sub-distrit, Mae Rim District, Chiang Mai Province; and

1.2.2 To create contemporary art works from the synthesis of knowledge related to Mueang Fai Wisdoms, with the goals to urge people to love and treasure water sources and natural resources.

1.3 Education/Application Advantages

1.3.1 Mueang Fai Wisdom is expanded to the creation of contemporary art works to urge people to have conscious in solving problems related to water source crises.

1.3.2 Communities are strengthened in term of sustainable water source management.

1.3.3 Community members and visitors who see the works can work together to solve problems related to the lack of tourists to visit tourist attractions in communities in a sustainable manner.

1.4 Research Design and Scopes

1.4.1 Research Scopes

(1) Scope of Contents

This research project is a study on Mueang Fai (Irrigation System) Wisdom, organized groups and stakeholders in water management, as well as general terrain features of Mae Sa River Basin, Mae Rim District, Chiang Mai Province, the information attained from which is used for creating art works in 'Mueang Fai – Water Stream of Wisdom: Relationship between Human Beings and the Nature' Project. The contents of this study are as follows.

1) General Features

- Location and Geographic Features;
- Physical Features of Communities in Mae Sa River Basin;
- Socio

- economic Profiles, such as Demography, Occupations and Infrastructure;

2) Historical, Social and Cultural Features of Communities in Mae Sa River Basin
   - Histories of Communities;
   - Social and Cultural Features;
   - Traditions and Rites;

3) Mueang Fai Wisdom: Relationship between Human Beings and the Nature
   - Mueang Fai System;
   - Traditions Related to Mueang Fai System;
   - Mueang Fai Organizations;
   - Agreements and Rules Related to the Use of Mueang Fai; and

4) The Creation of Art Works in ‘Mueang Fai – Water Stream of Wisdom: Relationship between Human Beings and the Nature’ Project

(2) Scope of Space

The scope of space for this study is the area of Mae Sa River Basin in Mae Rim District, Chiang Mai Province, which covers 3 sub-districts, namely, Mae Raem, Mae Sa and Rim Tai (Southern Rim) in Mae Rim District, Chiang Mai Province.

(3) Scopes of Populations and Samples

Populations of this research project are people in 3 sub-districts in Mae Sa River Basin in Mae Rim District, Chiang Mai Province. From all populations, samples are selected from the populations and divided into 4 groups as follows:

Mueang Fai Organizations or Representatives from Users of Water from Mae Sa River such as Kae Mueang, Mueang Fai Committees and Representatives of Water Users;

Representatives of Heads of Villages and Local Administrative Organizations such as Governors of Sub-districts, Heads off Villages, Assistants of Heads of Villages, Directors of Municipalities, Deputy Directors of Municipalities, Members of Sub-district Municipalities, Buddhist Monks and Senior Members of Villages;

Representative from Governmental Agencies and Private Section Related to the Water Use in the Area such as Officers of Doi Suthep – Pui (Mae Sa Waterfall) National Park Unit 3, Department of Water Resources and Provincial Waterworks Authority, Mae Rim Branch; and

Representatives from Entrepreneurs in Tourism and Hotel Industry such as Vendors in Mae Sa Waterfall National Park, and Representatives of Entrepreneurs of Tourism and Hotel Industry in Mae Sa River Basin.

1.5 Research Methodology

1.5.1 Research Methodology

This research project is an Art Creative Research Project that relies on Interdisciplinary Research Methodology. The research outcomes are presented as a descriptive report and a presentation of art works.

1.5.2 Research Process

This research project consists of 2 main parts.

Part 1

Part 1 includes documentary research and field research on historical, social and cultural aspects of communities in Mae Sa River Basin, Mae Rim District, Chiang Mai Province, Mueang Fai wisdom, Mueang Fai organizations, stakeholders who involve with water management in Mae Sa River Basin area, and tourist attractions in the communities. The details are as follows.

1.5.3 Data and Sources

Information or data used in this research project are classified into 2 types, which are Primary Data and Secondary Data.

1) Primary Data are data directly collected from primary sources such as from the interviews with representatives from Mueang Fai organizations or representatives of user of Mae Sa River water, village heads and local administrative organizations,

representatives from public and private sectors that are related to water use in the area.

2) Secondary Data are gathered from documents, books, journals and other printed media related to the research matters such as geographic features, location, general features of the river basin area, soil, forest and fundamental socio- economic profiles of communities in the studied area.

1.5.4 Data Collection Tools

Tools used for collecting data are the scripts for the interviews with key informants, observations and participation in the activities of communities, and the review on documents which are secondary data sources, records of data from observations and interviews by using cameras, video cameras, sound recorders and note books. The collected data from the interview scripts are checked for accuracy, completeness and unity.

1.5.5 Data Collection Procedure

In this study, data collection is carried out in 2 steps as follows.

1) Documentary Research is the study and review on literatures related to histories and the establishments of communities, society and culture from legends, chronicles, research papers, academic articles, documentary articles and art works that are related to the studied information.

2) Field Survey is the collection of information that is related to geography, location, physical features and environs, all of which are related to Mueang Fai wisdom, Mueang Fai organizations and people involved with the management of water sources of the communities, through interviews and discussions with key informants, observations and participation in important activities of the communities in order to find in-depth data. Data are collected with devices such as cameras, video cameras, sound recorders and

note books which are used for recording the data related to activities related to objectives of the study.

1.5.6 Data Analysis and Processing

Data attained from documentary research and field research works are analyzed through the organization, processing and content analysis in accordance with the objectives of the research, which are divided into 2 parts, as follows.

Analysis on Mueang Fais in Lanna, based on data attained from documentary research and field research works, which are analyzed in order to attain in-depth meanings of main data and wisdoms that are hidden in the matter of Mueang Fai, based on the concept of the sustainability of local wisdom, social organizations and histories of communities. Data are analyzed in various aspects as follows

(A) The analysis on Mueang Fai wisdom in Lanna;

(B) The analysis on the dissemination of wisdom of Mueang Fai organizations and people involved with the water management of communities in Mae Sa River Basin, Mae Rim District, Chiang Mai Province; and

(C) The analysis on the changes in the area of communities in Mae Sa River Basin and tourist attractions in communities.

Part 2

Part 2 is the creation of contemporary art works through the synthesis of bodies of knowledge attained from study in Step 1 for inspirations and directions for the creation of contemporary art works from Mueang Fai wisdom as the media to build conscious of members of communities in order to urge them to love and treasure natural resources and water sources.

1.5.7 Concepts for Creation

The creation of contemporary arts through the synthesis of bodies of knowledge attained from the research in Step 1 for inspirations and concepts for the creations, which reflect the Mueang Fai wisdom that the communities implement to managing water, activities of Mueang Fai repair, form of organizations and stakeholders

involving in water management of the communities, as well as the creation of art works with the communities by conducting experiments, systematically recording all the steps and presenting the process of the creation.

1.5.8 Presentation Methods

The presentation of the created art works can be divided into 2 parts, which are 1) the restoration of Mueang Fai wisdom of communities in the form of documentary articles, with the researcher being the coordinator to coordinate activities and build relationships with organizations, leaders of communities and the locals in order to generate the conscious towards the conservation of water sources together; and 2) the creation of contemporary art works that are based on Mueang Fai wisdom, the arrangement of which varies in accordance with the display sites (Installation Art). The works that are inspired by weirs and irrigation ditches are installed together in the united manner and water is filled into the work in order to show audiences the irrigation activities (Ti Fai) which is an inspiration of this project.

Creation Process

1) Step of Determination of Direction for Art Work Creation
2) Step of Collection of Data, Concepts, Forms and Techniques Related to Mueang Fai System, which is the wisdom of human beings in dealing with the nature
3) Step of Data Analysis and Construction, with the Analyses on Following Aspects
    3.1) Analysis on Concept or Overall Idea
    3.2) Content Analysis on Intangible or Psychological Compositions of Art Works
        3.2.1) Subject which means the idea that the artists uses for beginning the creation of tangible art works;
        3.2.2) Theme which means the direction of the subject, which is the starting point that will lead to the end results or the finished art works;
    3.3) Style Analysis; and

3.3.1) Contemporary Arts

4) Step of Data Analysis with Constant Comparison Technique means the use of comparison techniques on data in order to identify correlations and differences which will lead to the conclusion.
5) Step of Conclusion of Issues for the Creation means the implementation of the results from the analyses on data in different aspects to testing the predetermined hypotheses.
6) Step of the Formation of Ideas means the formation of thoughts based on the artist' s reactions to the environs, philosophies or experiences, which is called 'Inspiring Point'.
7) Step of Determination of Concept means the determination of the overall concept of the works, which is formed from the congregation of multiple ideas towards one thing, which are developed to a certain extent where it can be called a 'goal' or 'way of thinking'.
8) Step of Synthesis means the process to build an imagination on the structures of forms and symbols that agree to the goal or way of thinking, which will vaguely appear in the mind of the artist before being created as concrete art works.

8.1) Step of Interpretation means the transformation of concept that is intangible to imagination which will be transformed to concrete or tangible works later.

8.2) Step of Work Creation

8.2.1) Sketching

8.2.2) Model Creation

8.2.3) Final Work Creation

8.2.3.1) Determination of Forms and Styles

8.2.3.2) Determination of Techniques, Methods and Materials and Tools

8.2.3.3) Determination of Process and Space for the Creation of Works

8.3) Step of Work Installation

8.3.1) Step of Inspection of Completeness of Works

9) Step of Visual Arts Analysis

9.1) Form Analysis

9.2) Symbolic Meaning Analysis

9.3) Visual Element Analysis

1.5.9 Evaluation of Created Works

The created works are evaluated on the bases of the criticism by audiences who visit the exhibition of the works at Chiang Mai University Art Center.

1.5.10 Conclusion and Report Writing

This step is the presentation of the findings from the research and the created contemporary art works.

1.6 Operation Plan

1.6.1 The operation in Part 1 is the study on Mueang Fai wisdom of communities in Mae Sa River Basin, Mae Rim District, Chiang Mai Province, as shown in the following table.

Activities	Month								
	1	2	3	4	5	6	7	8	9
1.Preparation of Thesis Outline: - Research Questions Setting; and - Study on Data of Theoretical and Practical Parts	→	→	→						

Activities	Month								
	1	2	3	4	5	6	7	8	9
2. Design of Thesis Outline - Determination of Forms and Styles; - Data Sources and Samples; and - Research Tools and Method		→	→	→					
3. Research Operation and Data Collection - Preparation for Data Collection; - Documentary Data Collection; and - Field Data Collection				→	→	→			
4. Data Analysis - Analysis on Mueang Fai Wisdom in Lanna; and - Analysis on Mueang Fai in Mae Sa River Basin Area					→	→	→	→	→
5. Conclusion of Report Writing									→

1.6.2 The operation in Part 2 is the creation of art works, as shown in the following table.

Activities	Month								
	1	2	3	4	5	6	7	8	9
1. Preparation Step - Determination of Direction for the Creation of Works; and	→								

Activities	Month								
	1	2	3	4	5	6	7	8	9
- Implementation of Collected Data to the Determination of Ideas, Forms and Techniques									
2. Design Step Data Analysis and Interpretation - Concept Analysis; - Content Analysis; - Style Analysis; - Constant Comparison Analysis; - Conclusion of Issues for the Creation of Works; - Formation of Ideas; and - Determination of Ways of Thinking		→	→	→					
3. Operation Step Synthesis Step - Interpretation Creation - Sketching; - Model Creation; - Creation of Works; - Installation of Works; - Inspection on the Completeness of Works; and				→	→	→	→	→	→

Activities	Month								
	1	2	3	4	5	6	7	8	9
- Arrangement of Exhibitions of Works									→
4. Step of Analysis and Evaluation of Works									→
5. Conclusion and Report Writing									→
6. Publication of Paper									→

1.7 Location for the Research Operation and Data Collection

Area of Mae Sa River Basin, Mae Rim District, Chiang Mai Province

1.8 Research Period

The research period is between March 2016 and December 2017

1.9 Conceptual Framework