Non-Exclusive Resources and Rights of Exclusion
Private Property Rights in Practice

Hannes H. Gissurarson
Faculty of Social Science
University of Iceland

I Introduction

Private property rights to goods such as natural resources are rights that an owner has to exclude others from the utilisation of such goods. They are rights against other people. How can individuals come to have such rights? And why should they have them? Locke (1690) dealt with the first question. For him, property was natural in the sense that its emergence preceded that of government, which was indeed established to protect property. While Locke started from the premise that God had given the goods of the earth to mankind in common, he argued that individuals could come to appropriate individual goods, provided that there was "enough and as good left in common for others": this is the Lockean proviso, as Nozick (1974) called it. Nozick submitted that the proviso had to be changed to be feasible: it should be that others would not be made worse off by the appropriation of goods by an individual. In Nozick's theory, people did not necessarily deserve what they had, whether individual abilities or worldly goods: but they were entitled to their goods, either because they had not made others worse off by appropriating goods, or because they had been transferred to them without violating the rights of others, e.g. sold or given to them, or genetically passed on to them. Hume (1739) discussed the second question, why people should have private property rights. Nature was niggardly, and people were selfish, he argued. Therefore, to ensure peace and prosperity, they had to adopt certain rules of conduct, the most important being those of permanence of possessions and transfers by consent. In other words, good fences made good neighbours. Demsetz, in the spirit of Hume, explains the emergence of private property rights by scarcity: when goods became scarce, possibly because of new technology or changes in consumer taste, individuals can reduce harmful effects of economic activity to a tolerable minimum by establishing property rights in those goods. The theory of private property rights expounded by Locke, Nozick, Hume and Demsetz is cogent and powerful when applied to divisible goods like land and cattle. Land can be fenced off; cattle can be branded. The owners will look after their goods; everybody, or at least most people, will be better off, as a result. But what about seemingly indivisible goods like radio frequencies, mountain pastures, salmon rivers, and offshore fishing grounds? How can people come to have rights to them? And why should they? In this paper, a few such examples will be discussed.

II Warming on Offshore Fisheries

The first economist to subject the fishery to a systematic analysis, Warming (1911) argued that, under the conditions of his day and time, it would not be efficient. Consider two offshore fishing grounds, A and B, of different fertility. It could easily be demonstrated that, other things being even, too many boats would utilise the more fertile fishing ground A in comparison with the less fertile fishing ground B. (To use the language of economists: boats would move from the less to the more fertile fishing ground, until average net revenue would be equal on both grounds, whereas they ought to be allocated in such a way that marginal net revenue was equal on both grounds.) The

reason was open access: the two fishing grounds were non-exclusive resources. There was no price reflecting their different scarcities and directing individuals to their most efficient utilisation in comparison with economic possibilities on land. The fishermen regarded both fishing grounds as free goods. Warming pointed out that rent ought to be derived from a fishing ground, similar to the rent derivable from a plot of land. But unlike land rent, this kind of rent was dissipated in excessive harvesting cost. Fishing effort would expand, new boats would be added to the fleet, until there was no more profit to be had from the fishery. To solve the problem, Warming suggested access fees which would reflect the different scarcities of the two fishing grounds: Government would charge a boat harvesting in the more fertile fishing ground more than it would a boat harvesting in the less fertile one. In essence, his proposal was to define property rights to the two fishing grounds, where the owner would be government rather than indvidual fishing firms which would however utilise the grounds, for a fee. The idea was to restrict access and thus to turn the fishing grounds into exclusive resources.

While Warming was right that the explanation for the fishery's inefficiency was open access to fishing grounds, his analysis was flawed. First, his suggestion of different access fees to different fishing grounds presupposed more knowledge about these grounds than government could be expected to possess and also easier monitoring of harvesting in these grounds than was likely to be the case. In the second place, while he explained the need, or " demand" for property rights in the fishery, he did not analyse the "supply" side, namely the political process which might or might not provide a solution. This point will be discussed more fully below. Thirdly, the rent dissipation which occurred should really be seen as the problem of harmful effects which the economic activities of individual fishermen had on them as a group. Fish stocks were scarce resources. There was therefore an incentive to rush to the fishing grounds and harvest fish before anyone else came along; there was an incentive to over-invest in the fishery. Thus, the fishermen imposed costs on one another. An externality was created. The proper remedy was to try to find rules under which the fishermen could cease to impose these costs on one another, or at least reduce these costs to a tolerable minimum. The proper remedy was to try to allow the fishermen to internalise the externality. This is what indvidual property rights are for. Instead of government declaring, in effect, the various fishing grounds public property, and charging for their utilisation, it seems that it should have allowed the fishermen to appropriate the fishing grounds and exclude others from their utilisation. Then they would have been able to capture the rent which they had previously lost by over-investment. Indeed, on Warming's premises, namely that there were clearly identifiable fishing grounds, the definition of private property rights to the fishing grounds should have been relatively easy. However, there are at least two related problems with creating such territorial rights in fisheries. One of them is that individual fishing grounds may extend over immense areas at sea, far too big to be appropriated by any one firm. The other is that some fish stocks (such as herring in the North Atlantic Ocean and tuna in the Pacific Ocean) are not confined to any one identifiable fishing ground; they are fugitive in nature, moving from the territorial waters of one country to those of another.

III Warming on Fisheries on the Coast

Warming's 1911 paper did not have any impact. The economics of fisheries was developed by Canadian and U.S. economists in the 1950s (Gordon 1954; Scott 1955), without any reference to his work. But Warming returned to the subject, from a different angle, in a paper twenty years later (1931). In Denmark, eels are caught in traps laid out at sea, close to the coast. Traditionally, owners of farms by the coast possessed the rights to lay such eeltraps. They did not utilise the resource themselves, but leased the rights out to a community of professional eel fishermen. In the 1920s and early 1930s, this community put pressure on the Danish

government to abolish the traditional rights of farm owners by the coast to lay eeltraps. Warming's second paper was a warning against such a change in the law. He pointed out that this would be a change for the worse, from restricted to open access. The rent dissipation by over-investment brought about by open access would inevitably occur. It would be an illusion that the eel fishermen would be better off by gaining open access. Instead of having to use a part of their income to pay farmers by the coast for eeltrap leases, they would probably use an equal amount for equipment and other kinds of increased effort. Moreover, since the rights to lay eeltraps were traditional rights possessed by the farmers, government would have to compensate them, if it abolished these rights. Alas, government did not take Warming's advice; it abolished the rights—an example where the "supply" side of private property rights failed.

In his paper, Warming pointed out that it was better that the farm owners by the coast received rent from the eel fishery than that nobody would receive it, as would have been the case if the farmers' rights to lay eeltraps had been abolished. He did not point out, however, that a plausible response to the concern of the eel fishermen would have been to facilitate their buying the rights from the farm owners permanently instead of just leasing them over a fishing season. It would have been a mutually beneficial trade, since presumably the rights would have been worth more to the fishermen than to the farm owners for whom it only provided additional income. Another important point is shown by Warming's analysis. It is that some fisheries are territorial in nature so that private property rights in them are feasible. Apart from the Danish eel fishery, the shrimp and lobster and scallops industries in Iceland are other such examples. The products are harvested close to the coast, in local, easily identifiable harvesting grounds, mostly rather small. There is no reason why such harvesting grounds could not be privately owned. Fencing (or rather monitoring) costs are not high, and the good is perfectly divisible. Indeed, traditionally farmers by the coast in Iceland possess exclusive rights to harvest goods both in the shore (such as eggs and eider, driftwood and whales) and out at sea, reaching out to 110 m off the coast at high tide. Farmers by lakes in Iceland hold similar rights: each individual farmer by a lake possesses an exclusive right to harvest goods in the lake (mainly freshwater trout), reaching again out to 110 m off the shore; if the lake is sufficiently big that an area is left over, then this area belongs to all the farmers by the lake in common (it is then not a commons, but rather communal property). Before late 19th century, when Iceland was a poor country, with the population surviving on subsistence agriculture, the goods found in the shore, such as eggs, driftwood and the occasional whales, were quite important. Eider remains a valuable good.

III U.S. Broadcasting

According to Demsetz, private property rights typically emerge in response to new and harmful effects of economic activities brought about by new scarcities. Commercial broadcasting in the U.S. since the early 1920s would seem to be a good example. There were limits to the number of radio stations which could operate in a certain area. A station had to be confined to a certain area, and transmit over a certain radio frequency, if it was not to interfere with similar activities of other stations in its vicinity. But at present, broadcasting is regulated by government; a station receives a non-transferable license to broadcast, in a certain area and over a certain radio frequency. In many other countries, at least until recently, government even retains a monopoly on broadcasting. Why did private property rights not emerge in this situation? Hazlett shows (1990), that they did emerge in the U.S. In 1920-23, the secretary of commerce issued licenses to radio stations, on demand. When excess demand developed, the secretary withheld additional licenses. In 1923, a court decided that the secretary had no authority to do so, since he had no legal standard on which to choose between competing applicants. He was allowed, however, to select location, time and frequency of individual stations so as to minimise interference. In 1923-26, the secretary

continued, in practice, to ration scarce broadcasting licenses. Since radio stations retained their licenses when sold, there was a price on licenses, or radio frequencies, indirectly reflected in the price of stations. However, in 1926 a court decided that the federal government had no authority to define individual rights to the radio spectrum such as the licenses issued by the secretary of commerce. This seemed to create open access to a scarce resource, with chaos as the result. In a court decision in the autumn of 1926, a possible solution emerged. The radio station WGN had been broadcasting at a certain frequency in the Chicago area where it had established some following among listeners. Another station began broadcasting on an adjacent frequency in September 1926, causing WGN to file a complaint alleging that it was necessary to maintain at least a certain separation of frequencies on stations located within 100 miles of each other and that the newcomer was injuring a lawfully acquired business property, namely the good will associated with WGN's established radio frequency. The court decided, on the basis of common law, that since radio stations had in recent years been bought and sold on the understanding that they would retain their licenses, and since they usually had established some following, or good will, in the locations in which they operated, they were entitled to the exclusive use of the frequencies at which they had been broadcasting. Hence, the court upheld WGN's complaint.

The court decided, in effect, that private property rights could be established in the radio spectrum, by homesteading or the first occupancy principle. After the decision, several stations moved to file similar claims as WGN. It seemed that broadcasting rights would be established as private property rights. At this moment, however, Congress intervened, with the endorsement of the secretary of commerce, Hoover, later to become President of the U.S. It passed a bill making the radio spectrum public property and giving a federal commission the authority to issue non-transferable broadcasting licenses. The bill's author, Senator Dill, spoke with great clarity on the matter. "Uncle Sam should not only police this "new beat"; he should see to it that no one uses it who does not promise to be good and well-behaved." The major broadcasters supported the bill, because licenses were initially more or less issued in accordance with established practice. They had lobbied for the denial of licenses for newcomers, and for not extending the broadcast band, as was technically possible. Hazlett contends that the 1927 broadcasting law was the product of an informal alliance between the larger broadcasters who wanted further limits on entry than those that would have been brought about by well-functioning market forces, and the politicians who wanted to have at least some control over the new media. The interesting story told by Hazlett holds two lessons. First, there was a feasible solution to the problem of interference in the radio spectrum; it was a solution in terms of private property rights that could be exclusive, divisible, transferable, and permanent. Some economists in the 1950s and 1960s, noting the inefficiency of broadcasting regulation in the U.S., advocated creating a free market in broadcasting licenses by auctioning them off. But this would have been unnecessary if the law had been allowed to develop in the direction that it was taking in the autumn of 1926. The second lesson is that it is not sufficient to analyse the behaviour of participants in the market process, under existing technical constraints: the part played by politicians should not be neglected. There is not only the "demand" side of property rights; there is also the "supply" side.

IV Mountain Pastures in Iceland

Iceland was discovered by Nordic vikings in the 9th century and settled, mainly from Norway, in 874-930. While the country is large, only parts of it are inhabitable, typically narrow valleys stretching down to the coast, with rivers running through them, surrounded by highlands, heaths and mountains, often capped by glaciers. The settlers soon discovered that the raising of livestock was more feasible than the cultivation of fields. Herds of sheep could graze unattended in mountain pastures in summer, as no wild animals (except foxes) threatened them. Each settler claimed in a valley a plot of land for himself and his family and household. But most mountain

pastures became the collective property of the valley farming community, the so-called "hreppur", which oversaw not only grazing in mountain pastures, but also collected taxes and provided for mutual insurance against loss of livestock or houses, and for the maintenance of the poor. Why were the mountain pastures not claimed as private property, like the valley farmlands? The main reason was that exclusion costs for individual plots would have been quite high whereas they would be much lower for vast areas (Eggertsson, 1992). Individual plots would have had to be large, as vegitation was scattered, and sensitive to climatic changes so that grazing conditions varied from one year to another. Monitoring costs would have been high. While fencing costs would have been prohibitive in the rugged terrain, nature itself often formed natural enclosures with rivers, lakes, steep mountains, wasteland and glaciers, but these enclosures extended over large areas. There were also important economies of scale in driving sheep up to the mountains in early summer and in searching the pastures and driving the flocks down again in the autumn.

Even if mountain pastures were not strictly speaking a collective good, their joint utilisation was therefore economical. But in that case, three problems of internal governance had to be solved. What was the most economical unit of utilisation? How did farmers utilising a certain mountain pasture enforce their indvidual property rights in sheep? And how did the farmers avoid over-grazing? The answer to the first question is this. The hreppur became the unit of utilisation because it was already in place, and in most cases it had natural boundaries, the area of a hreppur typically coinciding with a valley, surrounded by mountains. Moreover, transaction costs in the hreppur community were low, as people knew one another, the community was stable, and reputation was highly valued. The answer to the second question is that it was easy to enforce individual property rights in sheep. They were simply marked on the ear, each farmer having his own particular mark. The answer to the third question is that the farmers avoided over-grazing by a system of individual grazing rights. There was an incentive for each farmer to drive more sheep up to the mountain than was optimal, because he would think that he would reap the whole benefit of more of his sheep grazing there, but that he would share the cost with all the other farmers. To avoid such free riders, the leaders of each farming community were instructed by law to find the maximum number of sheep that could graze in the pastures without affecting the average weight of the flock. In the words of the old Icelandic lawbook, in force until 1280, "Let them find that number, which in their judgement does not give fatter sheep if reduced but also fills the pasture." Once the total quota, or the total allowable number of animals, had been set, each farmer was given a quota on the basis of the value of his farm. A farmer who exceeded his quota paid for each additional sheep a penalty to his fellow members of the community that was twice the rent to an outsider for using the pasture. There is some evidence that this system of joint utilisation of mountain pastures and individual grazing rights worked quite well and fulfilled its function of restricting access to the optimal level (Eggertsson, 1992).

V Salmon Rivers in Iceland

The Icelandic settlers quickly discovered that about 80 rivers running down from the mountains through the valleys out to sea had ample supplies of salmon. It is a fish which usually spends the first 3-4 years in those rivers; then it migrates to sea to feed there for 1-3 years, returning to spawn in the rivers. While salmon rivers are typical collective or indivisible goods, they did not really become a scarce natural resource until the 19th century. The Icelandic salmon fishery is mainly regulated by tradition and by laws dating from the 19th century. No harvesting of salmon at sea is allowed. In the freshwater fishery, traditionally, riparian farmers have owned the fishing rights. For each river, the riparian farmers are required to form a fishing association operating the river. The fishing season is from late May to the end of September. The daily fishing period is 12

hours, between dawn and sunset, and fishing is always prohibited between 3 am to 7 am. Only fishing by rod and line is allowed. There is a maximum, or total allowable, number of rods for each river, set by the Directorate of Freshwater Fisheries. As a rule of thumb 1 fish a day for a rod is used to determine the total allowable number of rods; in some rivers there are further restrictions on allowable bait. Usually, the fishing rights are leased out by the fishing associations to angling associations. By this, the average value of each fish is at least ten times higher than the price on a fish market. The angling associations, in turn, lease out rods per days to individuals and companies. At present, the freshwater salmon fishery in Iceland is quite valuable: each fishing season about 35,000 salmons on average are caught, and the total worth of fishing leases for a season is estimated to be US$ 30 millions (Gudbergsson, 2003). The salmon rivers do not seem in any danger of overfishing. Moreover, many fishing associations have tried, with some success, to enhance the salmon stocks in their rivers by hatcheries.

The fishing rights in Icelandic salmon rivers may be regarded as private property rights held by riparian farmers. But they are peculiar in some ways. While they are exclusive and permanent, they are not divisible or wholly transferable. A farmer is not allowed permanently to sell the fishing rights associated with his farm although the fishing association of which he is a member usually leases them out over the season. So, they are only transferable over the fishing season, not in perpetuity. This undoubtedly reflects the political will to maintain traditional farming in the valleys of Iceland. But the fishing rights are further circumscribed, it seems, by regulations on allowable fishing gear and the total allowable number of rods in each river. If the objective is to catch salmon with the minimum cost, then presumably it should be caught in nets at the river end, not by individual anglers with rods. Why is the fishing gear restricted to rod and line? It is because salmon fishing is essentially recreational. The market for fishing licenses, the rods per days, is not a market for salmon, but for the experience of enjoying nature while fishing. The quotas in the salmon rivers are essentially effort quotas, expressed in terms of allowable fishing gear, fishing time and fishing season, sometimes even allowable bait. It is well-known that effort quotas in fisheries are less efficient than catch quotas, because their holders do not a sufficient incentive to minimise cost; they tend to try to maximise output. But the output in this case is precisely what is sought: it is to spend a whole day trying to catch as many salmons as one can, with a rod.

VI Offshore Fisheries in Iceland

There are three types of offshore fisheries in Iceland. The most important ones are the demersal fisheries, for cod, haddock, redfish and other species, usually operating in well-defined deep-sea fishing grounds (demersal fish is often called groundfish). Then there are the pelagic fisheries, for herring and capelin which roam over vast areas of the North Atlantic Ocean, in and out of Icelandic territorial waters. Finally there are the shrimp, lobster and scallops fisheries, operating in local grounds fairly close to the coast. It had quite an impact on the Icelandic fishing community when herring virtually disappeared, as a result of over-fishing, in the mid-1960s. Therefore, the fishing community was responsive when reports by marine biologists in the mid-1970s indicated that the cod stock was also in danger of collapsing. When Iceland had extended the territorial waters to 200 miles in 1975, government could start managing the resource, with the support of the fishing community. In 1975, after a moratorium on herring, harvesting was resumed with a total allowable catch, TAC, set by the Minister of Fisheries, and with each herring vessel (which were all of roughly the same size and with a similar fishing capacity) receiving an equal individual quota in this TAC. The individual quotas were made transferable in 1979. In the demersal fisheries, in 1977-83 there was a system of effort quotas, in terms of a fixed number of allowable fishing days at sea. This did not work. In order to reach the total allowable catch, the number of fishing days had to be reduced, for example for the large trawlers from 323 days in 1977 to 215 in 1981. At the end of 1983, government, in co-operation with the

fishing community, decided to adopt catch quotas. This was a controversial decision. The Western fjords of Iceland are closest to the most fertile fishing grounds, and because the fishermen there thought that they benefitted from effort quotas, they fiercely resisted catch quotas. As a compromise, the system was mixed for a number of years. But since 1991, it has been a comprehensive system of individual transferable quotas, ITQs, in all commercial fisheries. The Minister of fisheries, on the advice of marine biologists, sets a TAC for each species. Originally, individual quotas were allocated to fishing vessels in the demersal fisheries on the basis of their catch history in the three years prior to 1984, but since the quotas soon became transferable, more than 80% of them have changed hands.

The ITQs are essentially non-territorial extraction rights to fish stocks. The reason they are non-territorial is that at least the pelagic species of fish are fugitive in nature, roaming over vast areas. Moreover, even if there are well-defined fishing grounds for the demersal species, they vary in quality so the fishing vessels want the flexibility of moving from one to another. It is really only in the shrimp, lobster and scallops fisheries where territorial fishing rights could have been developed, but it was thought best to integrate them in the system. Indeed, some fishing vessels are multi-purpose so fishing firms enjoy more flexibility by holding non-territorial fishing rights. The ITQs have most characteristics of private property rights; they are exclusive, divisible, transferable, and permanent (Arnason, 1990). The system has worked much better than other management schemes in world fisheries (Gissurarson, 2000). Since an individual fishing firm holds a right to extract a certain share of the TAC in a certain species of fish, it does not only have an incentive to minimise the cost of harvesting this share, but is also interested in the long-term profitability of the resource: since 1991, the Icelandic fishing community has consistently advocated a cautious setting of TACs. But the system is by no means perfect. One imperfection is the result of the nature of the fishing right. Over a season, it is expressed in metric tonnes, MT. But if much of the catch consists of inferior specimen of the targeted species, or of non-targeted species, there is an incentive to throw it away. This is what is called highgrading and bycatch. It is however not a big problem in Iceland, and the theoretical solution would be to issue different quotas for specimen of different quality of the same species and to make the quotas in different species easily transferable (the latter is in fact done in Iceland). Other imperfections could be eliminated by simple legislative changes. First, the Minister of Fisheries usually sets the TACs on biological considerations, to maximise catch, not profit. It would seem desirable if self-management by the fishing community could replace this kind of political management. Secondly, some small boats are still outside the system and various measures have been undertaken to placate their owners, at the cost of the commercially more successful owners of bigger vessels. Thirdly, there are some restrictions on quota transfers, for example a maximum quota which each firm can hold, and the quotas are also tied to vessels, only transferable between them. Fourthly, and most importantly, there has been a reluctance to recognise the ITQs as at least akin to private property rights. It is not permitted, for example, to use them as collaterals although banks circumvent that problem by writing into contracts that vessel owners cannot transfer quotas from vessels held as collaterals, without the consent of the banks. The uncertain legal status of ITQs is the greatest remaining problem of the Icelandic system.

A Quota Auction?

The reason why the Icelandic legislature has been unwilling to develop ITQs into private property rights is the widespread resentment over the fact that rent—previously dissipated in excessive harvesting cost in fisheries—is now being captured by quota holders, i.e. owners of fishing vessels. Slowly, a change has been taking place in the fisheries. In quota transfers, those who want to remain, are buying out those who want to cease fishing. Some economists would argue that is precisely what was needed: over-investment, an ever-increasing number of

vessels chasing declining fish stocks, has been replaced by divestment, a reduced number of vessels harvesting healthier fish stocks. But when the ITQ system in the demersal fisheries was first introduced, in 1983, and long thereafter, there were economists who suggested that the necessary divestment should be brought about by government auctioning off the quotas instead of allocating them on the basis of catch history (Gylfason, 1990). Similar arguments can be made against this proposal as to Warming's idea of access fees to individual fishing grounds. The problem is not correctly analysed. It is that of mutually harmful effects of the economic activities of fishermen, in the absence of properly defined fishing rights. The rent dissipated is rent lost by fishermen, because of open access. The remedy is not to replace the loss of rent by excessive harvesting cost by the loss of rent by government charges. The auction scheme seems to be a failure to realize that the dissipation of rent is an externality for the fishermen, i.e. owners of fishing vessels. Possibly the reason is that the externality is invisible and can only be brought out by economic analysis (Buchanan, 1997). Compare it with the externality in the radio industry, discussed above. There the externality is obvious. It consists in the interference when somebody starts to broadcast close to one, both in terms of location and frequency. The externality in the fisheries is however rent foregone, rent dissipated. But it would seem natural to improve the rules in such a way that the fishermen could internalise this externality, not leaving them just as badly, or worse, off as previously.

This point can be approached from a different angle. Nozick's justice in initial acquisition required that others were not made worse off by the intended acquisition. This is similar to the criterion for a Pareto-optimal institutional change (Buchanan, 1959): that some would be better off, and that no-one would be worse off, by the change. It is obvious that some will be better off and that nobody would be worse off, by initially allocating the ITQs to fishing vessels on the basis of catch history. What would then happen—and what in fact happened in Iceland—would be that over time quotas would be transferred from those who wanted to leave the fisheries to those who wanted to continue, for example because they were young and strong, or more enterprising, or more efficient. Both groups would be better off, those who sold their quotas and those who bought quotas and remained in the fisheries. Government, and the public, would also be somewhat better off, because of a more efficient utilisation of scarce resources: there would be a gain to others in the excess capital released from the fisheries. However, it would have an unjust initial acquisition (by government) in Nozick's sense, and not an optimal institutional change in Pareto's sense, if the ITQs had initially been allocated in an auction where inability to pay a certain price would have brought about the required reduction in the fishing fleet. In that case, government would have been better off; those who were able to buy quotas would have been more or less as well (or badly) off as before, the difference being that they would be paying government for the quotas what they previously had been investing in excessive fishing capacity; those who were unable to buy would have been much worse off because they would have had to leave the fisheries and lose, without compensation, both their physical and human capital, acquired over many years and quite specific to the fisheries. Politically, of course, the choice was between buying the fishermen out, or driving them out. Initial allocation on the basis of catch history made the necessary adjustment slower and smoother, and therefore feasible. The rent which gradually emerged, and had previously been dissipated, could be used to buy and sell quotas and facilitate the change. It is true that others—those with no catch history—were being excluded. But it has to be emphasised that the cost of locating or entering an industry is usually lower than the cost of relocating or leaving one industry and entering another (Demsetz, 1988). Moreover, the choice which potential newcomers were deprived of was the worthless one of being able to participate in a race to drive profits down to nothing by excessive fishing effort.

VII Pigou and Samuelson on Non-Exclusive Resources

Private property rights are still quite controversial, not least among political philosophers. Rawls (1971) did not even believe that people had property rights in personal assets, such as their talents and abilities, and in the income or rent which those assets could bring them in free exchanges in the marketplace. Rawls' main argument against individuals enjoying the rent derivable from their personal assets was similar to that which George (1880) used against landowners collecting the rent derivable from land: it was that their initial distribution was morally arbitrary. It is against such theories that Nozick developed his entitlement theory of justice: people may be entitled to goods if they have come to hold them in ways which did not make others worse off. But for the purposes of this paper, two tales told by economists sceptical about "unfettered market exchanges" are instructive. They are both based on the same analysis as that of Warming on two fishing grounds of different fertility. Pigou (1912; 1920) told of two roads of different quality between the same two cities, one road being narrow and good, the other one being wide and bad. He demonstrated that traffic would be misallocated between the two roads: truckdrivers would move to the better road and cause congestion. The "rent" which could be derived from the superior quality of the better road would be dissipated in the form of congestion. To correct the situation, Pigou proposed, just as Warming had done, access fees: government should charge a toll for the use of the narrow road, reflecting its superior quality. But Knight (1924) pointed out that Pigou had overlooked a possible solution. If the better road was privately owned, its owner would charge the appropriate price for its use. Pigou quietly dropped the example from later editions of his work. But the Pigovian image of government as an auctioneer ensuring by tolls and taxes that all scarce goods are properly priced, not leaving this to participants in the market process under a framework of well-defined property rights, may have been in the minds of the Icelandic economists who wanted government to auction off the ITQs.

Samuelson (1974) told of two plots of land of different productivity, both plots being utilised as communal property by the six inhabitants of a village. He demonstrated, with the same arguments as Warming and Pigou, that the better plot would be over-utilised and that the net social product would thus be reduced in the absence of rent collection, i.e. pricing the two plots according to their different productivity. However, Samuelson also showed that if the rent was collected by a "landlord" and not by the village community (which would have redistributed the rent to the inhabitants), then wages in the village would go down. He concluded that Marx had been right that enclosures of commons might actually worsen the conditions of labour, even if the capitalists would gain by it and the net social product would increase. But Samuelson's analysis does not show, as he seemed to think, that privatising the two plots would make the villagers worse off. If the two plots were divided up into six equally valuable plots (of unequal size) and transferred to the individual villagers, and not to outsiders (e.g. government), then those villagers would surely benefit and the net social product would increase. This would be initial allocation by homesteading or the principle of first occupancy, quite similar to the allocation of radio frequencies which was taking place by court decisions in the U.S. until Congress stopped it in 1927, and also similar to the initial allocation of ITQs in Iceland on the basis of catch history. A scheme of rent collection by the village community, with a mechanism of redistribution to the inhabitants, was unnecessary. Moreover, it is not plausible, in Samuelson's example, that the potential rent of land would be equal under communal and private ownership. There would be much stronger incentives under private ownership to search for new and more profitable ways of utilising the land.

VIII Concluding Remarks on Private Property Rights

In this paper, it has been argued that private property rights are applicable, and have indeed been applied, in many areas outside the traditional ones of land and cattle and other visible and tangible goods. There were no technical obstacles to private property rights in radio frequencies, and such rights were quickly emerging, when the U.S. Congress stopped the process. Neither were there any technical obstacles to private property rights to certain resources on the coast, such as the right to lay eeltraps in Denmark, even if the Danish legislature abolished the rights and thus reintroduced the problem of open access in the eel fishery. When the resource in question occurs on such an immense scale that no sole owner can enclose it economically, like Icelandic mountain pastures, salmon rivers, and fishing grounds, individual rights can be combined with a communal management of the resource. The examples illustrate Demsetz' account of private property rights emerging in response to new scarcities and externalities, and enabling participants in the economic activities in question to internalise these externalities. Also, the examples clearly show that there are two sides to the emergence of private property rights as means of internalising externalities. There is the demand side, well-described in the extensive literature on the economic need for, and benefits of, private property rights. But there is also the supply side. There has to be some political support for the appropriate legislation, or at least for non-intervention by the legislature, when a situation of open access is changed into one of exclusive rights held by individuals. In the U.S., the radio spectrum was declared public property in 1927. In Denmark, the farmers' exclusive rights in the eel fishery were abolished under pressure from the eel fishermen. In Iceland, there is still strong resistance to the ITQs being recognised as full private property rights (surprisingly, partly coming from economists, cf. again, Gylfason, 1990).

Private property rights can be supported by political and social arguments as well as economic ones. By enabling people to internalise externalities, or reduce harmful effects of economic activities to a tolerable minimum, they create better general conditions for peace in society. They bring, in other words, about the spontaneous coordination of economic activities, the mutual adjustment of individuals which is one of the clearest signs of a civilised society. Private property rights also direct aggressive instincts into channels acceptable and indeed beneficial to others. It has been observed that man is seldom so innocently employed as in making money; and that it is better that a man should tyrannise over his bank account than over his fellow citizens. The transfer of natural resources into the hands of individuals creates an increased sense of responsibility; the resources are taken into custory, as it were; their owners become their custodians; and if they are inefficient in utilising them, they will sooner or later lose them: a fool and his resource are soon parted. Property enables people to take the future into account, to take the long-term view. Consider endangered species. Why are sheep in Iceland not in danger of becoming extinct like elephants in Africa? The difference is that the sheep is owned. Somebody is responsible for it, brands it or fences it off. It has been said that one of the greatest problems in Russia is that there was never a tradition of private property rights in natural resources, even before the communist era (Pipes, 1999). It has also been contended that in the less developed countries much capital is "invisible": it cannot be properly registered or transferred. Improvements on it will not always directly benefit its holders; therefore, such capital does not grow at the same rate as capital in more developed countries (de Soto, 2000). It is true that in a society of private property rights there will be some people vastly richer than others. Rarely mentioned, however, are the (undoubtedly unintended) benefits of rich people: they reduce the cost of the free market's experimental process by consuming goods which are very expensive in the beginning, and become much cheaper in the process, such as the car, the television set, the video recorder and the personal computer. Men of independent means provide some resistance to the potential tyranny of petty officials. They can take off the time, and command the resources, to fight them, before

the courts and in the media. It is also more than likely that a group of 100,000 capitalists will provide more risk capital than 10 investment funds controlled by political appointees. While rich people certainly create some resentment, in a strong and vibrant economy, with much upward social mobility, such people also create hope and encouragement. Most importantly, what explains the creativity, and ultimately the ever-improving living standards in capitalist countries, is the ability of people to experiment with, innovate on, combine or divide, buy or sell, their property.

References:

Arnason, R. (1990). Minimum Information Management in Fisheries. Canadian Journal of Economics. Vol. 23, 630-53.

Buchanan, J.M. (1959). Positive Economics, Welfare Economics, and Political Economy. Journal of Law and Economics, Vol. 2, 124-38.

Buchanan, J.M. (1997). Who Cares Whether the Commons Are Privatized? Post-Socialist Political Economy. Selected Essays. Cheltenham: Edward Elgar, 160-7.

Demsetz, H. (1967). Toward a Theory of Property Rights. American Economic Review. Papers and Proceedings. Vol. 57, 347-59.

Demsetz (1988). Ethics and Efficiency in Property Rights Systems. The Organization of Economic Activity, Vol. I: Ownership, Control, and the Firm. Oxford: Basil Blackwell, 261-80.

Eggertssoon, T. (1992). Analyzing Institutional Successes and Failures: A Millennium of Common Mountain Pastures in Iceland. International Review of Law and Economics. Vol. 12, 423-37.

George, H. (1880). Progress and Poverty. Several editions.

Gissurarson, H.H. (2000). Overfishing: The Icelandic Solution. London: Institute of Economic Affairs.

Gordon, H.S. (1954). The Economic Theory of a Common Property Resource: The Fishery. Journal of Political Economy, Vol. 62, 124-42.

Gudbergsson, G. (2003). Written communication with the author. Gudbergsson oversees salmon rivers at the Directorate of Freshwater Fisheries.

Gylfason, T. (1990). Stjorn fiskveida er ekki einkamal utgerdarmanna, ed. T. Helgason and O. Jonsson, Hagsaeld i hufi. Reykjavik: Haskolautgafan og Sjavarutvegsstofnun Haskolans, 120-5.

Hazlett, T.W. (1990). The Rationality of U.S. Regulation of the Broadcast Spectrum. Journal of Law and Economics. Vol. 33, 133-75.

Hume, D. (1739). A Treatise of Human Nature. Several editions.

Locke, J. (1690). The Second Treatise of Civil Government. Several editions.

Nozick, R. (1974). Anarchy, State, and Utopia. New York: Basic Books.

Pigou, A.C. (1912). Wealth and Welfare. London: Macmillan.

Pigou, A.C. (1920). The Economics of Welfare. London: Macmillan.

Pipes, R. (1999). Property and Freedom. New York: Vintage Books.

Rawls, J. (1971). A Theory of Justice. Cambridge, Mass.: Harvard University Press.

Samuelson, P.A. (1974). Is the Rent-Collector Worthy of His Full Hire? Eastern Economic Journal, Vol. 1, 7-10.

Scott, A. (1955). The Fishery: The Objectives of Sole Ownership. Journal of Political Economy, Vol. 63, 116-24.

de Soto, H. (2000). The Mystery of Capital. New York: Basic Books.

Warming, J. (1911). Om “Grundrente” af Fiskegrunde. Nationaløkonomisk Tidskrift, Vol. 19, 499-505.

Warming, J. (1931). Aalegaardsretten. Nationaløkonomisk Tidskrift, Vol. 39, 152-161.