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Community dialogs on the probabilities of community-based mangrove institution

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ABSTRACT

Active community participation is necessary for sustainable mangrove management. This two-year qualitative *cum* action research immersed into the context of a mangrove community in Krabi, Thailand with a three-fold purpose: (1) to understand the momentum of community roles in mangrove management over the past seven decades, (2) to devise a dialogic learning process for the community to create a community-based institution (CBI) for mangrove management, and (3) to identify the internal factors that influenced the probabilities for the community to realize their desirable CBI choice. The results revealed that the relations of the studied community to the local mangroves were oriented toward utilization, competition, exclusion, incentive-driven participation, and underground management. To empower their self-management capacity, a dialogic process entitled the Learn-to-Institutionalize Commons Management Model (L-ICM) was devised for the community to review their socio-ecological relations, to self-elevate their consciousness of the necessity for collective management, and to expose them to self-organizing experience. The community drafted three village mangrove rules and attempted to integrate them into a *tambon* mangrove rule. The factors that influenced the probabilities for the community to realize a genuine CBI for mangrove management included both foundation and procedural factors. The community dialogs must be founded on a deep awareness of the socio-ecological relations, high consciousness of the necessity of joint management, and clear understanding of the principles of commons management. They must continue in order to promote the community residents' deeper and wider recognition of the benefits of institutional changes and adequate background knowledge for a systematic self-organization for pro-active and transparent mangrove management. Dialog facilitators working in lagging parts of the community were recommended to expand from smaller neighborhood dialogs instead of village dialogs.

Introduction

Local mangrove communities could be presumed to have the strongest incentives to protect the quality of their environment for their own quality of life. Gaining food, herbs, fuels, fodder, and base materials for their living, health, and shelters from the mangroves, the communities are likely to manage their mangroves in a holistic way, balancing the social, economic, and environmental ramifications without trading off any of it for their sustainable living. They have been viewed as environmental stewards, not destroyers (Peluso, 1992). There is evidence that they can manage mangroves without government oversight

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(Smith & Berkes, 1993) and that their practices could enrich mangroves over time (Fairhead & Leach, 1996). However, mangrove degradation in Thailand is still continually reported as worrisome. Mangrove reservation in the 24 coastal provinces has dwindled by half from 3,679 square kilometers in 1961 to 1,676 square kilometers with observable declining density and fertility (Department of Marine and Coastal Resources of Thailand, 2015). The fragile tidal ecological systems have been unable to withstand urbanization, industrialization, over-exploitation, and pollution. Each year, mangroves have been disappearing by about 5 percent or an equivalent of USD 2.3 million (Janekarnkij, 2010) using environmental cost accounting. This may reflect that there are problems with community participation in mangrove management.

Arnstein (1969) classified people participation in development into levels, ranging from passive and tokenistic participation under which the state directly manipulated, offered therapy, informed, consulted, or placated local people to the active participation under which the state formed a partnership, delegated power, or allowed citizen control. At least 178 governments around the world, including the Thai government, agreed to achieve the highest level of people participation when they endorsed the historic 1992 Rio Declaration. At the national level, since the 10th National Development Plan, the state has accepted the necessity to allow local communities to participate in mangrove management. The constitutions, environmental and administrative laws, and regulations issued ever since have re-affirmed that the environmental management mandate must be transferred to local administrative organizations.

Despite such aspirations and ceaseless efforts, the available literature indicates that while considerable works have been undertaken regarding the application of technological and managerial innovations and the impacts of government policies, much less attention has been paid to understanding what local communities face when they try to increase their participation and develop a community-based institution. Kanchanaphan (2000) remarked that research targeting community institutional development was deplorably overlooked and fraught with power relations.

In order to understand what has led to such a grim situation, it is intriguing to investigate the mangrove management situation from the bottom-up perspective, that is, from the perspective of local communities. Answers are needed to questions such as to what extent the local communities are actually participating in mangrove management, what has led to such a level of participation, and what avenues are available for them to participate in mangrove management. These would yield understanding of the gaps in local participation, and on the probability of promoting more active participation, particularly in the guise of a community-based institution (CBI) for mangrove management. Additional knowledge obtained from the investigation would add to the literature related to the evolution of commons management institutions and prescription for the empowerment of local communities to be in charge of their environmental management.

Based on a case study of a community dwelling in the midst of mangrove forests, this study employed a qualitative *cum* action research approach with the aims (1) to clarify the context and momentum of community roles in mangrove management, (2) to devise a dialogic learning process for the community to create a CBI for mangrove management, and (3) to identify the internal factors that influenced the probabilities for the community to realize a CBI for mangrove management.

Literature Review

The study was launched based on the premise that a community-based institution (CBI) was most suitable for mangrove management because it is congruent with and accountable to the local communities and it is democratic because local residents could access institutional information, decisions, and judiciary and administrative processes. Extracting lessons from successful cases of commons management, Ostrom (1992) described successful CBIs as having some common features. They had clear boundaries of resources and users. Their rules were congruent with local conditions and allowed for their members to modify them. For robustness, they had a monitoring system, a graduated penalty code for violations, and low-cost conflict resolution mechanisms. Their creators had the organizing rights and, if there were externalities, their structure would be in the form of nested enterprises. For successful CBI creation, accurate information about the resources was needed, and the benefits of institutional changes must be greater than their costs and understood by their members. CBI members must have mutual respect and trust and the communities should be rather stable. As there is no cure-all suitable for every community (Ostrom, 2005), a CBI must be co-constructed by related entities. Its co-construction shares similarities with an education approach of social learning, hence an action research process that allowed for engagement in dialogs was applied in this research in order to build up an inter-subjective understanding, if not an agreement.

The present study heeded cautions that in localities where communities were in charge of environmental management, there might not be a genuine CBI. Such claimed CBIs might not foster environmental protection, bio-diversity, social equity, and human-ecological relations (Primavera & Agbayani, 1996; Walters, 2003). Areas suitable for conservation could be converted into fish ponds, residential areas, and other infrastructure. Conservation and/or rehabilitation practices in the claimed-CBIs, especially re-planting activities, might not embody bio-diversity as in natural forests. In addition, without enough care, the claimed CBIs would make environmental resources fall into the hands of the privileged few. A true CBI might not be inherent in many communities (Powell & Osbeck, 2010).

A strand of literature proposed that co-management under which the national and local governments, civic organizations, and local communities shared responsibilities for environmental management (Leach, Mearns, & Scoones, 1999) has gained more attention. However, as noted by Borrini-Feyerabend et al (2004 as cited in Armitage, Berkes, & Doubleday, 2007), co-management arrangements vary according to the degree of power sharing. For a non-radical transition, co-management was integrated with adaptive management in order to test and revise institutions at different scales for the right form of resources management

in a dynamic and learning way (Armitage, Berkes, & Doubleday, 2009). Despite recognition of the eventual necessity of multi-scale integration, this particular study opted to focus on an important task to understand the probabilities of the communities learning to take more active roles. The involvement of local and national governments was deferred until clearer understanding on the readiness of the local communities was obtained. The selected approach would better promote the practical effectiveness of the resulting CBI and evade a rigid management structure that was often formed by a top-down approach that would not respond well to the complexities of the State, communities, co-management dynamism and diversity and relevant ecosystems as warned by Carlsson and Berkes (2004). As a result, the research chose to immerse into the initial, real-life conditions of a selected community and promote dialogic interactions among community residents there to streamline diverse interests, a process noted by Agrawal and Gibson (1999) as being much needed. To empower the communities to initiate their desirable CBI, the concepts of social constructivist learning and deliberative democracy were applied in facilitating community dialogs. The social learning concept placed emphasis on invitations for learners to review, exchange, and structure their common knowledge and to evaluate the application of their new knowledge (Steffe & Gale, 1995) while the political concept stressed the participation of the people in dialogs to deliberate common issues by listening to the reasoning of everyone in public (Gutmann & Thompson, 2004).

Methods

In order for in-depth understanding regarding the probabilities of a true CBI for mangrove management, this study was based on the case of a mangrove community situated at the mouth of the Krabi River in southern Thailand. A comparison of the 1967 and current maps indicated a drastic shrinkage of mangroves in this second largest patch of mangrove in Thailand. Tambon Klong Prasong covered an area of 26 km^2 and was populated by 884 households or 5,000 residents with shared religious belief and close familial ties. The major occupations in the community were near-shore fishery and eco-tourism. Three villages were included in the research based on their adjacency and the consent of prospective research participants. The study comprised two stages. The first stage aimed to understand to what extent the local residents had been involved in local mangrove management. Community residents socially identified as knowledgeable or highly related to local mangroves were interviewed with regard to the history of life in the community and their observations about mangrove management over the past seven decades. Data on images of mangrove management as well as existing management institutions saturated after 17 informants identified by the snowball technique were interviewed. Data were then categorized to illustrate the shifting concerns and actions in local mangrove management and underwent member checking at a public forum attended voluntarily by 28 residents.

The second stage featured an action research with two series of dialogs being held in each of the three villages so that community residents had opportunities to deliberate local details and create their mangrove management institution. Special facilitating techniques were improvised based on the results of the first stage of the study in order to invite and inspire a total of 59 residents to voluntarily review their dormant knowledge, to recognize their common problems, and to visualize their desirable CBI. The dialogs were capped with an integrative dialog at the office of the *Tambon* Administrative Organization (TAO) in order to decide on the probabilities of their CBI by integrating it with the organization. Efforts were made to recruit a diversity of dialog participants by considering their natural, political, and religious roles in mangrove management and demographics. In the dialogic process, the researchers served as neutral facilitators encouraging the participants to share their knowledge and ideas to construct a common knowledge base and to conceive what they considered as an institution suitable for them. Support was given only when necessary or as requested by the participants. Notations of the intra- and inter-village processes were categorized to portray the operationalization of the improvised techniques for dialog facilitation, major issues emerging in the dialogs, differences in the context and management capacity across villages, and the internal factors that influence the probabilities for the community to realize their desirable CBI.

Results

Episodes of Community Roles in Mangrove Management

Based on the interview data, seven phenomena marked the shifts of the community's concerns and action on mangroves during the past seven decades. Details on each of the seven episodes of community roles in mangrove management from the interviewees' perspective as shown in Figure 1 are as follows:

- *The Settlement Episode*: When the eight pioneering families cleared small patches of mangroves for residence and paddy farming in 1950s, the local mangroves were described as *"dense forests arching over the river, blocking the view of the sky"* (as expressed by the son of the first community teacher). The settlers fished in the sea and gathered or hunted in the mangroves. There were no management activities as the abundant mangroves could easily accommodate the needs of the then small population.
- *The Mangrove Reservation Episode*: Since 1967, the state government has designated the local mangroves as national forest reserves fearing that the increasing population pressure could destroy the "significant" natural resources, such as *Taboon (Xylocarpus* sp.*), Samae (Avicennia* sp.*)*, and other valuable woods. However, the policy did not have much impact on the residents' access to the mangroves because the forest officers, who were small in number, were said to understand the necessity of the residents. Their utilization of local mangroves continued liberally without any participation in the state management of the local mangroves.

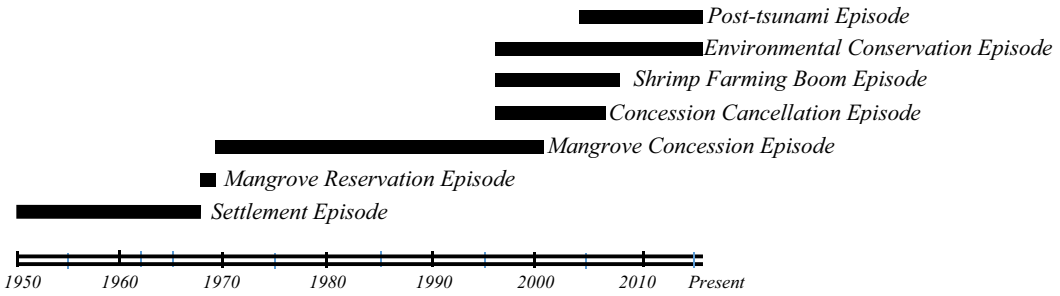

Figure 1 Episodes of the Khlong Prasong community's roles in mangrove management

- *The Mangrove Concession Episode*: From 1969 to 2001, the state government allocated four mangrove concessions in the study area to large-scale charcoal makers in the belief that, unlike small scale local loggers, these operators knew how to selectively cut and replant the mangroves in a systematic way. The concessions totally barred the local residents from the local mangroves, causing them to feel bitter and indignant.

  "We could not use the wood. Even picking waste wood just for home fuel would lead to a lawsuit." (a former logger hired by the concessionaires).

  "The big Taboon tree standing here in front of this pier for decades was felled by them. Why did our tree not belong to us?" (a boatman who denied working for the concessionaires).

The residents also reflected that the concessionaires devastated the mangroves.

"They simply cleared the forest to get all of the wood. Our mangroves became desolate, with only hanging vines and creepers, not refreshing as it used to be, so unsightly" (a local resident in the forest patrol).

Totally deprived of mangrove access, the local residents either turned to the sea to make a living or got hired to log the woods for the concessionaires. In this episode, they were not allowed to participate in the mangrove management that was controlled by the state and the private concessionaires.

- *The Concession Cancellation Episode*: The state decision to forbid logging all over the country in 1996 saw the local mangrove concessions gradually canceled. The informants portrayed a picture of the mangroves naturally recuperating and the residents regaining access. However, the cancellation created a vacuum into which *"some social elites"* stepped in to occupy some mangrove areas, setting a precedent for such practice in the localities. Individuals and groups of residents, as well as the administration at all levels, competed for mangrove control. While avoiding talking about individual competition within the same village, apparently because of familial relations, the informants were less reluctant to rebuke *"people from other villages"* and *"agencies."* Village headmen had to mediate several conflicts and set up patrol units. The local sense of ownership was heightened but there was no clear avenue for the entire community to participate in the mangrove management.
- *The Shrimp Farming Boom Episode*: The unruly competition for resources was spurred by the 1990s shrimp farming boom. More mangroves were cleared in order to open up new farms. However, very few local operators could make profits due to their limited technical and financial capacities. As a result, a number of them became tied to "*outside money-lenders."* The informants admitted that *"the people who destroyed our mangroves were us, local residents"* (a boat man). The mangrove clearings were stalled by the official action of arrests and lawsuits. Village headmen took part in legal actions against their familial relatives. Not only the ecological degradation but also social rifts escalated because of the lack of systematic and proactive management.
- *The Environmental Conservation Episode:* The state implementation under the framework of the 1992 Environmental Quality Protection Act started in the study area four years after its promulgation. The main activities included setting up patrol units, training environmental volunteers and paying daily wages for *"poor residents to replant mangrove seedlings"* (a local resident hired by state officials to manage the replanting programs). However, the replanting programs were widely rebuked for their effectiveness.

  "Many seedlings did not survive. Often, they replanted seedlings on the same ground again and again" (many informants).

In addition, the informants were concerned that the programs would take away the residents' resources control.

"We can collect seedlings in our village and plant them by ourselves. We should decide where to grow; otherwise, when the forest grows, the forest belongs to some big people, instead" (a resident who removed seedlings planted by residents of other villages and outsiders).

As there was no clear avenue for them to participate, the local residents developed an underground system to justify their resources access. They claimed such a system was sustainable because the local residents were guided by a shared religious belief which

"taught us to use things only as necessary, not to waste what God had given us. The residents here cut trees only when necessary. They cut only in the dense zones and the right tree sizes. If someone over does it, other people will know. This is a small place and we are relatives. Verbal warnings are enough to stop them" (a local leader).

- *The Post-tsunami Episode*: The 2004 tsunami devastated nearly 1,500 hectares of mangroves in the province but the study area was not much impacted. However, the disaster brought in hordes of government, non-government, charity, and activist entities. Relief supports poured in; occupational development programs were delivered to strengthen alternative fisheries, ecotourism, and other income-generating activities; new mangrove trees and bamboo embankments were erected to protect erosive zones. The local residents were involved in many *"do it as I say"* programs for incentive payments and security concerns. Programs with the *"please think what you should do"* approach were very limited and not directly on environmental management. The informants noted that the local residents had not yet initiated any pro-active programs for their mangrove management.

At the Cross-roads to a CBI for Mangrove Management

Over the past seven decades, the community role has shifted from no-management to illegal access, no-access, competition, sensitized conservation, layered management, and the present crossroads. A clear CBI was not established in the study area. Field data unveiled three concurrent mangrove management institutions existing in the study area.

Under the first institution of the state-led management, some selected residents were employed to patrol the mangroves or to manage environmental awareness and replanting programs. The institution rendered positive contributions in circulating the conservation discourse in the community but their effectiveness was highly questioned as reflected through the informants' observation about the replanting programs. While offering incentive-driven participation to some community residents, the institution fell short of giving the local community as a whole any decision-making power as promised by the constitutions and laws.

The second institution of share-holding, that was participated in by and benefited only some self-assigned individuals, worked like a private enterprise. It resulted from negotiations to settle competitive resources utilization among the privileged over some spots in the mangroves. The institution, despite its pro-activeness, involved very few community residents and could serve as a precedent for further condoning of resource allocation by and for individuals, groups, and even authorities. Its development was not legitimate and not socially inclusive.

On the contrary, the third institution of underground community-based management could involve more local residents. Informants claimed it to be effective because its code for accessing, using, and sharing mangrove resources was founded on the familial relations and shared religious belief. However, field observations indicated that concrete evidence of these verbal claims was rather elusive. With its underground and opaque status, the institution was unlikely to be able to restrain mangrove over-exploitation by the local residents amid population pressure as well as external elites, competition for resources, and tighter social linkages with the growing capitalist world. Accepting the local necessity head-on and grounding the community institution would bless the entire community with the power for joint decision-making and the establishment of a transparent mangrove management system. It was from this underground community institution that the study continued.

Community Dialogs on a CBI for Mangrove Management

To facilitate the community process for a CBI for mangrove management in the study area, the researchers developed innovative techniques to expand from the community's awareness of the socio-ecological relations to their recognition of the importance of collective action and their experience in arranging a community-based institution.

The first dialog topic on "Why are the mangroves important?" was conducted by using simple but stimulating questions such as "Let's think what there are in the mangroves. How are they related to each other and the mangroves? Who is at the top of the relations? How is the condition of the local mangroves? and Who put them into such a condition?" Feedback from the floor was posted on a board so that the participants could later draw relationships. The participants could *"endlessly"* (as noted by a senior participant) list plants and animals in the mangroves and recognized that local residents and animals *"depended on"* (as accepted by a near-shore fisherman) the mangroves. They saw humans at the top of the trophic relations because *"Man eats everything"* (many participants).

The participants' assessment of the condition of local mangroves shifted as their dialog continued. Initially, they expressed a belief that the mangroves were *"still abundant"* and *"would not disappear because residents here know how to use them."* However, as the dialog continued, they gradually started to accept that the local mangroves had degraded considerably. From the outside, the mangroves might look healthy, but an inside-view revealed that the density of the trees was *"like little chicks with thin features"* (a local leader). They eventually admitted their own destructive power and expressed concern about the impacts on their livelihood, occupations, and siblings.

At the point of admitting their impact, the dialog embarked on the second topic "Why is an institution important?" for which the researchers had prepared a game prop designed using Garrett Hardin's concept of the tragedy of the commons (Hardin, 1968) and Elinor Ostrom's concept of collective action for commons management (Ostrom, 1990). The game featured a grazing community in which players were given a goal to keep their sheep in good condition amid the limited common grazing land. The

game was effective in illustrating to the participants the failing economic, social, and ecological consequences of competition for common resources. When the competition heightened, the participants exclaimed that their sheep *"would die,"* they *"would have to move the sheep elsewhere,"* or their children *"would not have enough to eat."* Their stance gradually shifted towards self-help because

> *"No outsiders know better than us. The sheep owners had to think a lot. All related people must join hands and think together"* (a religious leader).

The participants moved on to suggest several managerial measures such as grazing zoning, leaving some grass to regenerate, estimating grazing duration, and initiating grazing rules. Their comments on the grassland management indicated they were becoming ready to dialog on the probabilities of a CBI for local mangrove management.

On the topic entitled "Reaching our dream institution," initially the participants transferred their grassland management ideas to the local mangrove management in a rather scattered way. Their ideas were jotted down on sticky notes and displayed on a visible board. It was not until one of the participants questioned what the community targets for their mangrove management were that the dialog started to streamline. Their ideas were categorized by moving the sticky notes into three major issues as follows:

- *The importance of the local mangroves:* The participants affirmed that being a community situated at a river mouth and surrounded by streams and the sea, their way of life was highly dependent on the mangroves directly and indirectly. They detailed that the mangroves provided food, income from fisheries and ecotourism, and shelters from natural calamities for both people and local and migratory animals.
- *The necessities of joint management*: The participants viewed that it was necessary for them to conserve their mangroves to prevent their degradation and disappearance. They saw the need for local mangrove management rules, as regional and state rules might not adequately account for their way of life and necessities. In addition, the local rules could shield them from exploitative outsiders. Despite concerns that they might not possess the legal rights to manage the mangroves, the participants decided to mobilize ideas on how they would jointly manage their mangroves before "*exchanging ideas with local and regional administrations and tune to match."*
- *The management system*: The participants treated several aspects of mangrove management as follows:
  - Zoning: They classified the local mangroves into conservation, utilization and public zones.
  - Management plans: They tried to integrate their mangrove utilization with conservation and rehabilitation, describing how to control logging, replanting, fishing, and hunting.
  - Management delegation: They proposed establishing mangrove management teams and determined the abilities and responsibilities of their delegates.
  - Penalizing: They established a graduated penalization, ranging from warning, fining, and community service to legal action. Even though they earlier thought that local communication would suffice, they eventually decided to include a clause on legal action in their penal code.
  - Trialing and revising of the rules: Without prior self-management experience, the participants saw that their village rules should be put into trial use. Any residents could lodge their requests for rule revisions or enforcement with their delegates, village headman, village committee, president of the TAO, and chairman of the *Tambon* Council.
  - Communication: The participants placed high importance on local communication in order to raise the community awareness of the mangrove significance and their respect for the village mangrove rules. The communication instrument that was most mentioned was simple signboards that could also make *"external loggers more considerate when they know that the residents here are managing their mangroves"* (a village leader).

Sensitivity to the Diversity of the Villages and a Workable CBI Form

Dialogs in the three villages brought attention to the fact that they possessed a diversity of situations, perceptions, and capacities. Village No. 1 was the most urbanized and used the mangroves for intangible benefits such as ecotourism. The participants from the village were more eloquent than the others but less prepared to take concrete action to conserve the mangroves. Rather, they saw that the self-management rules would equip them with social instruments to negotiate with the privileged outsiders who overpowered them and justify their necessity to access the mangroves. They evaluated the dialogs as *"helping the community to be self-reliant"* (a tour guide), but hoped the researchers continue to work as their *"medium"* for the self-management institution.

In contrast, the participants from Village No. 2 who were tangibly dependent on mangroves for fishery resources and erosion protection were more committed to action. They appeared determined to move on with their village rules even without future support from the researchers. They established their mangrove replanting team. They refined their organization to cover greater management details during the dialogs under the study. Their penal code prescribed heavier penalties on violating delegates than on the general residents.

Living far deeper in the mangrove swamp, the participants from Village No. 3 perceived mangroves as a *"forest,"* a term that connoted with their liberty to use the unoccupied wilderness. From the local leaders' point of view, such an attitude caused difficulty in working with regulatory authorities in curbing mangrove land encroachment. The leader admitted difficulty in treating the problem, saying *"Law enforcement was not strong enough."* During the dialogs as well as the field observation, it was found that it would be hard to use familial relations and religious belief

to curb the encroachment. However, the participants noted an important point that they never had opportunities to participate in public meetings such as these dialogs.

The diversity across the villages made the wrap-up dialog at the TAO office very interactive. As several issues remained contentious, more dialogs in the community were needed and there was a high possibility that a uniform structure of mangrove management for all villages would not be able to address the diversity. It was foreseeable that the structure would contain two parts with the principle-oriented part at the *tambon* level subsuming the operation-oriented part to be tailored at the level of each village.

Internal Factors Influencing the Set-up of a CBI for Mangrove Management

The qualitative *cum* action research unveiled two kinds of internal factors that influence the probabilities of a CBI for mangrove management. In terms of foundation factors for a CBI for mangrove management, the community residents needed to be aware of socio-ecological relations, that is relations within the mangrove ecosystem, between themselves and the eco-system, and between themselves and other residents. They needed to be conscious of the dangers of their own and others' action affecting the socio-ecological systems and the necessity for them to work together for sustainable mangrove management. They needed to understand the principles of and have the skills for commons management.

In terms of procedural factors, the residents first needed to engage in more dialogs in order to create wider and deeper understanding of the benefits of institutional changes. This was necessary in spite of efforts to involve the largest number and the most diverse types of community residents possible in the dialogs. In addition, it was apparent that some participants could engage in dialogs and benefit from social learning better than others. Some needed more time to mull over and develop an understanding that would convince them to place personal losses after the societal gains. Some expressly needed to learn more about and gain more experience from community forums. Secondly, the residents needed more background knowledge and experience on systematic self-organization for proactive and transparent management. For example, the residents did not realize the existing avenues for them to tap into the local coffers to cover their mangrove management costs. Nor could they think of creating low-cost local management mechanisms, especially when they had such strong normative familial and religious codes of conduct.

The relations of these factors were formulated as the Learn to Institutionalize Commons Management Model (L-ICM Model) as shown in Figure 2. The model premised itself on a belief in local rationality. It was founded on three factors—an awareness of the socio-ecological relations, consciousness of the necessity of joint management, and knowledge on the principles of commons management. These factors could be fostered by using the three improvised dialog facilitation techniques. If the dialogs produce a

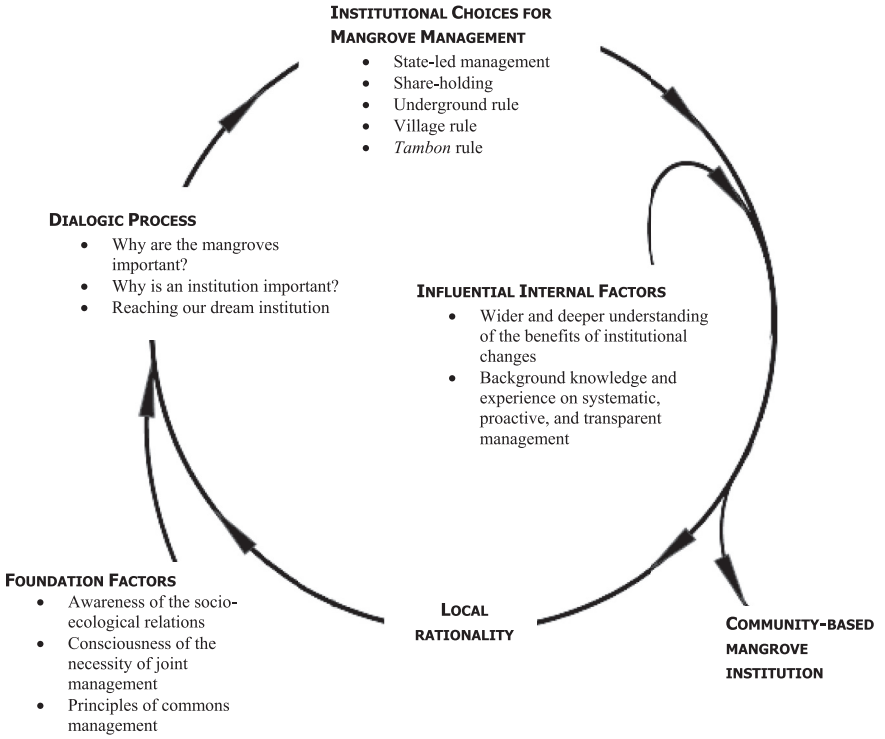

Figure 2 The learn-to-institutionalize commons management model (L-ICM)

wider and deeper understanding of the benefits of institutional changes and background knowledge and experience on systematic self-organization for proactive and transparent management, a CBI for mangrove management can be obtained. Otherwise, community dialogs need to do another round as illustrated in the model.

Discussion

Community dialog was selected as a tool to empower community residents by elevating them to a new understanding about themselves and their mangrove environment. As a result, the residents could create a story of their time and place with their values and aspirations embedded as described by Hoxie, Berkebile, and Tood (2011) as possessing high regenerative power and as prescribed by Koontz, Gupta, Mudliar, and Ranjan (2015) as essential for further learning. When the smaller dialog groups at the village level grew into a larger one at the *tambon* level, the transition brought in a greater diversity and called even more clearly for dialogs in order to find what Gleizer (2015) would call a collective identity. The transition called for the dialog facilitators to deal with many kinds of situations including collaboration and hierarchy by using delicate communication to creatively turn impediments toward changes as described by Zoller (2009) and suggested by the Community Dialogue Organization (2017).

Experience in arranging the community dialogs under the study led the facilitators to sense the need for dialog facilitators to possess a variety of knowledge and skills. Merely being a good communicator would not be enough. Effective facilitators for dialogs on a CBI for mangrove management must possess a vast knowledge of CBI epistemology, particularly the diversity of socio-ecological relations. Knowledge about sustainable development, commons management, and communication was also needed. In addition, self-restraint was a qualification that the facilitators must possess, as they must not be tempted to rush the community into a decision or an agreement. As occurred in the research process, despite the residents' success in creating village mangrove rules and being on the verge of concluding their *tambon* rules, the researchers could feel that there was still room for improvement in the community's capacity in terms of the management control which they had historically been denied. Kluvankova and Gezik (2016) found likewise that the robustness of the institution as well as socio-ecological systems was hinged on institutional maturity and local knowledge of the self-organized regimes. Dialog facilitators must have the ability to withstand temptation to create a showpiece that might not be robust. The Community Dialogue Organization (2017) shared the same stance in saying that not all dialogs needed to reach a consensus or agreement because they were not pre-planned. If dialogs had unfolded to transform and deepen understanding about oneself and others, be they similar or different, they would have already made the dialog mission worthwhile.

Dialog transactions in the study required considerable effort from the dialog facilitators. They needed to exercise neutrality at all times in a delicate way by holding fast to the benefits of the society and nature as their benchmarks. Skills were required in leading the participants into thinking together and using reason, constructively handling confrontations/conflicts by holding on to the common cause in searching for a genuine CBI, and quickly capturing the meaning that the participants wanted to convey, expressively and implicitly. Community dialogs can fill the gap in translating into practice the considerable amount already known about CBI ideals such as the institutional crafting principles by Ostrom or the "social residual claimant" institutional evaluation framework by Dwyer and Hodge (2016). The considerable time required for dialogs, like other kinds of action research, would not be wasted as a new understanding would certainly accrete institutional capital for a genuine CBI.

Conclusion and Recommendation

Without previous decision roles in mangrove management, the capacity of the local residents to manage their mangroves under the study was assessed as uncertain. A way to confirm their capacity was to provide opportunities for them to engage in public dialogs on how they would proceed with their mangrove management. The L-ICM Model was efficacious in enhancing the institutional capacity of some local residents. Some other residents, however, needed continued engagement in dialogs so that they could understand the benefits of institutional changes and develop systematic self-organization. A rush to put in place a claimed CBI would only turn it into an untoward tool for exploitation of the mangroves. The more they engaged in the institutional development or dialogic process, the greater the capacity they could have for embarking on an active role in sustainable mangrove management. Continued dialogs are pivotal for change toward a true CBI for mangrove management. For further facilitation of the dialogs in some lagging villages, it is recommended to consider building up integrated dialogs from small neighborhood group discussions, as such arrangements could be more effective than a village-wide forum in widening the involvement and understanding of community action regarding mangrove management.

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