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IMPERFECT INSTITUTIONS: POSSIBILITIES AND LIMITS OF REFORM
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Conclusion

The subtle art of major institutional reform

Introduction

The new institutional economics has made good progress analyzing the role of institutions in shaping economic outcomes but the field has made less headway formulating clear principles of institutional policy in many crucial areas.[1] Throughout the world reformers, convinced that institutions matter for growth, increasingly seek ways to improve their institutional environment. In this book, I discuss opportunities and limits for major institutional reform when relative economic backwardness or imperfect institutions are sustained by social equilibria; when exogenous shocks and new social models are the chief forces destabilizing such equilibria; and when history, political economy and incomplete knowledge constrain the potential reform path. In my approach the main novelty is an emphasis on incomplete and variable social models that guide decisions by policymakers as well as other actors. My concept of social models is directly related to the idea of mental models in the work of Douglass

[1] At the beginning of the millennium, the new institutional economics is surging again. Employing game theory, Aoki (2001) and Greif (forthcoming) provide landmark studies. Daron Acemoglu (2000) and colleagues, examining the colonial origins of comparative development, have found striking evidence for long-term institutional path-dependence, and Dani Rodrik and co-authors (2002), controlling for reverse causation and indirect effects, find statistical support for the primacy of institutions over geography and integration in economic development. Leading scholars involved in international economic reform, including Jeffrey Sachs and Joseph Stiglitz, have reconsidered their earlier views, giving greater weight to institutions in the process of growth. Yet with continued and growing theoretical interest in institutions, opportunities and limits for institutional reform have not received thorough scrutiny in the literature.

North (1990).[2] In the foregoing chapters, I explain what I mean by social models and attempt to make the concept relevant for the study of institutional reform.

Rather than rehashing the main argument of the previous chapters, this epilogue employs an empirical example to summarize my views. The example concerns the problem of introducing effective institutions for managing ocean fisheries. Institutional failure in ocean fisheries has become a major problem worldwide for both rich and poor countries, leading to overfishing and even disappearance of fish stocks. I argue that the governance problem in ocean fisheries illustrates how economic progress often depends jointly on new production technologies and matching advances in social technologies. The common pool characteristics of ocean fisheries imply that improved production technology, as well as greater demand for fish, can have destructive consequences if these developments are not matched by appropriate social technologies. In the last fifteen years of the 20th century, Iceland borrowed and modified a new social technology for managing its 200-mile fisheries zone. The experience vividly demonstrates how exogenous shocks, political economy, and incomplete social models shape large-scale institutional reform.

A modeling view of the world

Institutional reform is a game involving players with incomplete knowledge who cope by basing their actions and strategies on incomplete social models of varying quality. Social technologies are models that explain, not necessarily accurately, how various elements of social institutions interact, creating particular regularities in behavior, and

[2] See also Denzau and North (1994).

aggregate outcomes. Policy models, also a subcategory of social models, describe the relationship between goals of public or individual policy and the instruments for reaching the goals. All actors, both public and private, use policy models to formulate their strategies.

As the previous chapter reports, reformers have often failed to transplant social institutions from one country to another country and make the institutions work equally well in the new setting. Modern political economy provides several explanations of failed reform and the perseverance of imperfect institutions. The incentives of the ruling political coalition in a target country are sometimes incompatible with the new institutions; powerful special interests may ensure that only scaled-down or unsatisfactory versions of the new social technology are introduced; finally, unorganized, decentralized resistance can undermine the reform effort. To complete this list of obstacles, I have added social models as an important variable. Social models incorporate visions of how the social world works, both in practical and ethical terms. Institutional reform can fail when the authorities or the public lack practical understanding of new social technologies or when critical social groups see new arrangements as illegitimate.

Recognition of incomplete models modifies our views of the process of reform. We are not surprised to see unexpected outcomes, uninformed responses to shocks (such as ill-advised rejection of workable systems), interactive learning, and confusing feedback from major social experiments, as well as problems with embedding alien institutions in a new environment. The introduction of social models as a variable in

the policy process also draws attention to public and private strategies aimed at promoting particular models.

Imperfect institutions and ocean fisheries

Modern industrial countries usually rely on well-defined and secure property rights in all major activities, thus restricting to tolerable levels non-productive and wasteful activities. There are two important exceptions to this generalization: the property rights guiding the use of environmental resources and ocean fisheries. In all parts of the world, ocean fisheries are exploited in a wasteful manner. Until the Law of the Sea Convention in 1976 created a 200-mile exclusive economic zone for coastal states, multi-national open access regimes typically prevailed in valuable fishing grounds. The fishing nations were not willing or able to jointly manage ocean fisheries in an effective manner. In addition to political considerations, high transaction costs thwarted regulatory attempts, as well as new entry by third parties. The consequences of open access for valuable natural resources are well established in the literature. They involve overuse and depletion of the resource rent, as well as wasteful races to be first to capture the resource (Gordon 1954). Initially it was expected that with a 200-mile exclusive coastal zone fishing countries would effectively manage their domestic fisheries. These hopes have not been realized. Current technologies and high transaction costs make it impractical to enforce individual exclusive rights to specific migratory schools of fish, and traditional government regulations of ocean fisheries have very often failed to protect stocks and keep cost down. [3]

[3] Regulating fisheries is a particularly difficult task. Gylfason and Weizman (2002, 25) list four factors that complicate regulation in this area: (1) the high cost of monitoring an industry off shore; (2) "the

In an article lamenting the poor state of deep-sea fisheries, the *New York Times* (July 29, 2003) argues that Iceland's recent experiment with a new social technology may point the way to effective institutional reform in fisheries management: "The most important recovery strategy of all is simply to fish less, experts say. This can be managed in many ways. Harvest limits can be set with quotas allotted to individuals in a fishery who can then trade them. Iceland has set the standard for this approach, which has also been adopted in a few American fisheries. …Environmental and conservation groups, including Cato, support the practice." I now sketch the turbulent history of institutional reform in the Iceland fisheries, emphasizing the role of political economy and social models.[4]

The Icelandic fisheries: shocks, new social models, and institutional reform

In Iceland during the process of modernization it was the fisheries that lubricated the country's engine of growth. The fisheries, although of declining importance, are still crucial for the country's economic performance, accounting for about 40-50% of total exports of goods and services. The institutional environment of the fisheries affects not only the effectiveness of the industry but also economic growth, the distribution of wealth, and various other macroeconomic properties of the national economy. In a

large number of outputs being jointly regulated or managed and the extreme degree of interdependence among their cost and production functions;" (3) the severe instability of these interdependent cost and production functions; (4) the "technological inability of fishermen to control exactly the 'product mix' of jointly produced species caught …" These four factors illustrate well the close interdependence between social technologies and production technologies, and how discoveries in the natural sciences can transform social technologies, for instance by providing new measurement methods. The Gylfason and Weitzman (2002) paper offers a new social technology for regulating deep-sea fisheries, where a government board would use prices (fees on landed fish) to create desired outcomes. Their proposal is a new entry in the competition of social models in this area.

[4] My chief sources for the discussion of the new fisheries management system are reports commissioned by the Icelandic government, especially a report by *Auðlindanefnd* (2000), a Committee on Natural Resources. These reports are available only in Icelandic.

mature democratic country, pivotal role for a single industry has two important implications: It is very costly for the authorities to tolerate grossly inefficient institutions in this industry, and the industry lobby is very powerful, but its interests tend to be encompassing and overlap somewhat with the national interest. [5]

In Iceland, unanticipated series of supply shocks in the fisheries were the force that upset the social equilibrium and created opportunities for reform. The first shock occurred toward the end of the 1960s when the herring fisheries collapsed.[6] Already by the mid-1970s scientists had issued warnings about the precarious state of various species of groundfish, especially the cod. In the 1980s these reports became more strident, the catch was falling and an inefficient rat race generated by a fishing-days regulatory system had raised costs.[7] Falling total catch, increasing costs, and huge industry losses were unacceptable for Iceland. The authorities, influential segments of the industry, and the public gradually came to judge the institutions managing the fisheries as imperfect. Pivotal actors were now ready to consider new social technologies for governing the industry.

The reformers had few choices. Ostrom (1990) documents cases where local actors who share common pool resources self-organized and set internal governance rules

[5] At the beginning of the 21st century, per-capita income in Iceland is among the highest in the world. Although the fisheries play a central role in the economy, only about 11% of the country's labor force is employed in fishing and processing, and the industry contributes about 15% to GDP. The share of fishing and processing in the economy fluctuates from year to year, but there is a long-term downward trend because other sectors now grow faster than the fisheries. For more information see the web page of the Census Bureau of Iceland, WWW.hagstofa.is

[6] A total moratorium on fishing for herring was imposed during 1972-1975. The ban was lifted in 1976 when individual quotas were introduced. The quotas were tied vessels with a history in the herring fisheries. In 1979 the individual quotas became transferable at the request of the industry. A few years later, ITQs were introduced in the capelin fisheries in a similar two-step manner.

[7] Under a fishing-days regime the government sets a target for total catch and then estimates how many days it will take the current fishing fleet to meet the catch target. Costly competition among the fishers usually forces the government to lower their estimates of total fishing days. The regime creates incentives to use more ships, more powerful engines, and more effort.

for effectively using and managing their resources, for instance the utilization of a pasture or a lake. But ocean fisheries in Iceland lack most of the characteristics required for spontaneous self-management, according to the theories and evidence provided by Ostrom (1990). Libecap's (1989) work on fisheries regulations also supports this conclusion. In particular, the industry's strong commercial orientation, heterogeneity of operators and the means of productions, and the scattering of the industry all over Iceland hamper self-organization. As for a conventional market solution, simply leaving an unregulated and scarce common pool resource to market forces will bring perverse results (Gordon 1954). Finally, the experience with direct government regulations had been unsatisfactory: the regulatory regime that the government introduced for managing the new 200-mile zone had malfunctioned. The problems were partly caused by inherent contradictions in the system, which created incentives for excess capacity, and partly due to weak enforcement of both government targets for total catch and fleet size. By the mid-1980s, reform had become unavoidable and both government and industry were ready to revise their models and consider a new social technology, *individual transferable quotas*, which introduce elements of exclusive property rights into the common pool regime of the fisheries.

In the mid-1980s, individual tradable quotas were best know internationally as innovative and effective instruments for limiting the cost of industrial air pollution that had found application especially in North America. A market in tradable pollution permits has the advantage of assigning the task of cleaning up industrial processes to firms that can do so at least cost. Favorable experience with tradable pollution permits readily suggested that the method (social technology) could be

extended to other common pool problems. A smooth market in tradable fishing quotas obviously would assign fishing rights to the most efficient fishing firms. In Iceland, small-scale experiments with individual quotas had begun when herring fisheries were resumed in 1976, and for capelin in 1980. A 1985 law extended the system to the vital groundfish, such as the cod, and 1990 legislation completed the system. ITQs became the management system for all of Iceland's ocean fisheries, except that small boats had their own system.

The limits of reform

Although fear of collapsing fish stocks had induced the authorities to revise their models of fisheries management and created willingness to experiment with radical reform, policy makers did not have a free hand when the ITQ experiment began. The structure of an ITQ system can take many shapes, each with its particular efficiency and distributional properties. In Iceland policy makers faced several important choices when they implemented the system, but the political economy of their choices is fairly obvious. I focus here on four central issues:

(a) A system of individual quotas is possible without trade or with various restrictions on trading in the quotas. Forbidding or limiting trade dilutes the efficiency properties of an ITQ system but possibly protects high-cost operators, which can be politically expedient—for instance as part of regional policies.

(b) Initially the government can give the quotas away, sell them, or rent them. The authorities must decide between free quotas and some form of fishing fees.

(c) The government must also decide which social groups should initially receive quotas and which ones at later stages be permitted to buy or rent them. Possible candidates for these rights include owners of licensed fishing vessels, fishers, the processing industry, economically depressed regions, the public at large, and foreigners.

(d) To be healthy and economically successful, ocean fisheries requires management that takes an encompassing view and attends to biological conditions. The responsibility for overall management can be divided in various ways between the industry and government agencies.

Faced with these choices, the policy makers in Iceland made the following decisions: They permitted and encouraged trade in quotas but limited trading rights to domestic owners of *licensed* vessels.[8] In the first round, the government handed out individual quotas for free. Initial allocation was tied to active fishing vessels, with each vessel receiving quota shares in proportion to its catch history in previous years. Fishing rights are restricted to Icelandic citizens. The government manages the resource: it sets total allowable quotas for each species, monitors the operators, organizes marine biological research, and takes action to protect the resource, for instance by temporary closure of breeding areas. I will now consider these decisions and their significance.

[8] Initially, the government only licensed vessel with a fishing history prior to the introduction of the ITQ system. The country's Supreme Court invalidated these restrictions on trading rights. The government now licenses all domestic fishing vessels that are appropriately equipped.

Compared to other private industries, the government is deeply involved in the fisheries under Iceland's ITQ system, handling issues that usually are with the firms themselves or with industrial associations. The management and protection of fish stocks is almost entirely with the government. The government sets and enforces rules determining mesh size and fishing gear, puts sensitive locations off limits to fishers, and regulates the size of fish that can be harvested. Moreover government agents monitor the location and catch of every vessel. These factors underpin a hybrid ownership structure that combines both private and state property rights. Under the arrangement, a clearly defined set of private operators has exclusive rights of access and use of a share in total allowable catch, TAC, as well as transfer rights, but the state has taken over various ownership roles, especially the ones of maintenance and protection. The law further complicates the ownership structure by specifying that the Icelanders collectively own the resources in the 200-mile zone, explicitly stating that fishing rights acquired under the quota system are temporary and can be withdrawn without compensation.

When a government gives away valuable rights, such as pollution quotas, fisheries quotas, or licenses to operate taxis, and permits trade in these rights, the initial recipients receive windfall gains whereas subsequent owners who purchase these rights from the original beneficiaries make no such gains: In a well-functioning secondary market, the purchase price of quotas or licenses equals the expected net future gain of acquiring the rights.[9] The decision in Iceland to grandfather the quotas and hand them out for free is not unique. When governments issue formal user rights—quotas—to long-established industries that already have made substantial

[9] More technically: the price equals the present value of the expected future net income from the resource.

specialized investments, the most common method of allocation is to grandfather the rights and hand them out for free. In contrast, for relatively new activities with short user history, and where previous specialized investments are not important, quotas or licenses are more likely to be sold or auctioned off. Iceland is a special case, however, in that its chief resource-based industry is of vast significance for the national economy, which usually is not true of developed countries.

Delayed reaction

In modern Iceland few public measures have evoked such outrage as the 'free quotas.' The interesting problem for us to explain is not why the government followed a grandfather rule and initially allocated free quotas but rather why the outrage came with a substantial delay and, when it came, why its intensity was so great that outsiders find it hard to understand.

The legislation of 1985 and 1990 that established the ITQ system was not particularly controversial. At the time, institutional failure had wrecked the fisheries, creating alarming and well-publicized losses. In the public mind the industry was broke. When deciding how to allocate the individual quotas, the government faced a broke industry that had a 'first possession' claim on the resource, and a powerful political muscle. Both political and practical consideration ruled out levying user fees on the industry.

The reason why negative reactions to the 'free quotas' came with a delay is related to the problem of incomplete models. In economics, Coase's (1960) theorem (a social model) provides the standard explanation why tradable quotas would gradually

increase profitability in the industry and raise expectations about the market price of quotas. According to Coase, free exchange allocates property rights to actors who most value the rights, except when high transaction costs prevent trade. In a fishery, quota trade would eventually lower cost curves (through reorganization of the industry), raise output price (because of more effective marketing) and increase profits. It took most members of the international economics profession several years to fully appreciate Coase's 1960 contribution, and it is still debated. In Iceland of 1985-1990 only a few experts saw the dynamics of tradable fisheries quotas in terms the Coasian model.[10] Most people typically associated future recovery in the industry with restoration of fish stocks, such as the cod, and initially even the market for quotas did not anticipate that a sizable portfolio of fishing quotas would within years be worth millions of dollars. At the time of writing (2003), the fishing industry is booming, but relatively little progress has been made in restoring the valuable groundfish stocks.[11]

Before discussing the 'outrage explosion', a few words are needed about the problem of evaluating major institutional reform. The feedback from comprehensive reform is often uncertain because all other things are not equal. Mixed signals from a social experiment, however, muddle the debate and set the stage for 'modeling wars.' In

[10] Experts as well as the public usually rely on various 'tragedy of the commons' models to explain the collapse of fish stocks. The 'sustainable fisheries model' is a relatively sophisticated version of such interpretations. According to the model, fishing effort will increase continuously in an open access fishery until the level of sustainable stocks is reduced to a point where any further increase in effort yields zero rent—that is, the rent from the fishery is dissipated. Moreover, when fish stocks reach very low levels it is possible that the stocks collapse for biological reasons, putting an end to the fishery, at least temporarily. The sustainable fisheries model also explains how to maximize the rent from a fishery. Some party, the government or a monopoly, must control total effort and select the effort level, and associated stock size, that maximizes net income—in the model, the difference between the total revenue and the total cost curves (Scott 1955). Usually, the sustainable fisheries model holds organization constant, not allowing for profit enhancing reorganization of the industry; any increase in industry profits is achieved by adjusting effort measured in some constant units.

[11] On the positive side, herring and capelin, two surface species, have recovered, and Iceland has avoided collapse of stocks such as cod and haddock, which other nations have experienced.

Iceland, it has caused much confusion that the primary economic benefits from the ITQ experiment, so far, are due to radical reorganization of the industry rather than restoration of fish stocks. To further complicate matters, evidence and theory suggest that rising profits in the fisheries are due not only to the new ITQ system but *two additional factors* are involved: major improvement in production technologies and radical reform of the financial system (a new social technology). New production technologies include general-purpose and large-scale fishing vessels that process the fish on board. In recent years, several small fishing communities that specialize in fish processing have lost their business.[12] Those affected often put the blame on the ITQ system, although new methods and marketing methods are also part of the explanation. The financial reform of the 1990s was another turning point. Prior to the reform, politically appointed managers controlled the financial system, the real interest rate on loans was negative, and a loan was equivalent to a subsidy. In this environment, the granting of credit often reflected political motives or cronyism. Financial reform deprived the fisheries of hidden subsidies and compelled the industry to rationalize its operations. As they overlap in time, the effects of the three factors—ITQs, new production technologies, and financial reform—are not separable. Incomplete models and the confluence of explanatory factors have muddle the quota debate and kept it going: Some critics focus solely on restoration of fish stocks and do not consider restoration of the industry. And when industry performance or regional dislocation is under consideration, those debating often feel free to focus on only one of three closely correlated variables.

[12] When put under competitive pressure, the fishing industry in Iceland recognized that fresh fish often has the highest value on international markets; processing the product typically lowers its value.

Lord Perry's question and regulatory overfishing

The *New York Times* article cited above notes that the most important recovery strategy is simply to fish less—which requires selecting an appropriately low value for total allowable catch and enforce the target. With the recognition of 200-mile fisheries zones, valuable fisheries are usually under government regulation, which implies that overfishing is a failure of regulation or regulatory overfishing. In an ITQ system, if the government sets excessively high targets for total allowable catch or is unable to enforce its TAC target, the effect on fish stocks is more or less identical to what would happen under any other regime, given the same level of excessive fishing.

Eagle and Thompson (2003) report that in 1995 the House of Lords held a series of hearings on the distressed state of the British fishing industry. At the inquiry, Lord Perry of Walton asked why (almost) all fisheries management systems have failed to stop gross overfishing. Lord Perry wondered which of three factors was mostly to blame: wrong advice from scientists about total allowable catch; the propensity of politicians to set larger targets than scientists recommend; and failure by fishers to obey the regulations.[13] "Those to whom the question was posed, the Fisheries Secretary and the Deputy Director of the Directorate of Fisheries Research, did not answer it." (Eagle and Thompson, 2003, 651). Apparently, experts do not have a ready answer for Lord Perry's question. Again we face incomplete models and data. Eagle and Thompson, scholars at the Stanford Fisheries Policy Project, take up the challenge using data from two federally managed, overfished fisheries in the United States. Eagle and Thompson (2003, 651) identify a subtle research question: "While some research has previously been done on the potential political and social *causes* of

[13] Lord Perry's third explanation can also be seen as failure of government administrators to enforce the rules.

overfishing in regulated fisheries …, there is little to none on the question of *how these forces actually manifest themselves* in fisheries management (e.g. to what extent do fisheries managers ignore scientific advice or refuse to enforce rules?).” In other words, we possess only very uncertain and incomplete social models of the subtle relationship between management systems and the behavior of politicians, administrators and fishers.[14] In Iceland, many experts believe that the ITQs system has modified the behavior of scientists, government, and fishers. Overfishing is less extreme under ITQs than under prior regulatory regimes, but fears of the consequences of overfishing may have increased over time and independently constrained behavior.[15]

Incomplete models of marine biology also undermine fisheries management. Policy models for fisheries management are of little value unless they can draw on reliable knowledge about fish stocks. Uncertainty about the dynamics of life in the ocean, have complicate fisheries management, including enforcement. Unexpected developments of fish stocks provide fuel for peddlers of alternative theories about life in the ocean and appropriate management techniques.[16]

Fighting over the ‘free quotas’

[14] Eagle and Thompson (2003) do not provide conclusive answers but call for more data on scientific advice and management decisions. They believe, however, “that there is no one answer to Lord Perry’s question, not even for a single fishery.”(677).

[15] Since the 1990s, the most serious failure of fisheries management in Iceland involves small fishing boats operating under their own complex system of regulations that is not part of the ITQ system. The small-boats system, which is a side-payment necessary for getting support for the ITQ system, is a classic case of regulatory failure. Owners of small boats and their communities have strong representation in parliament.

[16] Once such theory claims that fish stocks are declining due to overcrowding and that the appropriate management response is to allow greater fishing effort. The theory is popular in fishing communities around the world.

In Iceland of the 1990s the 'quota debate' heated up until it became red hot and dominated the social discourse. The system has its supporters but the opposition has been fierce. The bulk of the opposition comes mainly from two sources. From people who believe that economic life in several small local communities (usually their own) has been adversely affected by the ITQ system, which they blame for a growing concentration of the industry in a few regional centers.[17] These critics typically want to abolish the system in its entirety and replace with some form of direct regulation, such as a fishing-days system.[18] Their opposition is best characterized as protection of own material interests. From our viewpoint the other main class of opponents is theoretically more interesting because here the opposition is essentially ideological and rests on models of legitimacy. The core belief is that the fisheries are the property of the Icelandic people, and parliament essentially committed theft when it initially gave free quotas to the industry. The most visible advocates of the purely moral view are intellectuals, both of the left and the right. The struggle is primarily ideological because the material circumstances of these critics would not significantly improve if the government were to heed their proposals.[19] Their actions instead represent social models at war (and perhaps utility functions where increases in the wealth of 'undeserving others' enter with a negative sign).

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[17] With a population of about 300,000 individuals, oligopoly is the usual state of affairs in many or most Icelandic industries, but not in the fisheries industry, although in recent years its concentration has increased. The essential point is, however, that most Icelandic fisheries firms sell their output in competitive international markets where the largest Icelandic firms are small compared with their leading international competitors. When evaluating competitive conditions, the first step should be to identify the relevant market.

[18] Many of the critics believe that their home community would do relatively well under a fishing-days system.

[19] Formal economic theory usually evaluates social arrangements in terms of their efficiency characteristics and lacks tools for comparing alternative distributions of wealth. In Iceland some economists critical of the ITQ system, perhaps responding to this tradition in modeling, have presented formal mathematical models showing that a system where the quotas were initially sold or rented out is more efficient (and just) than the present ITQ system. As the quota trade has worked smoothly, these models seek other explanations than high transaction costs.

To overturn the extant ITQ system, the opponents require majority vote in parliament. Hence norm entrepreneurs have emerged for creating public outrage at the system and to turn the opposition into a broad political movement[20] Usually, the general public is not very interested in industrial organization or competing forms of management and regulation, but a grossly illegitimate act by the government is another matter. To explain why 'free quotas' constitute theft, the intellectual leaders of the anti-ITQ movement have developed models of legitimate ownership, which they often put in historical context with links to familiar cultural symbols. Central to the argument is the idea of 'a national commons' or 'property of the nation,' and for illustrating these concepts reference is made to ownership of the ancient manuscripts of the Icelandic sagas (which the Danish government generously gave back to the Icelanders in the 1970s) or ownership of the national park at Thingvellir, the birthplace in 930 of the country's parliament. Attempts are also made to link national ownership of ocean resources to the country's ancient communal mountain pastures.[21] Various moral and practical arguments are both common and popular. Clergymen have preached in their Sunday sermon that it is immoral to buy and sell fish in the ocean before it is caught (although for generations Icelandic sport fishermen have bought licenses from farmers and other owners to fish for trout and salmon in the country's lakes and rivers). Another popular argument is that undeserving winners in the quota 'lottery', like all winners of big lottery prizes, will dissipate their wealth, sometimes with disruptive economic effects.

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[20] In 2003, the government majority in parliament supports the present ITQ system but many or most opposition members would like to change the system. It is entirely possible that opponents of the system will form a government following the next national election.

[21] In my view the historical communal mountain pastures resemble the current ITQ system. Each farmer had a quota, based on farm size, for how many animals he or she could graze in the pastures and the quotas could be rented out. The farmers did not pay any fee for use of the pastures. (Eggertsson 1994).

The social model of 'national ownership', which had a central role in the classic 20th century debate about private and public ownership, has returned in a new form and a new mode, now involving ownership of natural resources rather than ownership factories. A report to the Icelandic Parliament in the year 2000 by a committee of high-level civil servants and experts, dealing with utilization of natural resources, has recommended that the legislature claim national ownership over all natural resources in the country that currently are not strictly under exclusive ownership (including much of the highlands in central Iceland and the ocean). (Auðlindanefnd, Álitsgerð, 2000). The report further recommends that the government put non-owned and currently abundant natural resources in *custody of the nation* to prevent surprise appropriation by private actors. It is recommended that the country's constitution be changed to explicitly recognize these two new forms of property. As a sign of the authors' preoccupation with their new ownership models, the report recommends that wind energy, notoriously abundant and bothersome in Iceland, be put in custody of the nation. Wind energy in Iceland will never be a scarce resource and, therefore, the recommendation concerns the ethics of ownership. If private entrepreneurs decide to invest in windmills for generating electricity, they should pay the owners (the nation) for use of the resource, free use would be theft.[22]

Conclusion

At the beginning of the 21st century, outside observers may find it hard to understand why the debate about the free quotas is still alive. The original free allocation of groundfish quotas took place 1985-1990. A great many of those who received the

[22] The report identifies three types of public property: state property (such as banks) that can be sold; and property of the nation as well as resources in custody of the nation that cannot legitimately be sold.

initial windfall gain have sold their quotas and most current owners have not received any windfall. Moreover, organization in the industry has changed dramatically: many of the biggest firms are now owned by large groups of stockholders. To an outsider, a proposal for recalling the quotas is an attempt to rewrite history. Yet the country's largest opposition party, the Social Democrats, makes recall and fishing fees a central theme in its platform. The proposal calls for a gradual rather than wholesale withdrawal of the rights, with a fixed percentage of the total quota recalled each year. The government would then rent individual quotas back to the industry.[23]

Earlier I mentioned Lord Perry's question about regulatory overfishing and the manner in which pressures for overfishing manifest themselves in different management schemes. Anthony Scott, the fisheries economist, has speculated that the element of exclusive rights embedded in a system of individual quotas might gradually implant a sense of ownership in fishers and spontaneously give rise to self-management by the industry. In the same spirit, the government of New Zealand, which is the only country besides Iceland that uses an ITQ system to manage its fisheries nationwide, has gradually devolved certain management responsibilities to commercial stakeholder organizations. These organizations are usually composed of ITQ owners, who take some responsibility for managing the commercial fishery in which they are active (Yandle 2003). At the beginning of the 21st century, these transfers of management responsibility are still somewhat modest and they supplement government regulation. In view of worldwide failures by governments in restoring fish stocks, building successful stakeholder organization is a major challenge and opportunity.

[23] In order to get support in parliament for major restructuring of the system, compromise would probably have to be made with those who altogether oppose free transfer of quotas. The compromises might involve putting various new limits on the transfer of quotas to protect needy localities.

In Iceland social modeling has not turned in this direction. The bitter debate over the consequences of structural reorganization and free transfers has crowded out the subtle issue contained in Lord Perry's question. Instead the authorities focus on strengthening government monitoring and enforcement, and aligning incentives on various margins.[24]

[24] In 2003, the Icelandic government has responded to criticism over free quotas with a plan to charge the industry for the cost to taxpayers of managing the industry. Currently, the industry pays about one-half of these transaction costs, which arise from various monitoring and research activities.