

**VISIBLE FLOWS:
The Dynamics of Community-Based Flood and
Water Resource Management and Governance in Uthai Thani**

By

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Bachelor of Science in Architecture, Chulalongkorn University (2013)

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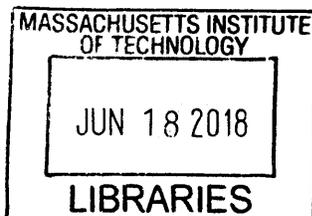
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ABSTRACT

In Thailand, centralized vertical governance with its 'line-of-command' approach continues to hamper holistic integration of water resource and flood management. In addition, the capacity of small-scale community actors and self-organized entities are not visible to the central bureaucrats. Using the mega 2011 flood as the baseline example, the four chapters of the documentary film, 'Visible Flows', are the synthesis of both formal, and informal conversations given by the Hart Thanong community who devised strategies to mitigate flood impacts with less reliance on external assistance, and continue to do so in the present. Conducted from 19th December of 2017 to 4th February of 2018, the discovery of the values, knowledge and actions embedded within these individuals demonstrated a paradigm shift for the water resource and flood management adaptation strategies in several ways. Firstly, it reframes the notion of crisis as opportunity, beyond embracing uncertainties as norms. Secondly, it demonstrates that a fully adaptive strategy requires highly collaborative organizational arrangement, through both formal and informal rules, based on iterative processes and continual development. Lastly, self-governance is central to increasing adaptive capacity in uncertain times.

Documentary film is a powerful medium to digest serious knowledge and insights of the individuals and the collectives. With the intention to bring about voices that are often invisible and marginalized in the water resource and flood management arena, the community members of the Hart Thanong Municipality, Thailand, become our educators, researchers and storytellers for this thesis. Using visual research of documentary video as the tool of investigation, I seek to understand the underlying structure that has led them to successful adaptation in order to prioritize collective actions in the water resource and flood management framework.

Thesis Supervisor: Professor Anne Whiston Spirn

Title: Professor of Landscape Architecture and Planning

Acknowledgement

This thesis is more than just a research project but, to me, a process of relationship building. The action fieldwork would not be achieved without the care, attention and contributions from several people who have been a part of this project, as well as, providing me with ceaseless support in every dimension.

The passion to pursue visual experimentation and to propel ground actions with courage and curiosity have been the supports of my dedicated advisor, Professor Anne Whiston Spirn. With her multi-disciplinary thinking, wisdom and years of practical experiences, as well as, her ability to uncover knowledge through poetic approach in understanding people and landscape – she have become my great inspiration. Anne is always there with sharp eyes and ears to guide me, while allowing all the freedom of exploration for me to build up the process. I am indebted to her not only in her guidance to accomplish the documentary and the written thesis but in making me see planning practices differently through hopes and opportunities. The incredible excitement I have when studied Elinor Ostrom's Institutional Analysis Framework was a delight – thanks to Jim Wescoat. His works, guidance and ways of thinking are also, very much, my aspiration to explore this thesis to the best of my ability.

The roadmap to ground this action research through video came naturally. Thanks to the valuable internship opportunity at the Global Water Partnership Organization in Stockholm, in the summer of 2017. With the encouragement of the two supervisors, Mr. Francois Brikkie and Mr.Kenge Gunya James, I was put in touched with Dr.Man Purotaganon, the local field operational officer in Thailand. I greatly owe this project achievement to Dr.Man who has spent a great valuable amount of time going through his years of field experiences, project implementation and stories to point me in the right directions. Most importantly, this research would not at all be possible without his generosity to introduce me to the community of the experimentation – the Hart Thanong sub-district municipality in Uthai Thani, Thailand.

I have an immense gratitude towards every single individuals I have come across in the Hart Thanong community whom I have grown deep respect and care for. All of the materials, time and valuable insights about the topic would not come through without the unceasing help from the municipal officer, Ms. Uthaiwan Chimpalee; president of the council, Mr.Sutat Chimpalee; deputy mayor, Mr. Samruay Sriklad; sub-district headman, Mr.Chalhong Sangbin; and most importantly – the mayor, Mr.Muan Kiewubon and the municipal clerk, Mr.Phongphan Temeeyanan. These standing figures carried me through every experiment that I have wished for without a single complain. Their generosity is the sea and a reflection for me in many levels beyond the project. I have also received endless kindness and help to facilitate my fieldwork and my well-being from so many other individuals in the community throughout the research.

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I am sincerely grateful to have the opportunity to collaborate with various different people from diverse background and knowledge to capture, tell and hopefully, bring about many actions and voices that have, too long, been invisible in the planning and design discipline.

Pim Pitchapa Jular | 23 April 2018

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| | | |
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| <i>Mr.Kiattisak Srijam</i> | <i>Mr.Boonprook Jongthong (P'Noi)</i> | <i>Mr.Chalor Rhongmarut</i> |
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*'Floating Pandan' (Author)
The Sakae Krang River, Uthai Thani, Thailand.
January 2018.*

CHAPTER 1 | INTRODUCTION

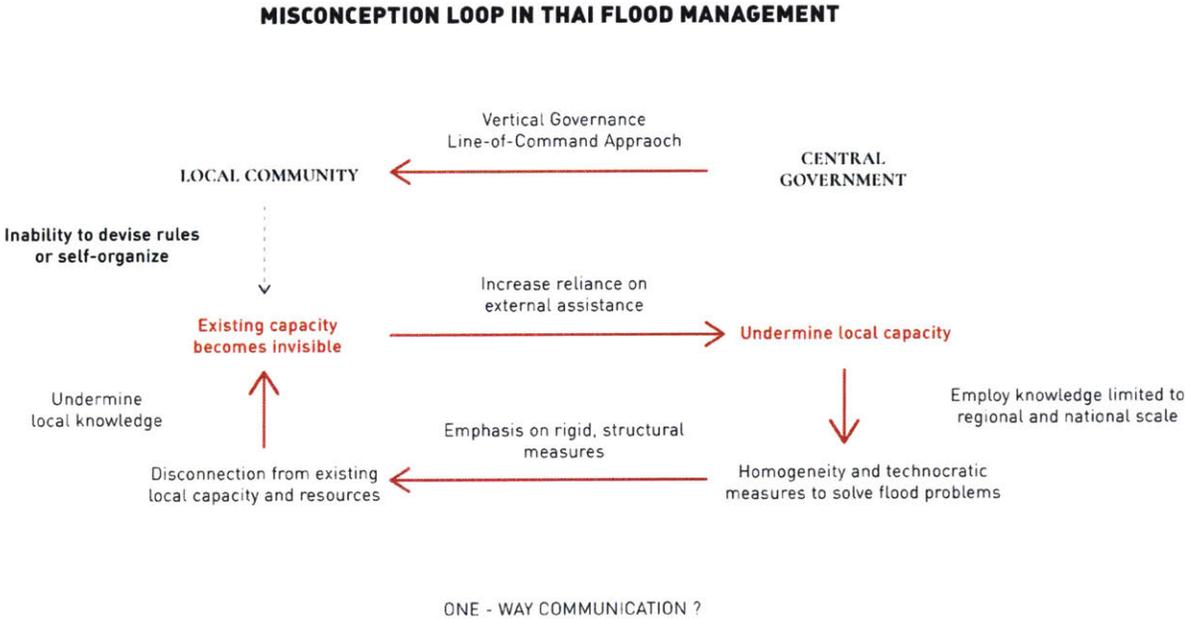
Water and flood management are complex. This is due to many competing factors including multiple competing uses and actors. Having experienced the world's fourth costliest urban flood in 2011 in the Chao Phraya River Basin (World Bank 2011; Raks Thai 2013), Thailand continues to experience floods in the past half-decade because of the lack of integrated water resource and flood management measures and policy framework (Nikomborirak 2013; Singkran and Kandasamy 2016; Purotaganon 2017).

In Thailand, the fragmentation of local and national bureaucratic entities has created overlapping roles and responsibilities in the flood disaster management regime, which hinders effective coordination across the Chao Phraya River Basin. In addition, the anomaly of climatic patterns, hydrologic cycles and growing urbanization have exacerbated flood disasters in urban areas globally, particularly in coastal cities. This poses critical challenges for structural measures alone to shield vulnerable communities living in flood-prone areas from the growing flood magnitude. Due to the fragmented coordination between agencies, the governance structure does not hold promise to alleviate the loss and damage caused by floods on wide range of communities across the Chao Phraya watershed (Global Environmental Facility; United Nations Environment Programme; Danish Hydraulic Institute; International Water Association 2014).

The existing action policy which is heavily biased towards structural measures further imposes constraints on coordination among small-scale local actors and makes communities' capacities less important. Flood management requires deep understanding of the interconnectedness in the water resources from both macro and micro level. Collective management of small-scale waterbodies such as stream, marshes, and ponds in specific context can offer a comprehensive body of knowledge. However, the centralized approach to flood management overlooks the opportunity to engage these small-scale actors within

the structure of its operations (Manuta et. Al 2006; Purotaganon 2017). Furthermore, the capacity of local entities to manage floods are not visible to central bureaucrats. Both public and government sectors have little awareness of the existing success provided by local governance in adapting with risks to mitigate flood impacts.

In sum, the top-down governance hampers flood management at the local level in several ways. It (1) *limits public capacity to reduce their own vulnerability*; (2) *provides narrow range of solutions to deal with high uncertainties of flood events*; (3) *perpetuates public perception of flood management to be solved only by the central authorities* and; lastly; (4) *creates unreliability in the water and flood management policy as a result of constant shift in political leaders* (Nikomborirak 2013). The following diagram demonstrates the misconception loop which persists in flood and water resource management situation in Thailand.



To be responsive and adaptive to uncertainties of floods, community-based flood management needs to be encouraged, employing collective local participation as the disaster

management frontier. The invisibility of successful community-based flood management potentially undermines the capacity of locally organized operations, and thus, impedes a holistic approach to flood and water resource management.

PLACE-BASED INVESTIGATION: THE HART THANONG COMMUNITY

To demonstrate the effectiveness of collective governance and to scale up the practice to the regional watershed, an investigation of adaptive local flood operation is needed. The research was built upon a real-world case, from a flood-prone Hart Thanong Community in the Chao Phraya River Basin, to analyze what underlies the structure of the successful community-based flood management.

With a summer internship opportunity at the Global Water Partnership Organization in Sweden in 2017, I conducted research on integrated urban flood management in South East Asian coastal cities, based on the case study of the 2011 mega flood in Thailand. In order to identify problems and opportunities, I was put in touch with Dr. Man Purotaganon of the country water partnership in Thailand, to learn more about alternative, practical strategies to water and flood management. Dr. Man, who has been operating as the field officer in various communities from different regions across the country, shared his over-twenty years of experiences in the community-based flood management through several phone interviews, as well as related documents.

Among these communities, Dr. Man explicitly referred to the Hart Thanong sub-district municipality as one of the most successful cases of active flood management ground operation. Preliminary interviews revealed that the community is highly adaptive in their organizations, in dealing with water resources on a regular basis, to mitigate flood impacts. Despite constraint of resources in the mega flood of 2011, the Hart Thanong community presented a case whereby internal local actors mobilized and devised existing capacities

to adapt in living with floods. Much can be learned from the structure of the self-organized communities within the Chao Phraya River Basin where water users have advanced local knowledge and experience in adjusting to risks and hazards. The Hart Thanong community, thus, became the site of investigation where governance meets practice. An overview of the Hart Thanong community is discussed in more detail in chapter two.

The attempt to transform water resource and flood management policy under the Thai vertical governance is difficult, given the political instability and constant shift of leadership in Thailand (Nikomborirak 2013). Nonetheless, as the river basin can be broken down into smaller subunits from ponds, canals, streams, rivers to watersheds, so too, can the units of management. Coordination problems that exist across the river basin scale can be overcome with collective actions at the community level as exemplified by the Hart Thanong community-based flood management operations. With the appropriate use of resources and partnerships with local members, NGOs and the local authorities, small-scale flood-prone communities can become more self-reliant and flexible in adapting to flood uncertainties over time

The first section of the research demonstrates two main problems: (1) *Centralized, vertical governance impedes holistic water resource and flood management operations* and (2) *There is little acknowledgement and support for collective operations from small-scale community actors within the water resource and flood management framework*. This leads the research to two corresponding questions. The first question, in dealing with the role of communities in water resource and flood management governance is: how did the Hart Thanong community create an adaptive structure in water resource and flood management governance? This is followed by the second question of how can visual methodology make the invisible visible? The following inquiry relates to the problem identified by Elinor Ostrom from Understanding Institutional Diversity that, “the groups who have actually

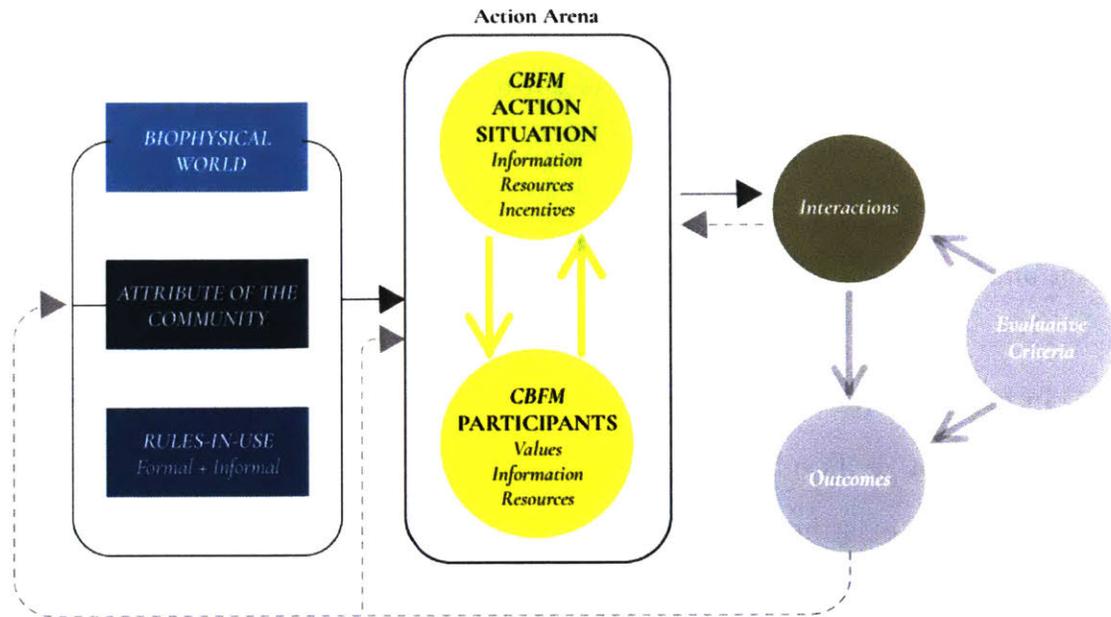
organized themselves are invisible to those who cannot imagine organization without rules and regulations issued by a central authority” (2005, p.240).

FRAMEWORK AND METHOD

Institutional Analysis Development and Visual Research Methodology

In order to understand how the Hart Thanong community has come to establish successful adaptive flood management governance, I analyzed the underlying deep structure of the existing community and made them visible through visual research methods. The Hart Thanong sub-district municipality presents inclusive engagement of various actors in the community for water and flood management plan. This allows for horizontal distribution of power as oppose to the conventional vertical governance or line-of-command approach introduced by the central authority. The research, which focuses on the informal power dynamics of horizontal governance, employed video as the tool of investigation.

In reviewing the literatures on institutional analysis development framework by Elinor Ostrom, a more systematic analysis of the community structure can be designed to identify the successful elements of the complex social interactions. The documentary film focused on the three components based on the framework, including: (1) *existing material conditions* (physical capacity and resources); (2) *the attributes of the community* (social capacity of the community) and; (3) *the rules-in use* (the relationships between the actors and the key strategies devised by the community) within the Hart Thanong sub-district municipality. Several field researchers agreed that the three components chosen for this experiment are critically important in local self-organized communities (Bastakoti and Shivakoti n.d.).



A Framework for Institutional Analysis : *Community-Based Flood Management (CBFM)*

adapted from
 Figure 1.2 A framework for institutional analysis.
 Source: Adapted from E.Ostrom, Gardner, and Walker 1994, 17.

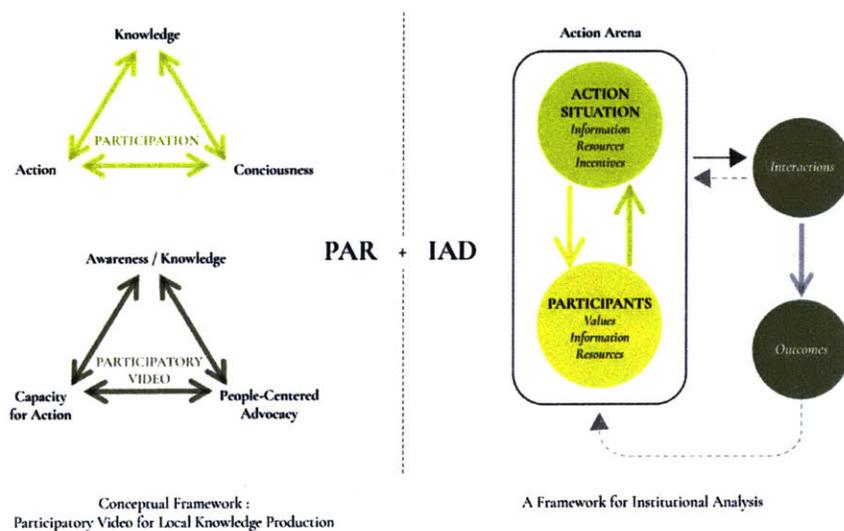
The intention of the visual film methodology and objectives of the thesis is as followed:

1. To better understand the underlying structure of the community-based flood management as well as to analyze the key factors that led to community empowerment and collaborative governance in order to become adaptive towards flood-risks.
2. To highlight the effectiveness of community-based water and flood management mechanism as a baseline for other flood-prone communities.
3. To disseminate the findings of local knowledge into the domain of resource management and disaster risk reduction as a way to promote coordination across vertical and horizontal institutions in water governance.
4. To experiment with the effectiveness of media methodology in urban design and planning; how visual interpretation can negotiate the gap of the qualitative aspects in social science research and disaster risk reduction

cooperation.

5. To raise awareness and garner support for collective local flood management from the general public, private and governmental sectors of multidiscipline in Thailand.

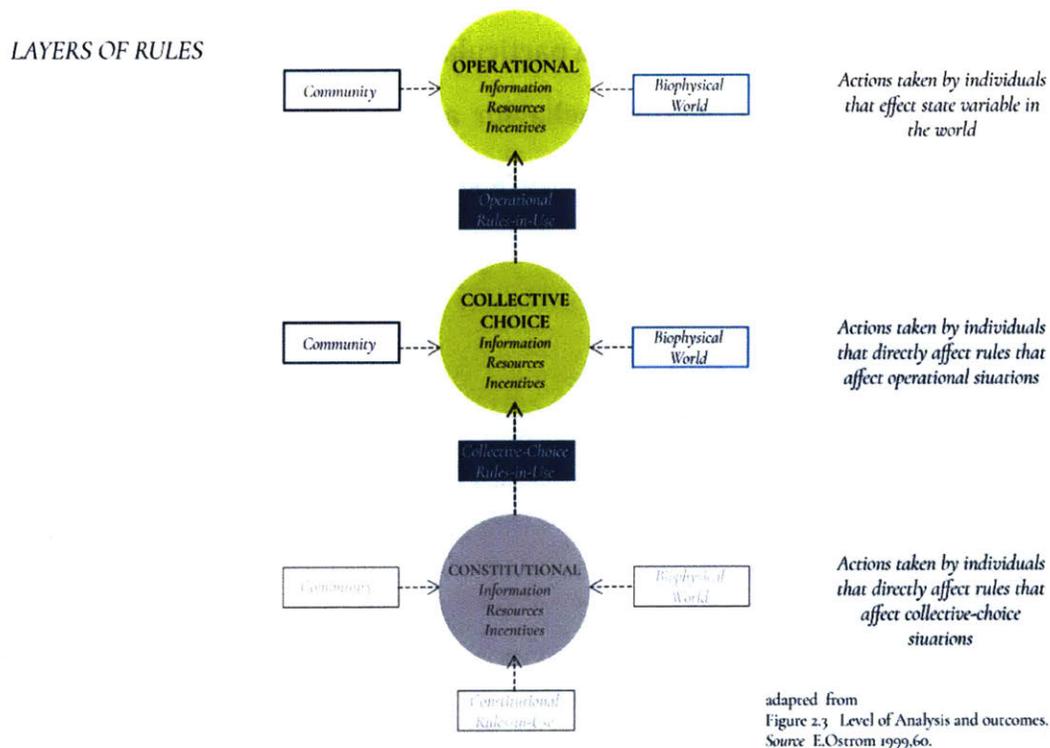
Polski and Ostrom have stated in the description of their institutional analysis development framework that all policy situations are governed by institutional arrangements that are crafted formally or informally by the individuals and groups in order to reduce risks and make interaction more predictable (1999). If an institution or a system is not contextually crafted, it has the potential to limit capacity for social change. This is because the internal building blocks of the institution that structure information and create “incentives to act or not to act in a particular social and cultural settings can impose constraints on the range of possible behavior and feasible reform” (Polski 1999, p.5). Institutional analysis development framework can be simplified into two main layers: (1) *the inner layer* (action arena) which is shaped by (2) *the outer layer* (exogenous variables). The structure of the action arena itself is made up of dependent variables consisted of the *participants* (actors) and the *action situations* (Ostrom 2005).



Conceptual Framework :
Participatory Video for Local Knowledge Production
adapted from
Figure 1.1 Gavetti and Cornwall's Framework for PAR. Reproduced
from Gavetti and Cornwall, 2006.
Challenging the Boundaries of the Possible: Participation, Knowledge and Power.

adapted from
Figure 1.2 A framework for institutional analysis.
Source: Adapted from E.Ostrom, Gardner, and Walker 1994: 47.

The action situation of this research is the adaptive community-based flood management operations, while the participants are the actors involved in the management of the water resources and flood events, including the community members, local and regional authorities as well as the NGOs. The dynamic structure of the adaptive community flood management, as such, rely heavily on how the rules are understood and accepted among community members. Since the study requires in-depth qualitative analysis of the rules that constitute the successful adaptive mechanism, visual methodology serves as an appropriate tool for the exploration of the complex social institutional arrangements, power relations, interactions and roles (Becker 1974).



There are several examples of the other Community Video Unit that have been used by local actors to file complaints to organize campaigns, leading to government agencies making changes (Corneil 2012; Mitchell 2012). The Fogo Island Project, created under the experimental program in ethical documentary at the National Film Board of Canada, the

Challenge for Change/ Societe Nouvelle program (CFC/SN), is the fundamental example of how visual documentary film can play a crucial role in social transformation. Created by Colin Lowe in 1967 to give voice to the community living on the Fogo islands, in an attempt to stop the relocation plan by the government, the film gave rise to community capacity building and empowerment and direct advocacy to the policy makers. Lowe employed rigorous methods to acquire insights to the concerns faced by the community including: interviews focusing on the people rather than on issues, the forbidding of candid camera to obtain islanders' full confidence, the co-production processes of filming, editing and screening with maximum influence from the islanders to their form (Svenstedt 1970; Mitchell et.al 2012). The final outcome of the project successfully communicated the concerns of the community to the government officials without causing trouble for them, resulting in the cancellation of the relocation plan (Corneil 2012; Mitchell et.al 2012).

Documentary participatory video can be used to leverage local voices and the marginalized groups of society to be more visible, such as the Community Video Unit or CVU in India, which was established and facilitated by a non-governmental organization to represent community interests (High et al. 2012). Due to many interests coming from the diverse participants involved in the practice of making the video, the consideration of power and the nature of participation becomes very important (Evans and Foster 2009; Ostrom 2005). Furthermore, the process of screening the videos to the community can help to destabilize the power of representation often made by the filmmakers (Plush; Low et al.; High et al.; Mitchell et al. 2012). Since the subjects of the film have a chance to reflect upon themselves, their actions and reactions, the act of screening becomes the main platform of dialogue between the actors. Participatory video is, thus, used to provide a shared space for people on the issues that may be rarely addressed or spoken out in the open. Such method become a means for advocacy and rprovide the opportunity to hold dialogue with policy makers and influence them (Lunch and Lunch 2006; Wheeler 2009; Mitchell et.al



*'By the River' (Author)
Hart Thunong, Uthai Thani, Thailand,
January 2018.*

“ [...], we are very proud.

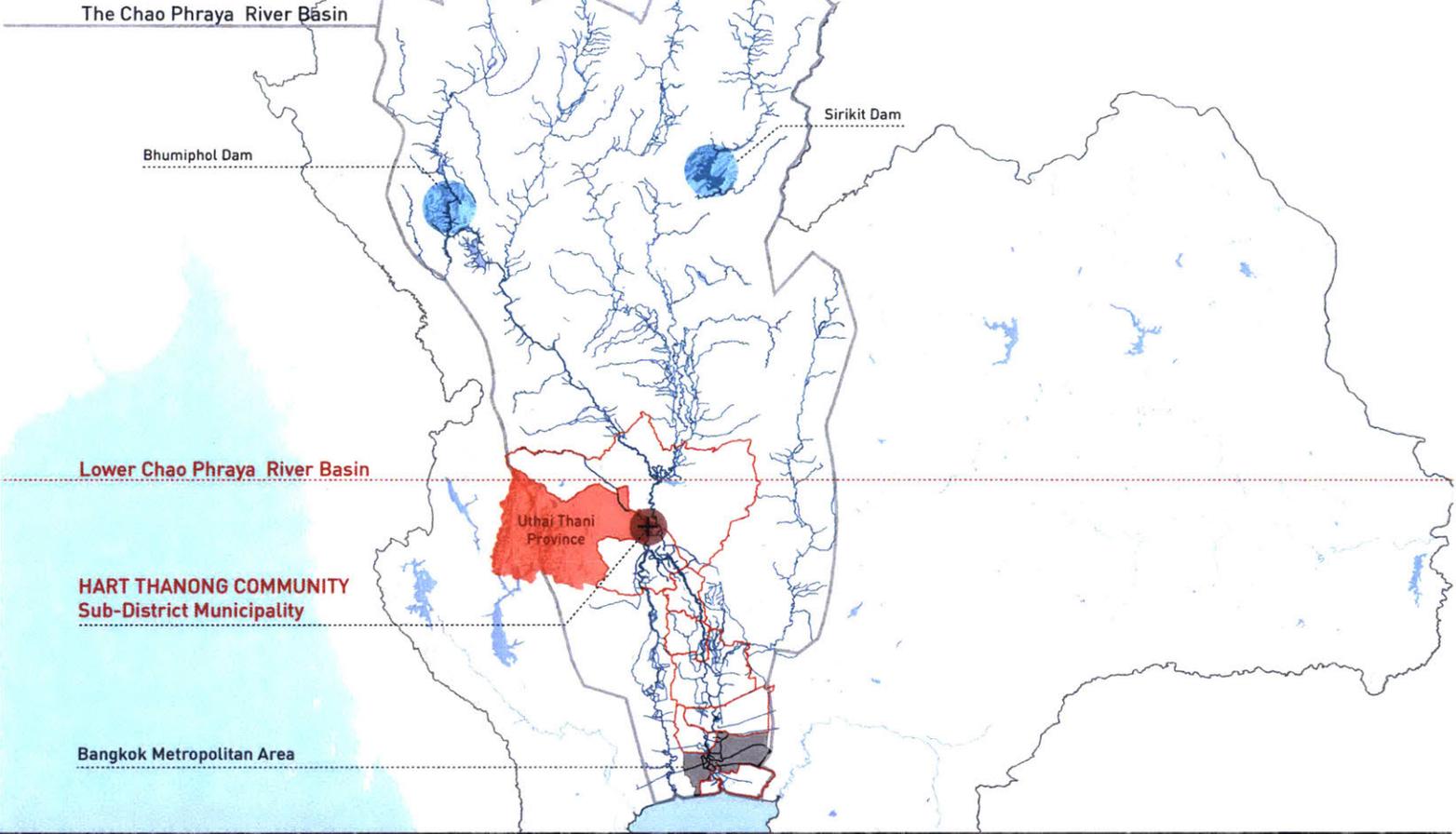
Despite the little knowledge we have, our determination and will, would propel the community and the whole sub-district to win over crisis every time[...]

This is our success, in my view.”

-Chaiman of the Municipality Council Suthat

Chapter 4 “Place”

THE CHAO PHRAYA RIVER BASIN
Location of Hart Thanong Community



CHAPTER 2 | CONTEXT

THE CHAO PHRAYA, THE SAKAE KRANG AND THE HART THANONG COMMUNITY

The Chao Phraya River basin is the largest artery for land and water resource development in Thailand. It stretches from the elevated northern plains to the low alluvial plains of the central region, draining an area of 160,000 km² and covers 30% of the country's total land area. The Chao Phraya River is the principal source of water supply for the national domestic, agricultural and industrial uses. The entire basin sustains 40% of the total national population (23 million inhabitants in 1996), employ 78% workforce and generates 66% of the national Gross Domestic Product (Office of the National Water Resources Committee; UN World Water Assessment Program 2003). The expanse of the Chao Phraya River covers four major tributaries of the Ping, Wang, Yom and Nan, which originate from the northern elevated plain. The confluence of the Ping and Nan tributaries, at Pak Nam Pho in Nakorn Sawan province, borders the site of investigation – Uthai Thani province – to the north.

The Hart Thanong community is a sub-district municipality nested in Uthai Thani province. Not only that it is located at the bottleneck of the Chao Phraya River Basin, the community is surrounded by two major rivers: the Chao Phraya River on the east and the Sakae Krang River on the west. In addition, it lies below the two major dams: the Sirikit and the Bhumiphol. These factors make the community extremely vulnerable to floods.

Top: Map of Thailand and the location of Hart Thanong Sub-District Municipality in Uthai Thani Province,

Source: 2011 Thailand Flood. Pitchapa Jular (2017). *GISTDA Geo-Informatics and Space Technology Development (2012)*, Esri Map.

Bottom: The Hart Thanong Site Area divided into six villages (called 'Moo')

Source: Pitchapa Jular. Adapted from Google Earth

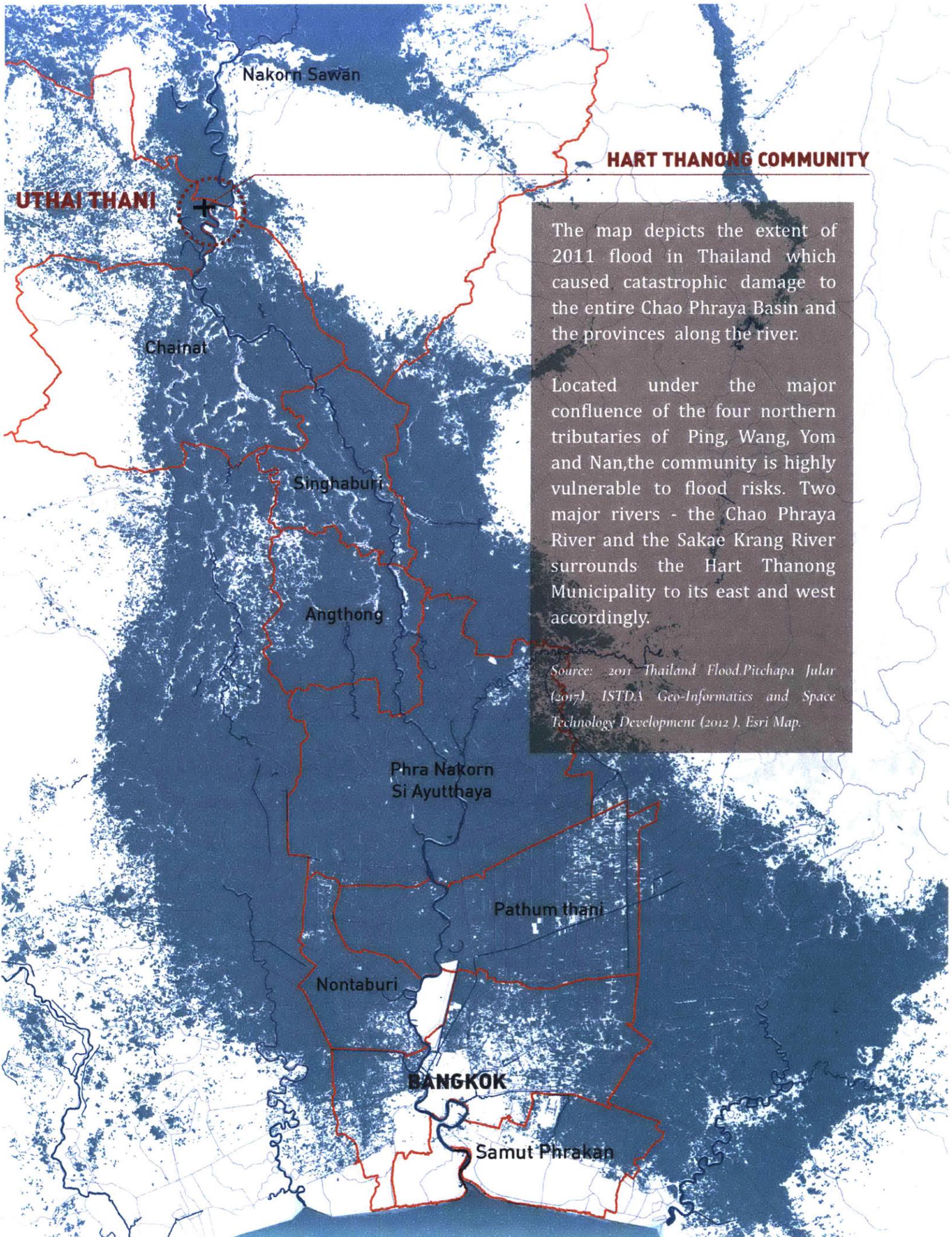
The Hart Thanong sub-district has a population of 1,966 people or 541 households with the density of 197 people per square kilometer. The occupation of the local residents ranges from agriculture, aquaculture, trade, clergy, horticulture and craftsmanship in knife and scissors production (Hart Thanong Official Municipality; 2017) many of which rely heavily on water resources and its management. The effects of flood, thus, not only threatens the lives of the people and the infrastructure within the Hart Thanong Community but potentially imposes longer-term damage on the socio-economic livelihoods.

THE 2011 FLOOD: PROBLEMS AND OPPORTUNITY

Existing Vertical Governance in Thai Flood Management and The Hart Thanong Community

The 2011 flood event in the Chao Phraya River Basin of Thailand was ranked as the world's fourth costliest disaster during the period of 1995 to 2011. It is surpassed only by the 2011 earthquake in Japan, the 1995 Kobe earthquake also in Japan, and the 2005 hurricane Katrina in the USA (Kittipongvises and Mino 2015). The flood lasted between mid-October through November 2011, inundating two-thirds of the country (Minister of Finance and World Bank 2012). The flood damage spread across 90.65 billion km² of land, covering 66 out of 77 provinces – affecting 4,039,458 households and 13,425,869 people with more than 800 deaths and 3 people missing (HAI 2012). The total damage was estimated at USD 46.5 billion, an approximation of THB 1.43 trillion (Jular 2017). Poor management, together with the unforeseeable precipitation pattern and volume, had resulted in the wide spread flood.

More than 1,500 communities all over Thailand – approximately 200 municipalities per province – were greatly affected by the mega flood (Wattanasiritam 2011). There are



UTHAI THANI

Nakorn Sawan

HART THANONG COMMUNITY

The map depicts the extent of 2011 flood in Thailand which caused catastrophic damage to the entire Chao Phraya Basin and the provinces along the river.

Located under the major confluence of the four northern tributaries of Ping, Wang, Yom and Nan, the community is highly vulnerable to flood risks. Two major rivers - the Chao Phraya River and the Sakae Krang River surrounds the Hart Thanong Municipality to its east and west accordingly.

Source: 2011 Thailand Flood. Pitchapa Jular (2017). ISTDA Geo-Informatics and Space Technology Development (2012). Esri Map.

Chainat

Singhaburi

Angthong

Phra Nakorn
Si Ayutthaya

Pathum thani

Nontaburi

BANGKOK

Samut Phrakan

has created overlapping roles and responsibilities in the flood disaster management sphere, which hinders effective coordination across the Chao Phraya River Basin. These also pose internal conflicts and strained relationships between the actors in flood management situations. For example, the unwillingness to exchange information between community residents and local authorities who are in charge of the information about the water level exacerbated and prolonged flood situations in Tak province (Purotaganon 2017). This is the result of an emphasis on the vertical governance and 'lines-of-command' approach to solve on-the-ground situations. This decision-making process, under the conventional Thai bureaucracy, is time consuming (Nikomborirak 2013). While top authorities are making chains of decision, flood damages are done to the communities, demonstrating that such approach is inappropriate to mobilize actions in a timely response to the increasing uncertainties of the disaster. This reflects the government's reactive response that stresses recovery rather than mitigation or adaptation. Despite recent incorporation the non-structural measures into the National Disaster Prevention and Mitigation Plan by the Department of Disaster Prevention and Mitigation, there is still an immense lack of effort to nurture local perception and action on the ground (Manuta et.al 2006; Purotaganon 2017).

The vertical governance of flood disaster management in Thailand is rigid. It focuses largely on structural measures to solve flood issues, which has problematic consequences. It constrains public's perception of flood management options and undermines public willingness to participate collectively and appropriately in flood crises. Costly infrastructural projects have been employed as the central focus of disaster prevention measures to gain public attention and approval in Thailand (Friends of Rivers 2015). Since structural measures such as dykes, dams and seawalls are physically tangible and can be built over a short period of time, the general public is often deceived with the illusion of 'total safety' against flood risks. The measures are more popular among the citizens since they can see

Centralized Governance at the National Level

The contemporary approach to resource policy and management are often reductive and homogeneous (Ostrom 2005). The scientific management of natural resources considers resources such as water, forests, pasture land and fisheries to be interlinked with larger domain; irrigation systems are interlinked with the watershed of major river systems. This give birth to uniform rules as the best solution (Ostrom 2005). However, the presumed superiority of the central government does not fit appropriately with the smaller-scale problem, thus, calling alternative systems of resources management at various scales (Ostrom 2005; Karkkainen 2001/2; Holling, Gunderson, and Ludwig 2001). The experience of the appropriators, who have been using the resources for years, allow them to intrinsically know more of its characteristics and details than the officials (Ostrom 2005). The state interventions, which undermine local interests in general, will impose great impact on any long-term legislative goals and effectiveness (Ostrom 2005). In the case of the Thai government, an attempt to establish communal rights to forest access failed tremendously due to the prioritization of commercial over local interests and the lack to establish incentives for locals' stewardship efforts (Johnson and Forsyth 2002 from Ostrom 2005).

In the 2011 mega flood event, the Hart Thanong municipality established a unique institutional arrangement at the sub-district (tambon) municipality, district and provincial level. It exemplifies a case where flood disaster management operation is based on an understanding of their own context and resources, as well as dynamic community networks, mutual trusts and relationship building. The community not only survived the 2011 flood through the coordination among local actors but also mobilized its own network capacity to reduce flood damage and losses. Local organizations partnered to provide logistics for the most vulnerable groups of people – pregnant, elderly, disabled and

children – in times of flood. There is also constant co-monitoring water levels with the Royal Irrigation Department local authority and the establishment of the Community Water User Association to regulate local water management, consumption and conflict-resolution on a daily basis (United Nations Development Programme; Department of Disaster Preparation and Mitigation; Asian Disaster Preparedness Centre 2014).



2011 flood turned Hart Thanong into a lake
(Source: Hart Thanong Municipality: 2011)



'Leaders': Campaign for safe ride during new year of 2017
(Author)

By adapting flood mitigation strategy to their own context and to the capacity of the local actors, the Hart Thanong Community mobilized internally with less reliance on external assistance. A sustainable flood disaster mitigation and adaptation plan, thus,

should focus more rigorously on integrating small-scale capacity within the disaster risk reduction policy framework. Much can be learned from the structure of the self-organized communities within the Chao Phraya River Basin whereby water users have advanced local knowledge and experiences in adjusting to risks and hazards. From this, an appropriate policy intervention can be learned and invented to accommodate local and regional coordination in the water and flood management domain. The evidence based on interviews, conducted directly with the field officer from the Thai Water Partnership Organization also helped identify the local adaptive implementation, the value of the local institutional arrangement and the potential benefit of the community engagement for the regional coordination.

The Grammar of (Informal) Institutions

Cooter (1994) pointed out that the complexity of the centralized law often underserves the need to achieve normative regulation to solve collective-action problems faced by individuals in communities. The informal adoption of “norms or rules without enacting them as written law”, thus, are often prescribed as ‘informal institution’ (Cooter 1994 from Ostrom 2005, p.166). Nonetheless, when the prescription is ‘shared’, it becomes norm or rule in itself with no regard to whether it is ‘formal’ or ‘informal’. In conclusion, the primary requirement in analyzing the rule-in-use is to observe whether or not and/or to what degree the common understanding exists among the participants (Ostrom 2005).

Evidence from empirical research confirms the “potential for local appropriators to be capable of self-organizing to manage common pool resources sustainably in comparison to the less effective performances from centralized government systems” (Ostrom 2005, p.222). Still, one cannot assume that all local efforts are the best successful option over large scale efforts (Ostrom 2005). Both must be considered together to produce effective

governance at various scales and context. Although it is essential to understand the formation of the sustainable collective actions through a particular context, using context alone is not a substantial theoretical approach. In light of Ostrom's extensive research, one needs to further analyze how contextual aspects (institutional, cultural and biophysical) affect individuals and communities. Future empirical work requires this fundamental knowledge to unlock the question of "how individuals change the structural variables and shared norms over time" (Ostrom 2005, p.287), thus, potential for the strategies and the institution to be 'adaptive' (2005).

"Self-organizing arrangements allow people to learn more about themselves and the needs of others amid the ecology around them" (Ostrom 2005, p.288) . Unlocking "problem-solving skills in a local context" lends one to be more capable in general problem-solving skills to solve "more challenging and far-reaching problems at another scale" (Ostrom 2005, p.288)

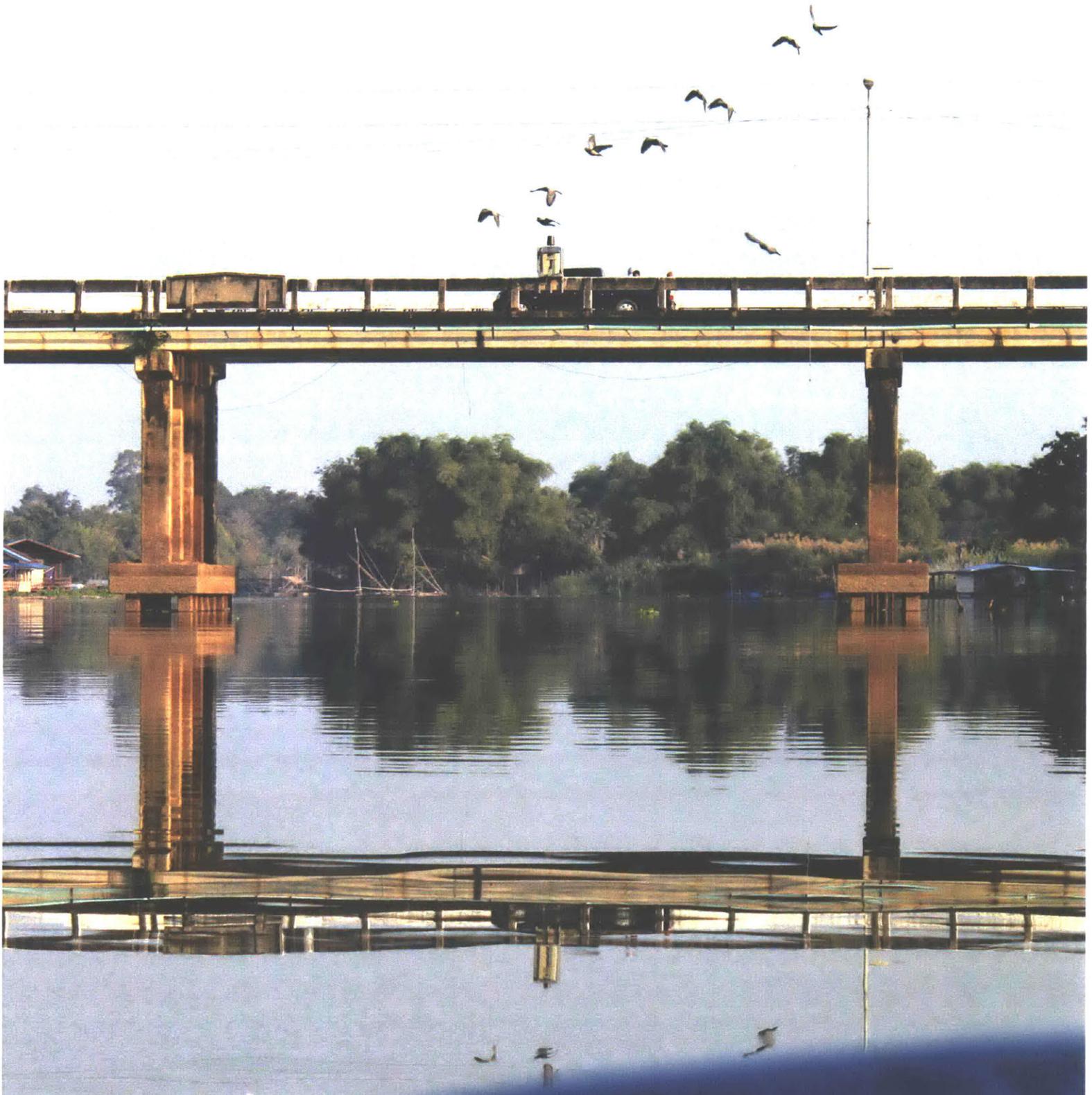
“ .. Many other sub-district around us may have all the resources ready. But in terms of implementation, we can cover every household and take good care of our villager to the best of our ability.

This was the challenge in management that we are proud of.

This is the success, management on the foundation of limited resources.”

-Deputer Mayor Samruay

Chapter 4 : Place

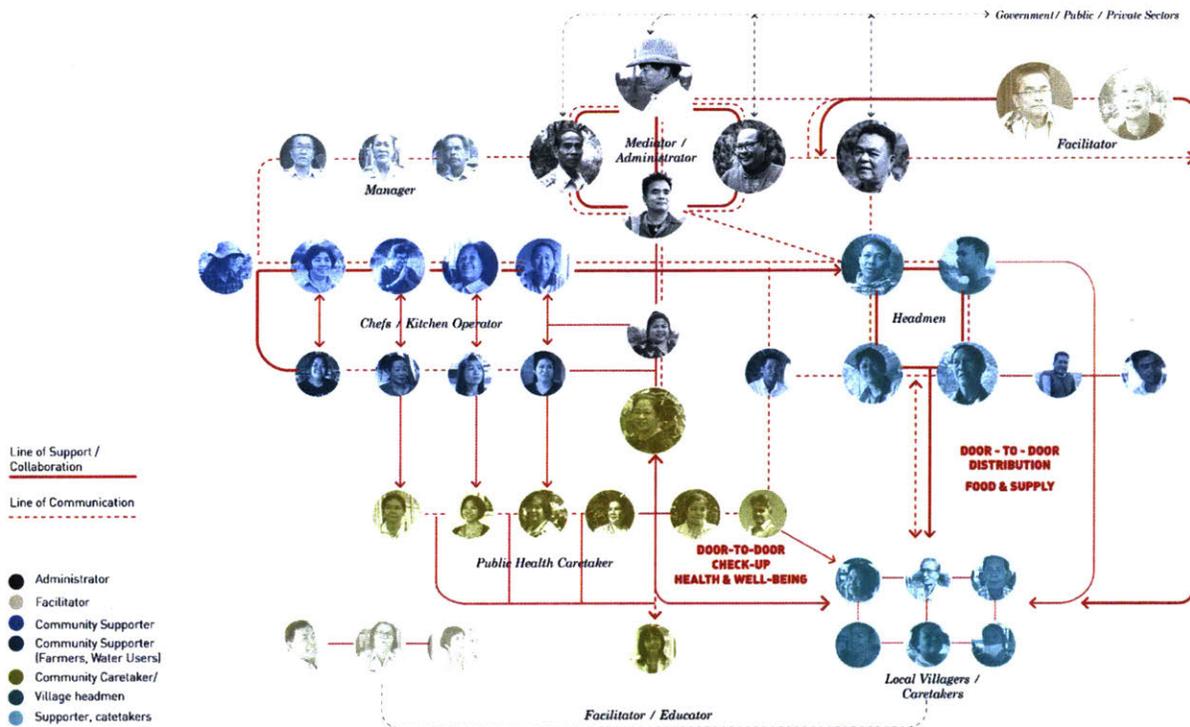


'Threshold' (Author)
The Sakae Krang River, Uthai Thani.
January 2018.

CHAPTER 3 | DISCOVERY : LEARNING FROM MEDIA

The documentary film, 'Visible Flows', is dissected into four chapters: human, time, scale and place, all of which when viewed in sequence, provides greater emphasis on the importance of coordination beyond specific site operations. The documentary stresses forward-looking solution and planning practices that call for facilitation of communication between sub-district, provincial and regional operations. Only by closing the gap among scales, can flood management policy framework and operations work in concert with one another with increasing efficiency and success. In conclusion, in order to achieve the consolidation of adaptive practices, there needs to be a paradigm shift to promote self-governance in local water resource and flood management at the sub-district municipality scale.

The following diagram (Dia.01) attempts to visualize the self-governing ecosystem of flood management in the Hart Thanong community to familiarize the readers with the operational structure in the site of investigation. The actors and their relationships are represented in various strings of network, which is contingent upon the changing situations from external challenges. The main core of the ecosystem, which remains largely influential, is the leadership within each operation group. Although the diagram offers an easy comprehension of the organizational structure of the self-organized Hart Thanong community, the most essential driver to the formation of the group itself, is not visible through such representation. The synthesis is represented on the left hand side of the diagram (Dia.02). The internal values embedded within the individuals and the collectives is of my findings, and can be best communicated through the use of video. This core finding will be discussed in the following section; deconstructing findings through visual media.

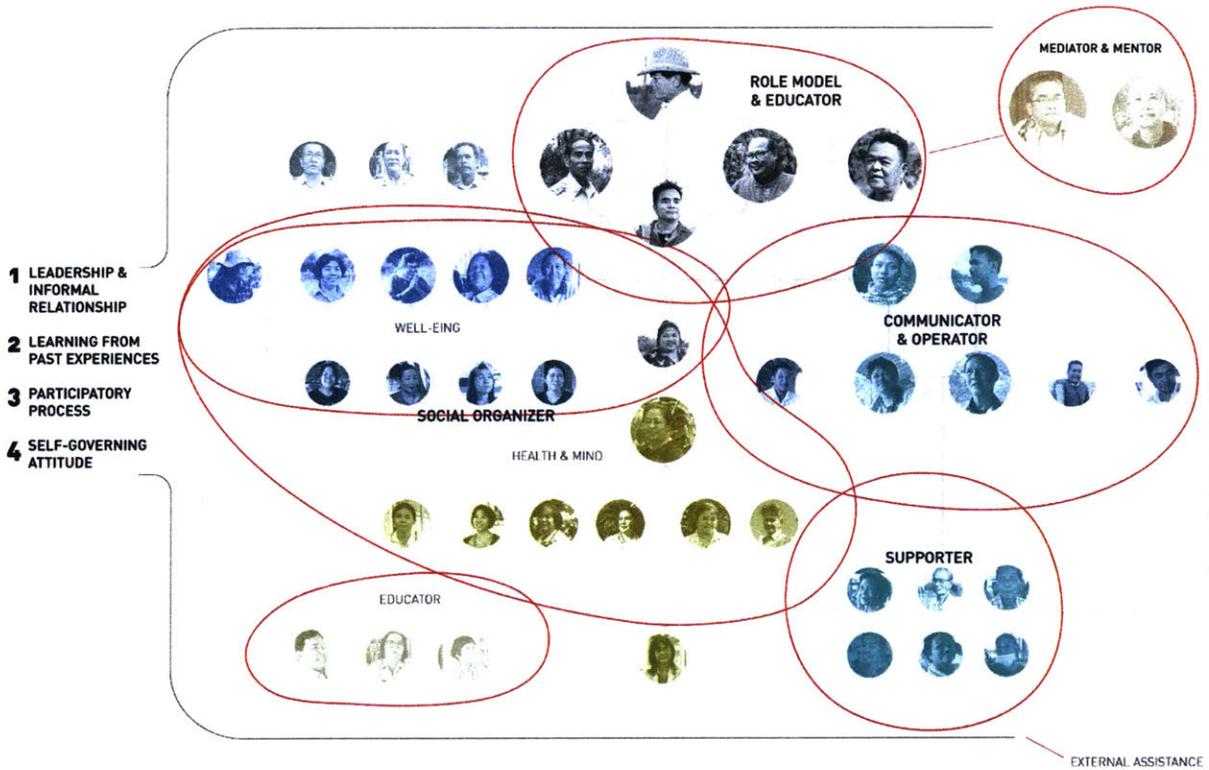


Dia.01

The Hart Thanong Flood Management Ecosystem

P.Jular

Dynamic lines of collaborations and communication occurs between sub-self organized groups. Each group represent a role that feed in and out of one another. This diagram only depicts the generalize, overview model of the community's operation. However, when a circumstance changes such as if one is to focus on water management before floods, the diagram would be reorganized accordingly. That means the power dynamic is shifted largely to the Chairman of Water User Association and the water user members, for example.



Dia.02

The Hart Thanong Mental Governance

P.Jular

The synthesis discovered by the use of visual method - documentary video - underly flows between the constantly shifting dynamic lines of collaboration and communication between the community members. The self-organized entities rely heavily on social interaction, trust and attitudes in order to be adaptive with uncertainties.

DECONSTRUCTING FINDINGS THROUGH VISUAL MEDIA

Visible Flows:

The Dynamics of Community-Based Flood and Water Resource

Management and Governance in Uthai Thani

The final summary of the research findings is synthesized into four chapters. To answer the probing question of: how did the Hart Thanong community create an adaptive structure in the water resource and flood management governance? Each chapter represents key findings which underlie successful adaptive structure to water and flood management, including:

Chapter 1 | Building leadership and informal relationships

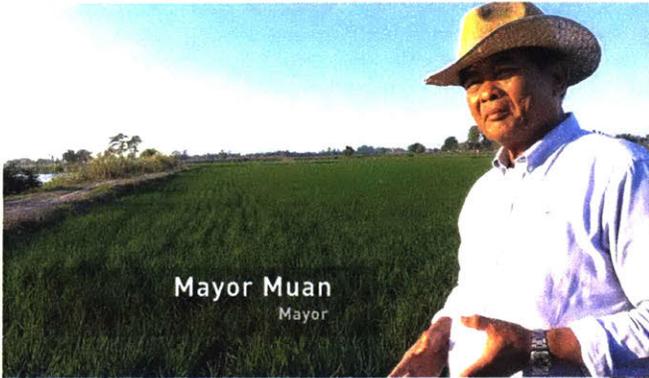
Chapter 2 | Learning from past experience

Chapter 3 | Participatory process

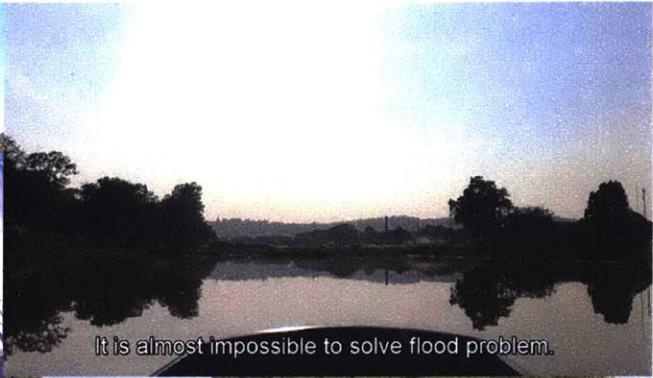
Chapter 4 | Self-governing attitude

Chapter 1 HUMAN | Building Leadership and Informal Relationships

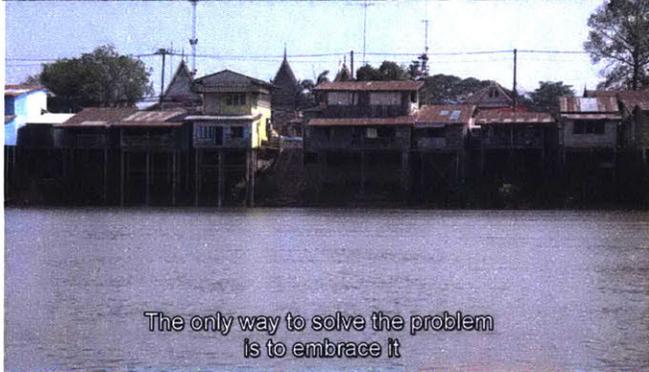
1. Strong, unselfish leadership is one of the most important factors for the success of adaptive governance and is the main influencer to instill adaptive attitude within the community members. When prompted with the recollection of 2011 flood, almost every community member expressed immense gratitude and joy over the municipal administration team, the community leader and the mayor, in particular. Since the finding shows that leaders at the municipal level of governance become both role models and educators for the community, careful consideration in leadership is an essential game changer.



Mayor Muan
Mayor



It is almost impossible to solve flood problem.



The only way to solve the problem is to embrace it



and adapt ourselves to the situation.



The mayor is a good person.



Ah. He is the man of his words.



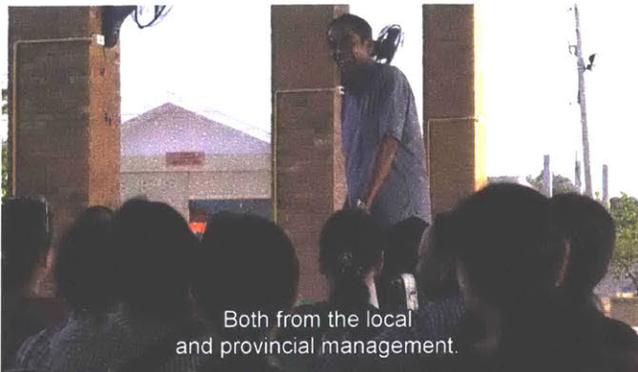
He has very good interpersonal relationship with the community.



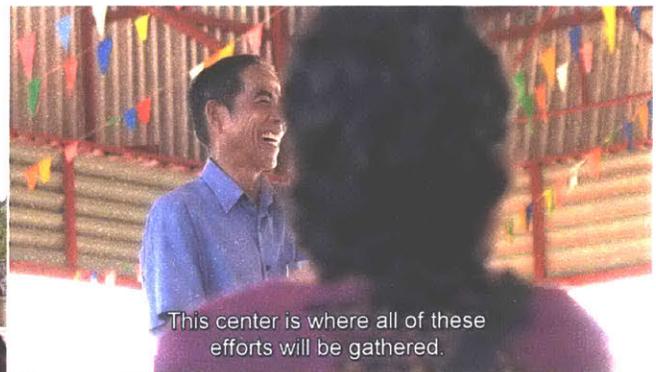
Did you have a chance to meet with him yet?

2. Face-to-face communication and attention by the administration team build trust and respect between the local administration and local community members. Informal relationships between formal institutions and the members of society are needed in order to build an attitude of co-existence. In order for flood operations to flow effectively, the individuals of the community and the administration team have to interface with each other on a regular basis. Common language of understanding between the parties is built upon frequency of their interactions, lending to successful communication in urgency of crisis. One example from the research is the constant interaction between the local public health officers and older members of the community. This is critical to the context of Hart Thanong where there is a high number of elderly residents. The extra attention given to them allows the operators to plan and prepare the right approach to reduce flood impact to match specific needs of the individuals.





Both from the local and provincial management.



This center is where all of these efforts will be gathered.



So, we took care of them, consoled them.



It has always been how it is. It's like a family.

The adaptive strategy here focuses on solving one particular problem: the well-being of residents during floods in order to mitigate stresses and mental breakdown. The focus is shifted entirely to individual needs and minds rather than the attempt to avert floodwater out of the area.

3. Informal relationships open up opportunities for the actors to be more creative in devising shared norms and rules. This increases the adaptive capacity among the community operation.



but it did not work too well due to such high costs



I thought about it for a while and came up with a simpler way - a whistle.



If I blow the whistle 3-4 times,



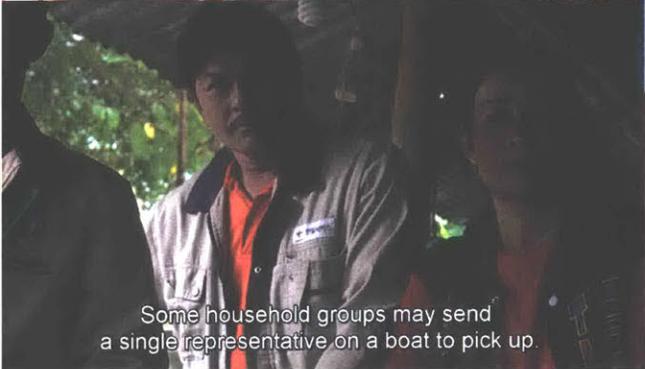
The last whistle marks the final calling



It means that the food is on its way near the villager's home



for the villagers to come out to wait at the pick up spots



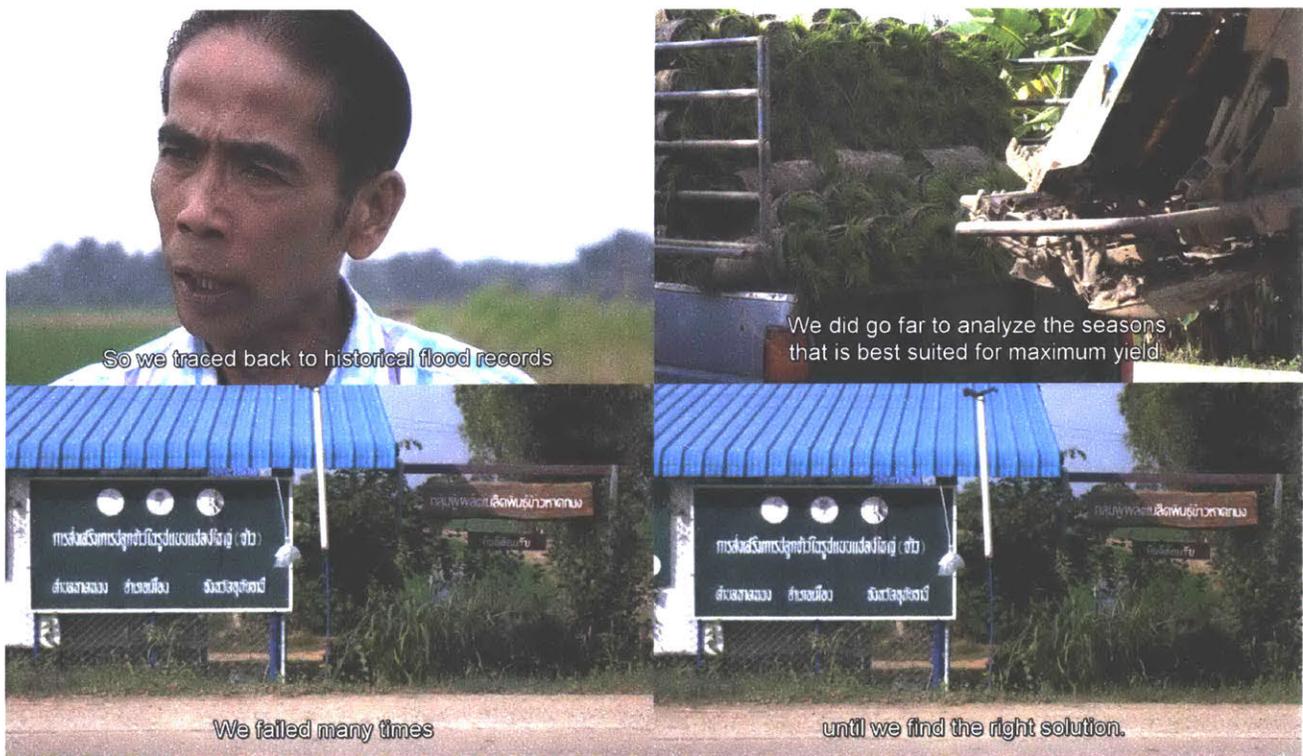
Some household groups may send a single representative on a boat to pick up.



P'Wandee: In the case that they cannot make it out, we would go in to deliver the food.

Chapter 2 TIME | Learning from Past Experience

1. Learn from past experiences in order to embrace existing conditions with progressive attitudes. The most strategic and practical responses to flood issues drew from past memories. Community members often described their reactions as lessons learned from prior years and how past experience increases adaptive capacity for future changes.



2. Highly detailed database, which is derived from a constant active engagement between local administration and community members, is a critical preparation strategy before flood events. This led to a successful request for financing mechanisms, budget allocation and external assistance on critical resources that were lacking in the community.



3. The study has shown that a certain level of local autonomy allows greater flexibility to devise rules of actions in response to the continually changing environment and uncertainties, leading up to more appropriate achievements in reducing flood-related impacts. However, even if there is a level of freedom for a community to govern, the actors must first learn the personal and collective values of their community in order to provide shared goals and for a framework to be fully self-governing and adaptive.



The protocols given by the formal association,



P'Veera Peaw
Farmer, Village Moo 3
Community Development
did not dig deep into the issues like we did.



But we chose to fix problems according to the changing situations



We make an agreement first before we farmed.



P'Veera
Member of Water User Association
After water irrigates the entire fields, we close the inlet.



In case someone forgot to close their inlet, we have to close it.



Everyone is willing to share.



the lower fields has to wait for the overflows.

Chapter 3 SCALE | Participatory Process

1. The mediator or the local NGO primarily emphasizes the importance of the community members at the individual level. This becomes a major entry for the community to learn about themselves and others in order to perceive possible shared benefits and values for the collective whole.



2. Furthermore, the mediator helps small-scale actors to perceive larger connections beyond what is visible within their own territories. This allows community members to pronounce their place in the world and connect themselves back into the system. The individuals can then start to think more holistically in order to generate solutions that simultaneously solve problems on site and at another scale beyond their scope.



3. The NGOs provide support for the community as well as for government officials to realign their values and goals. Empowerment and capacity building in both parties have been accomplished effectively through participatory process of co-creation in mapping of participatory risk assessment, resource mapping or community mapping, for instance. The process has resulted in: (1) *formation of practical teamwork*; (2) *inclusive knowledge production and effective communication between different individuals in the community*.



As demonstrated in chapter three, the chief deputy and village headman pointed out that the operational team was born out of the intervention initiated by the local NGOs and external academic research projects.

4. The intervention of a local mediator opened up a window of opportunity for the community to reflect on the existing assets and resources which they can employ as part of adaptation and mitigation strategies. By explicitly making the resources more visible to them, they can reclaim values in their everyday norms and are encouraged to channel their informal rules for greater capacity to adapt to the changing environment.



For sometimes change.



cannot be seen by the community who are there.



Every area is constantly changing.



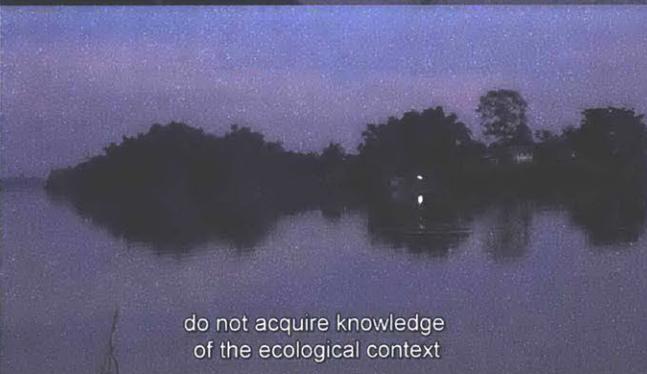
has to be recreated according to the changing situations.



The community needs to take part in the process.



As external organizations



do not acquire knowledge of the ecological context



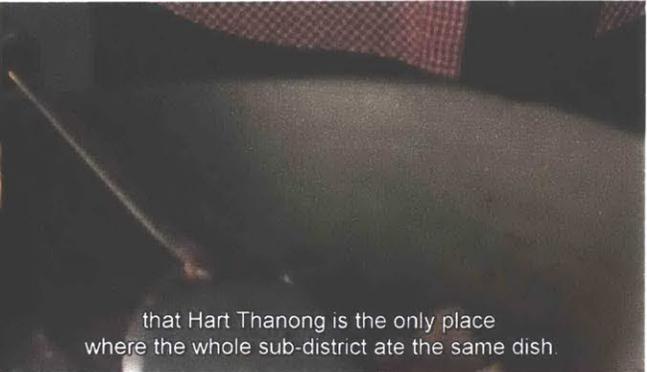
as well as the locals.

Chapter 4 PLACE | Self-Governing Attitude

1. The final chapter illustrates the attitude of the community that does not seek to rely on external assistance as their main source of rescue. There were several remarks given by different individuals within the Hart Thanong Municipality which embody a sense of pride in their own contribution and roles in the community, their own autonomy and their communal relationships. This pride instills a sense of belonging to a place in which they strive to develop and adapt to ever-changing circumstances including floods.



Out of the entire country, Thailand,
I can guarantee



that Hart Thanong is the only place
where the whole sub-district ate the same dish.



I am living the life of the farmer's son.



I am satisfied with what I have.



This was the challenge in management



We can drive the operations
and implementation



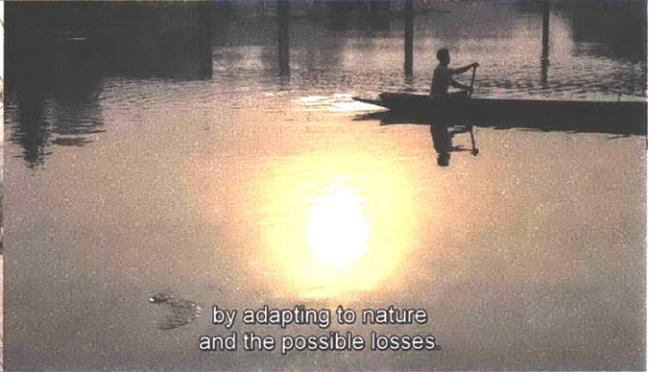
We are very proud



Principal of water User Association

This is our success, in my view.

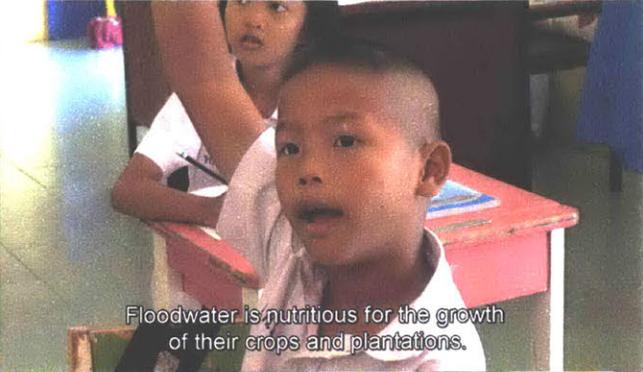
2. There are obvious repetitions of words and phrases including 'living with water' and 'adaptation' that when probed, were defined by different individuals with a similar explanation. The community members of diverse roles and responsibility share common mentality towards flood events in their environment. Beyond this, they also embrace losses that can potentially occur as a natural process that is inevitable. This particular way of thinking heighten their sensibilities to prepare for constant changes and uncertainties of external variables.



3. 'Crisis as opportunity' is an attitude that creates optimistic encouragement for the community members to get through the difficulties imposed by floods. With the support of self-organized operations, there are spaces for them to gather, to share and to carry each other through the situation. Since their mentality embraces uncertainties of natural processes from the beginning, they begin to reframe their thinking and seek for benefits that may come with the situations.



On the bright side, the villagers like when it floods.



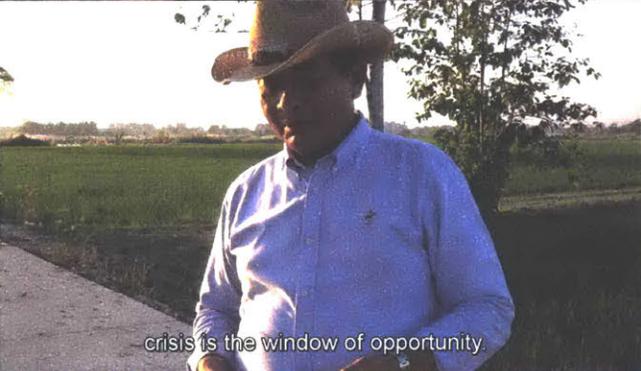
Floodwater is nutritious for the growth of their crops and plantations.



My father, for instance, catch fish during floods



When there is crisis, we turn it into an opportunity



crisis is the window of opportunity



for the community members to unite and collaborate with each other.



P'Thanorm
Villager M001

During floods, I went out to catch fish for sell.



It really makes good money,

4. A sense of place or refuge can further strengthen community cohesion as a valuable social space. This is demonstrated by the repeated reference to the establishment of the community kitchen and fresh food delivery during floods. Related descriptions of the strategies opens up an insight to the importance of 'place-making' and 'social gathering' space as crucial during flood crisis, in contrast to the conventional rebuilding and reconstruction approach after flood crisis. Almost every community member I have interviewed mentioned this without a prompt and with an expression of gratitude and joy.



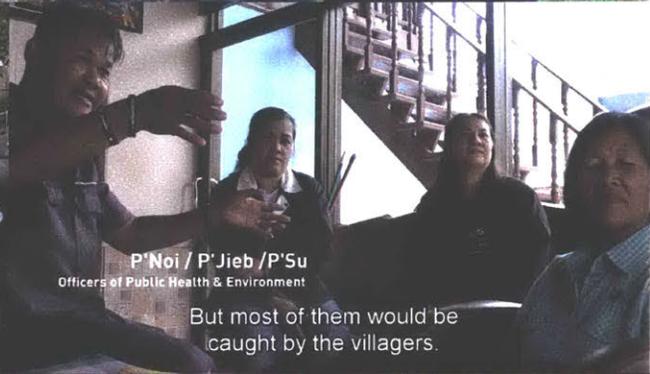
I could not stay in the house.



So I went to help them out, to cook food,



at the temporary evacuation ground.



P'Noi / P'Jieb / P'Su
Officers of Public Health & Environment

But most of them would be caught by the villagers.



Staying at home, isolated, can be distressful.



We need to get out of home to gather, chat and have fun.

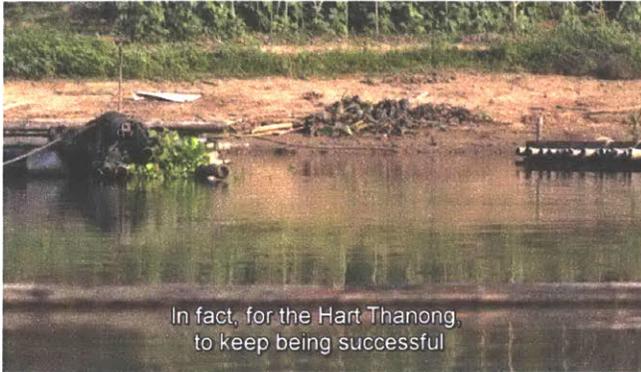


One great thing was they would cook fresh meals.

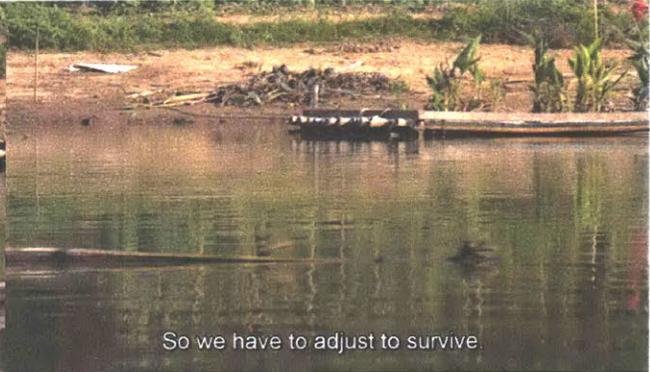


The villagers need not to worry about what to eat.

5. Adaptive capacity is an iterative process and is continual. Thus, it reinforces the importance to ground self-governing attitudes as the foundation towards adaptive capacity both from the organizational and individualistic points of view.



In fact, for the Hart Thanong,
to keep being successful



So we have to adjust to survive.



We have to constantly adapt,
grow and develop.



meant there is no ending.



P'Ked
Officer at Public Health Promotion

and they do not help us.
How would we get by?



We have to start from ourselves



In 2011, we did not have
any equipment to begin with.

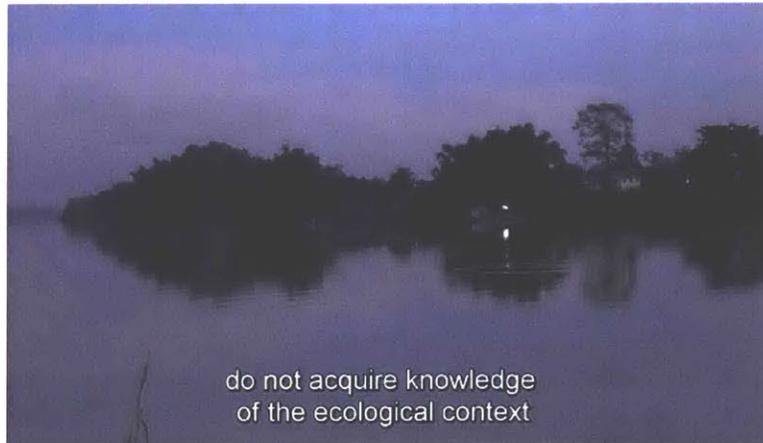


'Gods help those who help themselves.'

IDENTIFYING EXISTING AND POTENTIAL GAPS

Through visual research, I have identified existing and potential gaps within flood and water resource management from the situations experienced by the Hart Thanong community as followed:

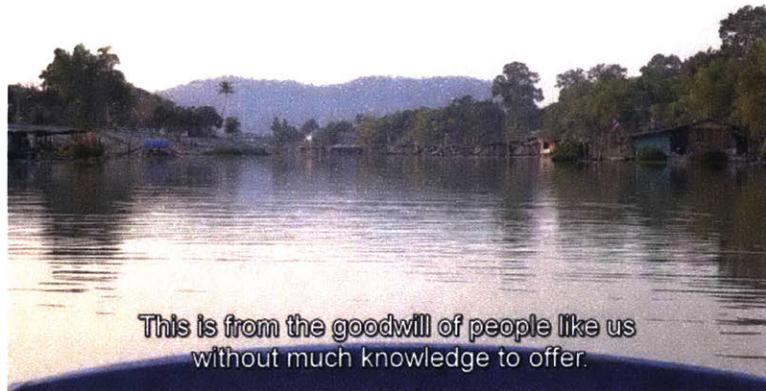
1. There is still little coordination between the regional water resource management and local community-based water resource management, despite the establishment of the River Basin Organization within Thailand. In chapter three, the deputy mayor clarifies the current situation, that a silo approach persisted in watershed management.



2. Government officials at the provincial level lack access to the insights and relationship with the community they are responsible for supporting. This makes it difficult to ground feasible implementation of water resource management, which requires an understanding of the site-specific context, actors and their capacities. The gap in communication has to be relinked in order to shape proactive conversation and responses to flood uncertainties.
3. Undocumented local wisdom – the informality of rules and knowledge embodied within the individuals of the community are not rigorously documented nor made salient. This

results in several side effects, including:

(i) The individuals of the community may feel less valuable within the society as they do not consider their own knowledge as important. In chapter four, the Chairman of the Municipal Council Suthat said,



The assumption based off from this statement for the use of the term ‘knowledge’ implies that it does not align with the typical definition of ‘knowledge’ in the current Thai society, which may value higher education as the ultimate means of knowledge production. This further widens the perception of power to the question of who gets to govern and with what knowledge? Communities need to by-pass this notion in order to self-organize proactively in response to the changing situation in which they themselves are directly affected by.

(ii) As a consequence, valuable knowledge and practices at the micro level are lost. There is a need to revive different modes of knowledge production, exchange and dissemination in an inclusive participatory planning process as well as to minimize gaps in the water resource and flood management practices. The scale of management in a river basin requires all of the possible devising rules, tools and practices as much as possible to cover the range of impacts imposed by flood events.

4. Changing attitude in youths as a result of the generational gap and disconnected relationship between landscape (water, soil, forests) and lifestyle. In chapter four, an explicit statement from the local school teacher opens up a new outlook in the water and flood management paradigm.



5. The generational gap, with the changing lifestyle have shaped different attitude towards water and the environment between younger and older generations. The emerging challenge gravitates towards increasing rural-urban migration of youths at the regional level and poses an issue of aging society as the remnant of migration pattern into cities. There is an urgent need to address this problem through raising public awareness. Educational reform through landscape literacy, which educates people through reading and seeing their landscape in its current and historical transformation, can strengthen the relationship between the individuals and their own context. This can ground the sense of belonging in younger generations. As reflected in the Hart Thanong community, there is a hope for youth to engage in community development and to mobilize local capacities to create positive impact, exemplified by the statement given by P'Ked in chapter four.

“ I think it is about a place. It is about our attitude [..]

I think if there are more of this thought in the younger generations, to go back and strengthen their communities, to develop their roots.

It would be fantastic ”

-P'Ked, Public Health Volunteers

Chapter 4 : Place

6. Difficulties linking water resource and flood management to holistic resource management.

The study reinforces the complexity of water resource management at the regional scale where holistic approach has to be considered in concert with other resources management, including soil and forestry. At the sub-district municipal scale, small-scale actors in communities can easily try to implement the integrated management. This is because the phenomenon presents itself visibly on the ground, affecting such individuals. For example, exacerbating precipitation and changes in climatic pattern which is manifested in floods and drought effect farming season and the livelihoods of the farmers directly. The most important actors to acknowledge holistic way of thinking and seeing are the small-scale local actors and not only the professionals, the academia or the government authorities. From the study in chapter three, the deputy mayor of Hart Thanong municipality is highly aware of this notion and pointed out that multi-seasonal and cross-sectoral management have to be considered simultaneously for successful long-term strategy to minimize impact from flood disaster.

After the research, the institutional analysis development framework (IAD) was

revisited to evaluate the findings. The empirical studies done by Ostrom and other social science researchers provide supportive argument to the discoveries within the Hart Thanong local institutions, and can be referred back to many specific statements captured in the video. The literature reviews, in correspondence to the research discoveries, can be summarized as followed:

In *Governing the Commons*, Ostrom explains that in the continually changing environment and uncertainties, adaptation opportunities can be increased through the organization of governance (2005). Given that most ecologically related problems such as water and flood management are nested in scales from small local to global domain, so too should the governance systems be invested to serve multiple levels. In conclusion, the researchers are urged by the author to focus in the “complex polycentric systems of governance that are created by individuals who have considerable autonomy to engage in self-governance” (Ostrom 2005, p.258).

3.1.1 Rules-In-Use

‘Rules’ as “strategies adopted by participants within ongoing situations” have not been the focus in the social science discipline even though they govern all of the decisions made by any institutions (Ostrom 2005, p.17). While the ‘authoritative relationships’ (vertical approach) between the nested, hierarchical levels of rules (operational, collective choice and constitutional choice rule) are important, so too are the ‘authorized relationships’ of rules at any one level (horizontal approach). Thirty independent studies conducted by Acheson, Wilson and Steneck noted the effectiveness of the local fishing regulation that is self-organized whereby rules substantially different from the scientific management are employed (Berkes et al. 2001 from Ostrom 2005).

3.1.2 Community Attribute

According to Ostrom, the Institutional Analysis Development Framework when being applied to the empirical field research, one can observe the regularity of the behavior that form the institutional basis for shared understanding in the linguistic statements. She suggests that the qualitative research employing in-depth interviews or the reconstruction of historical and case materials are often required. Furthermore, by providing guideline question such as, “is there an articulated sense of moral or social obligation ‘expressed’?” (Ostrom 2005, p.177), she points to the fact that field work also requires much intimate capture of sensorial textures in order to establish a sense of shared understanding .

Ostrom strongly argues that multiple assumptions about the participants are needed to increase the institutional analyst’s capabilities to predict and understand interactions and outcomes in a diversity of action situations (Ostrom 2005). The various differences the individual may have different internal mental models. Their internal valuation patterns may also differ, resulting in the decision to take particular type of actions. In addition, these behaviors are contextually dependent, thus, a single normative model is likely to be inadequate to “capture behavior in all context” (Frohlich, Oppenheimer, and Kurki 2004, p.116 from Ostrom 2005, p.113).

Shared Culture and Norms

Trustworthiness

Norms of reciprocity and trust are necessary for the long-term sustenance of self-governing regimes. Trustworthiness, reliability and accountability of other participants that are influential for the individual decision-making process are

difficult to observe. However, through the observation of the information rule, it provides a channel whereby the interaction or linkage between each participant can be understood more clearly.

Information flows

Ostrom explains that not only that it affects the level of information available to participants it also authorizes the information flow among the participants. This means the frequency in the exchange of information, the accuracy, the subject and official language used in the communication can equally impact the situations.

Mental model

Ostrom further spans the statement by the philosopher Allan Gibbard (1990) who stresses the “ritualistic value in achieving the shared norms” between the participants (2005, p.108) . The vividness in the mental model will influence what they should “do in particular situations and increases the probability that they will do so again in the future” (2005, p.108) . One other factors to be carefully consider in the analysis of the participants is the generational gap, which contributes to different life experiences, that may affect the mental models of the participants despite the them sharing the same culture (Schiemann 2002 from Ostrom 2005).

Relationship building

The mental model can be shared and developed further by communication, especially, if the participants already has shared cultural worldviews. Denzau and North stress on the importance of the positive impact from the repetitive, face-to-face communication to result in joint outcomes and consensus building (2000) the same with Ostrom who affirms from field studies that face-to-face communication is effective in providing more vividness than written communication. The latter property refers to the “amount and quality of the sensory details of the objects

encountered” (Frohlich and Oppenheimer 2002,p.8 from Ostrom 2005 p. 107). This leads to the claim that face-to-face communication, visual sensory of gestures and interactions plays a role in the participant’s decision-making process.

3.1.3 Biophysical World

The great array of choice rules devised by the users tend to exceed the limited recommendations given in textbooks. In turn, the crafting of rules by appropriators affect actions available to participants and the basic strategies they may deploy, thus, the outcomes (Ostrom 2005). However, general framework can be gathered from field evidence that appropriators relies heavily on ecological conditions (Ostrom 2005). In order to understand the rules used in common-pool resources in the field, we need to understand how the participants perceive the underlying biophysical structure of their resources which shape the way they develop rules, “in consistent with the time, place and norms shared in their community” (Ostrom 2005, p.243).

RECOMMENDATIONS

In Thailand, water resource and flood management strategies focuses heavily on a rigid, large-scale structural approach over a non-structural approach. Consequently, this shifts decision-making power entirely to the central authority and leaves little room for different sectors to intervene, especially at the local level. It is important to be forward looking to how, micro community-based water resource and flood management practices would be scaled up to the regional level. The following section provides main recommendations to push forward flood and water management governance in the Chao Phraya River Basin of Thailand.

1. Devolution of governance to sub-district municipal level is an important driver for collective water resource and flood management. At this scale, power dynamics can be reorganized more meaningfully, providing more space for equitable and inclusive governance. With strong leadership, the adaptive mindset can be adopted more easily.
2. Informal relationship building and organizational capacity building are the fundamental tools for an effective long-term solution in water resource and flood management governance. Under this umbrella, building proactive leadership is key to maintaining the integrity of self-governed local organizations as well as to unlocking the success of coordinated ground operations in uncertain times.
3. There is an urgent need to support embedded local facilitators to bridge or minimize the communication gap between entities at various scales within the river basin. These organizations or groups of people are the critical point of connection between the internal (community-based) and external (regional-based) coordination. As shown by the study, the intervention of mediators provides the following benefits:

(i) Strengthens and increases community self-reliance and adaptability to resolve long-term uncertainties in flood situations with less on external resources, creating awareness of the consequences of their own actions and how they are related to the systems as a whole.

(ii) Minimizes gaps between micro level and macro level towards an integrative river basin management. NGO's intervention can neutralize the dynamics of operations and the language of communication between government officials and community members to create the middle ground where action operations meet with system-thinking framework.

4. Education provided by formal institutions is vital for shaping an attitude towards water resource management and flood crisis in youth. This must be prioritized alongside other policy intervention to raise awareness in the younger generation. In order to plan and alleviate issue of rural-urban migration pattern, education and landscape literacy must inform the younger generation to: (1) Perceive values in and between themselves, the environment and the others; (2) Acquire a sense of belonging and sense of place and; (3) Reframe the attitude of crisis as opportunity.
5. Knowledge dissemination is urgently needed to empower and inspire collective practices within the Chao Phraya River Basin. This allow different communities across regions to reconnect with each other and potentially drive networks of cooperation between local entities. There must be a strong support for the platform of dialogue, knowledge exchange and transfer among the local actors.

To implement the recommendations on ground, I suggest two preliminary steps in order to lay first foundation for long-term improvement in flood and water resource management of Thailand. These two steps include:

Step 1: Shifting Visibility, Shifting Voices.

1. Amplify visibility and encourage practices of small-scale community-based water resource and flood management governance at the municipal level through mainstream media. There is a need to capitalize on the existing booming media platforms in Thailand as a channel for the underserved rural issues, aspirations and progression. Currently, there is an prioritization of solving problem of cities such as Bangkok over rural areas. Documentary as well as short films have the power to communicate stories

and reprioritize urgency in water resource and flood management that is not urban-centric.

2. Collaborate with potential partners from different sectors to accelerate and incubate communication platform for River Basin Organization at the smallscale watershed and waterbodies. Find existing capacities, reconnect, reorganize and revise the constituency of water resource and flood management regime to achieve proactive implementation or demonstration projects in rural areas.

Step 2: Grounding Connections between Scales

1. Rethinking the platform that incentivize multi-stakeholders to channelize their resources and capacity will immensely open up more possibility of integrated water resource and flood management design and planning practices. This may include design interventions such as communication and networking center, local knowledge and information exchange platform, which can be manifested in various physical or digital means of publications.
2. Realignmentandnegotiationofvaluesbetweendecentralizedandcentralizedgovernance is needed to balance decision-making power. Promotion of autonomy and devolution of governance, in fact, may not be a feasible option considering political power hold at the national level in Thailand. Planning practices through medium of film, using film as process, can contribute by communicating multiple shared benefits and maximized values for different sectors, stakeholders and discipline in light to encourage collective water resource and flood management for the decision makers for water policy reform.

“ [in 2011..] We did not have anything to begin with. But we did not demand or cry out for help from the others. We had to help ourselves first.

Like this old proverbs,
‘God helps those who help themselves’.”

-Mayor Muan
Chapter 4 : Place



*'Make Way' (Author)
The Sakae Krang River, Uthai Thani,
December 2017.*

CHAPTER 4 | REVISITING THEORY FROM PRACTICE

Na Vi, the local NGO from the Hart Thanong said, “In order to solve a problem in a particular place we may, sometimes, require to look for another resolution somewhere else” (Chanpuang 2017). This statement resonates with the transformation and the understanding of the theoretical standpoint during and after this field research experiment. It reinforces that theory informs practice and so does practice to theory. This is where I revisited the initial framework and several quotes given by Elinor Ostrom, which set me off at the beginning of the inquiry, to question and challenge the statements. It is vital to enrich the understanding of the institutional analysis development theory, which is rooted in political economy, with the findings made by the use of documentary video in practice. Crosscutting research methods from across disciplines are required to enhance and enrich understandings from a single discipline.

Prior to site visit, institutional analysis development framework played a major role in guiding the research experimentation. In an attempt to translate theory into practice, extensive readings were made to understand the framework and its definition, then, adapting it to the institution at the site of study. As a researcher, I set up boundaries and planned typical metrics as much as possible to carry out the hypothesis and to inform field actions, schedules and plans. The following diagram, which is adapted from the institutional analysis development framework, demonstrates the use of theory in practice prior to the departure:

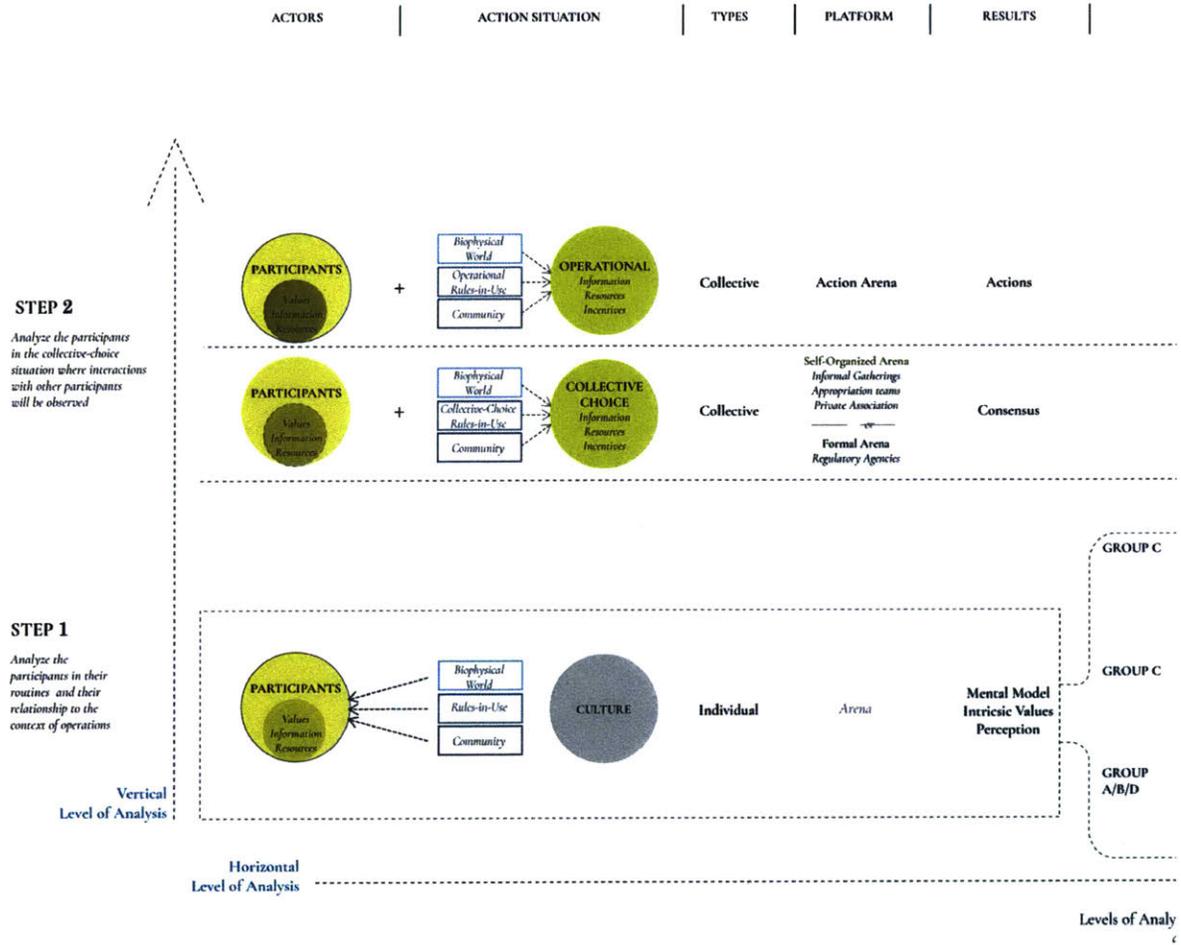
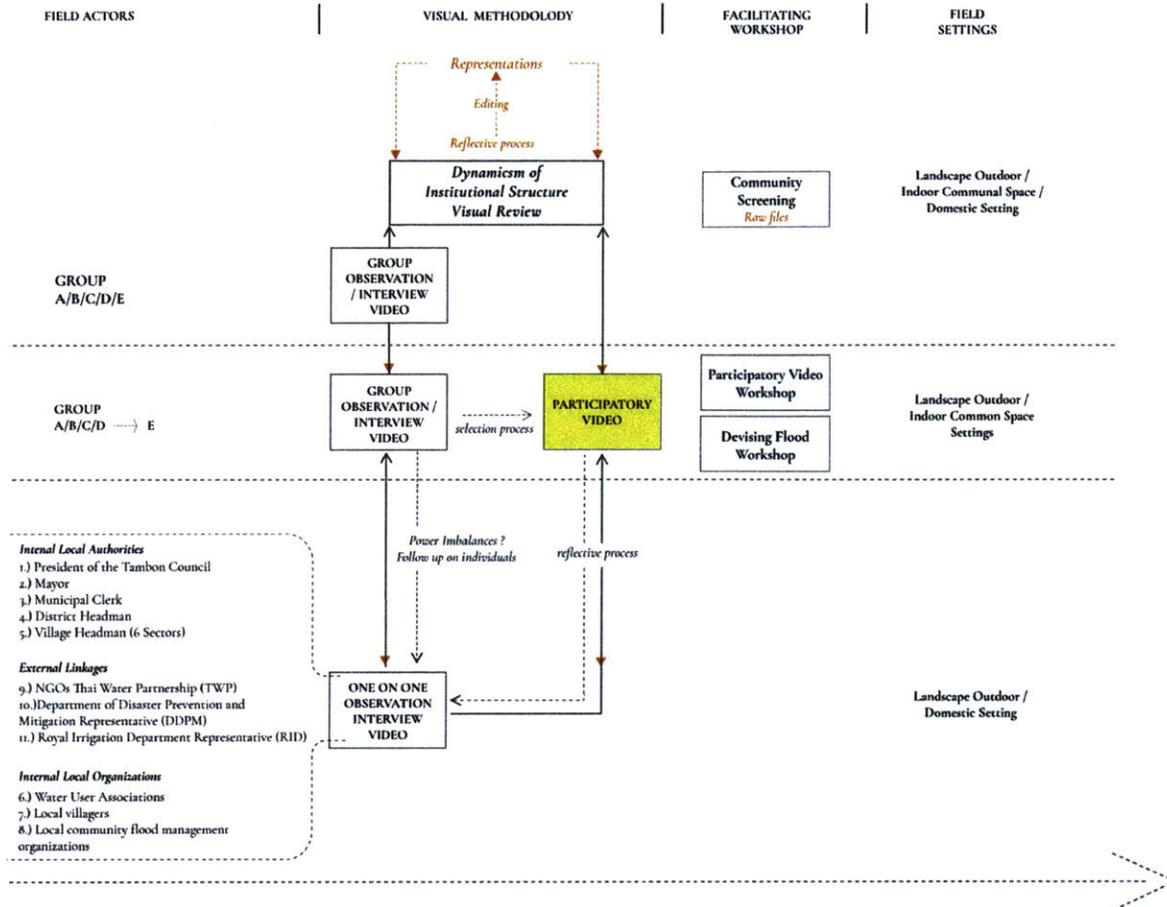


Figure 2.1 Internal structure of an act
 Figure 2.4 Relationship of formal and informal c
 Figure 2.3 Level of Analysis
 Figure 4.1 The relationship between information, action-outcome



ysis in Visual Methodology
adapted from

ion situations Source Adapted from E.Ostrom 2005, 33.
collective choice arenas. Source Adapted from E.Ostrom 1999,60.
s and outcomes. Source E.Ostrom 1999,60.
linkages and internal mental models (adapted from Denzau and North 2000,36)

RESEARCH CASES
COORDINATE / CONTACT MUNICIPALITY
MAY - DECEMBER 2017



LOCAL NGO

VISUAL RESEARCH USING VIDEO
DEC 2017



ADMINISTRATORS



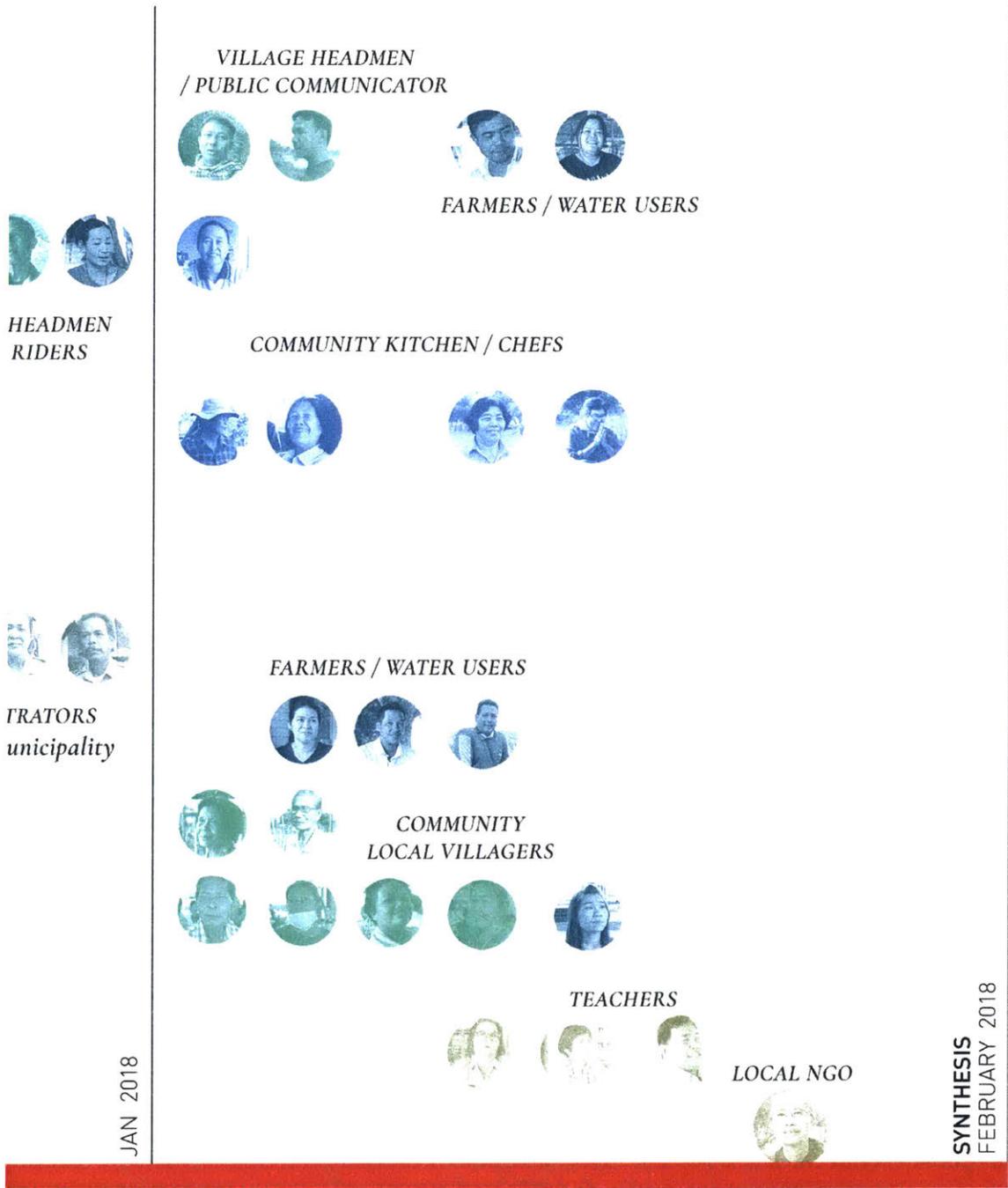
PUBLIC HEALTH
OFFICERS /
VOLUNTEERS



VILLAGE HEAD
/ BOAT FISHING



ADMINISTRATORS
Board of Mu

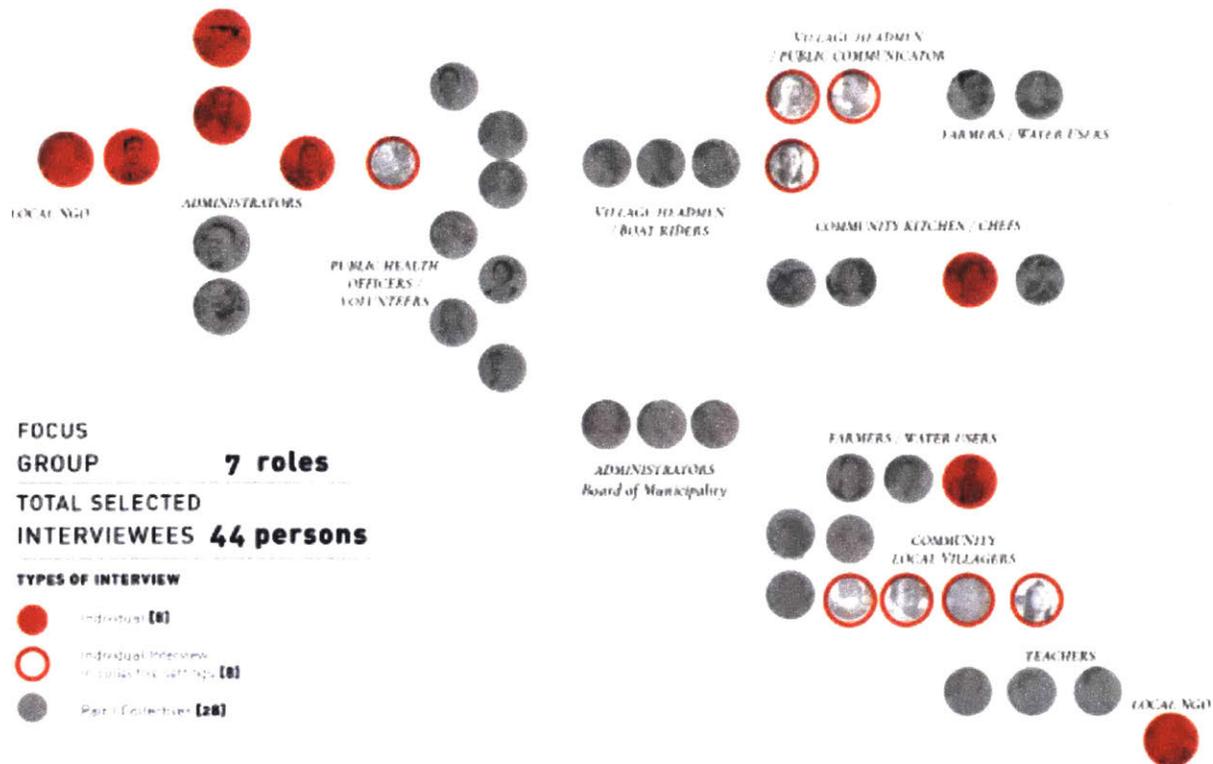


Timeline of the interviews made with the participants throughout research experiment from December 2017 - February 2018. The filming gradually became less formal towards the end of the research. P.Jular (2018)

However, using video as the medium of investigation in the field transformed initial research plans and pre-assumptions set up by the theoretical framework. Although Elinor Ostrom emphasizes the importance of site-specific examination of the participants in the policy analysis, she claims that these institutions are fundamentally invisible because the rules and laws devised by the community member are not recorded by text. Thus, the 'grammar of institution' was invented as a measure to capture the unwritten body of knowledge. On the contrary, I have found that with the use of video, I was able to tap into the knowledge embodied within the individuals of the community – to make visible the 'unwritten' laws and the consensus among the community members. These information needs to be 'captured' rather than 'written'.

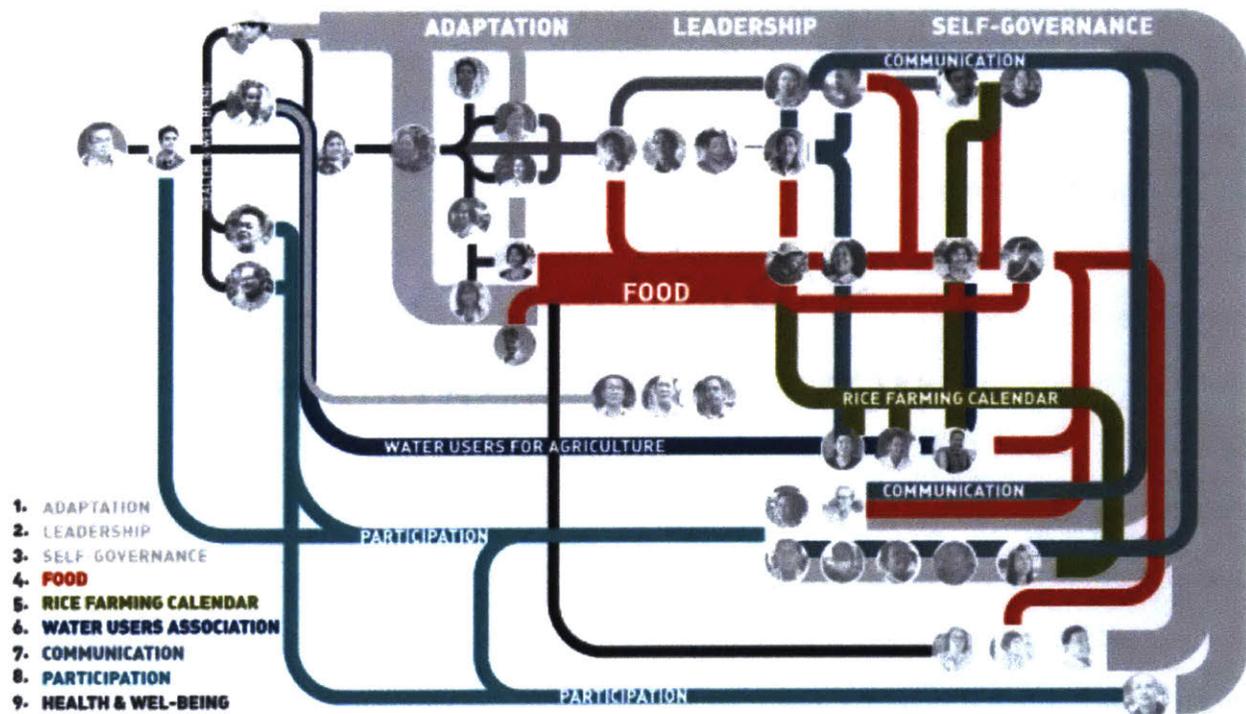
MAKING THE INVISIBLE, VISIBLE

The use of video allows researchers to collect and survey subtle information with a varying degree. This means that the types of interview were conducted slightly different depending on the topics of investigation and the level of dynamics needed to further capture the underlying values. For example, collective interview was chosen to be employed with the investigation in the community food delivery operations (see chapter one (19:22, 23:25); chapter four (05:14): Visible Flows) as it is the most robust flood management strategy which requires participation from many individuals of different roles. The use of collective interview, to draw different participants together within the same room, was considered particularly successful and even more so in the editing process. When shots of collective interview are juxtaposed with the accounts of individual-type of interview, one can see the distinction in the dynamism of interactions and the enthusiasm given by the audio and gestural expression.



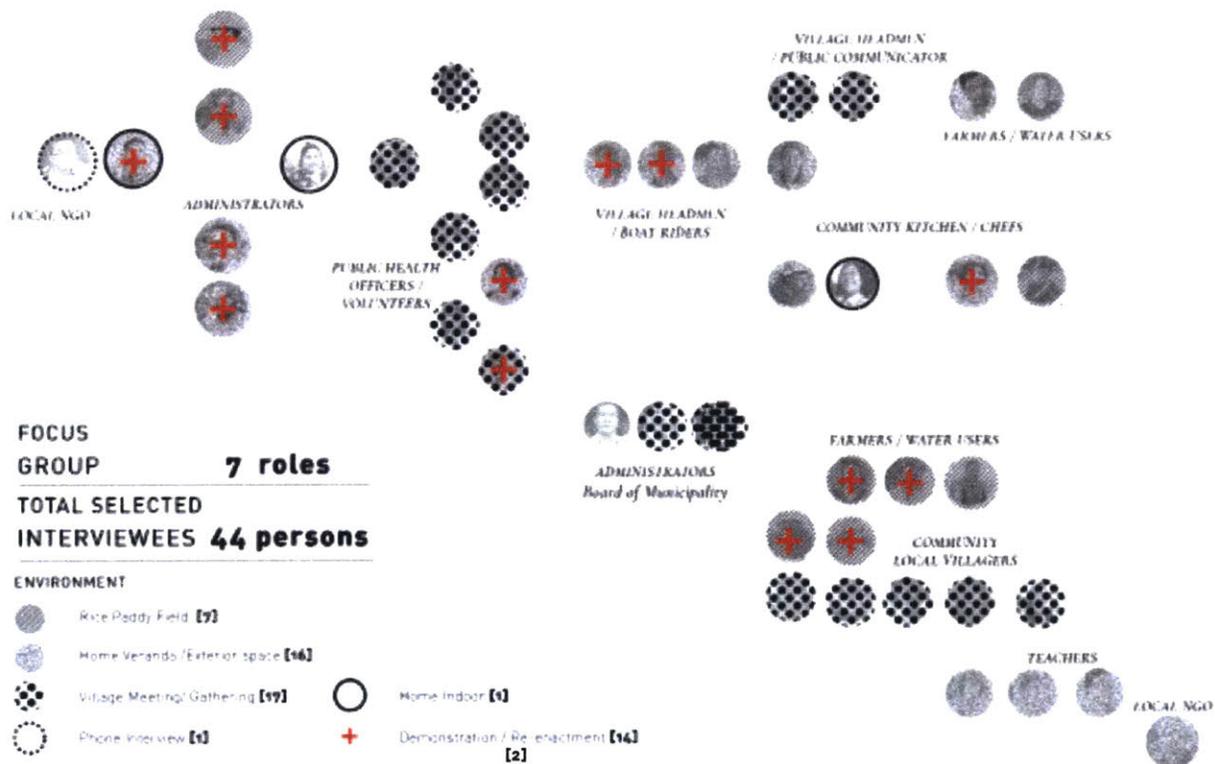
The research has shown that the dynamics of the participants are most powerfully reinforced by audio. Spoken by the participants themselves, audio reveal sensorial texture to capture qualities that cannot be rewritten or fully enriched by text alone, including emotions, feelings and expressions. Because these critical moments are often fleeting and spontaneous to the situations, video is a compatible and responsive tool to take account of these often – ‘lost’ – information. The discoveries of the interactions in the collective interviews given by the Hart Thanong community presents an example. It demonstrates that conversational dynamics between the participants is the heart of the ‘unwritten law’ mentioned by Cooter in 1994. The more dynamic the conversation, the more difficult is it to record the spoken rules in written language. However, repetition of gestures and responsive dialogue between the interviewees occurred naturally in the filming of collective interviews, which confirms the legibility of ‘shared norms and rules’ understood among the community members.

The accumulation of interviews informed the importance of 'food' during crisis, which later becomes the keyword that unlock the understanding of flood management within the Hart Thanong Community and elsewhere. The account of 'food' given by the participants transcends the notion of conventional disaster relief management as sustenance to the lives of the flood-affected residents. In the Hart Thanong community, it refers to social cohesion, pride and sense of belongings to a place – a mental model manifested as an operational response to crisis rather than mere action response to crisis. This interpretation, again, cannot be uncovered nor understood without the account of audio from the participants. Several statements on food emerged naturally without direct prompt to the topic itself, as mentioned in chapter three: deconstructing findings through visual methodology (documentary chapter four: Place; Self-governance). The gesture and choice of words used to describe food delivery remains important threads that binds the underlying structure of the community cohesion.



The diagram shows the repetition of words recorded in the interviews by different individuals of the community. P.Jular (2018)

Furthermore, the informal relationship formed under the Hart Thanong local municipality can be reinterpreted as a family unit, which enables the environment where operations and management can become more effective. Due to the willingness to share, empathize and push the limit beyond the ‘conventional’ roles given by formal status, the structure of the institution is constantly reorganized. The statement from deputy mayor Mr. Samruay, who said, “The mayor and I also operated boat services for the villagers. When crisis happens, we all transcend our roles to help each other out.” (2017), exemplifies the horizontal governance whereby roles, as well as regulations, are malleable and are susceptible to change.

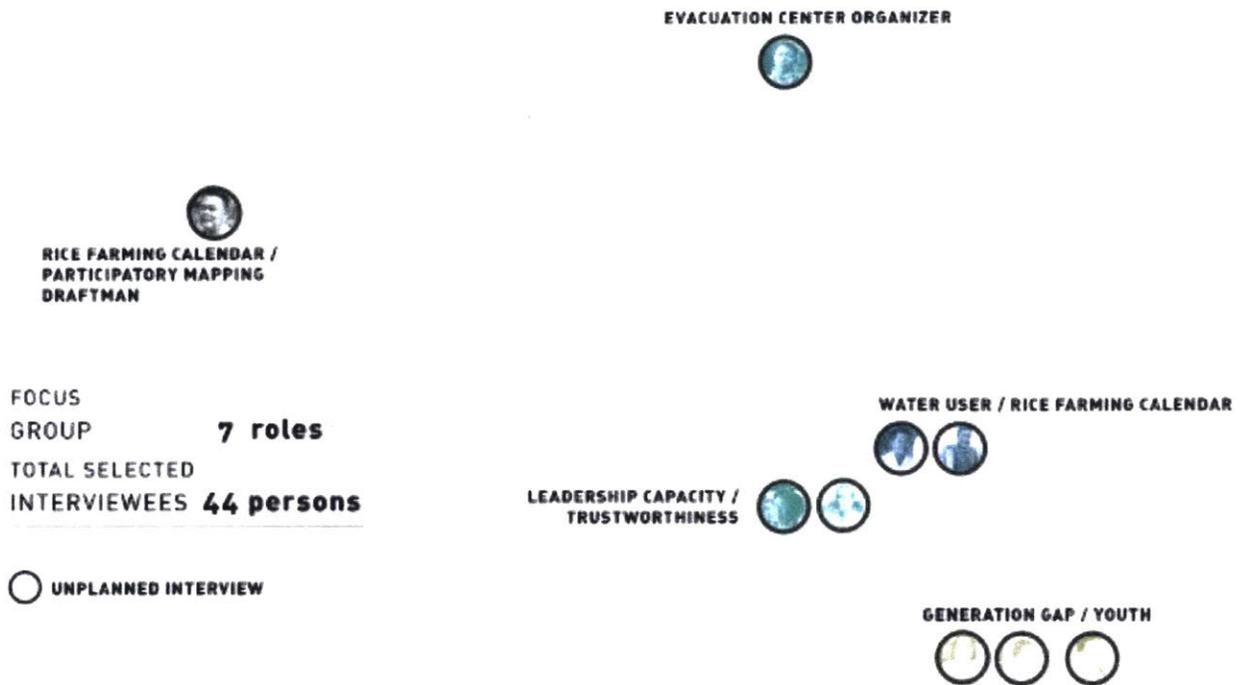


Several framework set up for how the video might be used resurfaced naturally in the field, most importantly, the settings of the interviews. Outdoor and indoor settings have an immense effect on the information given by the participants. The diagram above demonstrates choices selected by the participants on where they would prefer to give

an interview. Out of the total forty-four interviewees, only two participants gave their interviews indoor. This was also partly because on one case, it was raining and for the other, the interview requires information to be explained on a computer screen.

The participants' preferences pave way for me to understand the relationship between the community members and their biophysical world, leading to the insights of values, information and resources embedded within the individuals. This point in the finding corresponds directly to the institutional analysis development framework. However, the process, which allows me to arrive at the finding, was rather different from the pre-conceived sequence of research investigation. During the field investigation, I have found that the information and values embedded within each individual members were uncovered, first, through collective interviews, then, work backwards to reinforce individualistic perceptions and values. Being embedded in the fieldwork inevitably changed the metrics of the research and forces one to adapt the working process accordingly. Thus, working with video as a research tool allows reflexivity from the researcher at all times, as well as constantly grounds researcher with the ever-changing experiences.

In addition, field researcher needs to be highly flexible and responsive to the surrounding context. The exploration of the site using video attracted a number of unplanned interviews. The immediate encounters with the following community members, has led to vital understanding of flood and water resource management in the Hart Thanong community. The following diagram shows the participants in which I have interviewed unexpectedly or whom I have met without prior preparation plan. Key topics, which emerge out of these interviews, are described next to the participants' identification. One needs to understand the importance of critical moments when researcher intentionally leave some room for the unpredictable.

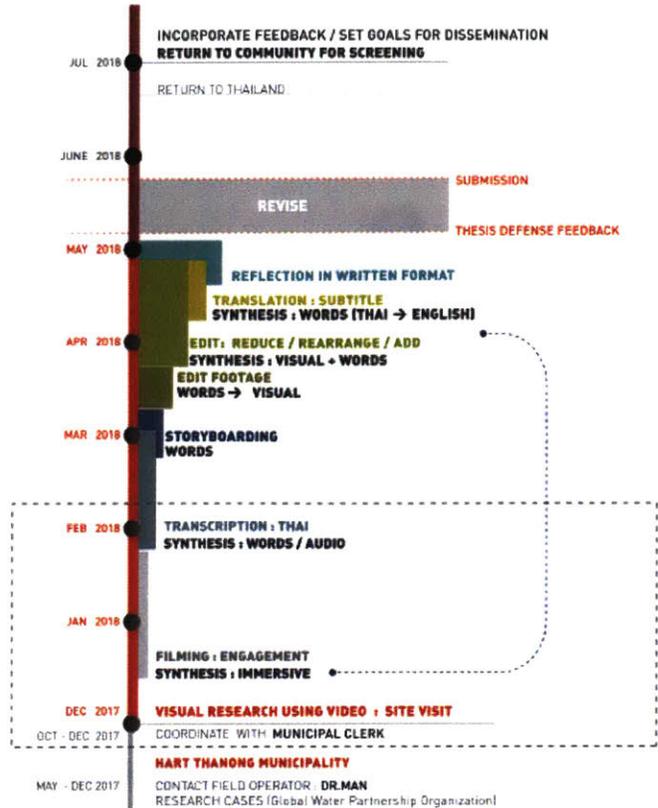


Visual methodology is all about process – a translation between visual and words, seeing and thinking. Researchers need to be fully engaged or immersed with every steps from the beginning, during, and after the experiment, and most importantly, in the transitions between them.

I have discovered that in the transitions, there are synthesis. As visual methodology requires researchers to work back and forth between seeing, thinking, translating and writing, layers of synthesis are built up along the process. There is no single linear sequence to prescribe visual research, thus, gives room for findings to be reinterpreted every time videos are revisited. In using video, the first layer of synthesis was formed naturally during the process of filming. The level of engagement from the researcher, or at that particular moment – the filmmaker, can become overwhelming. As a result, the researcher responds immediately to what seemed most important and dynamic to the topic of interview. The choice of words, interactions and references given by the participants naturally inform the researcher of what to ‘see’ or to ‘film’ next and in relation to their accounts.

FILM COLLECTION

| CONTEXT / ENVIRONMENT | INDIVIDUALS |
|-----------------------|---------------------------|
| 1,172 | 681 |
| TOTAL FOOTAGE | TOTAL FOOTAGE |
| | 298 |
| | FOOTAGE FOR TRANSCRIPTION |
| | FOOTAGE CONTENT |
| | FOOTAGE VISUAL |
| | 104 |
| | 99 |



Conclusion

From this research, I can thereby argue that several dimensions of film has the power to reveal unwritten law, legitimize informal rules, and thus, ultimately making the invisible visible. Thus, videography lays great potential to bridge social science with policy analysis and other planning investigation to fulfill the gap in which Elinor Ostrom has once questioned. The shared concepts that exist in the minds and routines of participants in policy situation no longer remains fundamentally invisible. Planners have the ability to go beyond conventional theory and seek for creative, crosscutting tools across disciplines, to provide resolution for planning practices on ground. I now revisited the statement that has led to the first thesis question, which said:

“The groups who have actually organized themselves are invisible to those who cannot imagine organization without rules and regulations issued by a central authority”

- Ostrom, E., 2005

Informal rules devised by locally self-organized institutions, which successfully drive implementation on ground, can be made visible. The validity of these institutions to the central authorities is not caused by its ‘invisibility’. From another point of view, it is the central authorities and the outsiders themselves who may not care to look and, thus, lack the ability to see or perceive the fundamental dynamics of the local institutions due to limitation of written form of documents. To enrich the notion of this statement, one can restate that:

“Documentary video opens up ways of ‘seeing’ self-organized institutions for those who cannot imagine organizations without rules and regulations issued by a central authority.”

-Jular, P. (2018) adapted from Ostrom, E. (2005)



*'Evening Routine' (Author)
Hart Thanong, Uthai Thani, Thailand.
December 2017.*

“ .. Many other sub-district around us may have all the resources ready. But in terms of implementation, we can cover every household and take good care of our villagers to the best of our ability.

This was the challenge in management that we are proud of.

This is the success - management on the foundation of limited resources.”

-Deputer Mayor Samruay

Chapter 4 : Place



*'Irrigated' (Author)
Hart Thanong, Uthai Thani, Thailand.
December 2017..*

CHAPTER 5 | APPLICATION OF VISUAL METHODOLOGY IN PRACTICE

The deliberate use of media as the tool of investigation relates to the question the role of video in research and planning practices. The potential of video to make visible the interactions, capacities and power dynamics between small-scale actors of self-organized institutions are examined. To reiterate the research question, I ask: *how can visual methodology make the invisible visible?*

The next section outlines the synthesis and reflections from the fieldwork conducted between December of 2017 to early February of 2018 with the Hart Thanong community members. The visual method of documentary video was used to engage with various groups and individuals of the community, to understand and analyze the underlying structure of the local water resource and flood management governance.

1. There were varying degree of responses from the community members in every first encounter. However, they eventually became very familiar with the research experiment after I had presented myself in several community events. I found that most of the community members welcomed the filming process and were more natural and pleased in the conversation than I had expected.
2. The embeddedness of the researcher is most important in field research in order to build meaningful relationship with community members. Several visits, small talk and informal conversations allow greater accessibility into the insights and conversation, which does not take place in a formal setting. For instance, the very first site visit where I was introducing the project to the community leaders took place in the meeting room of the municipal office. The conversation was, in comparison to many later interviews with the same group of people, much more formalize.

3. The researcher must be responsive to schedules and events happening within the community in order to capture the critical moments. Visual inquiry not only requires deep observations of the daily routines of the local villagers, but needs to be highly flexible with changing schedules, time and place where important moments such as community meetings, gatherings and other dynamic interactions between the local members may take place.
4. Revising the role of the community members as the researchers. Community members were highly cooperative with the research and have been so willing to provide information, reenact memories and their experiences of floods. After filming the last interview with the head of a local NGO, she mentioned to me off-camera that, from her experience, that community members feel the importance in themselves when their stories are being heard or when someone spends time to listen to them. Reflecting on the statement, filming became the tool to foster dialogue with the power to empirical knowledge and amplify voices of the community to other actors within water and flood management domain.
5. There were similar reactions from the same group of people during the filming. For instance, the administrative team became familiar with the camera's presence and were comfortable in all kinds of settings. On the other hand, most villagers tended to shy away if they were asked to be filmed in a formal setting. When I asked where they would like to be filmed or where they would like to talk about their experiences, they would likely say their homes or in a rice field. The change of setting made a difference to the detail and the information I would receive.
6. Informal settings and the outdoor environment seemed to have a major impact on local villagers' expression in front of the camera.. Hand-held approach to filming is

also more appropriate when having a conversation with the local members who were mostly active in the field. This implies the importance of informal settings to be effective environment in gaining deeper knowledge from different individuals.

7. The presence of the camera attracted positive attention and enthusiastic engagement from community members. On several occasions, while I was surveying the site and filming the context, many villagers approached me with interest to ask what I was doing. With no prior expectation, the camera granted me access to deeper conversations with community members and allowed them to engage more of their stories with regard to the research.
8. The presence of the camera helped facilitate natural conversations between the researcher and the community members if in the right setting. Critical dialogue often arose much later in the filming process and often happened very casually. With this in mind, I needed to keep the camera rolling despite the fact that the main questions and prompts had already been discussed.
9. The way in which the camera works has to be in parallel with how the conversation is initiated. The most effective way to provide a safe, inclusive space is to start with small talk and let the conversation flow instead of shooting direct questions. Some conversations may start off with an entirely different topic unrelated to floods or water.
10. One clue always led to another. While letting the conversation flow freely during filming, new information would slowly emerge to set up a guideline concerning who to talk to or what to film next. Later, it occurred to me that setting up the schedule in advance is fraudulent for fieldwork and is insufficient to contextualize the dynamics on the ground.

11. Throughout the filming, the most dynamic interactions often happened in the collective interviews where different community members with different roles joined a conversation. Often, when being prompted with flood events, they were able to give clear information not only about their own responsibilities, but of the others around them. Mostly they could even speak for the tasks that another may be responsible for.

12. While filming collective interviews, the level of casualness became a critical point of expression where each individual become more expressive, gestural and active. Many times, they spoke on top of one another when being prompted about a topic that stimulated their memories and got them actively engaged. When I asked a certain individual a question, the others in the room would be highly responsive through gestures such as nodding, agreeing with yes, or even chiming in their comments amid the conversation. Or when an individual could not vividly remember a certain detail, they wanted to tell me, they would start asking each other if they could remember that. This opened up a new understanding towards their relationship with one another, their reliability and trustworthiness in each other.

Filming process allowed the richness of each individual to surface through sound, facial expressions and gestures. Simultaneously, visual research methodology opened up all of my awareness, concentration and sensitivities to seeing, hearing, synthesizing and engaging with the participants as well as the physical environment simultaneously. The research process became an immersive experience which uncovered insights to individualistic and collective values that would have not been discovered through any external assessment.

Participatory Video as a Critical Research Tool

Experts and academic researchers from the social sciences employ a wide range of methods of inquiry, both quantitative and qualitative, in their studies to understand diverse social phenomenon. Yet, widely accepted methodology is largely produced in the written format. There is less consideration for the reality of dynamic human narratives which requires deep understanding of the site-specific framework that shaped the outcome of a social phenomenon (Banks 2015).

Participatory video, as a critical visual research methodology, can provide a platform for reflection and a space to consider the significance of what is and what could be (High et.al 2012). Moreover, it aligns with the participatory action research (PAR) as a way to empower community. Yet, the research focusing on participatory video projects is minimal over the last 15 years (Braden and Huong Than 1998; Lunch and Lunch 2006; Shaw and Robertson 1997; White 2003; Mitchell et.al 2012) and does not sufficiently address critical questions with regard to the interpretation of 'participation' that has been asked of Participatory Action Research methodology (High et.al 2012). The questioning of knowledge production is at the heart of Participatory Action Research which begins by asking what constitutes knowledge, who is allowed to define it, produce it, decide how its produced, or determine the quality and method of its dissemination.

Participatory video is not separable from the applied anthropology, and thus, speaks of social processes that are inherent in its nature. It emphasizes the 'using of visual anthropological theory, methodology and practice to achieve applied non-academic ends.' (Pink 2007). The origins of participatory video itself was born out of the innovation of individuals, organization and communities learning from their applications of filmmaking to social issues (High et al. 2012). Its definition, however, varies greatly in visual discourse

and can be difficult to pin down due to its rich diversity of purpose and applications. More importantly, the method has often been used more prominently outside of academic research and education than inside (High et al. 2012; Mitchell 2012). The following literature review summarizes how and why participatory video was used as the primary visual method for this research.

One of the crucial features of participatory video is that interesting results often arise from the process of making a film rather than the product (Ferreira 2006; White 2003; Mitchell et.al 2012) as it reinforces the social development of learning and improving relationships (High et al. 2012; Mitchell 2012). Participatory video creates an opportunity for participants to talk about things that lie below everyday lives and work but are seldom make explicit: values, vision and desires (High et al. 2012; Mitchell 2012). Thus, going through the process of making, discussion and reflection, one can shed light to the underlying mental models of the individuals within a community including the reason to take certain actions. In the case of Community Development in Hungary, participatory video was defined as 'a collaborative approach to working with a group of community in shaping and creating their own film, in order to open spaces for learning and communication and to enable positive change and transformation.' (High et.al 2012; Mitchell 2012). This naturally built relationships between the actors to come together and discuss their strengths and weaknesses in order to come to a solution. Subsequently the project reveals the successful outcomes of stronger development in the local community, the empowerment and the cooperation among the participants (High et al. 2012).

The power relations within horizontal governance as the central focus of this research analysis, thus, it requires visual inquiry based on participatory video to play a major role in the investigation. The method allows the individuals from the community to reflect more critically on their success and the underlying mechanisms which lay the

foundation to their adaptive institutional structure. Thus, it can open up more opportunity for them to identify any gaps or issues which may emerge during the reenactment of flood scenarios during the filming process or during the screening of the film.

PLACEMENT OF VISUAL THESIS RESEARCH IN PARTICIPATORY VIDEO

Given the time constraint of the thesis, this research could not reach as far into the process of participatory video. This media research is currently placed in between documentary ethnography and participatory video. The level of participation during the research conduct is demonstrated as followed:

Filming

There were constant awareness in the participation of the local members during filming, the participants were asked to choose the location of their interests where they feel most comfortable. They were also asked to demonstrate or lead the filmmaker to the locations related to 2011 flood events of their memories. This direct the camera naturally to frame the knowledge or stories they are trying to convey. While filming critical shots, the community members were also asked to affirm if the framing of the camera correspond to what they were trying to say.

Screening / Editing / Dissemination

The most important element in the participatory aspects of this project is the screening of the first drafts of film the community. In order to revise the second edition, the responses, reactions and input from the community will shape the edited content represent in the final video. There is a need to continue this research experimentation

with rigorous embeddedness. The screening has to be done in real-time in order to capture, observe and record the responses from the community members while they are reviewing the films. The projection of this research investigation, outcome and dissemination are discussed in details in the following chapter.

During the conduct of this action-research, several adjustments were made to the initial framework and the formal plan of investigation. This was due to the highly informal interactions encountered with the community members on ground, which in turn, reflects the need for research framework to be adaptive with the circumstances and the existing capacity given by the context. Sensitivities and negotiation with the local situations had led to the decision not to hand the camera directly to the participants. Major considerations were as followed:

1. The intervention interrupted their daily routines and could cause potential impacts on their live-work cycle including working on farms, fishing, crafting baskets, for example. The administration team, in particular, was loaded with administrative and ground works.
2. They were not comfortable using the camera due to its related technicality. They were most comfortable in storytelling. They naturally presented strong opinions, statements and gestures in conversational interviews, which further inferred their perception.
3. The community schedule were dynamics. The appointment and scheduling could not be easily forced upon individuals with respect to best time of day to film.
4. After the first week of embeddedness, research found that valuable footages were derived from less planned shooting schedule.

Workshops were almost not necessary to be implemented for the Hart Thanong Community because of their succinct and vivid explanation to water resource, flood and their understanding of the issue. The community demonstrate existing strong capacity within themselves that supplementary workshops should not be the focus on the field. Instead, the method found to be most appropriate for participatory learning with the community members were: the craft of the conversation and the flexibility to allow the participants to become knowledge providers. There also needs to be considerations in the limitations during the research as following:

1. Interviews with external entities both from the non-governmental and governmental organizations are fairly difficult and laborious to pursue. Despite initial contact with the entities, finding the right time and setting to interviews these individuals is unfeasible. The lack of interviews from the government officials open up question towards bias information.
2. Limited timeframe restraint the research from tapping into the perception of wider sampling group.

NEXT PHASE PROJECTION

The project aims to push forward the participatory aspect of the experimentation. The projection of visual reseach will continue after thesis submission as following:

1. Return to the community: Community screening and feedback
2. Second Film Edit Revision
3. Creating partnership

Potential Audience

1. Other flood-prone communities
2. Urban Residents
3. Government and public sectors in water resource management



กรมทรัพยากรน้ำ
กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม
Department of Water Resources



Potential Partnership

Quasi Governmental Organization

- **Public Health Organization, Thailand**

The organization focuses on issue related to public health and provide funding for creative projects to promote health and well-being of citizens. Its position as the quasi provides a bridge of management between public and government sectors.

Inter-Governmental Organization

- **Global Water Partnership (GWPO), Sweden and**
- **Country Water Partnership (CWP) in partnership with local NGOs, Thailand**
- **Asian Disaster Preparedness Center (ADPC), Asia-Pacific Region**
- **World Meteorological Organization (WMO)**

The organizations, branching to regional and country partners, have been implementing ground operations and capacity building program for communities around the globe. There are reports and assessments of pilot projects, which demonstrates interests to pursue knowledge management and community-based management. This provides a channel to amplify and disseminate local knowledge across Asia-Pacific regions similar to South-to-South cooperation.

Private Sector

The thriving design industry in Thailand is an opportunistic platform to elaborate the salient issue of water resource and flood management. Since climate change, projection in near future demonstrates the impact that threatens the country as a whole, water resource and flood management intervention needs to be prioritized as the major baseline for design and planning consideration. Thus, the importance of getting the message across and into the architectural and landscape design sectors has potential to ground implementations and reprioritize urgency of design direction towards integrated water management discipline.

The collaboration with the non-profit design and research organization would propel the issue across disciplines and can strategically neutralized the power dynamics between local and national government.

- **Friend of River (FOR)**

The organization is primarily focusing on re-master planning of the highly urbanized section of the Chao Phraya riverfront in Bangkok city. The two different locations offer opportunistic connections between the major nodes within the basin: Uthai Thani located in the mid-stream and Bangkok located in the downstream section.

There is an opportunity to reconnect platform of dialogue between rural-urban water and flood management.

- **Thailand Creative Design Center (TCDC)**

Social Organization

- **Documentary Club**
- **Bangkok Arts and Cultural Center (BACC)**

Institutions

- **Chulalongkorn University**
- **Urban Design and Development Center (UDDC)**

Conclusion

Visual research method has shaped my understanding towards the role of planners and designers as facilitators within the society. Most often, diverse values embedded within individuals got lost through planning processes. Individualistic and collective values are undermined, due to complexity of scales and various actors in which water and flood management have to deal with.. The research using documentary film also points to the question of whether or not the role of planner needs to be revised and repositioned to heed the communities varying beliefs and values more rigorously. By seeing how the community has developed adaptive networks of operation with regard to externalities and ever-changing stresses, I have learned that process of planning, too, be more adaptive and contextualized. Embeddedness is vital to understanding the community, to work with them in order to capitalize and support their existing capacities. This is the way forward to bridge

between regional and local cooperation in the water and flood management governance. Throughout planning history in Thailand, the discipline have become standardized and centralized which is in urgent need for a paradigm shift to plan for uncertainties of the future. Without individualistic diversity, it would be difficult to heal the gap between planning and practices, and more so for future challenges. Relationship building, using film as the medium of dialogue, is a vital tool for planners and researchers to reconnect with local community as well as the government officials to create meaningful impacts on local development. The use of documentary film to engage small-scale actors in water resource and flood management is the opportunity for planners to strengthen community cohesion and promote self-governance for an adaptive flood management and implementation.

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