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How to keep commons as commons in the long run: Formation and distortions of property regimes in Chilika Lagoon, India[1]

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Abstract

The paper tries to understand how a regime of *de jure* ownership of customary fishers is gradually changing into a state of *de facto* control of non-fishers and outsiders in the Chilika lagoon, a Ramsar site on the eastern coast of India. The paper brings into analysis the historical and current distortions in the access regime of the lagoon. The focus of this analysis is on two processes: one, the shift from a position of legal rights and entitlements to denial of access for customary fishers, and two, from a state of no or 'thin' access to claim of legal rights by the non-fishers. While tracking this changing nature of property regimes in Chilika Lagoon the paper makes two important conclusions. One, commons is not fixed in its own distinct category; rather there often remains a threat that commons can change into other types of property regimes. Two, the immediate challenge is to identify drivers that may cause these changes and even the bigger challenge is 'how to keep commons as commons' in the long run.

Key words: commons, commonization, decommonization, access rights, entitlements, lagoon

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INTRODUCTION

Ever since the onset of the tragedy of the commons construct the bulk of the scholarly work on commons has focused on how to enable an identifiable community of interdependent users to exclude outsiders while regulating use by members of the local community. Irrespective of resource types, the criticality of commons management hangs on the rules of exclusion, inclusion and subtraction: inclusion and exclusion pertains to decisions on who is or who is not an user, whereas subtraction deals with the rules of resource distribution and allocation. Based on this notion, scholars have identified excludability and subtractability as two characteristics of commons (Feeny et al. 1990) that offer a set of complexities in achieving successful regimes of commons. Various scholars have put forward thoughts on how to effectively deal with this complexity and challenges regarding commons management.

Collective action scholars postulate that property and property relations impact on the ways in which people use, manage and abuse natural resources, and that collective action and institutional arrangements can positively influence resource use, access and conservation (Johnson 2004). They maintain that failure of collective management is a misnomer as opportunity to negotiate and establishment of appropriate systems of rules by a collective can bring resource sustainability. Thus an apparently apolitical theory of commons was formed using rational choice (Robbins 2004) and methodological individualism (Johnson 2004) to explain the ways in which different types of property rights arrangements emerge and change over time (Ostrom 1990) and space (Wade 1988). However, it is increasingly important to recognize that commons is not an isolated island of resources; rather it is situated within layers of complexities, rooted in the past, present and future discourses, and the changing social and political circumstances across geo-physical boundaries influence its management. As Robbins (2004) points out, an apolitical theory of commons, therefore, though attractive, is inadequate.

Alternate approaches to understand commons' confusion deal with the problem of inequality, and the ways in which rules create and reinforce unequal access to common pool resources (References). They focus on (a) socio-economic equality and poverty reduction, (b) rules as important tools to enhance, not restrict, access to the commons, and (c) property rights and relations as contingent upon contextually specific forces of social change (Johnson 2004). While successful commons management has the potential to solve many resource management problems, it does not necessarily lead to justice. Property rights are perhaps a necessary condition for effective management of commons but it does not constitute sufficient conditions for justice and community control of resources (Zerner 2000). A justice and equity angle is not only valuable for understanding distributional and procedural factors in commons formation but also equally useful in characterizing how commons outcomes influence social structures (Gelobter 2001).

Complexity in commons management does not result from social, cultural, political or historical factors alone. Ecological factors and its juxtaposition with social and political developments are also crucial determinants. As Berkes (2003) puts it, commons may be

termed as complex systems of humans and nature, the management of which is an interdisciplinary subject. The idea that both social and ecological processes define and shape the nature of commons where social outcomes remain contingent upon ecological dynamics and vice-versa is important (Dale et al. 2000, Waltner and Kay 2005) because addressing only social dimension of resource management without an understanding of resource and ecosystem dynamics will not be sufficient to guide society towards sustainable outcomes (Folke et al. 2005). There is now a growing body of scholars who are trying to understand commons management as the management of complex adaptive system as they delve into building a commons theory that addresses critical issues of scale, uncertainty and change (Gunderson and Holling 2002, Wilson 2006, Adger et al. 2003, Berkes 2006).

To keep the issue in perspective, there are apparently many differences in the way different scholars deal with commons. However, if commons management is complex using a single approach to understand it may lead to conceptual and practical confusions. Each approach has relevant points to offer for analysis and understanding of commons in specific contexts. In this paper we draw from all these scholarly areas to understand the process of formation and distortions of commons in Chilika Lagoon, on the eastern coast of India. We introduce two related concepts in our analysis. One, *'commonization'* – understood as a process through which a resource or property gets converted into commons; two, *'decommonization'* – refers to a process through which commons loses its essential characteristics and gets transformed into other categories of property. The processes of commonization and decommonization are continuous and two way where the formation or distortion of commons pass through several stages and draw from influences of the attributes of the social, political and ecological context. As like any type of property can enter into a process of commonization, already established commons or resources that are in a process of commonization could also fall into a process of decommonization. Commons, therefore, can be referred to as a process in itself rather than a fixed property type. Moreover, the processes of commonization and decommonization offer key challenges as to how commons can be managed as commons in the long run.

Our study focuses on how a state property – the Chilika Lagoon – moved into a process of commonization and again succumbed to a process of decommonization even before a complete commons status was arrived at. We analyze various issues and dynamics that contributed to this process and are responsible for shaping the access rights regime in the lagoon. Following some background on the study area and methods, we first examine the property rights arrangements in Chilika, and then proceed under three headings (1) key attributes of commonization and decommonization in the context of Chilika, (2) major trends emerging from these processes, and (3) conclude with a discussion on 'how to keep commons as commons in the long run'.

STUDY AREA AND METHODS

The study is being conducted in the Chilika Lagoon of Orissa State, situated on the eastern coast of India. Chilika is the largest brackish water lagoon with estuarine character in Asia with a water-spread area that fluctuates from 1165 to 906. It is a highly

productive ecosystem and one of the biodiversity hotspots with some rare, vulnerable and endangered species, as listed in the IUCN red list, found here. The Zoological Survey of India has recorded over 800 fauna species in and around the lagoon, including 225 species of fish. On account of its rich biodiversity Chilika has been designated as a Ramsar Site – a wetland of international significance. In addition to the rich ecological and biological diversity, the lagoon acts as the lifeline of about .2 million fishers in 147 villages who, until recently, were dependent on fishing either as their only or primary source of livelihood. This makes Chilika a unique social-ecological system. However, with recent changes in the ecological and political attributes the lagoon social-ecological system is undergoing a process of disintegration. While the lagoon ecosystem has degraded the fishers are beginning to abandon fishing and take to out migration for a living. The hundreds of years of customary management of the lagoon through traditional fishers' institutions is giving way to new centralized institutional arrangements. The socially sanctioned and legally approved rights and entitlements of the customary fishers have either been withdrawn or do not hold ground in the changed context.

The field study was initiated in March 2007 and it will continue until December 2008. A variety of methods including both qualitative and quantitative techniques are being used to have access to data. After a reconnaissance survey of about 60 fishing and non-fishing villages, two representative fishing villages were selected using selection criteria for the purpose of detailed household level analysis. A number of interviews of key resource persons, structured and semi-structured interviews, focus groups were also conducted. In order to have longitudinal data sets, household level monitoring of 36 selected households in the two study villages is being undertaken on a monthly basis by using specific formats. In addition, a general survey in all the fishing villages of Chilika is currently underway to get an understanding of the ecological, social-cultural and political attributes of commons formation. Apart from preparing issue-focused case studies for topical analysis a number of policy workshops with fishers' representatives were organized to discuss factors and processes of commonization. Other than at the village level, a series of semi-structured interviews with various stakeholders were conducted along with collection of secondary information on policy.

KEY ATTRIBUTES OF COMMONIZATION AND DECOMMONIZATION IN CHILIKA

Commonizing the Lagoon: Key factors that shaped commons' formation

Several factors acted together to shape the formation of commons in Chilika lagoon **(Table 1)**. These factors are rooted in the social, cultural, economic, ecological and political history and traditions of the area. Based on a number of survey and settlement reports from the pre-independence India[4] and Orissa state Gazetteers, the initiation of

[4] The first settlement under British rule was concluded in the year 1804 – 1805 followed by a Triennial settlement from 1805 to 1808. Second one year settlement was also concluded in 1808 – 1809. The actual settlement was started by the order of the Governor General in the year 1837 which ended in 1845 where certain rules and procedures for settlement were adopted. Maddox has described the procedures and rules in his book "Final Report on the Survey and Settlement of the Province of Orissa". The

commonization in Chilika could be traced back to the early part of 18th century. Historically, the fisheries in Chilika had been managed on caste-basis. The basic division was between the fishing castes and non-fishing castes based on which a key distinction of who can engage in fishing by having rights and entitlements in the lagoon was made. According to the caste norms the fishing castes were allowed to engage in fishing activities while the non-fishing higher castes were not permitted to engage in fishing or its related matters. As a result, they took up cultivation and other non-fishing activities as their occupation, and the fishing castes continued fishing as their primary or the only occupation. Therefore, caste system facilitated the emergence of specific caste-based occupations that in turn allowed for defining rights and entitlements in the lagoon in favour of the fishing castes. This in itself became one of the key foundations of the process of commonization in Chilika lagoon.

Even within the fishing castes there are at least five sub-castes and their caste norms specify the exact nature of fishing rights and entitlements each sub-caste can hold within the lagoon. Those norms not only had social and cultural sanctions but were also recognized by the then local king and the state government after independence. The norms with regards to fishing by sub-castes-within-fishing-castes further clarified ground for the formation of commons by simplifying attributes like excludability and subtractability **(Table 2)**.[5]

The traditional fishing techniques used by the fishers were caste-based, season-based, species-based, and location specific. Each sub-caste of fishers used different fishing gears and methods to fish in different locations specified for them, which was again determined by customary norms. There was clear agreement on what to catch where in which season and the particular fishing technique to be used. Thus the methods of fishing confirmed to the needs of each particular sub-caste within fishers and reduced the chances of conflict by allocating separate methods of fishing to them. It also valued the importance of maintaining a healthy lagoon system for resource sustainability by focusing on the seasonality of the lagoon and its species. Another interesting angle relates to how these fishing methods were made operational. We observed that most of these methods required collective action where often a big group of villagers, in most cases the entire village, had to go together for fishing, and there were rules by which they were able to apportion the catch equitably.

Success of property rights arrangement would primarily depend on the condition of the resource, as without a resource base it is impractical to talk about establishing a rights regime. In the case of Chilika it enjoyed a sound ecological health and a good resource base until about the end of 1970's. The lagoon's interaction with the Bay of Bengal and fifty-two rivers and rivulets were regular. The water depth, salinity levels, pace of water

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subsequent settlement was taken up in the year 1890 – 1900, commonly known as Maddox Settlement. [Online] URL: http://khordha.nic.in/departments/revenue.htm

[5] This is not an attempt to idealize caste system in the context of Chilika; rather it is a factual representation of caste-based fisheries in the lagoon. The system of castes and sub-castes in Chilika continue to be rife with many dynamics, more specifically issues of equity including power, control and justice.

flow, presence of phytoplankton and the lagoon food chain were all at desirable limits, providing habitats for numerous species of fish, crab and shrimps. An analysis of the ecological history of the lagoon provides an understanding that the state of the ecological health of the resource or resource sustainability was a crucial driver in the process of commonization in the lagoon. A good ecological condition of the resource and regulated fishing practices favored high productive. Fishers were able to derive higher incomes from fishing and everyone got a share of this benefit. The economic benefits not only kept levels of competition and conflicts low but it also became a major motivation for fishers to work on the process of commonizing customary fishing areas within the lagoon.

If the total number of users can constitute a manageable size it will only aid the process of commons formation. In the 1950's the total population of fishers in Chilika lagoon was about ten times less than what it is today.[6] With such a small population it was easier for the fishers to function as a more cohesive community by forming fairly manageable sized village groups that could handle institutions and norms of resource management more conveniently. Resource conflicts were either low or they were resolved within an appropriate time frame. Moreover, the low population created less pressure on the lagoon resources.

It was clear from the caste norms in Chilika that there were agreed upon rules and norms on the management of the lagoon resources amongst users. What strengthened these rule systems was a long process of customary practices which further streamlined specific rights of fishers with regard to access, use, management and membership. In other words, the rules, norms and practices helped to define and put in place important elements of excludability and subtractability in the context of Chilika. Further, not only local resource rights were established and mutually sanctioned by the caste users, these eventually found recognition by the state through legal arrangements. A lease system was put in place even before independence to allow the fishers exclusive rights to specific fishing areas within the lagoon that continues to the present day.[7] The lease system was based on two principles which protected the interests of the customary fishers, i.e. a lease was offered to village not to individuals and it was meant for fishers not for non-fishers. This set of factors provided critical leeway to the process of commonization in Chilika that generally involves negotiations and settlement of access and benefit rights amongst possible users.

The norms and rules were made operational through elaborate institutional arrangements at various levels **(Table 3)**. The traditional village institutions were in charge of the fishery resources and either the village headman or a council of elders provided leadership. After 1959, village level Primary Fisherman Cooperative Society (PFCS) took over as the key community institution with regard to fisheries management in Chilika. The traditional village institutions that were responsible for the overall village management continued to provided guidance to the PFCS and monitor fisheries related

[6] Calculated on the basis of the overall population growth in the state as recorded by national census.
[7] There have been a number of deviations from the original lease arrangement which finds discussion in the section on decommonization.

matters as and when need emerged. At a regional level the Central Fisherman Cooperative Marketing Society (CFCMS) or the apex cooperative society of fishers coordinated between various village level societies and worked as a front organization to negotiate with government departments. The revenue department used to hand over all fishery sources to the CFCMS, which in turn allocated the sources to various village level cooperatives through an elaborate lease system. *'Jati Panchayats'* or caste assemblies were another prominent institutional arrangement that facilitated commons formation in Chilika. There is a saying in Chilika that 'when nothing works the *'Jati Panchayat'* takes over the reins and ensures that resolution of the issue is achieved'. These layers of arrangements provided an institutional basis for the process of commonization in Chilika.

The state government's approach to lagoon management was characterized by a policy of non-interference until about 1970's. The unwritten policy stood in favour of a capture-based fishery thereby ensured that no aquaculture activity finds place within the lagoon. This helped to keep interference from non-users at its minimum. The policy also recognized the caste-based arrangements for fisheries management in Chilika thereby provided scope for the fishers to continue with their negotiations towards full realization of commons status so far as their traditional fishing areas were concerned. Its is evident that due to stronger social-ecological, cultural and political factors the fishers were able to build a strong connection with the lagoon which worked as a factor for commonization.

Decommonizing the Lagoon: Key factors of distortion in commons' formation
The process of commonizing the lagoon received a set back with the unfolding of several factors in the lagoon's social-ecological and political milieu **(Table 4)**. It significantly affected the long-standing process of establishing collective action to manage fishery resources thereby turning a state property like Chilika lagoon into commons. Decommonization started with the declaration of a part of the lagoon as wildlife sanctuary in 1972 covering an area of 1553 hectares. In the British survey records of 1897 and the lease records of the CFCMS this particular area formed the customary fishing ground of four *Tiara* caste villages in Banapur region which enjoyed exclusive fishing rights over it. In one major stroke their rights and entitlements were withdrawn and the area where they had generations of association was declared 'restricted'. This marked the beginning of a process of decommonization of resources within the lagoon that were shaping up as commons.

The second blow to commonization came from the start of shrimp aquaculture activities in the lagoon around 1980's. Non-fishers, with either a direct or indirect involvement of powerful people, mostly undertook the aquaculture activities. Driven by profit motives they started taking over more and more traditional fishing areas of caste-based fishers and converted them into shrimp farms. Consequently, the culture of encroachment became prominent and, towards mid-1980 the lagoon was virtually taken over by non-fishers and the ""Shrimp mafia"". These developments gave rise to severe conflicts between the fishers and non-fishers that became regular a phenomenon in the lagoon.

The state government changed its approach to the management of Chilika lagoon around the same time. Its policy on a capture-based and caste-based fishery management in the lagoon suddenly took a back seat, as there were moves to replace them with culture-based fishery by involving not only the non-fishers by caste but also other interested groups including industrial and corporate houses. In line with this approach the state government signed a MoU with the "holding company" Tata allowing it to make investments in intensive shrimp culture in Chilika. 1100 hectares of traditional fishing ground belonging to nine villages were handed over to the Tatas. However, even though project development activities had started, the company had to pull out owing to swiping protest by fishers. Nonetheless, the area under the project remained in dispute and has not been returned to the fishers. This incident also set an unhealthy trend of more people getting interested in shrimp aquaculture as the government's intensions in favour of culture-based fishery became clearly evident.

Continuing with its support for culture-based fishery the state government introduced a new lease policy in 1991 that legalized shrimp aquaculture in Chilika and gave out rights to the non-fishers to undertake this activity. In accordance with the policy 6000 hectares of traditional fishing areas were withdrawn from the customary fishers and given out to non-fishing villages for shrimp aquaculture. This loss of fishing area by the fishers was in addition to the already encroached fishing grounds by non-fishers. These developments accelerated the pace of decommonization by setting a trend of encroachment and legalizing culture-based fishery.

The cooperatives protested and challenged the lease order in court. After prolonged legal battle shrimp aquaculture was banned by the High Court in 1993, Supreme Court in 1996 and the House Committee of the State Assembly in 1997. While the High Court directed the state government to safeguard the interests of the traditional fishers, the Supreme Court ordered to treat a thousand meter zone around the lagoon as 'no activity zone'. Finally in 2001, the state government banned shrimp culture activities in the lagoon. However, such far-reaching decisions did not produce any significant impact on the ground reality as illegal shrimp aquaculture continues unabatedly even today. According to a conservative estimate, more than fifty percent of the lagoon fishing area is either directly or indirectly under illegal shrimp aquaculture. Apart from the encroached fishing areas, the areas allocated as culture sources of fishery continues to be under the control of the non-fishers. Therefore, lagoon areas that were evolving into commons suddenly started to decommonize into sort of 'private property' in the shape of individual encroachments. A related development occurred as a result of growing confusion and conflicts over fishing areas. Our field notes indicate that due to 'fear factor' a number of fishing villages stopped going to their customary fishing grounds that were either located close to non-fishing villages or at distances to which they had to travel through non-fishing villages. In addition, many fishers could not travel to their customary fishing grounds, as navigation became a real problem due to the intensity of shrimp farms within the lagoon. Eventually, these abandoned areas were either encroached or they became sort of 'open access'.

By 1980's the signs of ecological degradation and deterioration in resource condition were evident in Chilika. Because the sea mouth was getting blocked, the flow of

sediments from the rivers and their drainage to the Bay of Bengal created a problem of siltation. Large-scale shrimp aquaculture and rampant encroachment within the lagoon also contributed to this problem. The lagoon started to lose its biodiversity, and made the resource base weak. The productivity of the lagoon reduced radically eventually bringing the income levels of fishers to an all time low. Our survey in one particular fishing village supported this with a number of data sets. The annual average income of a fishing household dropped by 70 - 80 percent. From fishing being the primary or only occupation, 92 percent of the fishers' households took up other occupations as primary sources of income and a fluctuating 40 percent household either abandoned fishing or engaged in seasonal fishing only. More than 90 percent of the households in the village have loans averaging around $1500. What followed thereafter was large-scale out migration by fishers as wage labourers. Our survey showed that 37 percent of households have male members still on migration. This has created a good number of 'absentee fishers'. A process of collective action requires physical presence of the users and their day-to-day involvement in the process of commonization. The economic and ecological displacement of fishers from Chilika along with the creation of an expanding group of 'absentee fishers' worked against this principle, reversed the process of commons formation and replaced it with decommonization of the lagoon resources.

The apportionment of fishing entitlements to the traditional capture sources continued without any change in lease price until 1965 when the system of ten percent annual incremental lease price was introduced. The ten percent annual increase in lease price continued for a good 30 years after which it moved up to 27 percent in 1991, i.e. 10 percent lease price to the revenue department, 10 percent administrative charges to the Orissa State Fisherman's Co-operative Federation Ltd. (FISHFED) and 7 percent stamp duty for lease agreement. This suddenly became a burden on the fishing villages as the lease price started to double in just less than three years. The enormous lease price was unaffordable because production in the lagoon plunged, bringing down fishers' income levels and forcing many of them to take to migration. By this time most of the village level PFCS were either defunct or dormant thereby the entire burden of lease price depended on the individual fishers' contribution. A number of petitions and protests by fishers on this issue have not been effective to influence the government for a change in the lease pricing. The burden of incremental lease price coupled with the loss of both productivity of the lagoon and income of the fishers has become a crucial driver for decommonization of customary fishing areas in Chilika.

The government's persistence with the high lease price is seen by many as a strategy to push the fishers out of the lease system. The strategy is to increase the lease prices higher so that the fishers lose their 'lease holding capacity', i.e. the amount of lease price exceeds the fishers' capacity to pay. Consequently, the fishers would either not take anymore lease or start taking less and less areas depending on how much they can pay or stop taking lease completely. Once this happens traditional fishing areas can then be easily diverted to non-fishers or others as there is currently no law that reserves these traditional fishing areas exclusively for the customary fishers.

High lease price coupled with the expanding encroachment of traditional fishing areas have resulted in serious issues of access and entitlements. While a lease entitles the traditional fishers to have full access to the resource, they are denied of any such rights in practice due to the invasive nature of encroachment in the lagoon. However, the customary fishers continue to pay annual lease price and take even the encroached fishing areas on lease only in order to retain ownership claims over their traditional fishing areas. Interviews with fishers in several villages revealed that even though parts of the leased fishing area are no more under their possession they prefer to renew the lease every year by paying high lease prices just as 'a strategy to retain their ownership in some form'. This is definitely an expensive way of keeping hold of access rights and entitlements. The fishers fear that if the annual lease is not renewed their traditional fishing areas would be leased out to non-fisher villages by the government. We observed that a number of villages who had delayed payment of lease price for renewal were already informed that their traditional fishing areas would be leased out to other interested parties if immediate payment and renewal of lease was not done. The lease records of CFCMS / FISHFED shows that in several cases portions of traditional fishing areas have already been leased out to others either because renewal or payment of lease price was delayed. On the other hand, there has not been any significant drive by the government to protect the interests of the lease holding fishing villages in order to restore their rights and entitlements to their traditional fishing grounds that are currently under encroachment. This has posed a serious threat to the commonization process in the lagoon.

How did fishers manage such huge lease prices with low productivity and negligible income levels? We found in our discussion with a number of fishers that a common practice across fishing villages has been to unofficially sub-lease a portion of their traditional fishing grounds to outside moneylenders who give them either advance money or a big loan. While the villagers use this money for paying lease prices to the government (for court cases on conflicts regarding fishing areas, in some cases), the sub-lease is used to repay the advance or loan. All of these sub-leased areas are used for shrimp aquaculture. Once sub-leased, the general practice by the moneylenders is to continue shrimp farming in the sub-leased area by providing additional funds to the village every year even after the initial loan amount is repaid. In a number of cases sub-leased areas were eventually encroached if the village refused to continue the sub-lease after the loan was paid back. However, the practice of sub-lease became a growing trend in Chilika as more and more fishing villages found it difficult to pay the high lease price for retaining rights and entitlements, or just nominal ownership, to their traditional fishing grounds.

We also observed a number of irregularities in the selection of lease beneficiaries. Our reading of the CFCMC lease records indicate that traditional fishery sources have been leased to individuals belonging to both fishing and non-fishing castes, non-fishing caste villages, and even some government departments. This practice of allocating leases to individuals, non-fisher villages and institutions (other than village cooperatives) was started as early as 1960's. This definitely set an unhealthy trend as more and more of

these interest groups wanted a share in the lagoon commons that was previously managed by fishers alone.

There has also been steady erosion in the institutional base of commons formation in Chilika. Two developments in the early 1990's are important in this regard. One, in 1992 a centralized autonomous agency known as the Chilika Development Authority (CDA) was created to manage the affairs of Chilika. While more pressing issues like change in fishing policy, the ongoing conflicts between traditional and non-traditional fishers and encroachment of the lagoon could not be addressed by the CDA, it definitely added to the already existing 'institutional confusion'. Second, in 1991, FISHFED was created as the apex organization of all the fishers in the state including fishers in Chilika. This institution replaced the CFCMS, which being a local institution was able to function in close collaboration with village level fishers' cooperatives. In contrast, the creation of FISHFED at the state level took away the locus of decision-making control from the local fishers to a centralized administrative control. The local fishers view this as yet another encroachment of their rights and entitlements. The creation of such macro-level organizations has continuously undermined the existence of traditional institutional arrangements that facilitated commons' formation in Chilika.

The fishing methods and techniques also changed significantly. The diversity of traditional fishing practices and their associated methods and techniques were gradually replaced by a few dominant methods using synthetic gillnets and trammel nets (locally known as 'khanda jala' or 'disco nets') thereby resulted in stiff competition among fishers. Moreover, fishing soon reduced to become an individual activity from its earlier position where a large group or the entire village was required to fish. The new techniques enabled fishers to fish all round the year disregarding the seasonality of the lagoon and its species. This not only affected the ecological health of the lagoon but the instances of stiff competition and conflicts increased.

Other important factors for decommonization included external drivers such as influences of international market trends with regard to shrimp prices, international development funds, priority to eco-tourism and their associated trends. Consequent to these factors, the process of disconnection between the fishers and the lagoon resources intensified and soon became a factor for decommonization.

CONFUSION IN THE COMMONS: SOME CONCEPTUAL IMPLICATIONS

Fish for power: Everybody loves fishing

The recognition of caste-based fishing rules and customary use of traditional fishing sources through the lease system established a set of rights and entitlements in favour of the fishers in Chilika. Through continuous lease of the same fishing area year after year they were not only able to create greater stakes in specific locations of the lagoon but they also succeeded in strengthening their claims over those areas through a process of commonization. To put things in perspective, even though the fishers' rights to access and withdraw were better defined than their rights to manage, exclude and alienate, they were able to hold the 'bundle of rights' (Ostrom and Schlager 1996)

together to negotiate their positions from being 'authorized entrants' to becoming 'proprietors' thereby moving from a situation of state property towards establishment of commons. However, with the start of the decommonization process the 'bundle of rights' disintegrated leading to a peculiar property rights situation and resulting positions for the fishers. While the fishers continue to pay the lease price that should entitle them to the 'bundle of rights', none of the rights in the bundle are actually available to them due to encroachment and conflicts. The postulation by Ostrom and Schlager (1996) that 'collectives may, and frequently do, hold well-defined property rights that do not include the full set of rights listed in the bundle; but to hold some of these rights implies the possession of others' does not clarify the current property rights situation in Chilika.

There are two major trends coming out of this analysis, (a) the caste-based fishers of Chilika are in a state where they do not even hold a single right from the bundle, an indication that there has been a shift from a position of legal rights and entitlements to the denial of access for the fishers, (b) the non-fishers have moved from a state of no or 'thin' access to the claim of legal rights over the lagoon resources. The second trend confirms to the theory of access (Ribot and Peluso 2003), which maintains that 'access has the potential to eventually lead to establishment of property rights'. However, our analysis of property rights regime in Chilika indicates that while access can lead to formation of property rights; legally confirmed property rights and entitlements can also revert backward to either access or no access state, an outcome that confirms to the first trend. These trends also form the crux of the commonization and decommonization processes in Chilika.

The question of 'how a regime of *de jure* rights of customary fishers is gradually changing into a state of *de facto* control of non-fishers' offers important theoretical challenges. In the context of Chilika, we considered that a 'bundle of rights' is perhaps not enough without a 'bundle of powers' because property relations constitute only one set of mechanisms by which people gain control and maintain resource access (Ribot and Peluso 2003). Therefore, effective commons management would imply locating these *powers* within the social, political, economic and ecological contexts that shape people's ability to benefit from resources.

Understanding the process of commons formation requires among others, attention to co-optation (Nayak and Berkes 2008), mechanisms by which the state may seek to expand its power "in new ways" (Lele 2000). This was evident in Chilika as the state gradually moved from a role of allocating fishing rights and entitlements to regaining control of the lagoon. An active process of commonization involves devolution of power. But the state is by nature interested in maintaining control and accumulating power (Lele 2000, Winslow 2002), and therefore chances of co-optation through retaining control and expanding power remains high (Nayak and Berkes 2008).

Changing nature of property rights: Where are the commons going?

The complexity with regard to the management of commons in Chilika was observed in the diversification of the resource into various property types from its initial category of

being de facto commons[8]. More important than the diversification of property types were the factors and the processes, and the social-ecological and political circumstances which influenced this. As the process of commonization gave way to decommonization confusion on the status of property rights started to emerge. We observed that specific areas within the lagoon remained under more than one property regime simultaneously. To put this in perspective, areas that were managed as commons were sort of privatized through encroachment by non-fishers. While fishers continued to take lease of these encroached fishing grounds they virtually lost their access to these areas. Consequently, these areas remained under both, even though partially, commons arrangement by fishers as well as their use as private property by the non-fishers (through encroachment for shrimp aquaculture). At the same time, the government retained its ownership over all these fishing areas which made them state property. Based on these facts we found elements of state property, private property and commons in a number of fishing areas within Chilika lagoon. The changing nature of property rights regime in Chilika has led to four different emerging trends: (1) from state property managed as commons to open access, (2) chunks of state property within the Lagoon, (3) chunks of private property within the Lagoon, and (4) commons losing essence (subtractability and excludability).

Emergence of multiple property regimes

It is evident from the above discussion that the diversification of property rights in Chilika has given way to the establishment of multiple or mix property rights regimes **(Table 5)**. These multiple property regimes are often in conflict with each other and one is continuously hindering the smooth functioning of the other. The key question is "can multiple property regimes co-exist within a fixed geographical limit, especially in a lagoon?"

This changing nature of property rights situation in Chilika and the establishment of multiple or mix property regimes offer interesting theoretical challenges on understanding commons formation and, more importantly, 'how to keep commons as commons in the long run?'

CONCLUSIONS: KEEPING COMMONS AS COMMONS!

Success of commonization as a process depends on the close links between people and the resources **(Table 6)**. This important link was evident in Chilika as with ecological degradation and deterioration in resource condition the income levels of fishers went down leading to large scale migration, growing indebtedness, and social-ecological marginalization of the fishers. The fact that more and more fishers started to think that their relationship with the lagoon had deteriorated over the years and they were slowly getting disconnected from it reversed the process of commonization and gave way to decommonization. We also saw in the case of Chilika that commons is not about a piece of resource alone, nor it is about people depending on that resource. Rather, it is a fine blend of both humans and resources that makes commons an integrated social-ecological system (Berkes 2003); delineation between the both would

[8] State property being managed as commons through customary practices, caste norms and mutually agreed upon collective arrangements by fishers of Chilika.

be artificial and arbitrary (Berkes and Folke 1998). There is a need to deal with people and resources together, rather than in isolation. Therefore, the level of connection of people with the resources is a key determinant of successful commonization; disconnection in any form may lead to the onset of a process of decommonization.

If people and resources act together to form commons then it is but desirable that both human societies and ecosystems remain healthy and are based on principles of sustainability. In resource dependent societies, integration of social-ecological systems is mirrored in the process where institutions and social regulations evolve in tandem with the ecological progression of the resources (Nayak 2003). Commonization, therefore, underscores the importance of resource sustainability on which access and entitlement questions rest. This also makes evident that social-ecological systems have powerful reciprocal feedbacks (Gunderson and Hollings 2002, Berkes et al. 2003), they act as complex adaptive systems (Walterner-Toews and Kay 2005, Janssen et al. 2004), require institutional diversities (Ostrom 2005) and multiple institutional linkages (Nayak and Berkes 2008). Institutional diversities are core to the management of social-ecological systems and its related processes like commonization where new institutions can be 'crafted'; they can also arise spontaneously (Ostrom 2005).

In the context of heterogeneous societies the importance of procedural and distributional factors in commons formation needs highlighting. This delves into 'how commons outcomes influence social and political structures; questions of representation, accountability and transparency'. The caution is even though establishment of commons is meaningful, collective action and devolution of authority may not result in social, economic and environmental justice and democratic decision-making, and it is possible that devolution can actually create forms of decentralized despotism within the commons arena (Ribot 2000). Until questions of 'whose rights and entitlements', 'who has power and control', 'who takes the decisions', etc. are dealt with, the prospect of justice with regard to commons formation is a moot question (Zerner 2000). This offers vital challenges to the commonization process.

Commonization involves transformation of resources from one property type to other, a process that is strongly influenced by the prevailing governance structures and mechanisms. Such influences are stronger in cases like Chilika where commonization is based on the transformation of a state property towards commons. The example of the changes in lease policy in Chilika with its revenue orientation, the approach from capture to culture-based fishery and from caste-based fishing to "everyone can fish" elucidates this point. The importance of governance mechanisms lie in the creation of conditions for ordered rule and collective action (Stoker 1998) and institutions of social coordination (Lee 2003). Commons formation definitely benefits from devolution of management rights and power sharing (Folke et al. 2005), creating space for participation, representation, accountability, empowerment and social justice (Lebel et al. 2006), formulation and application of principles to guide interactions (Kooiman and Bavinck 2005), and respect for diversity, complexity, power dynamics, levels and linkages (Nayak and Berkes 2008). Facilitated by a sound governance regime, these aspects can become key attributes of a commonization process.

The issue of scale has important connotations for the process of commons formation because in diverse resource management contexts different actors constrain, create, and shift scales (Cash et al. 2006) to serve their own interests (Swyngedouw 1997a, 1997b). Even tough it was operational at a local community and resource management level, commonization in Chilika had far reaching influences from drivers at multiple scales, i.e. caste and class politics at the local and regional, political dynamics at the state and national, and global market trends and international development funds at the macro levels. Various actors worked at these different spatial scales to change power and authority thereby were able to alter access to resources, and the decision-making with regard to the formation of commons in Chilika. Because drivers at various levels of organization impact common property resources (Berkes 2004) there is a need to consider multiple level of management (Young 2002, Adger 2003, MEA 2003) for successful commonization of natural resources. In this regard, networks and partnerships are key to the success of commons formation.

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Table 1: Process of commonization in Chilika

Key attributes	Manifestations
Caste	• Only fishers by caste allowed to engage in fishing • Caste-based norms specified fishing rights and entitlements
Fishing techniques	• Caste-based, season-based, species-based, and location specific • Considered needs of each caste and allocated separate fishing techniques which helped reduce conflicts • Focused on the seasonality of the lagoon and its species by valuing the importance of resource sustainability by • Based on collective action involving either a big group of villagers or the entire village (fishing as group activity)
Favourable condition of the resource leading to good quantity and quality of fish production	• Sound ecological health and a good resource base • Better ecological condition of resource and regulated fishing practices favored high productive • Higher incomes from fishing and everyone got a share of benefit • Economic benefits kept levels of competition and conflicts low
Low population (less fishers)	• Small population size meant less fishers • Easier for fishers to form more cohesive and manageable sized community groups
Clear rights and entitlements	• Caste norms for use and management of lagoon resources • Customary practices established specific rights of fishers with regard to access, use, management and membership • Resource rights mutually sanctioned by caste users and recognized through legal arrangements • Lease system protected interests of customary fishers by providing exclusive rights
Government policy	• Approach of minimal or non-interference • Favoured culture-based fishery • Recognized caste-based arrangements for fisheries management
Strong fishers institution (Coops)	• Fishers' institutions at various levels, i.e. from village to regional • Distribution of functional responsibilities amongst institutions • Community-based institutions in command
Fishers connected to the lagoon	• Social and economic benefits, ecological and political advantages, cultural practices kept fishers connected to the lagoon

Table 2: Caste-wise fishing norms and arrangements

Fisher castes	Fishing methods	Fishing techniques	Location of fishing	Season of fishing	Type of catch
Kaibartya and Khatia	"Jano"	Enclosure with bamboo and nets	Shallow waters in narrow channels	May – September	Bigger fish and shrimp
Kaibartya and khatia	"Bahani"	Handmade cast nets and non-motorized boats	Mostly deep waters but occasionally shallow waters	October – June	Bigger fish and shrimp
Mainly Kaibartya and Khatia but occasionally other fishing castes	"Dian"	Use of nets and collection by hand	Around the "Jano" fishing areas	May – September	Fish of all sizes
Kandra	"Baja", "Dhaudi" and "Tata" (Trap fishing)	Bamboo boxes of different shapes and sizes	Shallow waters and change of place seasonally	Twelve months	Shrimp and medium to small fish
Tiara	"Baja", "Dhaudi", "Khainchi", "Mugura" and "Tata" (Trap fishing)	Bamboo boxes of different shapes and sizes	Shallow waters and change of place seasonally	Twelve months	Shrimp and medium to small fish
Kandra and Tiara	Prawn khatti	Bamboo and net enclosures for capturing shrimp	Shallow waters	March – August	Shrimp of all sizes
Women of Bhoi caste (non-fisher)	"Chimuta"	Hand pick shrimps from mud under shallow water	Shallow water	March – August	Shrimp of all sizes
Men of Bhoi caste (non-fishers)	"Suti"	Angling with hook and line only	Shallow and not so deep waters	Mainly in summer	Fish of different sizes through "Suti" and shrimp from "Poluaha"
	"Poluha"	Manually drain water from an enclosed water area to	Shallow waters or near shore areas		

		catch fish and shrimp			
Both fishing and non-fishing castes	"Uthapani"	Fishing in extended water areas in rainy season	Near shore and in shallow areas	July – September	Shrimp and fish of all sizes
Mainly non-fishing castes and occasionally fishing castes	"Khainchi", "Mugura" and "Khatia"	Bamboo boxes of different shapes and sizes	Shallow water and change of place seasonally	Twelve months	Shrimp and medium to small fish
	"Poluha"	Manually drain water from an enclosed water area to catch fish and shrimp	Shallow waters	Mainly in summer	Shrimp and medium to small fish

Table 3: Fishing related traditional institutional arrangements at various levels

Name of institution	Level of formation	Who are members	Key functions
Traditional village institution	Village	All households represented by adult members	Overall village management including fishing
PFCS	Single or combination of villages	All fishing households	All fishing related matters including fishing areas lease
CFCMS	All fishing villages in Chilika having PFCS	All PFCS and its members	Take bulk lease from revenue department and sub-lese to PFCS
"Jati Panchayats" or Caste Assemblies	Regional, i.e. all fishers belonging to a particular fishing caste irrespective of villages they live in	Fishing villages or fishers belonging to a particular fishing caste	All matters relating to the particular fishing caste including fishing related conflicts.

Table 4: Process of decommonization in Chilika

Key attributes	Manifestations
Diversion of customary fishing areas	• Creation of Protected Areas in place of customary fishing grounds • Diversion of fishing areas to other uses
Shrimp aquaculture	• Non-fishers and other powerful people undertook aquaculture activities • Customary fishing areas became shrimp ponds • Conflicts between fishers and non-fishers became prominent
Culture of encroachment	• Non-fishers and "Shrimp mafia" indulged in encroaching customary fishing areas • Bulk of the motivation came from shrimp aquaculture • About half of the fishing area encroached
Change in government approach	• Shift in focus from capture to culture fishery • From caste-based fishery to involvement of non-fishers and industry • Focus on eco-tourism in the lagoon
Government lease policy	• Legalized shrimp aquaculture • Non-fishers given rights for the first time undertake culture fishery • Fishing areas withdrawn from customary fishers and handed over to non-fishing villages for shrimp aquaculture
Ecological imbalance and poor resource condition	• Ecological degradation and deterioration in resource condition • Lose of biodiversity and a weak resource base • Productivity of lagoon reduced radically • Income levels of fishers fell to all time low • Ecological and economic crisis resulted in large scale out migration
Changes in lease arrangements	• Unaffordable lease prices at 27 percent annual increase • Seen as a strategy to displace customary fishers • Unofficial sub-lease of customary fishing grounds • Fishing area lease to individuals, non-fishing castes, and even government departments
Loss of rights and entitlements	• Encroachment, high lease price and loss of institutional base resulted in serious issues of access and entitlements
Erosion of institutional base	• Centralized agencies like CDA and FISHFED replaced fishers' institution • Locus of decision-making control moved from local fishers to a centralized administrative control • Village level cooperatives became either dormant or dysfunctional
High population (more fishers)	• Big population size meant more fishers • More people engaged in fishing: both fishers and non-fishers • Difficulty in forming cohesive and manageable sized groups
Change in fishing methods	• Dominance of synthetic nets replaced traditional nets • Fishing became more or less individual activity
Global market trends	• International shrimp prices became a driver of change
Fishers disconnected from lagoon	• Ecological, social and economic disintegration, and unfavorable political decisions initiated a process of disconnection

Table 5: Mix of property rights regime in Chilika

Property rights category	Type of resources included
State property	• Protected Areas: Nalabana Bird Sanctuary • Regulated area for dolphins • Seasonally protected areas for fish breeding • Areas for tourism
Private property	• Encroached fishing areas under shrimp aquaculture (privatized despite court decisions) • Encroached areas already converted to other land use or construction
Open access	• Abandoned traditional fishing grounds • Certain areas in deep Chilika • Lagoon areas under conflict
Commons	• Caste-based management of traditional fishing areas

Table 6: How to keep commons as commons?

1. The level of connection or disconnection of people with resource is a fundamental basis
2. Ecological health of the resource or resource sustainability is crucial
3. Economic benefits are key motivations, but social and ecological benefits also matter
4. Issues of rights, entitlements, justice, power and control are important, especially in the context of heterogeneous societies
5. Governance structures and policies can have far reaching influence
6. Success of commons institutions acts as a determinant factor
7. Attention to drivers at multiple levels – local to global – is must