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The cost of privatizing the commons: overlapping property systems in Tonle Sap, Cambodia

Thol Dina
The Department of Political Science and International Relations, Zaman University, Cambodia
tholdinajp@gmail.com

Jin Sato
Institute for Advanced Studies on Asia, The University of Tokyo
satoj@ioc.u-tokyo.ac.jp

Abstract: This paper examines the political implications of dividing the commons through the case study of private fishing lots in the Tonle Sap Great Lake of Cambodia. The de facto private property in Tonle Sap lasted for over 100 years until the government abolished the system completely in March 2012. Unlike conventional studies of the commons which assume away the question of divisibility as too costly to be realistic, we argue that divided management occurs even when the cost is very high. This "cost" is not merely economic, but also political. Our case study illustrates how this political cost is channeled through a network of influential people to maintain the resource system and how a private property on the commons can be demolished, also for political reasons.

Keywords: Cambodia, divisibility, fishing lot, property systems, Tonle Sap

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1. Introduction

One of the central tenets in the commons literature is the focus on the "nature of goods" as a driving factor narrowing man's institutional choices. Aristotle, for example, observed long ago in *Politics* that "which is common to the greatest number has the least care bestowed upon it" (Saunders 1995, 24). In his classic formulation that led to the subsequent proliferation of the commons literature, Hardin (1968) stated that certain issues have "no technical solutions" and thus force society to make immoral choices such as unequal privatization or coercive state monopoly to avoid the "total ruin" of the commons.

In a revisionist critique to Hardin, Elinor Ostrom (1990) noted that societies in many parts of the world have devised ways to avoid the potential tragedy by inventing "local commons" through various institutional mechanisms that satisfy both socio-economic needs and resource demands of the population, as well as the long-term protection of the ecological base that provides such resources. This was echoed in a recent review of the commons conducted by Araral (2014, 21) who found that Ostrom's observation is valid in the special case of small-scale, locally governed commons, but not large-scale, national, regional, and global commons. Why do such commons stay as commons instead of being privatized as Hardin recommended? The conventional answer is that "they are too costly to privatize."

There are numerous examples of the high cost of exclusion, ranging from the offshore open-access fisheries in Turkey and Sri Lanka, ground water in California, and large pasture areas, where exclusion by fencing or other methods is too costly (Ostrom 1990; Cox et al. 2010; Araral 2014). But even when the returns exceed the costs, is this adequate incentive for privatization? What exactly is the nature of such costs? Would privatizing the commons discourage collective action at the communal level? Rarely addressed in the literature, these questions direct our attention to the potential tension between private and communal properties in resource regimes.

We explore this theme by observing a type of resource unit that has the characteristics of a commons but which, in practice, has been divided among private users, i.e. natural resources with overlapping property rights. Such resources are not uncommon, and we cite as examples the Töbel grasslands in Switzerland (Netting 1981), forest and grassland resources in Hirano, Nagaike, and Yamanoka villages in Japan (McKean 1986), and Zanjera irrigation communities in the Philippines (Araral 2014). Araral found that the Swiss and Japanese meadows, and the Philippine irrigation are generally designated as private property, a fact that helps residents develop robust institutional outcomes.

Regardless of whether the resources in question are designated as private or communal property, successful collective action will be required at some level to achieve sustainable benefits. The collective action of community members must be based on the philosophy of trust, cooperation, networking, and mutual works. Ostrom (1990, 91), in studying commons around the world, noted that there are eight principles that contribute to the successful management of commons. They

are clearly defined boundaries, congruence between appropriation and provision rules, collective choice arrangements, monitoring, graduated sanctions, conflict resolution mechanisms, recognition of rights to organize, and nested enterprises.

But these same principles do not apply universally to the management of all common pool resources and these can vary according to the type of resource and prevailing conditions. Netting (1981) outlined five specific conditions applicable to a communal form of land tenure: low production value of the land, small yields, limited possibility for improvement or intensification, large territory available for effective use, and relatively large groups of participants to take on capital-investment activities.

Parallel to these empirical contributions, Oakerson (1992, 42), believing that identification of the key attributes of the commons would enable researchers to diagnose the cause of problems and find potential solutions, highlighted four main factors in any analytical approach to study the commons. The first concerns the physical and technical characteristics used to secure the yield. The second is the decision-making arrangement; the third is the pattern of interaction and mutual choice of strategies, and the final attribute is the outcome, which results from the interaction of the first three.

Under the first attribute of physical and technical characteristics, Oakerson (1992, 44) listed three additional points: (i) jointness, which he defined as a condition in which "one person's use cannot subtract from the use of others": (ii) exclusion, which is related to the management of and access to the resource; and (iii) control of and access to the commons, which according to Oakerson depend on the physical nature of the resource and the availability of technology. But he argued that the costs depend not only on technology, but also on the number of users and obstacles.

Oakerson offered an effective framework that has been adapted as the point of departure for this paper. First, although Oakerson highlighted the divisibility of the commons, he did not elaborate on the conditions where such a division might occur. He believed that the divisibility of the commons could come from economic or cultural factors, but failed to provide detailed examples. According to Oakerson, other relevant reasons could be related to decision-making arrangements and the possibility of converting the commons into private property.

Our paper, offering an alternative explanation based on the political factors that surround the right of access to valuable resources, aims to contribute to the literature in two ways. First, it explores the social significance of the divisibility of the commons and the patterns of interaction within the fishing lots in Tonle Sap, Cambodia. While many commons around the world have been managed through collective action, the case of Tonle Sap, encompassing private and common property, is a unique example of the divisibility of a commons. Second, the paper addresses the question of inequality among the resource users of the commons, a fact which has attracted only passing interest in the conventional literature. In Tonle Sap, private property has been owned by many layers of stakeholders, ranging from the fishing lot operators to sub-contractors, sub-subcontractors, and small-scale fishermen.

Our case study is carried out on Cambodia's Tonle Sap Lake, valuable enough to support private exclusion while at the same time maintaining the characteristics of a commons. Tonle Sap, the largest freshwater lake in Southeast Asia, has embodied an overlapping property system for more than 100 years. Its fishing lots, which were de facto private property, were initially introduced by the state in the 1880s and abolished in 2012.

More than a million people are involved in fishing activities in the Tonle Sap commons (Mak 2011; Keskinen and Varis 2012) where hundreds of communities have jointly used and managed these resources for generations. But problems were created by the impossibility of managing remote geographical areas inhabited by stocks of fish that migrate considerable distances between breeding sites and harvesting areas where the fish are actually caught.

The most productive areas of Tonle Sap, however, have been designated as commercial fishing lots,[1] which are geographically defined locations on a stretch of the river, river beach, or temporarily flooded land, which may or may not include flood forest areas (Degen and Thouk 2000). The fishing lots were re-introduced as a system of fishery management in Tonle Sap in 1908, mainly to generate revenue for the French colonial administration through the sale of licenses to businessmen and wealthy fishermen which permitted these to be fished in certain locations during specified periods.

We argue that commons can be privatized, but that the high attendant costs of exclusion must be balanced by some type of financial arrangement in order to ensure the sustainability of the private system and the prevention of high political cost. In other words, if a high-cost option is available, shareholders may wish to take it. However, it is a risky system because the costs are not only economic, but also political. High yielding resources tend to attract political attention as targets for taxation and rent seeking, and owners, in addition to the cost of protecting their vulnerable boundaries, incur additional expenses in attempts to avoid such pressure.

The literature on the commons has widely discussed overlapping property systems, but has been surprisingly silent on their socio-political implications. Resources are considered as commons with respect to their stocks (such as forestland), yet some property systems grant exclusive rights to individuals with regard to volumes (as in timber). In fact, instead of addressing a single "layer", local institutions are designed to respond to the varying and often overlapping layers of property-rights systems.

Our paper attempts to analyze the socio-political implications of dividing the commons by examining the Tonle Sap fishing lots, a private property arrangement that has functioned for the past 100 years. We examine the emergence, evolution, and incidents that led to its eventual cancellation in 2012. We pay particular attention to the decision-making arrangements and patterns of interaction within

[1] The French, clearly wishing to retain certain areas for economical reasons, referred to these locations as productive fishing lot areas (National Archives of Cambodia 35177).

the commons prior to 2012, focusing in particular on the interaction between the lot owners and fishermen both before and after the abolishment of the lots system.

While scientific studies of Tonle Sap abound (Tanaka et al. 2003; Lamberts 2006; Kummu et al. 2008; Zhang et al. 2014), only a few have attempted to study the socio-political nature of its fishing lots (Degen et al 2000; Somony 2002; Dina and Sato 2014). Studies on the Tonle Sap fishing lots are very limited, and can be classified into two types with regard to their evaluation of the lots system. The first strand supports fishing lots (Thouk and Sina 1997; Thouk and Zalinge 1999; Degen et al. 2000), believing that the fishing lots constitute a robust institution for protecting the spawning grounds, i.e. the flooded forests. In contrast, the second group considers the community fishery to be the appropriate entity to control and manage fishery and flooded forests (Gum 1998; Somony 2002; Piseth 2003; Evans et al. 2004; Ratner et al. 2011). This group argues that the lots practice caused conflicts and the exclusion of local fishermen, thus they support the concept of a community managing its own resources through a community fishery.

Including Tonle Sap in our discussion of the commons will enable us to define the relationship between private and common properties in a unified ecological system. Through this research, we hope to contribute to the commons literature by presenting a case where the commons were divided and privatized. We argue that Tonle Sap did not lead to the commons tragedy as predicted by the skeptics, but induced instead a robust institutional set-up that worked to protect the fish spawning grounds, i.e. the flooded forest areas. And this is why Tonle Sap continues to be productive more than a century after the creation of the fishing lots.

2. Research methodology

Our research is based on two methodological advances. First, to situate the lots system in a historical context, we examined various original French documents,[2] as well as Cambodian reports such as *Reach Kech* (Royal Affair) available in the National Archives in Phnom Penh. This information helped us understand the evolution and management of these fishing lots in the 20th century and provided an insight into the interests of those connected with the Tonle Sap resources. Furthermore, the archive data offered an in-depth perception into the interaction between the lot owners and small-scale fishermen, their conflicts and cooperation, as well as a view of how the Cambodian administration supervised the fishing lots during the colonial period.

Second, in addition to ordinary fishermen and NGO workers, we conducted interviews with former fishing lot owners and workers during our three visits to Tonle Sap in January and September 2012, and in August 2013. Not many researchers, except Dina and Sato (2014), have had access to inside information

[2] These included, among others, letters, budget records, and files by the Resident Superiors.

from the lot owners themselves, which partly explains why so little has been written on the subject. First, to guide our choice of interviewees, we met with local NGOs workers concerned with fishery issues. Then, we selected two community fisheries in Siem Reap that had been fenced-in by the fishing lots. We interviewed various members of the fishing lots[3] but names and locations must remain unanimous due to the sensitivity of the matter despite the cancellation of the system.

Because of the relative lack of reliable data on the socio-economic impact of the lots system, much of this research is based on a small sample of anecdotal evidence collected during our interviews with lot owners, from reports by international organizations, and grassroots level members of NGOs who have worked closely with the communities.

Interviewing former fishing lot owners was challenging.[4] Of the fishing lot owners, two were reluctant to respond during the initial interview, which lasted about 90 minutes, and only one answered nearly all our questions. But during the second and third visits, the interviews were much longer, with the last session continuing for more than three hours. The interviews covered a wide range of issues from fishing lot operation tasks to the process of securing relevant licenses.

For meeting the ordinary fishermen, we arranged four formal group-interviews that included both fishermen and committee members of the community fishery. The meetings with three groups of fishermen in Kampong Phluk and Kampong Khleang Commune covered issues related to their current fishing situation, their knowledge of the plan to cancel the fishing lots, their views on the fishery reform, as well as their interaction with the fishing lot owners prior to cancellation of the system in 2012. We also met with members of the community fishery committee to better understand their daily practices, their difficulties and successes, and their perceptions of the reform. Additional information on the informal interaction of local authorities, researchers, and staff members from five natural resources-related NGOs helped strengthen the empirical foundation of our claim.

3. Fishing lots as private property

3.1. The birth of private property in Tonle Sap and protection of the flooded forests

French administrators had introduced the concept of private property in Cambodia a century ago. Prior to this, Cambodia's natural resources (land and forests) were considered to belong in theory to the king and were loosely managed in practice. People could claim the right to land by clearing and settling it (Sokbunthoeun 2010, 76). Forests and water were open-access resources that could easily be appropriated for one's personal usage.

[3] These included three former lot owners, four sub-lot contractors, and one fishing lot accountant.

[4] Supplied with an introduction from the three lots owners, the authors tried to interview several other owners, but without success.

Land was the initial target of privatization. Land reform was launched in 1884, the early period of French control, but this introduced little change to the traditional system (Thion 1993). In 1896, the first cadastral department was created to oversee and manage the technical and administrative procedures of land registration (Sokbunthoeun 2010, 82). In 1898, the French administrators extended the concept of private property to the forestry sector through the creation of a department of forest services.

Fisheries were also within the realm of reform by the French. The Cambodian king controlled most of the rewards from the Tonle Sap fishing business by selling licenses to Chinese tycoons in favour with the king. According to our archival research, the principle of private property was introduced in Tonle Sap in the 1880s when the French authorities began to monopolize fishery resources.[5] This may have been the central administration's first attempt to privatize the commons in Cambodia. In 1908, the French replaced the traditional fish-farming practice with a new system of commercial fishing lots (mainly in Tonle Sap) in order to generate revenue. Initially the revenue was rather modest due to the rushed implementation of the reform, but soon developed into significant amounts (Cooke 2011).

Although the 1908 reform was intended to strip the Chinese lot owners of their licenses, they continued to dominate the industry (Cooke 2011). During the 1910s and the 1920s, many of the large and valuable fishing lots were still in the hands of wealthy Chinese, as exemplified by the decades-long dominance of such elite Chinese families as *Chia Kay* and *Kim Guan Ly* in Kampong Thom province. Chinese businessmen seemed to have a fishing lots monopoly in three other provinces bordering on Tonle Sap (Siem Reap, Battambang, and Pursat). Khmer Muslims ranked third in prominence after the Chinese and Vietnamese, while Buddhist Khmer people could afford to acquire only small and low profit lots.

With regard to actual management, prior to the 1920s there were very few attempts to conserve the lake's fishery stocks. Traders tried to maximize fish harvests without concern for the depletion of stocks. There were no strict regulations. The Resident-Superior Louis Paul Luce merely issued a few circulars but these had no impact.[6] It was not until the late 1920s and early 1930s that the French finally started to pay more attention to conservation work, creating conservation areas and ratifying new fishery laws and regulations.[7] From the 1930s, they focused on the protection of the flooded forests which are vital as fishery spawning grounds.

[5] National Archive of Cambodia (NAC) 4118.

[6] NAC: 25719. For example, the 1911 circular by the Resident-Superior banned fish harvesting during the closed season but this was widely ignored (Cooke 2011, 373).

[7] Based on archival data, the French administrators were aware of conservation prior to 1920, wanting to reduce the size of some of the fishing lots and to reserve certains areas for fish habitats. However, implementation of these ideas had to wait until 1920 when the contracts expired.

3.2. The impact of the creation of fishing lots and related measures

Conflicts were reported occasionally in the early 20th century. Prior to the introduction of the fishing lots system, there were some reports of tension between ordinary fishermen and the fish traders who had gained the right to control certain fishing areas. Many of the major conflicts were quelled by the king's intervention, in which the crown made certain concessions. For example, during King Norodom's reign (1864–1904), pacifist ordinances in 1872, 1874, and 1880 regulated the size of fishing traps across rivers, the types of fishing gear allowed, and the classification of lots (Thouk and Sengji 2007).

Researchers on Cambodia widely agree that fishery resources were *de facto* open-access areas that enabled all fishermen to fish wherever they wished. According to Cooke (2011, 362), even non-nationals (the Chinese and Vietnamese) could fish in Tonle Sap during the breeding season in exchange for the customary 10% royal levy and "tea money" to local authorities (Cooke 2011, 362). Once the commercial fishing lots had been introduced in 1908, some lot owners started to expel local fishermen from certain areas. This was particularly evident in Kampong Thom Province, which subsequently triggered grievances among the locals. For example, in 1908 and 1909, local fishermen complained about the adverse impact that the large private fishing lots had on their traditional fishing grounds. The French administrators later recognized that in drawing up the lot contracts in 1908, they had made a mistake to include local fishing grounds within the defining boundaries of the commercial lots.[8] However, despite the importance of the traditional fishing areas for local livelihoods, the French could not intervene until 1911 when the contracts expired. At that time, large sections of Peam Kreng River were designated as fishing grounds for the locals.

Perhaps because of the increased complaints and the need for coordination, the French administration enthusiastically encouraged local fishermen to form fishery associations. The first Cambodian Fishery Association was formally established on 29 July 1911[9] to take control of and manage the fishing lots.[10]

There were other complaints as well. In 1915, a group of fishermen in Kampong Thom approached the French administration to demand larger fishing grounds,[11] and the elimination of the fishing lots in their area. Wanting to fish freely, the locals even indicated a willingness to pay a fishing tax if the lots were to be dismantled. At that time, French authorities also acknowledged that many lot owners violated regulations regarding certain fishing gear, sub-leasing lots, or causing pollution through fish oil production. Even though the French did not abolish the fishing lots as demanded, they did warn the lot owners, citing legal action should the violations and exploitation of the local fisherman continue.

[8] NAC 9334.
[9] NAC 9334.
[10] NAC 35657.
[11] NAC 5724.

Perhaps concerned over the decline in fish harvests caused by lot owner infringements and to promote conservation, the French pushed for stronger measures. In 1918, they introduced a plan to reduce the size of some fishing lots in order to preserve certain areas for conservation. But the plan could not be implemented until 1920 when the fishing lot contracts expired. Initiatives in the 1920s pushed for greater conservation, especially protection of the flooded forests that play important role in preserving fish stocks. Conservation areas started to appear in Tonle Sap after 1920.

A more substantial initiative was started in the late 1930s with the creation of conservation areas and the ratification of fishery laws and regulations. Royal Ordinance No. 100 was issued on June 7, 1940 to regulate operations of the fishing lots. In particular, the ordinance defined the boundaries of the flooded forests around Tonle Sap, banned the clearing of these areas to maintain them as spawning sites, and identified the location of protected areas in the five provinces around Tonle Sap. Flooded forests were well protected during the post-independent era until the outbreak of civil war in the 1970s.

During our visit to one floating village in Kampong Chhang Province in 2012, the former village chief shared his impressions of the forest protection efforts of that time:

> *During the Sangkum period (1953–1970), they did not have as many officers as nowadays, but these worked very effectively. In this area, there was a dense flooded forest with many big trees. They protected the forest very well. Nowadays, people from outside our community have cleared much of the forests. I used to report this to the officer numerous times, but I still saw little action to prevent forest clearing. There are many agencies working on the lake, but I wonder why they could not work effectively. I feel very disappointed with their inaction. (Personal interview: Kampong Chhnang, 2012).*

Throughout the colonial and post-independence periods, the French and subsequent administrations seemed to have managed fishery conflicts and conservation relatively effectively, with very few negative outcomes. According to our interviews with elderly fishermen who experienced that period, fishing lot owners rarely violated fishery regulations or exceeded their lot boundaries. There was no poaching in the lot sites or conservation areas. Most importantly, they protected the flooded forests that are vital as spawning sites. This, however, does not mean that the fishing lot operations during the post-independence era (1954–1970) were without tension between lot owners and local fishermen. In the 1960s there were reports of elite beneficiaries involving with benefit from fishing lot operations and fatal casualties among the fishing lot owners and managers (Kurien et al. 2006).

The fishing lots system was gradually abandoned during 1970–1979, because of the civil war in the early 1970s and the subsequent political transition to a communist regime. Almost all of the commercial fishing lots in the area were

placed under the control of the Khmer Rouge. Fishing was strictly forbidden, and most of the population was forced to live in cooperative units to work the rice fields or dig canals. A small number of fishing units remained, solely to supply fish to top Khmer rouge leaders and for export to China.[12] By the early 1980s, after a pause of more than 10 years in commercial fishing, fish stocks in Tonle Sap were bountiful, and people were able to catch adequate harvests with traditional gear.

In 1987, the socialist government revived the private commercial fishing lots system in Tonle Sap in order to supplement the budget through trade revenue and to improve conservation. The Fishery Law of 1987 incorporated certain elements of earlier fishing laws and introduced new aspects, such as defining the various types of fishing activities. It also sought to regulate fishing gear and fishing activities by classifying these into three types: small, medium, and large-scale (or commercial) fishing.

After their revitalization in 1987, private fishing lots started to affect local fishing grounds but not too seriously. Tension nevertheless reached an alarming level in the early 2000s when there were numerous grievances over fishing access and boundaries (Piseth 2003). Some fishing lots extended even into the residential areas of the fishermen, as lot owners considered their boundaries to constitute whatever areas were covered by water, often significantly encroaching on the fishing grounds of the local fishermen. After a series of top-down reductions in lot areas, the government abolished the entire fishing lots system in Tonle Sap in March 2012 to allocate the lots as community fishing grounds and to reserve certain areas for conservation (Figure 1).

3.3. Paying the costs of privatization

3.3.1. System of lot maintenance

In September 2012, 6 months after all remaining private fishing lots had been abolished, we spent a week in Tonle Sap, in an attempt to interview the lot owners who, for political reasons, had not been accessible earlier. To run a fishing lot, an operator was required by law to obtain a license which was granted on the basis of applications and a subsequent bidding process. It was usually granted to the highest bidder. Officially, the fishing lot license was valid for 2 years, after which it was to be renewed through the applications/bids procedure.[13] But our interviewees indicated that some lot owners had been able to operate the same fishing lot for over a decade, suggesting that these had somehow managed to submit the winning bid many times. This begs the question of how it was possible

[12] According to our interview with a former lot owner who supplied fish for the Khmer Rouge, most of the harvest was used to make dried fish (Personal communication with lot owner: Siem Reap, September 2012).

[13] After the year 2000, the tenure of the license for surveyed lots was changed, and could in some cases be valid for 4 years.

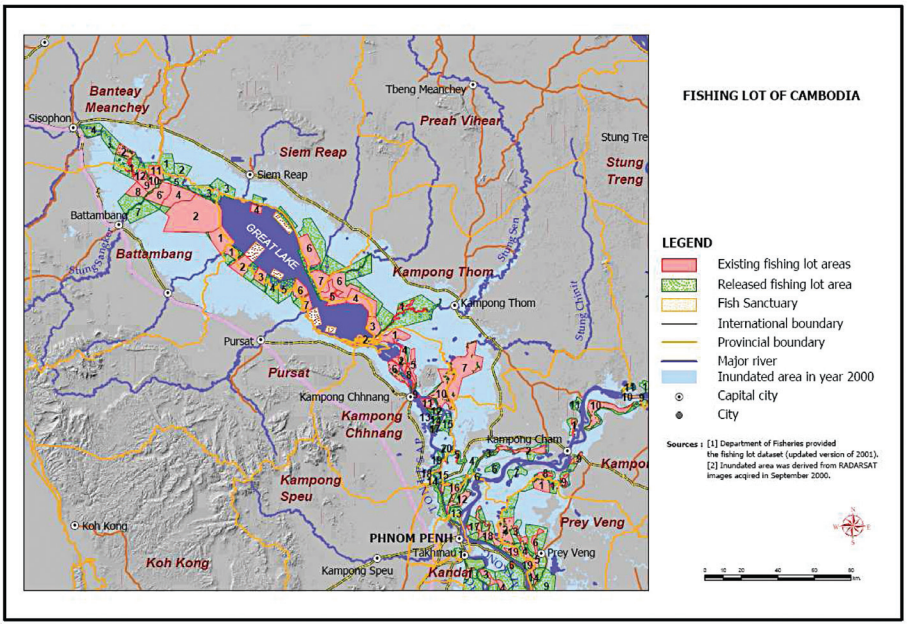

Figure 1: Map of Fishing Lots (Source: Mak 2011).

for an operation last for a decade, and more importantly, how they managed to pay for it.

Once a license had been granted, lot operators were to adhere to the guidelines articulated in the so-called "burden book".[14]

Prior to the reforms in 2000, fishing lot owners could operate for 2 years, after which the state reclaimed the lots for a new round of bidding. Fees were paid three times a year to the Ministry of Economy and Finance, usually between the end of April and early June. The amount of the fee was clearly stated in the burden book, and depended on the size as well as the location of the fishing lot. Lot operators were also responsible for other duties such as preserving the fish stock, protecting the flooded forests, and preventing forest fires.

Although the license was supposedly valid for 2 years, some fishing lot owners had been able to continue operations for generations. Others had worked the fishing lots for more than a decade, enabling them to build strong networks with relevant government agencies, fish traders, and sub-lot contractors.

How was this possible if the lots were allocated through a bidding process? We discovered that to secure an operating license, a fishing lot owner had to negotiate

[14] "Burden book" is a literal translation of the Khmer words *Sivphov Bantuk*. The burden book outlines specific terms for the lot owners: e.g. stipulating the periods when fishing was allowed; the banned seasons, location of the lots, and a schedule for paying the concession fees and the amounts.

with numerous government agencies involved in the process of awarding these licenses, and at every level, a substantial amount was paid out as "tea money".[15]

One interviewee described the process: first, the lot owner paid around USD 10,000 to the provincial fishery administration to get their signature. Next was the provincial Agricultural Office for another signature, where the amount was half of the tea money paid to the Fishery Administration Office. Then, came the provincial governor whose signature was secured for at least USD 20,000. The final stop was the Fishery Administration in Phnom Penh, where the price of the signature was negotiated with the head of administration, who, with the cooperation of the Ministry of Agriculture, Forestry, and Fishery, prepared the necessary documents to the Council of Ministers for final approval. Usually, the money paid under the table was about tenfold to the amount stipulated in the burden book (personal communication, August 2013).[16]

Lot operations also necessitated considerable investment. A former fishing lot owner in Battambang estimated that his expenditures were around 500 Damleung[17] of gold per year (Personal communication: August, 2013 Siem Reap).[18] More than half of this amount was for bamboo fencing (which needed to be replaced almost annually), and other equipment needed for fish harvesting and preventing fish migration. The remainder covered labor wages, food, medicine, patrol, and political costs.[19]

Some lot owners lacked the funds to take delivery of the license when they first bid for it, while others had only half of the total amount needed to claim their targeted lots.[20] As a result, many turned to moneylenders, borrowing at higher than bank interest rates, supported with "other favors".[21] Interest rates could exceed 10% a month,[22] and "other favors" consisted of clandestine deals to sell-off certain sections of the relevant lots to the accommodating moneylender, often for less than half the going market rate. Deals were kept hush-hush so as to generate maximum profits for the loan shark from the re-sale of these areas to sub-contractors. Furthermore, some moneylenders demanded a commission from fish sales. But, despite high interests and other pay-backs, lot operators still made a profit: there is a saying: "when they [the lot owners] have lots, they have money,

[15] "Tea money" was what a lot owner paid to the relevant authorities to secure his license.

[16] For one fishing lot in Siem Reap, the burden book value in 2011 was USD 31,500.

[17] As of 2013, 1 Damleung of gold is worth approximately USD 1,600 USD.

[18] This owner's lot was 50,600 ha size, and covered large flooded forest areas.

[19] The expense of running a fishing lot could be reduced with the adoption of advanced technologies such as replacing bamboo fencing with nylon netting, which became popular in the 1990s. Even though this was more expensive, it lasted much longer (over than 5 years versus 1–2 years for bamboo), and by the early 2000s nylon had replaced bamboo almost entirely.

[20] Similarly, many contractors had borrowed money from banks or loansharks to buy their sub-lot areas, and many were shocked over the cancellation of the fishing lots in 2012.

[21] Another source of money were the lot operators.

[22] Banks in Cambodia charge an interest rate of around 15% per annum for amounts between 10,000–50,000 USD.

but when they lose their lots, they are bankrupt and only the debts remain". This became a reality for many operators after the government abolished all the Tonle Sap fishing lots.

3.3.2. Towards lot abolition and the decline of political costs

In May 2011, the government issued Order 01 to organize fishery management and to suppress illegal fishing in Tonle Sap. A special committee, formed to investigate the situation around the lake, noted that the fishing lots created problems that ranged from conflicts with the local people to the destruction of the ecological system through improper practices (Chhin 2012). This report stimulated three initiatives to suppress illegal fishing, and ultimately resulted in the government's announcement in March 2012 to ban private fishing lots in Tonle Sap altogether.

Although there is no consensus on what motivated the move to ban a system that had existed for more than 100 years in Tonle Sap, some plausible hypotheses can be posited.[23] From the government's perspective, the measure reduced conflict in the fishery sector, improved the livelihoods of ordinary fishermen by allocating more fishing grounds to their communities, and promoted conservation through the creation of many conservation areas. Economically, the contribution of the private fishing lots was modest—less than USD 1.5 million per year—which, according to the Prime Minister, was equivalent to what the government received in custom duties in a single day (Hun Sen 2012). Hence, the government had no economic concerns in cancelling the Tonle Sap private fishing lots, and all former owners interviewed during our field work suggested that it was politically motivated. This observation was supported by many of our respondents who believed that the government had manipulated access to resources to pacify the fishermen in exchange for votes.

3.3.3. The pattern of interaction and consequences

The long existence of private fishing lots in Tonle Sap had both negative and positive consequences. On the positive side, it was the only system in Tonle Sap that helped generate state revenue, and conserve fish and flooded forests. In a study of Cambodia's fishing lots, Virkom and Sithirith (2008) cited the observation of Zaline et al. (1998) that fishing lots provided some protection of fish stocks through the control of poachers and prevention of large-scale loss of inundated forests. Spread widely over much of the fishing lot areas around the lake, inundated forests were generally well protected. Nevertheless, tension existed over access to fishing sites and their boundaries, but this friction was not due to the lots system *per se*, but was instead associated with broader management and governance issues such as the poor and weak management and monitoring of the Fishery Administration over the practices of lot owners, unclear boundaries of fishing areas, and the corruption among some relevant officers who let lot owners

[23] For a detailed elaboration of these hypotheses, see Dina and Sato (2014).

encroach on the fishing grounds of the small-scale fishermen (Thouk and Sina 1997; Say 2014).

Lot owners generated benefits, especially in the catching and selling of fish, that trickled down to a substantial number of people ranging from sub-lot contractors to ordinary fishermen (Figure 2). Lot owners generally did not operate the lots themselves, preferring as our interviews indicated, to sell parts of their lots to sub-lot contractors and to keep only the productive locations for themselves, their families and relatives. Even sub-lot contractors re-allocated their sub-lots to other fishermen, or allowed for a fee ordinary fisherman to catch in specific locations or during certain seasons (Piseth 2003). Although some small-scale fishermen also operated within the proximity of the lots and benefited from the lots system, this group is significantly smaller than the million or more people who were involved with Tonle Sap fisheries.

The years 1998 to 2000 marked an increase in the size of the fishing lots. According to our interviewed fishermen, fishing lot boundaries were expanded close to their houses. The small and shrinking fishing areas of the locals made it hard for them to sustain their livelihoods. According to Piseth (2003), lot owners resorted to armed guards to protect their property from poachers. Tension and conflict increased, which ultimately eroded the interaction and understanding between local fishermen and lot owners in the early 2000s. Based on fishery conflict data from the Department of Fisheries, Degen et al. (2000) observed that conflict increased more than 200% from 1998 to 1999. He also noted that these figures reflected a mere fragment of the actual numbers because mistrust of the authorities prevented people from complaining, or complaints were not passed onto the authorities.

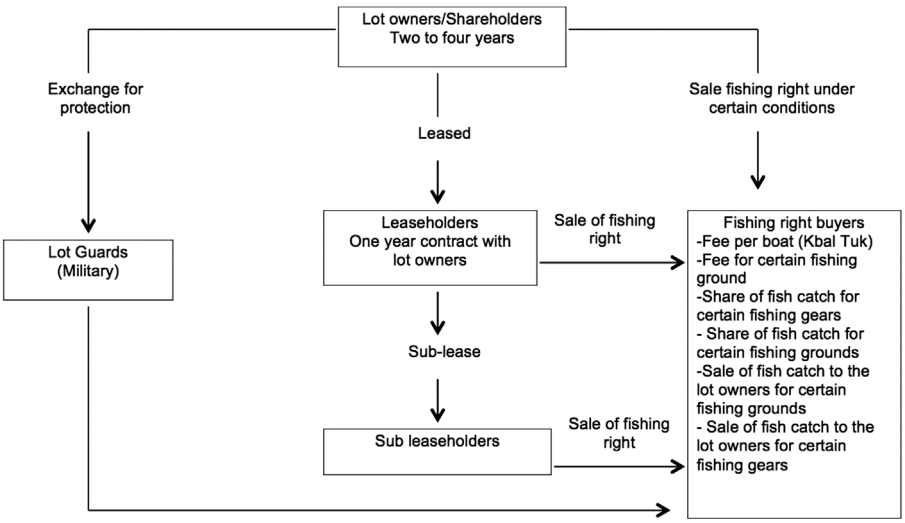

Figure 2: The pattern of interaction in lot in exchange for protection (Source: Mak 2011, 221).

The growing number of conflicts caused some researchers (Degen et al. 2000; Virkom and Sithirith 2008) to recommend that more efforts be made to improve the management of fishing lots because of their economic importance as well as their significance in flood forest protection and stable food security. The fishing lots system, when properly managed, had been effective in protecting the flooded forests and eliminating poachers from conservation areas, mostly because the lots were in the hands of private owners who had the power and resources to undertake these duties fully. One of the reasons why the fish stocks in Tonle Sap have continued to be productive for the last 100 years was the protection of forests, which are vital as spawning grounds.

But at the same time, researchers have underlined the negative consequences of the fishing lots, arguing that these created conflict and jeopardized sustainability of the fisheries in Tonle Sap. Grievances, ranging from institutional problems to the practices of lot operators, focused on boundary issues (with local fishermen complaining that lot owners overstepped boundaries (Thouk and Song 1999; Somony 2002; Piseth 2003), violence, navigation, and the use of illegal fishing gear. As the populations increased and fishing areas became more limited, some fishermen turned to poaching. Conflict, arrests, and violence ensued.

Friction developed not only between fishermen and lot operators, but with local authorities as well. Gum, who studied the management of twelve fishing lots in Battambang province through interviews with community people, local authorities, and fishing lot operators, observed that conflict among all three parties was widespread. Local authorities were often accused of leasing open-access areas for business interests, while incidents occurred over the infringements of the lot operators.

In response, the government decided in 2000 to reduce the size of the fishing lots and to re-assign these to the community (Ratner 2006). More than 56% or some 538,522ha were allocated to small-scale fishermen who were encouraged to manage them through community fisheries (Vanna and Gallardo 2011, 453). Regardless of the 2000 reform and the transfer of a number of fishing lot areas to community administration, tension prevailed. Our interviews confirmed that small-scale fishermen were annoyed by the lot owners' restrictions on fishermen's mobility, by the over-expanded lots boundaries, and their use of armed forces to guard the lots.[24] While the majority of the fishermen supported this re-assignment policy of abolishing the fishing lots, nearly all fishing lots owners and sub-lot contractors suffered (Hills et al. 2012).[25]

Our interviews indicated that proper management of the fishing lots could have improved relations between local fishermen and lot owners and operators. Even

[24] Guards refused to allow fishermen to travel across the fishing lots, which meant an extra burden in terms of gasoline costs and time to circumvent lot boundaries. Fishermen also claimed that sub-dividing the lots among numerous contractors depleted fish stocks.

[25] All interviewed lot owners confessed to facing anxiety and economic stress after the government cancelled the fishing lots.

though the majority of local fishermen were not happy with fishing lot operations, they still endorsed the system because fish yields were better in the proximity of the lots; and the existence of fishing lots prevented the spread of illegal fishing because of tighter monitoring by sub-contractors. In addition, local fishermen recognized the important role of the fishing lots in protecting the flooded forests. They acknowledged that lots owners and operators were better positioned for preserving these areas because of their money and good networks with government officials. The potential for building a stronger platform for collaboration had been present if the lots had been properly managed and monitored.

4. Explaining divisibility in Tonle Sap

The rise and fall of the fishing lots in Tonle Sap demonstrates that handing over resources to a community does not necessarily reduce the incidence of conflict and illegal activities. The character of the lake's ownership – whether private or common properties – had no impact on the rivalry over fishery resources among the different stakeholders. However, the fact that the lots system had sustained itself for more than 100 years does imply that the lot owners were earning enough to pay the high cost of division and privatization. Not only did the lot owners in Tonle Sap have money to purchase and update fishing gear and to hire guards and sub-contractors but also to maintain the system itself through bribes to state bureaucrats and politicians.

According to Oakerson (1992, 46), the divisibility of a commons may develop because of cultural or economic factors, and it is true that in the early stages of dividing the commons in Tonle Sap, the French were interested in generating revenue through taxes and the sale of lot licenses. However, in addition to these financial aspects, we observed that a contributing role in the long existence of fishing lots in Tonle Sap was the capacity of individual lot owners to pay the relevant political costs. Despite tension and ecological problems created by the fishing lots, these continued to exist in Tonle Sap until 2012 because of their importance to certain state bureaucrats who continued to enjoy tea money from lot owners.

Oakerson (1992, 45) also pointed out that the cost of privatizing the commons can be reduced through advanced technology. This observation is supported by the example of the Tonle Sap fishing lot owners who cut costs by replacing bamboo fencing with longer-lasting nylon netting. But the administrative and tea money costs were still high, requiring lot owners to maximize fish harvests.[26]

The long existence of commercial fishing lots in Tonle Sap provides an interesting case to fill any gaps within the commons theory with respect to the costs of privatization. The fishery commons of Tonle Sap was clearly divided

[26] A lot owner needed to pay tea money at four different administrative levels before being able to submit his bid to the Ministry of Agriculture, Forestry, and Fishery. The higher the level, the larger amount paid.

and controlled based on private property rights long before the fishing lots were eliminated. Yet, as the commons theory expects, monitoring this "private property" through such means as fencing and paying tea money was costly. Expenses were incurred from boundary demarcation with fencing, security measures against poachers, payments for facilitating administrative procedures, and sustaining such a system (through political bribes), all of which had to be compensated for with greater profits from the sale of fish from each lot.

However, we still argue that privatized fishing lots can have a contributing role to both the economy and conservation if supported with strong mechanisms and good governance. Looking at the revenue received by the French during the colonial era suggests fisheries accounted for about 10% of total income over two decades. Based on personal communications with lot owners, during the 1990s and 2000s the average lot in Tonle Sap could generate at least USD 0.5 million per year. If the state had improved revenue control mechanisms and eliminated under-the-table transactions, fishery revenue would have exceeded USD 1.5 million, an amount repeatedly cited by the Fishery Administration. Through the division of the commons and the introduction of private property, the state should be able to mobilize revenue for supporting the Fishery Administration, especially its conservation efforts, which will help Tonle Sap to be productive for years to come.

5. Conclusion

In the effort to produce income for the state, parts of Tonle Sap had been divided and converted into private commercial fishing lots for over a century before they were banned by the government in 2012. Through this system of division, the French were able to collect substantial amounts of revenue from the fishing lot businesses and taxes. However, it soon became apparent that dividing the commons entailed higher costs for the private owners since illegal fishing was often hard to detect and the damage to fishery resources was difficult to monitor. The political cost was also a burden, compelling lot owners to sub-divide and lease the sub-lots to contractors, and increase their fish yields in order to compensate for the costs and ensure some profit.

Our research brings us to the conclusion that with respect to conservation, privatization of the commons, contrary to conventional wisdom in the commons literature, has worked in the case of Tonle Sap. The nature of Tonle Sap did not trigger the tragedy of the commons as was predicted by the skeptics, but led instead a robust institutional set-up for protecting the flooded forest areas, the all-important spawning grounds of fish. This enabled Tonle Sap to be productive for over a century despite increased fishing efforts brought about by the growing number of fishermen. This result is consistent with the emerging literature, which challenges the critics of privatization of the commons (Araral 2014).

Hardin (1968, 1247) says, "injustice is preferable to total ruin". We agree that some order is better than no order. Yet the cost of maintaining such an order,

whether private or communal, should be fair and transparent. The eventual failure of the lots system in Cambodia proves this to be true.

Literature cited

Araral, E. 2014. Ostrom, Hardin and the Commons: A Critical Appreciation and a Revisionist View. *Environmental Science and Policy* 36:11–23.

Chhin, B. 2012. Activities of the Inspection Committee on the Management and Development of Fishing Lot in Tonle Sap. National Authority for Land Dispute Resolution: Phnom Penh, Cambodia.

Cooke, N. 2011. Tonle Sap Processed Fish. In *Chinese Circulations/Capital, Communities, and Networks in Southeast Asia*, eds. E. Tagliacozzo and Wen-Chin Chang. Durham, NC: Duke University Press.

Cox, M., G. Arnold, and S. V. Tomás. 2010. A Review of Design Principles for Community-Based Natural Resource Management. *Ecology and Society* 15:38.

Degen, P., F. V. Acker, N. Zalinge, N. Thuok, and L. Vuthy. 2000. Taken for Granted: Conflict over Cambodia's Freshwater Fish Resources. Paper Presented at IASCP, Bloomington, Indiana, June.

Degen, P. and N. Thouk. 2000. *Historical, Legal, and Cultural Perspectives on the Fishing Lot System in Cambodia*. Phnom Penh, Cambodia: Department of Fishery.

Dina, T. and J. Sato. 2014. Is Greater Fishery Access Better for the Poor? Explaining De-Territorialization of the Tonle Sap. *Journal of Development Studies* 50(7):962–976.

Evans, P., M. Marschke, and K. Paudyal. 2004. Flood Forests, Fish, and Fishing Villages, Tonle Sap, Cambodia: Community Forest Management Trends in Southeast Asia, *Research Network Report No. 12.* Asia Forest Network.

Gum, W. 1998. Natural Resource Management in Tonle Sap Biosphere Reserve in Battambang Province. Consultancy Report for the European Commission Support Program to the Environmental Sector in Cambodia.

Hardin, G. 1968. The Tragedy of the Commons. *Science* 162:1243–1248.

Hills, T., M. Bunnara, and R. Dave. 2012. *Review of Policy Settings for the Management of the Tonle Sap Great Lake: Targeting Support for Implementation*. Phnom Penh, Cambodia: Conservation International.

Hun Sen. 2012. Addressing the deep fishery reform on March 8, 2014: http://www.khmerlive.tv/archive/20120308_TVK_PM_Hun_Sen_Address_to_the_Nation.php.

Keskinen, M. and O. Varis. 2012. Institutional Cooperation at a Basin level: For What, by Whom? Lessons Learned from Cambodia's Tonle Sap Lake. *Natural Resources Forum* 36:50–60.

Kummu, M., D. Penny, J. Sarkkula, and J. Koponen. 2008. Sediment: Curse or Blessing for the Tonle Sap Lake? *Journal of The Human Environment* 37(3):158–163.

Kurien, J., S. Nam, and M. Sam Onn. 2006. *Cambodia's Agrarian Reforms: The Emerging Challenges for Policy and Research*. Phnom Penh, Cambodia: Department of Fisheries.

Lamberts, D. 2006. The Tonle Sap Lake as a Productive Ecosystem. *Water Resources Development* 22(3):481–495.

Mak, S. 2011. Political Geography of Tonle Sap: Power, Space, and Resources. PhD Dissertation. The National University of Singapore.

McKean, M. A. 1986. Management of Traditional Common Lands in Japan. In: Proceeding of the Conference on Common Property Resource Management, National Research Council, pp. 533–589. Washington, DC: National Academy Press.

National Archive of Cambodia: 35177. 1908. Ordinance Royale No. 35, 22 Mai, 1908.

National Archive of Cambodia: 35657. 1911–1916. Ferme des pêcheries du Tonle Chhmar et Stung Sen.

National Archive of Cambodia: 4118. 1897. Ferme générale des pêcheries du Cambodge.

National Archive of Cambodia: 9334. 1911. pêcheries et du adjudications des pêcheries de Kg. Thom.

Netting, R. 1981. *Balancing on an Alp.* New York, USA: Cambridge University Press.

Oakerson, R. J. 1992. Analyzing the Commons: A Framework. In *Making the Commons Work: Theory, Practice, and Theory,* ed. Daniel W. Bromley. San Francisco: ICS Press.

Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Actions.* New York, USA: Cambridge University Press.

Piseth, C. 2003. Contested Legitimation of Access to Fisheries: A Case Study of Everyday Practices among Fishers in Tonle Sap, Cambodia. Master Thesis. Regional Centre for Sustainable Development, Chiang Mai University.

Ratner, B. D. 2006. Community Management by Decree? Lessons From Cambodia's Fisheries Reform. *Society and Natural Resources* 19(1):79–86.

Ratner, B., G. Halpern, and K. Mam. 2011. *Catalyzing Collective Action to Address Natural Resource Conflict: Lesson from Cambodia's Tonle Sap*. CAPRi Working Paper No. 103: Washington, DC.

Saunders, T. J. 1995. *Aristotle Politics: Book I and Book II.* London, UK: Oxford University Press.

Say, S. 2014. Limited State and Strong Social Forces: Fishing Lot Management in Cambodia. *Journal of Southeast Asian Studies* 45(2):174–193.

Sokbunthoeun, S. 2010. Political Economy of Land Registration in Cambodia. PhD Dissertation. Department of Political Science, Northern Illinois University.

Somony, T. 2002. Concept of Fisheries Co-management in Cambodian Context: A Case Study in Fishing Lots #3 and #6 in Siem Reap Province, Cambodia. *Master Thesis*. Royal College of London.

Tanaka, M., T. Sugimura, S. Tanaka, and N. Tamai. 2003. Flood–drought Cycle of Tonle Sap and Mekong Delta Area Observed by DMSP-SSM/I. *International Journal of Remote Sensing* 24(7):1487–1504.

Thion, S. 1993. *Watching Cambodia: Ten Paths to Enter the Cambodian Tangle.* Bangkok: White Lotus.

Thouk, N. and L. Sina. 1997. *Review of the Fishery sector in Cambodia*. Phnom Penh: Mekong River Commission and Department of Fishery.

Thouk, N. and S. L. Song. 1999. Report on Field Survey of Fishing lot No. 6, Kampong Khleang Commune, Sot Nikhum District, Siem Reap Province.

Thouk, N. and T. Sengji. 2007. *The History Cambodian Fishery (Khmer version).* Cambodia: Fishery Administration.

Thouk, N. and V. Zalinge. 1999. *The Present Status of Cambodia's Fisheries and Management Implications*. Phnom Penh: DoF/MRC-DANIDA.

Vanna, N. and W. Gallardo. 2011. Perceptions of the Local Community on the Outcome of Community Fishery Management in Krala Peah Village, Cambodia. *International Journal of Sustainable Development and Ecology* 18:453–460.

Virkom, M. and M. Sithirith. 2008. Entitlements and the Community Fishery in the Tonle Sap: Is the Fishing Lot System Still an Option for Inland Fisheries Management? Fisheries Action Coalition Team's Paper.

Zaline, V., N. Thouk, and S. T. Touch. 1998. Where There Is Water, There Is Fish. Fishery Issues in the Lower Mekong Basin from a Cambodian Perspective. Paper presented at the 7th Conference of the International Association for the Study of Commons Property. 10–14 June, Vancouver.

Zhang, L., H. Guo, X. Li, and L. Wang. 2014. Ecosystem Assessment in the Tonle Sap Lake Region of Cambodia Using RADARSAT-2 Wide Fine-mode SAR Data. *International Journal of Remote Sensing* 35(8):2875–2892.