Not Sure about the Shore! Transformation Effects of Individual Transferable Quotas on Iceland’s Fishing Economy and Communities

Anna Karlsdóttir*
University of Iceland, Faculty of Social Science
Oddi v/Sturlugata, 101 Reykjavik, Iceland

Abstract.—By the 1990s, widespread fisheries restructuring triggered by the implementation of the individual transferable quota (ITQ) system and market-derived impacts of globalization had occurred in most aspects of the Icelandic fishery sector. The consequences of privatization of fishery resources have transformed management in regulating access to the resource, processing, corporate ideology, and the reproduction of labor. Economic rationality, marketability, efficiency, and managerial innovations in effect are both the mantra and imperative accompanying concentration and consolidation. Social and environmental costs are widely observable in many coastal communities that were the former lifeblood of the Icelandic economy. This chapter presents an account of the policy implications of cutbacks in Atlantic cod Gadus morhua allocations and discusses their effect on coastal communities around Iceland. It will focus on the response of fishery companies to a changed structural environment, as well as their role in shaping the new sector with special emphasis on the economic rationale of leading seafood companies. In this context, this chapter explores the impact of the transformation in the fisheries sector on effects of the ITQ system on stocks; on fishing and fishers; on the processing sector; on labor, particularly that of women; and on communities.

Introduction

In Iceland, the individual transferable quota (ITQ) system was implemented gradually from 1980 (capelin Mallotus villosus) to 1984 (Atlantic cod Gadus morhua) in order to dominate as a resource management system for all species in 1990. This transferable quota system then applied to near all commercial fisheries (Alþingi 1990). As with any natural resource management system or regulations imposed, the introduction of an ITQ system in Icelandic fisheries influenced the behavior of stakeholders within the system. The introduction of property rights and transfer rights changed the ideology among decision makers and among companies involved.

Institutional frameworks define social practices, assign roles to participants in these practices, and guide interactions among occupants of those roles (Young 2002). Institutional frameworks thus create dynamics. Before the 1990s, the dynamic caused by regulation was characterized by state intervention in most levels of the fishery system, where local investments in fishery plants and shipping were common. Although the Icelandic government having both directly and indirectly subsidized the fishery sector for years with loans from different public funds, debt restructuring, consumption of fixed
capital, and even devaluation of the Icelandic króna if needed, decided to change course by declaring that the fishery sector would have to become more self-reliant. The market was heavily regulated with a centrally determined fresh fish price and state licensing of exporters resulting in strong vertical integration of fishery companies. In the beginning of the 1990s, the state withdrew from most interventionist procedures liberating export (1992), as well as dismantling centralized efforts to influence price. Fresh fish auction markets were established bridging the link between buyers and sellers, instead of price formation mechanism previously imposed.

To begin with, fishing rights under the Icelandic ITQ system were only partly commoditized. While ITQs could be leased relatively freely, they could only be bought or sold en masse along with the fishing vessel to which they were originally allotted; that is, they were not fully divisible or independently tradable. Moreover, the ITQ system had not been permanently institutionalized. Quotas did not, therefore, constitute true private property rights. Eventually, in 1990, several radical alterations were made to the existing ITQ system (Pálsson and Helgason 1997). First, the system was extended by incorporating a number of new fish species and allocating ITQ shares to approximately 900 smaller vessels (6–10 metric tons) that had been fishing under other restrictions (fleet-quota restrictions). Second, the ITQ system was established on a permanent basis. Finally, and arguably most significantly, ITQs became fully divisible and independently transferable, making them more akin to property rights. These changes, in effect, marked the full institution of the ITQ system in the demersal fisheries, bringing the process of enclosure and privatization initiated in 1984 to culmination (Helgason and Pálsson 2001).

The new market-oriented system altered ties between vessels and processors to some extent, although a consolidation tendency increased, with large fishery companies becoming even more powerful through quota purchase. Neoliberal capitalistic imperatives commanded that investments in shipping and fish plant operations became totally driven by shareholders’ concern, and market mechanisms drove the trade of transferable quotas, creating a market where quotas were being bought and sold. The privatization of access rights limited new entrants without capital into the system, released others seeking out, and reinforced supposedly cost-effective fishery companies.

At a time after resource economists loudly flagged Garrett Hardin’s theory on the tragedy of the commons (see Hardin 1968), and both marine scientists and economists presented the coastal ecosystem as a predictable, domesticated domain (Pálsson and Helgason 1997), harvesting planning changed. Most observers would agree that planning on catches and processing became more stable than under the previous management system, enabling vessel-owners and fish processors alike, as well as traders, to plan ahead more than before. One could speak of a shift in generators of booms and busts—where a regulatory framework on catches and landings earlier determined the behavior of stakeholders in the system and now shifted to price formation. The main fluctuating elements in the fisheries remaining were prices on the market and floating currency rates. The quota rights thus became capitalized and changed hands. Some of the families of the boat owners with newly gained capital inherited the quota. Among those were children with inheritance rights, sons, daughters, and fishermen’s wives. A new term for people selling their rights became widely used in the Icelandic vocabulary. “Sea barons” they were called (Bragadóttir 1991a, 1991b), referring to people who made their fortune and went into other ventures or those who became in-
creasingly bigger exclusive owners of fishery rights. The direct link between ownership and operation also became severed, in that inheritors or acquired owners were not necessarily directly involved in occupations in the fishery sector (Karlsdóttir 2005). In those cases, they were mainly capital holders with the access to the resource (renting out rights or making others take care of operations), although some still remain actively involved in running operations.

Instead of using the ITQs on their own vessels, some sea barons then ventured to increase their profit margin by leasing them to small-scale operators with few or no ITQs of their own. The emergence of profit-oriented ITQ leasing was indicative of a shift in the conceptualization of fishing rights, a shift that coincided with a growing perception within the industry that ITQs were not just use rights but, in effect, property rights that could be exchanged solely for profit. These transactions typically involved long-term contracts between large ITQ-holders and smaller operators, in which the former provided the latter with ITQs in return for the catch and a proportion of the proceeds. One such arrangement, usually referred to as “fishing for others,” became increasingly widespread (Helgason and Pálsson 2001). Strictly speaking, there was no lease price paid up front for the ITQs. However, the small-scale operator was effectively paying a lease price for up to half of the value of the catch. Another form of ITQ leasing, generally referred to as “ton for ton fishing” took place when a large ITQ-holder offered to pool 1 metric ton of his ITQ against every metric ton put forward by the lessee (Helgason and Pálsson 2001).

After the inevitable redistribution of ownership rights to the resource that swept over in the wake of the implementation of the new resource management system, not only did the quota and related access rights change hands, but substantial impacts were linked to interregional transfers. By that token, a partial refeudalization, expressed by the metaphor of lords and tenants bringing associations to medieval times, was created in the wake of redistribution of ownership rights in the fishery, not rejoiced by everyone.

Structure of Policy Making

The total allowable catch (TAC) is set by the Minister of Fisheries and based on the recommendation from the Marine Research Institute. Fishing vessels are allocated a fixed share of the species subject to TAC. The combined quota share for all vessels amounts to 100% of each species. All commercial fishing activities are subject to these quotas. The quotas were initially allocated on the basis of catch history prior to the establishment of the quota system. The quota share is multiplied by the TAC to give the quantity that each vessel is authorized to catch of the species concerned during the fishing year in question. This is referred to as the vessel’s catch quota. Permanent quota shares and annual catch quotas are divisible and transferable to other fishing vessels. The allocation of quotas is subject to a fishing fee. Individual fishing enterprises may not control more than the equivalent of 12% of the value of the total quotas allocated for all species and 12% to 35% for individual species. (Information Centre of the Icelandic Ministry of Fisheries 2007). According to the ministry of fisheries, the major aims of the environmental consideration for the Icelandic fisheries has been sustainable fishing based on scientific assessment and recommendations together with responsible fisheries practices and an economically viable seafood industry (Information Centre of the Icelandic Ministry of Fisheries 2007).

Various organizations and public institutions play a role in the fishery system. By legislation, the Icelandic parliament estab-
lishes the fundamental rules upon which to base fisheries management. The Ministry of Fisheries and Agriculture is responsible for the overall management of the fisheries, the issuing of regulations, and long-term planning. Several organizations based under the Ministry of Fisheries and Agriculture have authority in different arenas of fisheries management. They are the Marine Research Institute, Icelandic Food Research, the Icelandic Food and Veterinary Authority, the Directorate of Fisheries, the Central Bureau of Applied Research, and the Fresh Fish Price Directorate.

Control of landings is taken care of by the Directorate of Fisheries. Landings are weighed by certified harbor officials and regularly monitored by inspectors from the Directorate of Fisheries. Landings are reported on a daily basis. Inspectors also check fishing gear, catch composition, and handling on board. All commercial fishing operations are subject to a permit from the Directorate of Fisheries. In 2007, the directorate issued some 1,332 fishing permits to vessels and smaller boats. Certain fisheries require special permits, such as Danish seining, inshore shrimping, and specific fisheries pursued by Icelandic vessels in distant waters, as well as the fishing of foreign vessels within the Icelandic exclusive economic zone (EEZ) (Directorate of Fisheries 2008).

The Fisheries Association of Iceland represents the fishery sector’s interests domestically and internationally. The areas of discussion include environmental issues and responsible resource utilization. The Fisheries Association is a member of the International Coalition of Fisheries Associations. The association represents seven main organizations in the fisheries sector, including both employers and employees. These include employers, vessel owners, processing plant organization, employees, Seaman’s organization, engineers’ organization, offices organization, workers’ union, and small boat owner’s organization.

Fishing corporations are especially influential in fisheries policy. In addition to representation in the Fisheries Association, the stakeholder organization LIÚ (Federation of Icelandic Fishing Vessel Owners) emphasizes the viewpoints of its members to the Icelandic legislature (the Althing) and the executive branch of government and endeavors to study and follow up issues of concern to the fisheries, which will be dealt with by the various government institutions (Federation of Icelandic Fishing Vessel Owners 2007).

The Directorate of Fisheries issues annual catch quotas (kilograms) to individual vessels as a share in the total allowable catch (TAC), which the Minister of Fisheries sets every year for each species. The annual catch quota is based on the individual vessels quota share (%). All major commercial stocks are now subject to quotas (25 species) and they represent approximately 95–97% of the total annual catch value (Directorate of Fisheries 2008).

The TAC of most of the species is issued for each fishing year, the period being from September 1 to August 31 the following year.

**Effects of ITQ System on Stocks**

In recent years, the Marine Research Institute has recommended that the exploitation rate should be lowered, but these recommendations have not been implemented by the Ministry of Fisheries. This is probably a response to heavy pressure from stakeholder organizations, especially the Federation of Icelandic Fishing Vessel Owners. The Marine Research Institute furthermore claims that spawning stock biomass is only half of what is assumed needed to produce maximum sustainable yield. Recruitment since 1990 has been low, and mean weight at age of all age-groups is close to or at historical low (Marine Research Institute 2007).
It is possible to distinguish between stated objectives of management schemes, unstated objectives, and unintended side effects (Young 2002). It is fair to conclude that this did also apply in the case of the implementation and effects of the ITQ system in Iceland. As Pálsson (1991) notes, usually the stated objectives of management proposals are to bring the industry under control, to promote conservation and sustained yield, and to ensure reasonable returns to the average fisherman. The main stated objective of the quota system in demersal fishing in Iceland ever since implementation of the ITQ system has been to control the TAC and to make fishing more economical. One of the main motives behind changing paradigms in the resource management system was a firm belief that an imposed transferable quota system would lead to rationalization of an increasingly bigger fleet facing problems of overcapitalization and overcapacity and improve cost efficiency of involved companies. Though still not recognized by the national authorities, that intention soon had a reverse effect already from 1984 to 1993 as the fleet expanded by 9% or 10,400 metric tons (Eyþórsson 1997).

While the cost size of the economic equation has been significantly reduced, there has been less success as regards the ecological objective. The proportion of immature cod in the catch has been increasing since the early 1990s. In that light, it is rather surprising, then that politicians have been willing to institutionalize such a radical departure from the previous system, given the failure of the new one in securing the reproductive potential of the stocks (Pálsson, 1991), a stand that not everyone agrees on, authorities included. Several scholars writing about impacts of the implemented fishery management system have claimed that one of the unintended side effects has been the tendency of fishermen under the present system to dump low-quality species, immature fish, and excess catch for which they have no quota (i.e., Pálsson 1991; Arnason 1994; Eyþórsson 1998; Pikitch et al. 2004). Since there has been a ceiling on the catch that each boat is entitled to, fishermen are likely to discard parts of their catch.

In spite of harsh critique by the public towards the role played by the government, the maritime fishery department, and the Federation of Icelandic Fish Vessel owners, public bodies have denied high grading and bycatch discarding was practiced at all—likewise for the Institute of Economic Studies at the University of Iceland, which has acted as a consultative expert working group in economic issues related to the fisheries for the Icelandic fishery minister (Institute of Economic Studies 2007). Illegal discarding of fish creates many problems in relation to law enforcement, the policing of the seas. Making sure that all the catch is landed is both expensive and technically difficult for the authorities (requiring an inspection officer aboard every fishing vessel). Another problem relates to the reliability of models of recruitment and stock size. If many of the fish that are caught are never landed or reported, estimations of stock size, the whole basis of quota allocations, are obviously rather imprecise (Pálsson 1991).

The cod and capelin reference biomass is currently estimated at historical lows (Marine Research Institute 2007), the shrimp fishery has collapsed (1997), and many other stocks prospects are bleak. International agencies’ warnings and reports of future prospects for the world fisheries, made known, for example, by Worm et. al. (2006) have not triggered any serious response on behalf of the leaders of the main fisheries consultant institutions. Nor have any other movements been generated from an array of literature and public discussion abroad and internationally (i.e. McGoodwin 1990; Blades 1997; Berrill 1997; Dwyer 2001; Clover 2005; Roberts 2007). There has seemingly been a hegemony
of stated objectives independent of evolving realities, as it has been known for several years now that stocks have not shown signs of good recruitment (Jónsson 2000). Like most other environmental disasters, slow ecological demise does not make headline news, and the result is limited public debate about resource and environmental issues (Corbin 2002).

After being faced with the serious state of affairs of fisheries around the country, the Icelandic Minister of Fisheries, at last decided to follow the institute recommendations for the first year since the implementation of the ITQ in the summer of 2007 that TAC should be reduced by one-third of TAC from previous year to 130,000 metric tons (2007/2008). Being caught up in unstated objectives and unintended side effects, the minister established a series of measures to investigate the status and future prospects in order to develop future problem solving strategies for the Icelandic fisheries. Of specific concern was the fate of fishery communities. One of the institutional bodies engaged in drawing an account of the possible impacts was the Economic Research Institute of the University of Iceland (Institute of Economic Studies 2007).

In a report written for the Minister of Fisheries, as a consultative work on economic impacts of the catch rule, the Institute of Economic Studies of the University of Iceland rejects the strong public claims that the ITQ system is responsible for the dilapidated state of stocks and overfishing. On the contrary, they claim that there is no connection between the ITQ system and conservation or build-up of the stock that is the role of TAC determination. Furthermore, they claim that no one has been successful in proving that the ITQ system leads to worse fishery patterns that negatively impact the state of fishing stocks (Institute of Economic Studies 2007).

Effects of the ITQ System on Fishing and Fishers

The unstated objectives of the new system were, perhaps, to secure the position of the biggest companies and the owners of the largest vessels, thereby favoring some groups of producers over others. Increasingly, fishing becomes the business of large-scale business firms. Apparently natural and technical management decisions have had important effects on the balance of power and structure of the fishing industry by changing the possibilities and alternatives with respect to access to fish.

For a long time, the public was informed on a regular basis by leading figures within the government and the federation of Icelandic vessel owners that Iceland was ranking first among world nations in mastering most aspects of the fisheries. First, Iceland was said to be leading in technological development and implementation within the fishing harvesting and processing sectors. Second, the fishery management system was viewed as superior compared to other fishery management systems practiced elsewhere and that the economic performance of the fishery sector without state subsidies demonstrated this (Ministry of Fisheries Iceland 1997). In general, the effects of the ITQ were widely debated. As an example, 10,265 articles with varied views on the effects were published in one of the main Icelandic newspapers in the period between January 2000 and January 2008.

After the introduction of the ITQ system, the composition of species harvested has changed somewhat, as Table 1 illustrates. Partly, the introduction of fresh fish markets and increased competition on auctions diversified the species caught. Species gained currency on the market that had been thrown away or made into fish meal in earlier periods (Ministry of Fisheries Iceland 1993). Pe-
logic fisheries gained importance in volume and value throughout the 1990s (see Table 1). The main species caught in terms of volume in the fisheries are Atlantic cod, haddock *Melanogrammus aeglefinus*, pollock (also known as saithe) *Pollachius virens*, redfish *Sebastes viviparus*, Atlantic herring *Clupea harengus harengus*, northern wolfish *Anarhichas denticulatus*, Atlantic halibut *Hippoglossus hippoglossus*, and capelin. Cod has historically been the cash cow of the fishing economy, but with a diminished stock and a change in the management system, a further diversification of other species caught has developed. Fishing of demersal species like capelin had been increasing substantially until 2006 when stocks seemed to have diminished (Marine Research Institute 2007).

In the 1980s, the first freezer trawlers were added to the Icelandic fishery fleet and the number increased rapidly, as the economic rationality of economy of scale and cost effectiveness within the management system instigated a dynamic in that direction (Institute of Economic Studies 2007).

As previously mentioned and as Table 2 indicates, the number of vessels has increased. The intention of the ITQ system to cause a withdrawal of catch capacity from the fisheries was not fulfilled, in spite of the government’s buyback program in the mid-1990s, aimed at removing vessels from the fisheries. It is therefore clear that the substantial growth in metric tons for the biggest and the smallest vessels do not fit predictions of the ITQ model. For the small coastal vessels, the increase is obviously due to the fact that boats up to 10 metric tons had an option to stay outside the ITQ system until 1990. Fewer trawlers did not necessarily mean less fishing capacity in wake of rationalization and/or mergers of companies. As an example, there were 31 factory freezer trawlers in 1998; in 2000, there were 49 freezer trawlers; and by 2006, there were 63 trawlers, 12 of them with capacity between 1,500 and 4,999 metric

<table>
<thead>
<tr>
<th>Year</th>
<th>Atlantic cod</th>
<th>Haddock</th>
<th>Pollock</th>
<th>Redfish</th>
<th>Atlantic herring</th>
<th>Capelin</th>
<th>Crustaceans</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>309,577</td>
<td>31,928</td>
<td>63,974</td>
<td>24,819</td>
<td>50,743</td>
<td>191,763</td>
<td>8,539</td>
<td>49,401</td>
<td>703,744</td>
</tr>
<tr>
<td>1975</td>
<td>265,759</td>
<td>36,658</td>
<td>61,431</td>
<td>38,291</td>
<td>33,433</td>
<td>501,093</td>
<td>7,298</td>
<td>44,608</td>
<td>988,571</td>
</tr>
<tr>
<td>1980</td>
<td>428,344</td>
<td>47,915</td>
<td>52,380</td>
<td>69,868</td>
<td>53,268</td>
<td>759,519</td>
<td>12,358</td>
<td>84,419</td>
<td>1,508,071</td>
</tr>
<tr>
<td>1985</td>
<td>322,810</td>
<td>49,533</td>
<td>55,135</td>
<td>91,381</td>
<td>49,363</td>
<td>992,999</td>
<td>27,279</td>
<td>83,759</td>
<td>1,672,259</td>
</tr>
<tr>
<td>1990</td>
<td>333,652</td>
<td>66,030</td>
<td>95,015</td>
<td>94,848</td>
<td>90,338</td>
<td>693,740</td>
<td>31,389</td>
<td>97,280</td>
<td>1,502,292</td>
</tr>
<tr>
<td>1995</td>
<td>202,900</td>
<td>60,125</td>
<td>47,466</td>
<td>118,750</td>
<td>284,473</td>
<td>715,551</td>
<td>84,556</td>
<td>91,306</td>
<td>1,605,127</td>
</tr>
<tr>
<td>2000</td>
<td>238,324</td>
<td>41,698</td>
<td>32,947</td>
<td>116,267</td>
<td>287,663</td>
<td>884,858</td>
<td>46,198</td>
<td>332,502</td>
<td>1,980,163</td>
</tr>
<tr>
<td>2002</td>
<td>213,417</td>
<td>49,951</td>
<td>41,839</td>
<td>110,876</td>
<td>223,843</td>
<td>1,083,135</td>
<td>54,765</td>
<td>355,502</td>
<td>2,133,328</td>
</tr>
<tr>
<td>2004</td>
<td>227,258</td>
<td>84,563</td>
<td>62,695</td>
<td>84,514</td>
<td>224,365</td>
<td>525,086</td>
<td>32,678</td>
<td>486,356</td>
<td>1,727,285</td>
</tr>
<tr>
<td>2005</td>
<td>212,456</td>
<td>96,580</td>
<td>67,736</td>
<td>61,535</td>
<td>264,660</td>
<td>594,632</td>
<td>14,036</td>
<td>358,292</td>
<td>1,668,927</td>
</tr>
<tr>
<td>2006</td>
<td>199,375</td>
<td>96,591</td>
<td>75,460</td>
<td>57,949</td>
<td>291,380</td>
<td>177,828</td>
<td>6,081</td>
<td>418,250</td>
<td>1,322,914</td>
</tr>
</tbody>
</table>

Table 2. Composition of the Icelandic fishery fleet before individual transferable quota and after selected years.

<table>
<thead>
<tr>
<th>Year</th>
<th>1982</th>
<th>1986</th>
<th>1999</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decked vessels</td>
<td>657</td>
<td>691</td>
<td>751</td>
<td>852</td>
</tr>
<tr>
<td>Trawlers</td>
<td>72</td>
<td>106</td>
<td>91</td>
<td>63</td>
</tr>
</tbody>
</table>

tons harvesting capacity (Statistics Iceland 2007a).

The growth of the factory trawler fleet had other options alongside fishing within the ITQ system. They are capable of fishing beyond the 200 nautical mile EEZ and were found throughout the 1990s fishing Norwegian-Arctic cod in the Barents Sea “Loophole,” shrimp on Flemish Cap off Newfoundland, redfish in the Irminger Sea south of Iceland, and herring in the North Atlantic. Participating in the race for fish in international waters became an attractive strategy in the late 1990s for securing future harvesting rights in areas where ITQs might be allocated to participating nations on the basis of recent catch histories (Eyþórsson 1997). The economic risk of such operations has been systematically reduced by larger license owners and their corporations by leasing the vessels’ ITQs to the inshore fleet, thereby transferring operational costs to smaller inshore operators. Leasing prices are high, especially for cod quotas, and have increased over the whole period since implementation of the ITQ. As an example, they amounted to more than 50% of average cod landing prices between 1991 and 1995 and to 60–70% in 2006. It thus becomes clear that operating a small inshore boat on the conditions of leasing is a hardship and inevitable way to poverty.

Two different remuneration systems have been used concurrently by the Icelandic fishing fleet. On vessels less than 500 dead weight metric tons (DWT), termed boats, and small trawlers, crew members have been remunerated by a share of revenue. On the bigger trawlers (more than 500 DWT), a fixed pay system augmented by an intricate bonus system has been in use. The development and the terms of the share system have been determined by the organizations of vessel owners and fishers in collective bargaining (Mattíasson 1998). Reoccurring dissatisfaction among fishermen about trade unions performance in negotiations since 2001, as well as dozens of court cases on the legal status of fishermen’s labor rights, indicates unrest among this group of stakeholders. The ITQ system led to a system where vessel owners require crews to pay the costs of renting quota in spite of a ban of that practice, especially when crew and vessel owners share interests in keeping the vessel in operation, as the fishers might have the choice between fishing for a share and not fishing at all. This partly explains the continued struggle between fishers and vessel owners.

**Effects of ITQ System on the Processing Sector**

Fish processing moved out on sea as frozen on-board processing was considered more cost-effective. What is not included in that account though is the continuing and frequent replacement of processing technology equipment, causing overcapitalization and debt for the fishery companies (Interview with processing plant workers, 2006). Improved transport technologies increased air transport. The establishment of fish auction markets liberated local trade on unprocessed fish, but also contributed to more road-based transport of fish away from the communities where it was landed. Larger offshore trawlers embarking in fewer and larger ports generated mobility of fishermen recruited for the offshore trawler fleet. Together, those changes in dynamics contributed to disintegrating local connection between harvesting and processing. As a result, half of the demersal species were not processed domestically but exported unprocessed. The consolidation of plant operations and the closure of many plants, especially smaller ones, are associated with a focus on shipping or flying out more fresh fish directly to markets in Hull, Grimsby, or Boston markets. In fact, one of the causes of process plant closures is less processed fish (Alþingi 2007). This trend
marks a significant change from an earlier structure of coastal communities in which the pattern of “one company towns” included a closely intertwined life between community and company.

The federation of vessel owners and the small boat owners’ organization has had contradicting views on the effects of the quota system throughout the period from implementation till now. For example, one fraction of fishermen from the small boat owners’ organization decided to break loose and establish their own organization of independent fishermen in the beginning of 2008 based on the argument that the larger organization had become too conformist to the larger stakeholders views and too blind to the fact the ITQ system was ruining coastal communities.

**Changes in the Business Regime**

One of the side effects of the privatization of the fishery sector was that it became more professionalized, with increased emphasis on technology development and the introduction of information technology into every step of the production processes, from fish to dish. With the recruitment of university educated engineers and MBAs into most managerial functions within the fishery companies, the vocabulary, values, ideology, and discursive power seeping into the sector changed. Globalization, market segments, profit and exchange rates, and internationally certified quality and food safety schemes became the stated edges of competitive advantage.

Throughout the 1990s, the public was focused on media covering success stories on attributes of Icelandic companies becoming successful in ventures abroad, substantiating that globalization and international orientation in business was the right thing. Some Icelandic seafood companies (i.e., Bakkavör, formerly a small family processing company in a small community in south Iceland) have become quite powerful ready-made food and seafood corporation by applying the strategy of moving the processing closer to buoyant urban mass markets in United Kingdom and some other European countries. This extension of an export subsidiary strategy has been used for a long time by the large and well-established, though reorganized, export sales organizations/corporations in the United Kingdom, the United States, France, and several other countries. It is necessary, however, to point out that these success stories are constructed on other less publicized failures. The market link is a profitable business where some companies have exhibited extraordinarily well in terms of revenue, innovation, and growth (Karlsdóttir 2000). This has contributed to a polarization in terms of affluence and survival favoring the new global businessman above the locally oriented processor.

Evaluation rationales have also changed in the 25 years since the initial introduction of the ITQ. The progress in fisheries has changed values in the industry. As an example, it is only recently that the legitimacy of fisheries as the backbone for the coastal communities has been questioned in public debates. These debates question whether it is justifiable to exhort the fisheries as the economical foundation for the villages around the country. Partly, this new value set reflects occupational diversification of the economy and export sectors, along with an increasingly urban population disembedded from the realities of the most destabilized fishery communities. As an example, the labor force in fishing and processing decreased from 14,710 in 1998 to 10,840 in 2005 (Statistics Iceland 2007b).

**Effect of ITQ on Recruitment and Knowledge**

In the past two decades, work in the fisheries has become less and less popular among the young population that does not envision it as
A promising career. Educational offerings in the field of fisheries have as a result suffered lack of students. Jobs, especially in fish processing but also aboard vessels have, gradually, had to be filled by a migrant workforce. Thus, 19% of jobs in processing in 2005 were filled by migrant laborers (Statistics Iceland 2007b). The numbers do not reflect the diverse situations in individual plants in some of the fishery villages. My own observation and experience is that in plants in the Eastfjords, the percentage of foreign workers was closer to 40% of the total staff. In spite of an increase in broader selection of specialized education in Iceland in general since the 1990s, recruitment of students to fisheries education has regressed (Ministry of Fisheries Iceland 2007). It lies in strong contrast with established and declarative statements from the Ministry of Fisheries from the mid-1990s.

New attitudes are establishing themselves within Iceland’s fisheries sector. Steadily increasing priority is being given to maximizing the potential of marine resources in fishing and fish processing. Ways to increase efficiency and improve operations are under constant examination, with the goal of boosting product value to improve business performance on the basis of sustainable harvesting of fish stocks. At the same time, strong emphasis is placed on job training and skills in the fisheries sector. Educational material has been provided to schoolchildren. (Ministry of Fisheries Iceland 1997).

The attitudes to jobs in fisheries have for some time been generally negative as they are associated with low status. This applies both to processing work as well as for working on the sea, but for processing jobs (mainly women’s jobs) especially, the general view held is that the jobs are low paying, monotonous, require a low skill set and provide no future opportunities (Ministry of Fisheries Iceland 2007).

Discourse is a structure for how people express themselves and how they bring their thoughts into a certain form, for example through power that is reflected as social control. Power thus characterizes all human and social interaction between people where the language is the most important tool (Foucault 1980). I have not conducted substantial analysis on discourse in the Icelandic fisheries, but the dominating voices echoed in public media and political debates as well as among leading entrepreneurs in the field have been resting heavily on language based on certain economic theories sorting, explaining, and generating suggestive instruments favoring economies of scale, efficiency, and profits at the expense of small-scale variety of coastal primary occupations and, last but not least, the coastal population. Furthermore, it is clear that layoffs, rationalization, and other changes of the fishery system have not contributed to positive expectations to the sector.

I always thought this management system would be bad for the nonmetropolitan area (of Iceland) and for the vessel fleet. This would predominantly be a system built for the purpose of the big and powerful. It has come true, especially in the offshore fleet that is processing it all onboard. The quota system has hurt the land based processing and undermined the rural areas and coastal communities. This is beyond doubt the worst legislation passed for the rural areas. (Sigurdórsson 2000).

The Gender Displaced

Neoliberalism places strong emphasis on individual and corporate rights, but it often neglects the rights of workers. While gender-
based analysis of fisheries-related policy and
development initiatives have grown, gender
issues still tend to be compartmentalized and
marginalized within fisheries initiatives and
research (Neis et. al 2005). Like men, women
contribute directly to fisheries as workers,
organizers, and managers in fishing-based
households, markets, credit systems, indus-
tries, and communities. They have fishery
knowledge and skills, and they depend on fish
resources and industries for their livelihoods
and, to some extent, for food self sufficiency.

As with fishermen, most of the women who
rely on fisheries are concentrated in the coast-
al, artisanal fisheries and thus experience con-
flicts with larger fishing enterprises, creditors,
governments, and corporations. The three
studies I have conducted on women involve
(1) a qualitative study of women involved in
aquaculture around Iceland and a mapping
of women's participation in decision making
within fishery resource management on com-
pany, administrative, and political levels, in
addition to research and development as well
as on the discursive level (Karlsdóttir 2005);
(2) a survey on the status of women within
the 18 largest fishery companies in Iceland,
conducted as part of a study on women's sta-
tus in fisheries for the Minister of Fisheries
in 2005 (Karlsdóttir 2006a); and (3) an ac-
count of women's roles and situation in the
fishery sector in the Eastfjords of Iceland in
times of profound industrial transformation
in the region, through 31 in-depth interviews
with female fish processing workers (Karls-
dóttir 2006b).

The participation of Icelandic women
in the labor market has, during the 20th and
early 21st centuries, been higher than in oth-
er Western neighboring countries in all eco-
nomic sectors. Even so, women rarely attain
leading positions in industry, despite the fact
that women in the past several decades have,
to a large extent, received more higher educa-
tion than men. Depopulation of the coastal
areas has occurred with women remaining a
marginalized labor force with few economic
alternatives. Conducting studies on women
involved in fisheries has not been in the fore-
front for the societal discussion of impacts of
fisheries resource management policies.

Technological development within the
fishing industry has had an impact on the
involvement of women. In the wake of the
introduction of the production line, and later,
when information and computer technology
were incorporated into production processes,
women became almost solely involved in trim-
ming and worm picking as well as the pack-
ing of fish. This meant doing the work at the
pace of the flow line (under a bonus system)
where little concern was devoted to training
and experience. Their work was marginalized,
and it was believed that anyone possessed the
skills to do this work (Skaptadóttir 1997a,
1997b, 1998, 2000). Skaptadóttir found that
the gender-based division of labor became
even more defined in fish processing as a re-
result of increased technological development,
and women's jobs were devalued.

While a certain resource management
policy in fisheries affects the lives of individ-
uals and families to a large extent and there-
fore the sustainability and development of
communities, it has other less prominent side
effects. Through earlier mentioned impacts,
resource management systems will affect how
people define their people's identity because
the resource system will inevitably contribute
to a certain order where people are given po-
sitions and roles. As a result of the disempow-
erment mood in fishery communities, the in-
terviewed women in the Eastfjords expressed
the governing mood to feel somehow stuck
in an industry without many future prospects.
Even though most of the women had consid-
ered changing occupations, they emphasized
that possibilities or choices of jobs were few.
According to many women, there were few
possibilities for advancement in the fishery
plants. Few positions were offered, and if they were, young male colleagues would typically be recruited. According to many of the interviewed women, it is convenient to coordinate the job at the fish plant with family life as it is easy to take time off when needed. Most of the women said that they could not imagine working shift hours, having to work weekends, and taking night shifts for similar pay as in the fish processing (e.g. in an aluminum smelter 40–50 km away). In general, the women seemed to have low self esteem and did not feel entitled to be in positions of power.

In spite of different perceptions, none of the women speak negatively about the work in the fish processing. They seem to choose the role of adequacy and contentment. They talk about the work as being consistent and well paid in regard to flexibility and work hours. They try to make their conditions bearable with a positive attitude, even in the cases where work hours have been cut because of the companies’ rationalization actions, making their salaries insufficient to take care of their families.

These findings are supported by other studies conducted by Guðbjörg Linda Rafnsdóttir (1997). She has characterized this class of women workers as Valkyrie heroines, where the women rely first and foremost on themselves; they do not complain about their standard of living nor do they make demands of their employer, the labor union, or other governing institutions. Traditionally, Icelandic cultural perceptions of women cast them as stoic and unwavering, even when undergoing distress. In that way, the oppression is maintained and the women become slaves to the system.

Practicality seems to characterize women’s approach. They often express the view that they find themselves not entitled to positions of power and leadership, and some even express that they primarily need to mature before they can take on a leading role. Some of those views seem surprising from the viewpoint that those are not generally applicable to men (Karlsdóttir 2006ba). Many of the women interviewed considered themselves and women who they knew personally suitable for managerial and decision-making roles in the community. At the same time, the tone was negative about women that were decisive in the community. Those factors might very well keep women from achieving positions of leadership within the fishery sector, even though they have the qualities and qualifications to do so.

Effects on Fishing Communities

Major consolidation of ownership of fishing rights, shares in companies, and so forth, has occurred as a result of the ITQ system. It serves as a case that in 1999/2000, the quota ownership of the five largest vessel companies was 22.5% of total allocations and that the 50 largest companies owned 70.3% of the total quota allocation that year (Alþingi 2002). The distribution of quota in coastal communities has decreased from owners in 79 municipalities, and owners of licenses are now only to be found in 45 municipalities around Iceland (Karlsson 2007). Total quota allocations distributed regionally does not reflect the regional distribution, as the quota is transferable through market exchange. Figure 1 illustrates the regional quota transfer in the 1990s as informed by the former fishery minister in a response to public inquiry at the Icelandic Alþingi (Parliament).

The quota system is a controversial issue in the rural setting of Iceland, especially in later years, as it has become clearer that some communities are left without possibilities because consolidation is a fact. In 1999, the government modified the resource management system by deciding that 10% of allocations would be distributed to communi-
ties. This modification to existing law on the fishery resource management (Alþingi 1990) and has been extended for the quota year 2007/2008 (Directorate of Fisheries 2007). The experience with the community quota is debated.

The altered dynamics in the distribution of processing on sea and on land has resulted in increased acquisitions and mergers, meaning the closing of many land based processing plants that were the former lifeblood of fishery communities around the coast. As an example of the consolidation, 43% of frozen fish products in 1993 were being processed in 10 fishery communities around the country, whereas 70% were being taken care of in the same 10 communities in 2005 (Institute of Economic Studies 2007; see Table 3). Cod was processed in 42 Icelandic municipalities in 2005 and of those only 25 of those processed more than 1,000 metric tons (Karlsson 2007). In one of the major sales companies of fish products for export, 11 owners owned more than 85% of shares in 2003, as opposed to 54 in 1993 (Samband íslenskra fiskframleiðenda 1989–2003; Sölufélag hraðfrystihúsanna 1989–2003).

Limiting access to fishery resources brought about significant changes in the communities/fishing villages, as already mentioned. In several communities where license holders sold their rights combined with both a company taking over vessels and processing plants and later closing down the activity in the town transferring trawlers to different ports, structural changes have led to a situ-
ation where inhabitants were excluded from the access to the ocean as none of them had quotas. Consolidation in the fishery sector in the past two decades has led to a significant reduction in fishery and fish processing activities for some fishing communities while engendering an increase for others. This is especially true for Dalvík (north Iceland in Eyjafjörður region; see Figure 1).

Large factory trawlers dominate the processing sector, and less emphasis has been put on land-based processing activities. In cases where local plants and vessels were bought and taken over by larger companies to be later closed down and because fishery licenses and vessels are then moving out of the community, local inhabitants and especially women lost their jobs, some of them becoming unemployed. The job market and economic prospects for smaller rural and coastal settlements formerly solely dependent on fisheries have become poorer and have threatened community viability in the long term. Furthermore, economic development in Iceland during this time has led to uneven regional development between the capital and rural coastal areas increasing the risk of an even more widening gap between the urban capital area and rural and coastal communities.

As described above the rapid development towards consolidation in processing on frozen cod has meant that in the period between 1992 and 2005, processing has become more concentrated and is exclusively being processed now by the 10 largest fishery companies and their processing facilities (on land and at sea) (Institute of Economic Studies 2007). In general, a wave of massive layoffs in fish processing became obvious in the beginning of the 21st century. For example, fish processing workers were being dismissed in at least 27 fishery communities in the period between 2002 and 2005, where income from fisheries was the mainstay of the local economy. In the few months after the minister of fisheries declaration on the cutbacks in cod fisheries, 11 fish processing companies had dismissed more than 400 workers in 13 fishery villages around Iceland or closed down operations (Fréttablaðið 2008). Less consolidation has been observed in the salted cod processing, which in part can be explained by the fact that when hardship hits, it is an easier strategy (because of less technological sophistication of the process and therefore less capital intensity) to establish a small-scale “bacalau” plant, even by local inhabitants alone, rather than rebuild and establish a whole freezing plant.

Akureyri and the fishery communities in the vicinity have become comparatively more important in processing from 1992 to 2005, while Reykjavík (the capital) and surrounding fishery communities in the southwest have remained in a similar position. The most gravely affected communities in general can be characterized as monodependent communities (i.e., communities in Westfjords [Isafjörður is the regional center], Vestmannaeyjar [south of Iceland], and dozens of other earlier important fishery communities (see Figure 2). Larger fishery communities in the west (e.g., Akranes and Snæfellsbær), in the East (e.g., Eskifjörður and Garður), and in the south have gained importance as processors of frozen cod since the implementation of the ITQ and are among the most significant processors. Fish processing of frozen products took place in 50 fishery communities in 1992 but was only located in 34 communities in 2005, while processing of other demersal species has been constricted from 50 communities to 35 (Institute of Economic Studies 2007).

The recent decision made official by the Icelandic government—to cut one third of 2006 TAC, put into effect on August 1, 2007—further affected fishery communities differently. Communities with multiple species processing of pelagic species have the
most elasticity towards the inevitable cutback of cod fisheries. Those communities are predominately located in the southwestern corner of Iceland in proximity to the capital, as well as with the exception of a few individual communities in northeastern Iceland (i.e., Dalvík).

**Policy Implications**

The development described above has led to reduction of jobs in the fishery processing resulting in permanent closures of processing activities in many communities. Furthermore, the increased productivity both in fishing and processing has led to a diminishing need for labor with technological innovation and automation. According to the Institute of Economic Studies, increased productivity is thought to be the precondition for competitiveness among companies and should be first priority in the management and organization reconstruction of the sector (Institute of Economic Studies 2007). In a previously mentioned report, that was the basis for the fishery minister's decision making on how to go about inevitable cutbacks on the cod allocation. The representative discourse taken from the text clearly favors economic logic above other aspects and the report has clearly political implications.

In spite of impressive account of changes brought about by the ITQ system, several shortcomings dominate the views brought forward. The economists dealing with advisory roles for the minister fail to see the
problem that young and skilled labor is not drawn to the sector, as well as identifying the important role of communities and women therein. Furthermore, there seems to be a lock-in or path dependence (Freeman 1994) in the economists’ perception of the sector, since Fordism and great offshore fleet activity has led to a more monotonous organization within the sector. A cyborgization of fisheries1 (Johnsen 2005; Johnsen et.al 2005a) might have contributed to a less attractive work environment and created recruitment problems, but was somehow ignored in the Icelandic political environment. Additionally, many fishery communities rely almost solely on the fishery sector as a source of jobs. There are not many other jobs offered. Prospects of further massive layoffs related to the cutback of cod TAC on top of the recent years layoffs will marginalize the communities even more and presumably lead to further out-migration. Relying on economic logic with so many shortcomings can contribute to a breakdown of the fishery sector from within.

Local effects of the catch rule are indisputable. The ITQ system has already affected different communities and condition for livelihoods there. The development can be put into a perspective of cumulative causation. Some communities reap benefits from the consolidation and therefore enjoy escalating economic prosperity with multiplier effects that proximal villages enjoy. Other (and, in this case, a larger number of) communities run into a negative spiral, threatening economic survival and marginalizing the least benefited communities over time (Myrdal 1957, in Fujita 2007). Market forces thus increase rather than decrease inequalities between regions. In that sense, Gunnar Myrdal’s model of cumulative causation is applicable in the case of Icelandic fisheries community development after introduction of the ITQ. Some of the Icelandic fishery communities await a similar fate as the communities in Newfoundland and Nova Scotia in Canada in the aftermath of the collapse of cod in the 1990s and is a very relevant concern. In the book Enclosing the Commons (Apostle et al. 2002), the social transition and economic rationalization in the ITQ fisheries in Nova Scotia is described, bearing some resemblance to the Icelandic experience—thus strengthening concerns that increased inequalities will be created by further quota concentration in particular communities as the outcome of vigorous competition. Intensifying possessive individualism creates success for some but hardship for others—captains, crew, plant workers, and families. Families have less control of their own fate and find it harder, if not impossible, to make ends meet (Apostle et al. 2002). The socioeconomic aspects have not been imperative in the decision making on Icelandic fisheries development. Therefore, the communities’ venesection is directly linked to an overemphasis on rationalization on solely economic terms at the cost of community welfare.

Even though the diversity of Icelandic fisheries around the coast has diminished over the years, the diversity is still a key to the role of fisheries in the Icelandic society. By the same token, an argument can be made that economic changes lead to a very high opportunity cost for the culture and community togetherness. In the Nova Scotia experience, there was a broad consensus among the inhabitants of fishing communities that the ITQ system had changed community structure since implementation. There were two persistent themes: the way work organization related to community, and an increasing impermanence of social relations in contemporary communities (Apostle et al. 2002).

1 A metaphor applied for the outcome of efforts to make overexploited important fisheries resources more manageable through a transformation of fish, people, and technology (with strong emphasis on technologies domination over nature).
The weight of fisheries and processing in the regional economies and occupational life in the regions illustrates that Westfjords and then Eastfjords are by far the most dependent on the sector for living. Numbers for northeast Iceland are not reflecting conditions in individual communities, as larger municipalities with diversified local economies like Akureyri, Dalvík, and neighboring communities are strong leaders in multiple fisheries and processing. Other smaller, more peripherally located communities have suffered significant job layoffs and reduced economic opportunities. They do so as a result of migration and diminished amount of work available under a serious threat of extinction. The same counts for at least 49 communities around the coast, most of them in Westfjords, where the effects of cut-backs of cod allocation will show its full effect.

During the past decade, many coastal communities have suffered periodical closures of plants, contributing to an atmosphere of uncertainty and shadowing future perspectives; however, the persistence among many inhabitants of fishery villages is remarkable. It supports a hypothesis that communities rest values within fisheries other than solely economic rational ones, as resilient as economic concerns. A dozen of fishery villages, both in the west and east and predominantly in the peripheral areas, have suffered this form of development. Stykkishólmar, Flateyri, Súðavík, Köpasker, Raufarhöfn, Þórshöfn, Stöðvarfjörður, Seyðisfjörður, and Breiðdalsvík, just to mention few, are all communities where the main town and, in some cases, the only fishery company left in town closed. In such an aftermath, the burden is put on local citizens left with worthless properties making the selection of coping strategies slim. The cultural effects of local economies’ transformations are first and most dramatically felt in poorer demographics of local communities in which children are not encouraged to focus their future dreams locally. A community, if lucky, gradually emerges as assets for coastal tourism with emphasis on leisure or other cultural attributes. Furthermore, the out-migration of people from the rural areas has shown that the propensity of women to leave while men stay behind is great, resulting in a major gender imbalance regionally, not supporting sustainable development of the population development.

The widespread debate of the effects of ITQs in the Icelandic fisheries communities taking place in spring of 2007 due to prospects for major cutbacks in TAC’s fuelled a response by major fishery companies, indicating that an official debate would harm the fisheries. All the major fishery companies are results of consolidation in the sector, and until then, a silencing of critical voices had been the imperative. Understandably, those stakeholders were uncertain about the status quo and their power role and feared that a widespread debate might transform conditions for the system de jure. In the beginning of summer 2007, when the Icelandic authorities faced a grave situation in the fisheries, it was clear that further downturn would affect many. Avoiding collapse in different arenas was the main concern. How that turns out remains to be seen; in the meantime, nobody can be sure about the shore.

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