

PRIVATISING THE COMMONS

A CRITICAL REVIEW OF THE PROPERTY RIGHTS PARADIGM

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Abstract

The commons problem emerges because the existing property rights structure cannot prevent the dissipation of the benefits of environmentally conscious behaviour to free riders. The property rights school, based on the Coasian concept of externality, argue that privatisation of the resource will resolve the crisis in such situations. Biologists (Wynne-Edwards Ardrey) and psychologists (Crowe, Edney) have also supported this view.

In our paper, we have critically examined their arguments. We have pointed out that the property rights school fails to consider the costs of privatisation and the fact that the prevailing system of property rights depends upon the surplus being generated. They also ignore the considerable body of literature documenting the depletion of privatised resources.

The real cause of the crisis, we argue, is not the system of property rights per se, but in the delineation of the rights over possible income flows from the resource. Proper attenuation - the restriction of the rights to use of the resource - can resolve the commons dilemma. This view accepts community management as an important and distinct form of resource regimes that simultaneously ensures inter-generation and intra-generation equity.

Key Words: Common Property Resources, Community Management, Natural Resources, Privatisation, Property Rights, Sustainable Development.

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Abstract

Common Pool Resources (CPRs) are resources used jointly by a group of persons called the resource community. Such resources are characterised by rival consumption; however, like public goods, it is difficult to exclude such resources. Consequently, researchers argue, such resources are inevitably over-exploited and exhausted – the so-called Tragedy of the Commons. This Tragedy can be attributed to the dissipation of the benefits of conservation amongst the resource users, while the costs of conservation falls on the individual. This problem can be solved by privatising.

In this paper, we have undertaken a critical review of the multi-disciplinary literature on privatisation.

The paper begins with a definition of common pool resources and its functions. We then review the literature on the Tragedy of the Commons model and its causes. Although, the Tragedy of the Commons is associated with Hardin, the origin of the proposition is much earlier – in the writings of Aristotles. We briefly undertake a chronological survey of the literature.

This is followed by a detailed critical survey of the literature on property rights. Based on the Coase Theorem, economists like Demsetz and Posner have argued that privatisation will ensure that the entire costs and benefits of resource use will accrue to the resource user only under a private property regime. Researchers in other fields – biologists, social psychologists, experimental studies and empirical studies undertaken by social scientists - have supported this view. This paper reviews their contribution also.

However, this literature is based on flawed assumptions. It overlooks several issues that seriously impair private property regimes from ensuring sustainable resource use. These issues include:

1. Establishment and maintenance of private property rights has costs, which may be quite substantial.
2. The system of property rights prevailing at a point of time depends upon the economic surplus being generated.
3. Even privately owned resources can be over-exploited under certain conditions.
4. Community-based management of resources may also provide a viable sustainable alternative.

Subsequent research has established community based management systems – common property systems – as a viable alternative to private property regimes. The advantages of common property over private property regimes are pointed out.

However, the Post Independence era has witnessed a decline in the area under CPRs. Based on the conclusions of the literature survey we argue that this trend has alarming implications for both equity and sustainability.

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1. Introduction

Common Pool Resources (CPR) refer to natural resources jointly used by a large number of people with co-equal rights to the resource. Unlike public goods, however, their consumption is rival - exploitation of the resource by one individual reduces the stock of resource, thereby affecting consumption by others. In other words, consumption of CPRs generates *strategieic externalities* in the shape of reduced consumption - either in the present, or (which is more common) in the future. This problem is serious, as the cost of applying the exclusion principle may be prohibitive. Examples of such resources consist of gleamings from harvests, ground water aquifer, fishing stock, the ozone layer, etc. Such resources may be *local*, i.e. used by local communities (forests); or *global*, i.e. affecting several countries (ozone layer). This study focuses on local commons.

CPRs contribute to rural welfare in many ways. They constitute an important source of stable consumption, add variety to diet, provide low cost inputs to the production process, and contribute significantly to rural income (specially of the poor households) in various ways. They are also a source of employment, particularly amongst women, children and elderly persons. CPRs also form part of the social security system cushioning the rural poor from the effects of seasonal declines in income. Finally, they constitute an important component of the rural resource base. Their destruction leads not only to the loss of an

important part of this base, but may affect the functional stability (resilience) of the entire resource base. It is important, therefore, to both conserve and nurture CPRs.

Empirical studies have shown that the area under CPRs is declining over time (Jodha, 1986). While some economists would attribute this to degradation through over-use, this would be a mistake. Such studies have also shown that privatisation is an important means of destroying common rights over natural resources. It is necessary to analyse this trend and examine its implications for the sustainability of the rural resource base.

In our present study we shall review the existing literature on this issue. We will attempt to establish Common Pool Resources as an important form of property rights that both increases rural welfare, specially for the rural poor, and ensures the sustainability of the resource system.

2. Privatisation of Natural Resources

2.1: Tragedy of the Commons

Economists have traditionally believed that CPRs are inevitably over-exploited and exhausted – the Tragedy of the Commons. The origin of this problem lies in the inability of the property rights system to ensure that the consequences of the actions of resource owners are restricted to them, leading to over-utilisation of the resource. This has been stated by various authors: Aristotles (Jowett, 1967), Marcett (in Bromley, 1989), Lloyd (in Edney, 1980), Warming (Anderson, 1911), Gordon (1954), Scott (1955), and Cheung

(1971). The most influential statement of this proposition came from Hardin (1968), who also coined the term ‘Tragedy of the Commons’.

Hardin’s prediction of tragedy in the commons was based upon an analysis of the open field system prevailing in medieval England. Grazing land was commonly owned by the villagers and formed a stable system initially. But, with demographic expansion, pressure on the commons mounted and the rate of exploitation exceeded the rate of replenishment.

The problem here is that the institutional arrangement - or, to be more specific, *the property rights system* - is not able to prevent the benefits of an individual resource user’s environmentally conscious behaviour from dissipating to other (short-sighted) resource users. (Neither are the costs of environmentally degrading action restricted to the offender.)

Insert Table 1 here

This suggests that a solution to the tragedy of the commons lies in altering the property rights system. Early writers on this subject believed that this modification must be directed towards a property system that would facilitate internalising the costs and benefits of resource use. This could best be achieved, they argued, under a system where private property rights prevailed. For instance, Hardin stated, “the tragedy of the commons as a food basket is averted by private property or something formally like it.” (1968).

The argument in favour of private property rights has been put forward from three different angles: from the viewpoint of economists, from the viewpoint of zoologists, and from the viewpoint of behavioural psychologists. We shall first examine the proposition by economists.

2.2: Economist's Viewpoint - Demsetz and Posner

The chief proponent, among economists, of a system of private property rights has been Harold Demsetz. His analysis has its theoretical foundations in Coase's classic article "The Problem of Social Cost" (1960). Coase had argued that the problem of externalities could be solved if the rights of the various parties are well defined. This would enable the parties to take into account all the costs of their activities.

Based on this argument Demsetz (Demsetz, 1966, 1967, Alchain & Demsetz, 1975) espoused the desirability of a system of private property rights to prevent over-use and depletion of natural resources.

“If the main allocative function of property rights is the internalisation of beneficial and harmful effects, then the emergence of property rights can be understood best by their association with the emergence of new or different and harmful effects.’

“Changes in knowledge result in changes in production functions, market values, and aspirations. New techniques, new ways of doing the same things - all invoke harmful and beneficial effects to which society has not been accustomed. ... (T)he

emergence of new property rights takes place in response to the desires of the interacting persons for adjustment to new benefit-cost possibilities.’

‘... property rights develop to internalise externalities when the gains of internalisation becomes larger than the costs of internalisation. Increased internalisation, in the main, results from changes in economic values, changes which stem from the development of new technology and the opening of new markets, changes from which old property rights are poorly attuned.’ (Alcian & Demsetz, 1975)

The crux of Demsetz’ position was that private property is the most appropriate way to make the individuals internalise the externalities. In his words, "A primary function of property rights is that of guiding incentives to achieve a greater internalisation of externalities" (Demsetz, 1967). In contrast, under communal ownership, the costs associated with the use of that particular resource does not fall on the users. Therefore, the resource will be over-used, as the person seeking to maximise the present value from his use of the resource will overlook that part of costs that is borne by others. Negotiation to curtail excessive exploitation of the resource is of course possible, but the costs of negotiating between the large number of resource users and the costs of policing the agreement will be substantial.

Demsetz proceeds to argue that an individual owning land maximises it’s present value by taking into account alternative future streams of benefits and costs, and choosing that

stream which maximises the present value of his land. This involves a consideration of both present and future conditions. In effect, therefore, he acts as a broker between the present and future generations. But in the case of communal property there is no mechanism to ensure that the claims of the future generation will be given their due weightage, resulting in the present generation being given excessive preference. In other words, the impact of an individual's actions on the future generation - as well as on other members of the present generation - are not taken into account fully in the case of common property resources.

The incentive effect of a private property regime had long been recognised (though not explicitly stated), as is attested by the following excerpt from Lloyd: "The common reasons for the establishment of private property in land are deduced from the necessity of offering to individuals sufficient motives for cultivating the ground, and of preventing the wasteful destruction of the immature products of the Earth" (in, Balland & Platteau, 1996).

Hardin, too, had recognised the superiority of private property rights.

"An alternative to the commons need not be perfectly just to be preferable. With real estate and other material goods, the alternative we have chosen is the institution of private property coupled with legal inheritance.... we are not convinced, at the moment, that anyone has invented a better system. The alternative of the commons is too horrifying to contemplate. Injustice is preferable to total win." (Hardin, 1968).

Richard Posner (1977) has expressed similar views regarding the ultimate wisdom of institutional change in the direction of atomistic property arrangements over resources. According to him, the proper incentives for economic efficiency were created by the parcelling out of mutually exclusive rights to the exclusive use of particular resources among the members of society. If every piece of land is owned by someone, in the sense that there is always an individual who can exclude all others from access to any given area, then individuals will endeavour by cultivation or other improvements to maximise the value of land.

He argues that there are three criteria of an efficient system of property rights:

1. Universality: All resources should be owned by someone;
2. *Exclusivity*: Rights to use the resource belong exclusively to the owner; and,
3. Transferability: Such rights are transferable to some other person on a temporary or permanent basis.

These characteristics are satisfied only by a system of private property rights.

Louis de Alessi (de Alessi, 1980) also provides a coherent critique of communal property rights. He argues that common ownership will imply reduced investment, increased entry to capture the rent, and earlier harvesting of the resource. The recognition of these problems often leads to restrictions on the use of privately owned capital, leading to the predominance of labour-intensive techniques. Consequently, the average and marginal productivity of labour will be lower, and those of capital higher, than under private

ownership. Moreover, since common ownership discourages the postponement of capture (as the stock may be appropriated by someone else), the quantity of resource appropriated will vary more widely over time so that the resource is more likely to become exhausted. The choice of resource use may also be affected. For instance, instead of planting a crop with a higher present value but a longer gestation lag, individuals have the incentive to grow faster growing crops, or grazing cattle - activities on which he incurs lower transaction costs.

2.3: Biologist's Viewpoint - Wynne-Edwards and Ardrey

Privatisation, we pointed out before, has also been supported by contributors from other fields. Wynne-Edwards' (Wynne-Edwards 1962, 1965) ethnological spatial dispersion theory, for instance, deals with the management of common resources by sub-human animals. The basic tenet of this theory is that animal communities self-regulate their population to avoid over-exploitation of food sources through a system of territoriality.

Members of the consuming community - usually the males - compete for a limited number of territories in the resource bearing area, and since these territories are large, winners disperse sparsely over the resource, preventing over-exploitation. Females generally mate with territory winners, so that the latter's "successful" genes are passed onto the next generation. Subsequently, the next generation is not only genetically superior, but also smaller in size.

Territoriality, therefore, performs several functions: it helps in genetic selection, reduces the rate of resource consumption, generates a social hierarchy, with territory winners forming the elite, and prevents direct competition for resources that could otherwise destroy the resource pool.

It is doubtful to what extent Wynne-Edwards's theory is applicable to human societies. For one, human territories do not display the same functions as it does for sub-human animals. Besides, losers are not treated as expendables in human society - specially with the emergence of the welfare state. Nevertheless, Ardrey (Ardrey 1966, 1970) has tried to extend Wynne-Edwards's theory to human society. He proposed that human societies are governed by competitive principles and that the aggressive social behaviour of human beings is based on innate and unalterable biological factors. He further points out that there is co-existence of equality of opportunity with genetic inequality of ability. This creates biological divisions within a society, forming the basis of the process of genetic selection. Simultaneously, there is inter-dependence between members of the community, so that the survival of the community calls for some self-sacrifice on the part of its members.

In contrast to Wynne-Edwards, Ardrey stressed that competition among humans often transcends conventional forms. Further, the recognition of the inherent biological equality is psychologically manifested as a basic drive for identity. Achieving control of the resource distribution can satisfy this drive. This is possible either by achieving control of the resource distribution. This is possible either by occupying a place in the community

hierarchy, or through possession of a territory. Thus, according to Ardrey, the function of a territory is to demarcate the owner's biological superiority and obtain for him the secure control of a portion of the resource stock of the community.

2.4: Psychologists Viewpoint - Crowe and Edney

Psychologists have also suggested the utilisation of the concept of territories to resolve the commons dilemma. Crowe (1969) suggested that large territories should be divided into small homogeneously valued groups.

Territorialising implies, in this context, the division of the common resource into subdivisions with individual (or sub-group) responsibility for each. Territorialising does not simply mean the creation of boundaries (and their maintenance); it is a system of behaviour that has cognitive, temporal and spatial aspects. The essence of this strategy, however, is the division of the whole resource in such a way that individuals are given the freedom to utilise their allotted portion, but depletion of that portion minimally affects other portions. Thus, the solution is to tackle directly the problem by dismantling the commons itself.

Edney (1980) has argued that such a strategy is acceptable for the following reasons:

- a) The individual is given the freedom to utilise the resource allotted to him in a manner which he believes to be rational;
- b) The individual is also given the responsibility to maintain the division;

- c) It minimises competition over the resource and allows territory holders a sense of individuality and control;
- d) It relaxes the individual's responsibility for the group, and vice versa. Thus territory holders are not required to practice altruism, reducing the scope for free-riding; and,
- e) Need for external governance and maintenance of the territory is reduced.

2.5: Results of Experimental Studies

Support for the beneficial effects of privatization also comes from an experimental study by Cass and Edney (1978). They have argued that the division of the resource pool into distinct territories will make resource management more efficient, with higher *individual* exploitation rates, even though each individual territory is smaller and has lower carrying capacities than the common pool. This is because:

1. The allotment of distinct territories will develop a greater sense of individual responsibility in each harvester, reducing responsibility diffusion for a crisis and discouraging individual harvesters from thinking that they free ride on others;
2. Such a system reduces the uncertainties involved more `controllable'. Division of the resource pool into individual territories eliminates the problem of free riding and reduces the problem to one of self-control or self-management. Further, with the eradication of external effects, property owners become solely responsible for the outcome of their actions, as well as being able to predict these consequences with greater reliability.

The experiment studied the effects of making the impact of resource consumption visible to the resource community and dividing the resource pool into territories, one for each harvester. Both were expected to improve resource management and allow exploitation at higher rates in the long run, but the effect of each factor was expected to be dependent on the other. The experiment was set up as a commons dilemma situation, in which the subjects play in groups of four, 'exploiting' a regenerating computer controlled resource pool. Pay-offs to individual harvesters at the end of the experiment were based on total points accumulated, with subjects being able to choose to extract points from the resource stock rapidly or slowly over a number of rounds. The dilemma faced by these resource users was whether to extract points rapidly for themselves, or to limit extraction in each round allowing time for the community pool to regenerate. A game in such simulation exercise continued till the pool was depleted, or a time limit was reached.

The results of the experiments suggested that both visibility of resources and territorialisation contribute to efficient resource management. A combination of both these conditions resulted in a near optimum strategy being adopted, on the other hand, allocation of territories without resource visibility resulted in under exploitation out of caution. The authors argued that private territories increased the predictability of the system and focused responsibility on the owner, thereby creating a greater sense of control. This led to the adoption of conservative exploitation strategies. The availability of feed backs about the impact of such strategies - in the form of resource visibility - allows resource users to shed their over-cautiousness and move to a strategy closer to the optimum.

2.6: Examples of Sustainable Privatised Resources

Advocates of privatisation have also cited the emergence of successful private property rights in the case of endangered resources.

Demsetz's discussion of the relation between the advent of commercial fur trade and property rights in the Montaigne Indian society is one such example (1967). Before the establishment of the fur trade, game was communally owned and hunting was carried out to satisfy food and clothing requirements. Externalities were undoubtedly present, but the scale of hunting was such that they were not significant. The advent of the fur trade had two effects: firstly, the value of fur was considerably enhanced; secondly, in response to the first development, hunting intensity increased sharply. Both these effects enhanced the externalities associated with hunting to significant levels. This led to a change in the system of property rights, with the onset of private ownership. The first stage witnessed the temporary allotment of land, this was followed by seasonal allotment of land, and finally full fledged hunting territories earmarked for groups.

In addition, Demsetz notes several other cases of successful privatisation: for the Indians of the Labrador Peninsula and of the North-West Coast (1967). Harper-Fender (1981), too, notes the favourable impact of privatisation of natural resources to conserve the fragile supply of fur-bearing animals amongst Cree Indians of Saskatchewan.

3. A Critical Review of Privatisation

Early writings on the commons were characterised by the following features. Firstly, they all believed that CPRs were over-utilised and would therefore be depleted. Secondly, the root of the problem lay in the system of property rights, which prevented the consequences of resource utilisation accruing to individual resource users. Thirdly, the emergence of distinct property rights in the resource would lead to resource conservation. Hence, CPRs should be privatised.

This view, however, overlooks several points:

5. Establishment and maintenance of private property rights has costs, which may be quite substantial.
6. The system of property rights prevailing at a point of time depends upon the economic surplus being generated.
7. Even privately owned resources can be over-exploited under certain conditions.
8. Community-based management of resources may also provide a viable sustainable alternative.

The subsequent discussion will elaborate these points.

3.1: Costs of Property Rights

It has been argued that the establishment of property rights has its costs and benefits. Whether or not property rights will be established, the form they will take, etc. will

depend upon their Marginal Cost and Marginal Benefit curves. Consequently, as there is a change in these curves, there will be a corresponding change in the property rights arrangement.

INSERT FIGURE 1 HERE

For instance, when the Marginal Benefit curve is MB, and the Marginal Cost is MC, property rights will not be established. But a change in technology, for instance, may result in the costs of enforcing property rights falling to MC*.

For instance, private property in land in the American Great Plains did not develop fully before the 1870s because the cost of fencing was too high, making it impossible to prevent livestock from crossing range boundaries. But, the use of barbed wire as fences greatly reduced the costs of fencing and led to the demarcation of property rights after 1870.

This implies that the costs of establishing property rights are important and we cannot claim beforehand that private property rights is efficient under any situation. Such costs occur under the following heads:

1. Costs of establishing and protecting property rights;
2. Costs of decision making with respect to use of a scarce resource;
3. Costs of establishing institutions to negotiate between agents; and,
4. Costs of policing after the optimal level of resource use has been determined.

For instance the person owning the resource has to be clearly agreed upon, and non-owners excluded. With regard to CPRs it is not simply enough to demarcate boundaries between tenements and assign ownership rights to them - though this itself is a costly operation. It is also necessary to protect each owner from intrusion by others. Alternatively, if the decision were to retain communal management, there would be no such costs as long as membership of the resource community can be controlled. In medieval England, for instance, this was ensured through the system of frankpledge. The transaction costs of establishing and operating a private property regime are, therefore, enormous.

3.2: Property Rights and Economic Surplus

The property rights school argues that private property rights will maximise the economic surplus generated. This is based on the assumption that the system of property rights prevailing determines the economic surplus. Bromley argues, however, that the opposite is true - it is the magnitude of economic surplus being obtained that will determine the appropriateness of the system of property rights. He is, therefore, reversing the functional relation:

$$\text{Surplus} = f(\text{Property Rights})$$

to:

$$\text{Property Rights} = g(\text{Surplus}).$$

Dahlman (1980), for instance, has shown that the open field system operating in medieval England was superior to a system of private property rights. He pointed out that

the optimal scale of operations was different for arable and pastoral activities. While crop cultivation could be carried out in small discontinuous plots, grazing had to be carried over a wide area. This led to differing types of property rights emerging for these two activities. In the former private plots were prevalent. But, for pastoral activities, division of the land and the resultant restrictions on access would require frequent negotiations to determine the terms and conditions on which cattle could be grazed on some other's land. In addition, policing would be necessary to detect over-grazing, or breaking any other terms of the agreement between the parties. These two conditions led to high transaction costs. The problem was by-passed by the introduction of open access to pastoral land. Simultaneously, the right to withdraw land from communal use was withdrawn - so that the ability of individuals to threaten others was reduced. Economic pressures (grazing could be carried out only in large consolidated holdings) also contributed the stability of the system.

3.3: Sustainability and Privatisation

Establishing private ownership would not, however, necessarily eliminate the danger of resource depletion. The reason is that the rate of exploitation would depend upon private costs and benefits from extraction. In the presence of externalities there would be a divergence between such private costs-benefits and social costs-benefits leading to a solution that is not sustainable in the long run. Such divergence's may occur if the cost of exploiting the resource is low, the gross returns from exploiting the resource is high, there is insecurity regarding the ownership of the resource, or if future income is discounted at a very high rate.

So over-exploitation of a privately owned resource, when the objective is to maximise individual present value maximisation, is quite possible as shown in various mathematical models (for a list of citations, see Larson & Bromley, 1990). In fact over-exploitation may be the optimal strategy under the following conditions:

1. When the minimum viable resource stock is positive, extinction is optimal if the initial resource stock is small;
2. When the minimum viable resource stock is zero and the discount rate exceeds the growth potential of the species (Cropper, 1988).

While depletion may not result from present value maximisation if harvesting costs increases as the stock decreases. The resulting stock could still fall to such a low level that it has become depleted in an 'economical' - if not 'physical' - sense (Larson & Bromley, 1990).

So we see that ownership is not the crucial element in determining whether a resource is used sustainably or not - it is control over possible uses of the resource.

3.4: Environmental Degradation, Property Rights and Attenuation

In this context, the meaning of property rights becomes important. Property rights refer to:

“the sanctioned behavioural relations among men that arise from the existence of things and pertain to their use. Property rights assignments specify the norms of behaviour with respect to things that each and every person must observe in his

interactions with other persons, or bear the cost of non-observance. The prevailing system of property rights in a community can be described, then, as a set of social and economic relations denoting the position of each and every individual with respect to the utilisation of scarce resources.” (Furubotn & Pejovich, 1972)

This has two implications. Firstly, the relation is not between a person and the resource; it is a relationship amongst individuals with respect to resources. Secondly, ownership of property rights does not imply unfettered enjoyment of the benefits from the property. Rather it implies that the prevailing institutional structure will specify the rights and privileges of the owner with respect to the flow of benefits accruing from the property.

Burrows observes:

“One of the important functions of the legal system is to define the legitimate uses of property. Even in a social system based on private ownership of property, society, through the legal system, confers on the owners only limited rights of use. ... It is clear, therefore, that the ownership of property is essentially the ownership of rights to some, but not all, of the services that property is capable of yielding. In addition to allowing the owner to enjoy these services, private ownership normally provides for the exclusion of others from also enjoying the permitted activities. ...” (Burrows, 1979)

Now environmental crises occur because resource owners do not give sufficient weightage to the welfare of future generations. So they will undertake activities, or use

their property right, in a manner that will harm future generations. Under the prevailing institutional set up, or rather under the prevailing frame of rights, such activities may not be considered illegal and can be continued. It is only when the existing structure of rights to the future income stream from the resource is curtailed in a manner by which the welfare of future generations are given sufficient weightage that the environmental problem can be solved. Such restrictions on owned resources are referred to as attenuation: “Any limitation on the way in which property rights may be used constitutes attenuation.” (Quiggin, 1988).

The problem, therefore, is not due to the form of ownership prevailing, but in the specification of the rights enjoyed by the property owners: “Common property of natural resources is no more a tragedy in terms of environmental depletion than private property. It all depends on what social institutions ... are guiding resource use in either case.” (Ciriacy-Wantrup, 1971).

3.5: Open Access versus Community Management

The property rights school, however, bypassed this issue by equating common property with open access conditions. The property rights school has held that either property is private, or it is held by the state. According to this view, resources not amenable to private appropriation are ‘common property’. This implies that such resources are not owned by anyone: it is a free good. This approach view CPRs as open access resources freely available to all users.

It has been argued by Ciriacy-Wantrup & Bishop that this usage is “at odds with the long-standing meaning of the concept ...”(1975). They further point out that:

“The meaning of the concept “common property” is well established in formal institutions such as the Anglo-Saxon common law, the German land law, the Roman law and their successors. It is well established in informal, institutional arrangements based on custom, tradition, kinship and mores.... economists are not free to use the concept “common property resources” or commons” under conditions where no institutional arrangements exist. Common property is not “everybody’s property” ...to describe unowned resources (res nullius) as common property (res communes) as many economists have done for years in the case of high seas fisheries, is a self-contradiction” (Ciriacy-Wantrup & Bishop, 1975).

Many CPRs (including Hardin’s common field system for a long period, for instance), are communally owned and managed sustainably. Resource users may realise the benefits of co-operation and create institutions (both formal, as well as informal) which incorporates ecological conservation as an objective within its structure. Such institutions contain mechanisms for both exclusion and allocation of the resource. Examples of such community-based resource management systems includes the Spanish Huertas, the Zanjiras in the Phillipines, the Alpine grazing systems, Japanese common land system, the Lofoten fishery system, etc. (Berkes, 1989; Ostrom, 1990)

This has led to reclassification of the different property rights system into the following divisions:

Insert Table 2

The property rights school equates open access resources with CPRs. But community based systems can also provide a sustainable alternative by building up group identity. Group identity encourages co-operation because members of a social group tend to regard other members favourably and believe them to be trustworthy, honest and co-operative. Other members of the same group are expected, therefore, to reciprocate co-operative behaviour. In addition, inclusion within a social group reduces social distance between members so that they make less distinction between their own and other's welfare. In fact, experimental studies have indicated that feed backs regarding group outcome has a greater impact than feedback on his individual performance (Kramer & Brewer, 1980).

More importantly, a community-based management system can minimise the substantial transaction costs associated with establishing and operating a resource regime. In an n-person resource community ${}^nC_2 = [n(n-1)/2]$ agreements would be necessary. Naturally, the costs of such an extensive negotiation process would be significant. An institutional alternative to the series of bilateral exchanges is to create a CP regime that internalises the multiple negative externalities. For instance, instead of having numerous individual owners of upland forestland, a CP regime can be devised where the community earns more from down hill land which compensates them for not cutting timber up hill. As McKean argues:

‘CP regimes may become desirable when more intensive resource use multiplies the externalities between parcels, or when individuals face insurmountable

transaction and information costs in Coasean contracting. ... There is probably some point at which economies of scale in negotiating takeover, and collective decision making, collective agreement on fairly restrictive use rules, and collective enforcement of those rules becomes easier (less time, lower transaction costs for the owners) than endless one-on-one deals.” (MacKean, 1996).

This becomes crucial in the context of low value resources.

In addition, CP rights can serve to operate as a way of privatising rights to resources without sub-dividing it. Natural resource systems are complex – their optimal scale of operation may be large. In that case, they are more productive when left intact.

The optimal scale may be large and may constitute the entire system for several reasons. For instance, the CPR may be physically indivisible or may lack distinct boundaries so that division of the resource may be technically impossible. The resource may be mobile and variable, or even unpredictable, so that resource users may prefer to share the entire area, and decide where to concentrate use at a particular time, rather than parcel the system and impose risks on some individuals. Sometimes the administrative infrastructure that is necessary to support individual property rights may not exist – cheap fencing material or courts to resolve disputes may be absent. In that case, sharing rights is an economical way of ensuring enforcement of the group’s right.

Of course, it is possible for some institutional rule like Majority Decision Rule to emerge when there is a large number of bilateral bargaining. Since such arrangements are also

necessary under communal ownership there appears little to choose between these two forms of ownership in this regard. However, this overlooks the voluntary nature of such arrangements. In the case of private property rights, the emergence of such an arrangement creates scope for appropriating a more than fair share by threatening to withdraw from the organisation. In the case of communal ownership, however, individuals are bereft of such bargaining power so that establishment of institutional arrangements and their preservation becomes easy. Secondly, the entire community carries out monitoring. This spreads out the costs of monitoring over the entire community, so that per head contribution is low. Users monitor each other's; they also band together to patrol the entire resource system to prevent outsiders from exploiting the resource. Rotation rules place the two actors most concerned with cheating in direct contact with each other so that the fear of being cheated leads to monitoring. Pro-social norms and conventions are employed. This allows the community to economise on monitoring costs.

Finally, vesting resource rights in those living in proximity to the resource gives them incentive to monitor the resource properly. People living close to the resource have certain strategic advantages over others in the sense that they have the potential to exploit and degrade the resource more easily. They can also monitor resource use more easily. Vesting property rights in these people strengthens the incentive of those most capable of enforcing rules about access to the resource to design rules that protect and enhance it. Vesting those rights in others instead destroys those incentive and converts those nearest

the resource into likely poachers. Any rights scheme needs to consider the strategic importance of vesting resource rights in the communities living closest to the resource.

4. Conclusion

To conclude, private property rights regimes are not sufficient to ensure environmental sustainability - they are only necessary conditions. What is necessary is that rules exist for exclusion of `outsiders' and for resource sharing. This implies that no single type of property rights can be prescribed a priori as a remedy for environmental degradation. However, community-based resource management systems have the following advantages:

1. They utilise local skills and resources.
2. They are compatible with local culture.
3. Information requirements are less and can be obtained more easily.
4. Monitoring costs are lower as user participation increases management legitimacy and leads to better compliance.
5. They ensure equity in resource allocation.
6. They enable the poor households to access the resource.

Consequently, the gradual privatisation of CPRs found in various studies (Jodha, 1986; Pasha, 1992) is not encouraging. In fact, it is the shrinkage in the area under common lands that has contributed to the increasing pressure on such resources leading to their degradation (Sen, 1981). It is, therefore, necessary to reverse this trend and encourage the establishment of decentralised management structures.

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Table 1: Accrual of Costs/Benefit to Resource User and Community

Action	Increase in Output	Over-grazing
Addition of extra cattle	Benefit monopolised by individual	Cost of depleted common land spread across all herdsmen
Not adding to herd	Cost, in terms of output foregone, borne entirely by individual.	Benefit enjoyed by all herdsmen - even those free-riding.

Table 2: Forms of Property Regimes

Property Rights System	Characteristics
Private Property	Owner enjoys exclusive rights to use the resource and transfer these rights temporarily or permanently.
Open Access	Resources are used by everyone none of whom possess rights which are exclusive or transferable.
State property	Ownership and management is controlled by the state.
Communal property	Use rights are controlled by an identifiable group who devises rules for resource sharing, exclusion, etc.

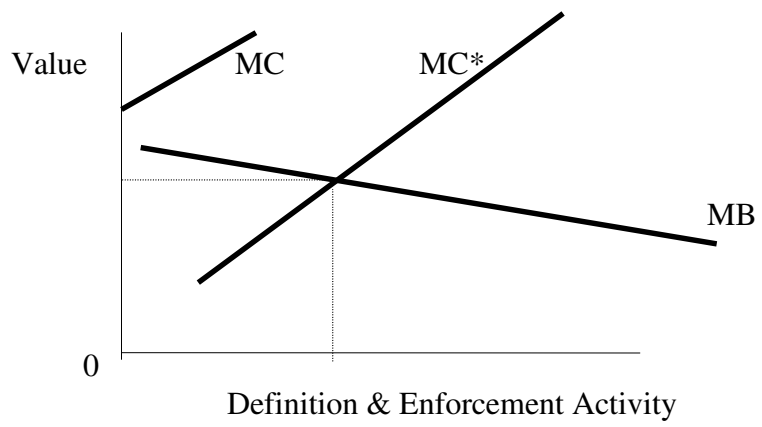


Figure 1: Costs & Benefits of Establishing Private Property Rights