

“SCARING THE FISH”

A Critique of the NRC’s Justification for Individual Transferable Quotas (ITQs) and A ‘Systems Analysis’ of Their Likely Effects

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I. Introduction

In the 1996 Sustainable Fisheries Act (SFA), amending the 1976 Magnuson-Stevens Fishery Conservation and Management Act (M-S Act), Congress asked the National Academy of Sciences (NAS)¹ to examine the notion of individual fishing quotas (IFQs) as an approach to fisheries management. Then, “not later than October 1, 1998, the NAS, in consultation with the Secretary of Commerce (SC) and the Regional Fishery Management Councils (RFMCs), shall submit to the Congress a comprehensive final report on IFQs, which shall include recommendations to implement a national policy with respect to IFQs.”² According to the SFA mandate, this report, called *Sharing the Fish*,³ “shall include a detailed analysis of IFQ programs

¹ The NAS, chartered in 1863, is “a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare,” with “a mandate that requires it to advise the federal government on scientific and technical matters,” according to the National Research Council (NRC) Report, *Sharing the Fish: Toward a National Policy on Individual Fishing Quotas* (Washington, DC: National Academy Press, 1999), p. vi (henceforth to be identified as “*Sharing the Fish*”).

² Section 108(f)(1) of the M-S Act, a “legislative mandate from the SFA,” cited in *Sharing the Fish*, Appendix A, p. 243.

³ Cf. note 1 above for full reference.

already implemented in the United States”⁴ and “shall identify and analyze alternative conservation and management measures, including other limited access systems...”⁵ This SFA amendment to the M-S Act also required that:

The SC shall, in consultation with the NAS, the RFMCs, the fishing industry, affected States, conservation organizations and other interested persons, establish two IFQ review groups to assist in the preparation of the report, which shall represent:

(A) Alaska, Hawaii, and the other Pacific coastal States; and

(B) Atlantic coastal States and the Gulf of Mexico coastal States.

*The SC shall, to the extent practicable, achieve a balanced representation of viewpoints among the individuals on each review group. The review groups should be deemed to be advisory panels under section 302(g) of the M-S Act, as amended by the SFA.*⁶

The National Research Council (NRC), “organized by the NAS in 1916 to associate the broad community of science and technology with the NAS’s purposes of furthering knowledge and advising the federal government, ... has become the principle operating agency of the NAS and the National Academy of Engineering (NAE) in providing services to the government, the public, and the scientific and engineering communities.”⁷ The NRC, through its Ocean Studies Board (OSB), appointed a Committee to Review Individual Fishing Quotas (IFQRC), made up of fifteen members and three staff.⁸

The IFQRC issued a draft report for review and discussion in late 1998, and then produced a final report, *Sharing the Fish*, in early 1999. This report, *Sharing the Fish*, was reviewed by an independent panel of eight individuals⁹ selected by the NRC for “their diverse perspectives and technical expertise ... to ensure that the report meets institutional standards for objectivity, evidence and responsiveness to the study charge.”¹⁰ Also acknowledged for their input, and thanked for their “diligence and interest,” was an alphabetical list of 144 individuals, along with staff from various state and federal organizations. “Special thanks” were also accorded to “the National Oceanic and Atmospheric Administration (NOAA) Advisory Panels set up by Congress to ‘assist in the preparation of the report,’” under the National Marine Fisheries Service (NMFS), with respect to their fifteen representatives each from the east and west coasts. These panels met twice with the IFQRC, and their “inputs were very helpful.”¹¹ They also issued a brief nine-page report in May 1999, summarizing members’ comments.¹²

⁴ M-S Act, Section 108(f)(2), as quoted in *Sharing the Fish*, p. 244.

⁵ M-S Act, Section 108(f)(3), as quoted in *ibid.*, p. 245.

⁶ M-S Act, Section 108(f)(4), as quoted in *ibid.*, p. 245.

⁷ *Sharing the Fish*, p. vi.

⁸ Twelve of those fifteen members were practicing academics, with expertise in the following fields: marine sciences (1); economics (4); anthropology (4); law (1); environmental technology (1); and political science (1). The remaining three (nonacademic) appointments included the chair (with a legal background), a New Zealand fisheries scientist, and the chief executive officer (CEO) of a professional forestry firm.

⁹ This panel included one fishing industry spokesperson and seven academics.

¹⁰ *Sharing the Fish*, p. vii.

¹¹ *Sharing the Fish*, pp. ix-xi.

¹² *National Marine Fisheries Service’s IFQ Advisory Panel Report on the National Research Council Report “Sharing the Fish: Toward a National Policy on Individual Fishing Quotas,”* May 1999. The composition of these panels, as indicated in *Appendix B* of this document, is of interest. The East Coast Panel, chaired by an academic environmental economist and strong advocate of ITQs, was composed of fourteen other members, over half of whom were from the commercial fishing industry. The other half included one academic, two fisheries management people, one private

A. National Standards of Fisheries Management in the Magnuson-Stevens Act

The general thrust of this study – as recommended by the NRC in its final report on IFQs, *Sharing the Fish* – is that a fisheries management system based on individual transferable quotas (ITQs) should be adopted as national policy by the SC and the NMFS, as a means of fulfilling the National Standards in the M-S Act. These standards call for “any fishery management plan” to meet the following criteria:

- (1) to “prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery...;”¹³

charter boat owner, and only one environmentalist. The West Coast Panel – chaired by an Alaskan nonacademic – was made up of fourteen people as well, of which eight were in the fishing industry, with the other six including one academic, one fisheries manager and two environmentalists. The overwhelming representation of fishing industry interests seems to be quite typical of the NMFS and its approach to fishery management choices.

¹³ *Standard 1* – the first on the list – does not include *definitions* of “overfishing” or “optimum yield,” at least according to *Sharing the Fish*. Carl Safina, director of the National Audubon Society’s Living Oceans Program, founder of the Marine Fish Conservation Network, voting member of the Mid-Atlantic Regional Fisheries Management Council, and noted author of *Song for the Blue Ocean: Encounters Along the World’s Coasts and Beneath the Seas* (New York: Henry Holt and Company, 1997), in an essay on “Where Have All the Fishes Gone?” (*Issues in Science and Technology*, Spring 1994, pp. 37-44), p. 42, indicates that, though...

...overfishing is undefined, ... optimum yield is defined as the maximum sustainable yield ‘modified by any relevant economic, social or ecological factor.’ This definition sounds eminently reasonable but it can be used to justify virtually any catch level, including one that exceeds the reproductive abilities of fish.

But the *economic* arguments suggest that the fishery stock size for an “optimal yield” does not lie *below* but *above* the biomass level for maximum sustainable yield (MSY) if fishing costs per unit of effort *fall* as stocks increase (which they do). As Daniel V. Gordon and K. K. Klein explain, for example, in a paper on “Sharing Common Property Resources: The North Atlantic Cod Fishery,” ch. 13 in Mohammed H. I. Dore and Timothy D. Mount, eds., *Global Environmental Economics: Equity and the Limits to Markets* (Malden, MA: Blackwell, 1999), p. 288:

If the objective of government intervention is not only to sustain the stocks but also to maximize economic profit, the optimal harvest level is obtained at a stock level ... [with] the greatest distance between total revenue and total cost [on a graph, where their slopes are equal to that of the fishery biomass growth function relative to stock size, which is the common representation of these single-species analyses... – FBJ]. The difference between revenue and cost for the harvest ... represents the maximum profit possible in the fishery. ...

It is important to note that the optimal economic equilibrium is characterized by a larger stock level than the maximum sustainable yield level. Consequently, economic rationale calls for a more conservative management strategy in terms of stock size than required under the objective of maximizing sustainable yield. [emphasis added]

So, on the basis of the definition supplied by Safina, the *economic* claim is clear, that “optimum yield” requires a *higher* stock size than does a standard based on “maximum sustainable yield.” The *ecological* arguments shall likely also work for more conservative fishing limits through a precautionary approach, given the many uncertainties involved in ocean fisheries and the effort to estimate these stocks. *Social* concerns – on the other hand – depend on discount rates and the embrace or range of ‘planning horizons,’ which should include the needs of *future* as well as present generations. And if the private rates of return required, due to the risks of fishing, *exceed* the expected present value of the capturable earnings growth path that comes from *reproduction* of fisheries, then the resource shall be overexploited down to commercial extinction anyway for private gain. Part of the problem is that private discount rates are too high, especially in the environmental realm, to reflect the increasingly urgent needs of future unborn generations (both of people and fish)! According to Gordon and Klein, p. 299, referring to W. R. Cline, “The Economics of Global Warming” (Washington, DC: Institute for International Economics, 1992):

Intergenerational transfers of resources raise additional problems. ... Because costs and benefits occur at different times, proper decision making requires that these values be discounted to a common period. The choice of an appropriate discount rate is fundamental (Cline, 1992). In the fishery, standard discount rates of 5 percent or 10 percent, which are commonly applied to short-lived private or public capital investments, may not be appropriate where very long-term effects are also important. High rates disadvantage future generations because far away benefits add practically nothing to the present value of the stream of benefits. Cline (1992) and

- (2) to be “based on the best scientific information available;”
- (3) Individual and interrelated stocks of fish, where practicable, should be “managed as a unit or in close coordination” throughout their range;
- (4) any IFQ allocation of fishing privileges must be “(A) fair and equitable ... (B) reasonably calculated to promote conservation” and (C) implemented so as to limit “excessive” individual shares;
- (5) to “consider efficiency in the utilization of fishery resources” but not “as its sole purpose;”
- (6) to be flexible enough to “allow for variations ... and contingencies;”
- (7) to “minimize cost” where practicable;
- (8) to “(A) provide for the sustained participation of ... and (B) ... minimize adverse economic impacts in [fishing] communities;”
- (9) to “(A) minimize bycatch and (B) ... [its] mortality;” and
- (10) to “promote the safety of human life at sea.”¹⁴

The problems suggested by the National Standards in the M-S Act are onerous indeed. As *Sharing the Fish* reports, “most U.S. fish stocks are in a state of full exploitation or overutilization.” Despite “several successes ... there have been many serious failures,” attributed to “overinvestment ... and the ‘open access’ nature” of fisheries management practices.¹⁵ “The stressed nature of many fisheries is apparent from scientific reports of decreasing numbers of spawning fish, reduced overall biomass and population levels, and lower catch per unit of effort (CPUE) in commercial fisheries.”¹⁶ The National Standards set by the M-S Act have not been

others strongly suggest discount rates of 1 percent to 1.5 percent as more justifiable for projects which effect changes in the environment, such as changes in fish stock. A low discount rate will encourage more investment for the future and, in the fishery, suggest a more conservative harvesting policy. [emphasis added].

Consequently, even social and ecological factors should also mandate a more conservative fisheries management strategy than any *purely economic* “optimum.” So one might challenge Safina’s assertion with this argument that the “optimum yield” in *Standard 1* of the M-S Act – if properly understood – demands a *more conservative fisheries management plan* with respect to the setting of TACs than anything based on the MSY of fisheries stocks, even – if not *especially* – with the mandated modification for economic, ecological and social factors!

¹⁴ *Sharing the Fish*, Appendix D, pp. 258-59.

¹⁵ The attribution of overfishing to ‘open access’ has been challenged by many fisheries scientists with historical, anthropological or sociological expertise. First, the notion of ‘open access’ has been questioned with regard to its application to traditional community fisheries, since it assumes an absence of any social or economic constraints to entry or overfishing. This is (at best) a gross simplification of the reality, a misrepresentation that devalues (if not dismisses) successful, long-enduring *community-based* fisheries management systems that were only recently overcome by modern, acquisitive fishing activities run *for profit* instead of *for livelihood*: cf. the statements referred to in notes 522 and 525 on pages 2-2 below for examples of this argument. Even *Sharing the Fish*, p. 184, admits that its own dichotomy of ‘command’ vs. ‘property-based’ systems of fisheries management is incomplete, in a portion of the report discussed more fully below in *Section IV.E.7.*: “However, these two approaches ... ignore the hundreds of examples of fishing communities that organized themselves and have effectively managed their access to and use of fish stocks...” (For further information, cf. the text accompanying note 510 on page 2 below.) As one prominent fisheries analyst, Bonnie J. McCay, put it, in “Social and Economic Implications of ITQs: An Overview” (*Ocean and Coastal Management*, 28, 1995), pp. 3-22:

ITQs and co-management are based on very different theoretical perspectives. ITQs come from neo-classical economic theory; co-management reflects a call for more democratic decisionmaking and a more anthropological theory ... ITQs derive from an analysis of ‘the commons’ as a simplistic, open-access situation where the only sources of regulation are either ... government, or the market. Arguments for co-management are fueled in part by a recognition of ‘the commons’ as highly variable social institutions, some of which have prevented overexploitation and excessive investments of labour or capital. ...

¹⁶ *Sharing the Fish*, pp. 13-14.

fulfilled by traditional input and output controls as administered by the NMFS.¹⁷ This abject failure of fisheries management is the disturbing cause of this search for a new and different approach by Congress, to stem an advancing worldwide degradation of fisheries stocks from commercial overexploitation.¹⁸ In this context:

*A relatively new policy instrument, the individual fishing quota (IFQ), is among the alternatives being considered as a possible solution to excess harvesting and processing capacity, stock depletion, and possible ecological disruptions that characterize many managed U.S. fisheries, including those that operate under ... restricted access. Broadly speaking, IFQs are exclusive individual privileges to harvest portions of an overall quota of marine fish or shellfish.*¹⁹

¹⁷ Carl Safina, in *Op. Cit.* (note 13 on page 2 above), pp. 37-38, denies the attribution of overfishing to 'open access' (cf. note 15 above) or even traditional management systems, placing the blame instead directly on the NMFS:

This overfishing could have been stemmed or prevented ... if eight regional fishing management councils empowered by the [M-S Act] to deal with the problem had adhered to Congress's intent and done their jobs. But the councils, comprised of political appointees with heavy fishing industry representation, have often failed to take decisive steps to end overfishing or to develop plans to restore rapidly dwindling fish populations. In short, the feeding frenzy by U.S. fishers and the unwillingness of the fishing councils to slow them down has led to dramatic declines in fish populations and economic disaster for fishers and fish communities. ...

Although the NMFS has authority to temporarily shut down imperiled fisheries by emergency action, in practice it seldom does so. It largely defers to the eight regional fishery management councils, which often make decisions at odds with the recommendations of NMFS's scientists. ...

¹⁸ But this interpretation of ITQs, as a method to save the NMFS from its own mismanagement of fisheries due to the overwhelming influence of fishing industry interests in the management process – which has wielded its power in favor of myopic gainful exploitation at the expense of farsighted resource conservation (which would have been more in accord with the explicit demands and national standards specified in the M-S Act, as summarized above) – is not the one accepted by a number of fisheries experts who are critical of the ITQ concept. Parzival Copes, for example, emeritus professor of economics at Simon Fraser University and Director [?] of the Institute of Fisheries Analysis there, offers a more realistic conception of ITQs' intent and effects, on pp. 4-5 of a 1997 Address before the World Forum of Fish Harvesters and Fishworkers in New Delhi entitled "Common Property Fishing Rights: Coastal Resources for Coastal Communities":

[It] is important to recognize clearly the intrinsic nature of a government's move to install an ITQ regime, starting with a free gift of access rights to selected individuals [which] is basically the expropriation without compensation of a community's resource base. ... The direct financial value of this confiscation may be measured by the capitalized value of the quota holdings representing the alienated resource. ...

The avowed purpose of the promoters of the ITQ has been to bring the efficiency advantages of private ownership to the fishery. The attempt to do so has been a failure. ... The claim that ITQs will bring the efficiency advantages of privatization to the fishery is mere pretence. ITQs have not turned fish stocks and their environment into divisible pieces of exclusive private property, that are managed separately and efficiently by their owners. What the installation of an ITQ program does do is give away to a limited group the tradable rights to participate in a common property fishery according to a particular set of rules. ...

From this perspective, ITQs simply extend the corporate takeover of the fisheries management process from *political influence* over regional councils into the realm of *outright expropriation* of 'common' property for private gain. In other words, the entire resource value of a 'public treasure' – the common ocean fisheries (supposedly) held in trust by government as 'steward' – are to be 'gifted' through ITQs (with no required return compensation) into the hands of the corporate sector as a 'grant in perpetuity' (on the way to becoming a *permanent property right* through common law). In sum, ITQs – in this view – are really a raid on the 'public pantry' by private gain-seeking interests, under the guise of 'economic efficiency' and 'environmental stewardship,' neither of which can be shown to result from any ITQ system, be it in practice or from any other theoretical vantage than 'neoclassical' economics (the assumptions of which bear little relation to the realities of fisheries management relative to these other approaches, which yield very different conclusions about ITQs, as discussed in *Section III* and *Section IV.E.6.* below).

¹⁹ *Ibid.*, p. 14.

B. Six Questions about ITQs as Presented in *Sharing the Fish*

But this alternative fisheries management tool has stirred up a boiling cauldron of controversies over its likely effects on the problems cited above, as well as some new ones spawned by its novel approach to the privatization of ‘public common’ ocean resources, including: “its potential for creating windfall benefits to the initial recipients, the privileges that IFQs create, and the potential for decreasing employment and changing social and economic relationships among individuals and communities.”²⁰ The purpose of this review is to take another, more critical look at ITQs, both in general and as presented in *Sharing the Fish*, with the aim of addressing a number of questions.

These questions start with the methods used by the NRC in its review of IFQs, in terms of both the *selection of personnel*, especially for regional councils to which most fisheries management choices are referred by the NRC recommendations for ITQs, and the underlying *economics and politics* of the investigation, analysis and implementation of their recommended plan. Next, a series of questions shall be addressed with regard to the standards and goals of IFQs and whether they are really fulfilled by an IFQ or ITQ system. These questions include the following:

- (1) Does the NRC study, *Sharing the Fish*, allay the *conservation concerns* about ITQs?
- (2) Does *Sharing the Fish* meet the requirements of a *precautionary approach*?
- (3) Does *Sharing the Fish* prove that ITQs will not become *private property*?
- (4) Does *Sharing the Fish* establish the *stewardship effects* of ITQs?
- (5) Does *Sharing the Fish* show *traditional fishing communities* benefit from ITQs?
- (6) Does *Sharing the Fish* offer a full and objective analysis of *ITQ experience*?

The NRC analysis of IFQs in *Sharing the Fish* presents ITQs as satisfying the standards specified in the M-S Act, along with other related principles of fisheries management theory and practice. The goal of this review is to show that *these standards have not been met by the NRC study* in its findings for ITQs as a fisheries management policy, and to argue that *an ITQ plan cannot meet these standards*.

Since ITQs are not the solution to fisheries problems as presented by the NRC panel, other approaches should be explored and developed, truly consistent with stewardship practice and conservation needs. These alternatives should include the *localization* of fishing effort, to encourage stewardship practice and tight (incentive) feedbacks, and to place more emphasis on *environmental* and *community* interests over narrow *economic* criteria of efficiency and private profit (through a ‘gifted’ *capture of value* from the public commons and effective *cost*

²⁰ *Ibid.* Parzival Copes, in *Op. Cit.* (note 18 above), p. 6, suggests that the “enthusiastic promoters of ITQs didn’t look beyond their noses when they predicted marvelous results from the introduction of ITQs.” In fact, the experience with ITQs has not delivered on its promise as a panacea for fisheries management problems, especially in *conservation effects*:

It turns out that the rules of ITQ administration that were designed to eliminate some of the externalities of the fishery, in fact introduce several “viruses” to fisheries management in the form of new externalities from which the fishery had not suffered before. ...Some of the more important problems that may cause a lot of damage to the fishery ...are of two kinds: (1) externalities resulting from the management requirements of ITQ systems, and (2) externalities ... from the incentives ITQs give to participants in the fishery to engage in practices that are damaging to the fishery. In both cases the problems affect the fishery mostly through their impact on conservation. ...

externalization onto society, our ecology and future generations at the expense of more public concerns), such as are detailed below.

In general, ‘systems’ approaches (in economics and organizational theory) yield different conclusions about ITQs than ‘neoclassical’ economics, from which ITQs derive their strongest source of support. These alternative views suggest that community-based comanagement systems should – because they have in the past – perform a lot better for resource conservation and stewardship practice – as well as in economic efficiency – than any ITQ system might do, because of locally tighter ‘feedback control loops’ and a better internalization of cost thereby achieved. If so, then choosing a ‘neoclassical economic’ conceptual framework – at the expense of viewing ITQs through any other analytical lens in *Sharing the Fish* – may be the chief failing of the NRC panel’s study, as argued in *Section III* below.

II. The NRC Study, “Sharing the Fish”: A Critical Overview

The first part of this discussion involves a look at the *process* and *context* of the NRC study, as it affected their recommendations. First, the selection of personnel ought to be examined: the choice of specific participants – especially for regional councils – has an important effect on the NRC’s findings and their implementation. Furthermore, the *politics* of ITQs are also underemphasized throughout *Sharing the Fish*, though special interests seem to dominate how ITQs have been proposed, designed and managed wherever they have been tried, as well as their real social effects (as distinguished from those stressed by the NRC panel in *Sharing the Fish*). What follows is a broad review of fisheries management standards, including but not limited to those specified in the M-S Act, to establish the full and proper context of further discussion of *framing questions* and the diverse systems of thought used to analyze ITQs. All this shall lead to *Section IV*, addressing the six questions stated above. The emphasis of this critique is more theoretical than empirical, as the major flaw in *Sharing the Fish* is that it employs a ‘neoclassical’ economic framework that does not apply to a ‘systems’ setting.

A. The Actual Review Process: Selection of Personnel

In any review process, selection of experts shall be essential in determining ultimate outcomes. Structural issues are also important: how discussions are run; the framing of facts, issues and questions; who drafts sections of the report; and how the solicitation of feedback is handled and the input considered. The NRC’s study committee was made up mostly of academics in different fields, as already noted.²¹ The report is somewhat variable: academic discussions are ably done; historical/legal issues seem well-presented; the economics, however, is narrowly unaware of alternative views; and political issues are understressed to a fault in *Sharing the Fish*. How ITQs are reported in terms of experience with them around the world is spotty in *Sharing the Fish*, but nevertheless informative, especially in *Appendices G* and *H*. Last, the recommendations sidestep many key issues, by referring how IFQ plans should be designed and applied (in terms of stability, initial allocations, transferability and enforcement)²² to *regional fisheries management councils* with precious little advice.

1. The Role, Structure, and Composition of Regional Fisheries Management Councils

So regional fisheries management councils shall have a lot of authority over what decisions are made and to what effect in all IFQ applications. The justification for a decentralization of fisheries management policy choices seems a good one – at first blush – on its own terms: Fisheries are so different and diverse with respect to needs and demands that a ‘one size fits all’ approach shall be destined to fail.²³ And failure (at this point) is unacceptable: fisheries

²¹ Cf. note 8 on page 2 above.

²² Cf. *Sharing the Fish*, pp. 193, 201, 203-7, 208-9, 120, and 216-17, respectively, on these subjects.

²³ As Elinor Ostrom explains in a Literature Review on “Private and Common Property Rights” in *The Encyclopedia of Law and Economics* (<http://encyclo.findlaw.com/lit/2000art.htm>, 1997), Sections 5-7:

What should be obvious by now is that the world of property rights is far more complex than simply government, private and common property. ... [Section 5, page 9 of 50]

Even though all common-pool resources share the difficulty of devising methods to achieve exclusion and the subtractability of resource units, the variability of common-pool resources is immense with regard to other attributes that affect ... incentives ... and the likelihood of achieving outcomes that approach optimality. ... [Section 6, page 10 of 50]

throughout the world are in such desperate shape – because of mismanagement and overexploitation – that many are teetering on the edge of collapse.

Indeed, this is part of the argument for an ITQ plan: that everything else has been tried to little avail at stopping the juggernaut of factory ships stripping the ocean of fish without restraint. But *decentralization* to local communities and to genuine stakeholders in the viability and continued health of ocean fisheries is *not* the same as turning over the fisheries management process to the private corporate sector, as ITQs seem intended to do, at least as suggested in *Sharing the Fish*. In the NRC panel's own words:

*Some committee members believe that ... broader participation and cooperative management should be ... key objectives of ... [an IFQ program]. This process could be assisted by requiring IFQ holders to participate in management decisions and to assume responsibility for some of the management functions, such as the observer program and dockside monitoring.*²⁴

The regional fisheries management councils – in which the NRC panel places so much reliance and trust to manage our ocean resources for conservation – are not up to the job, at least as currently staffed. First, the authority structure, along with the purpose and organizational culture of the NMFS is simply and totally aimed toward *commercial* and not ecological interests.²⁵ The NMFS is housed within the NOAA – as it probably should be – but the NOAA is situated in the *Department of Commerce* and not the *Department of the Interior* (whose orientation is more to *environmental integrity* than trade).²⁶ The result is that *NMFS scientists* have no real authority in a department devoted to *commercial* goals and interests, instead of to conservation or ecological long-term health.²⁷

Considerable recent research has also stressed the importance of involving participants in the design and implementation of such property-rights systems. ... [Section 7, page 17 of 50]

²⁴ *Ibid.*, p. 223, as further discussed below in *Section IV.D.3.* starting on page 2 below.

²⁵ A recent report, released on 27 September 1999 by the Marine Fish Conservation Network (MFCN) called *Lost at Sea*, argues that the NMFS has failed to enforce or comply with the requirements of the 1996 SFA to protect ocean resources, in the face of the highest ever recorded levels of overfishing and waste. According to a press release issued on 28 September 1999, MFCN director Lee Crockett explained the problem thus:

The NMFS has failed to take the actions necessary to restore our valuable marine fishery resources and, through this negligence, has ultimately placed these public resources in severe peril. ... Instead of meeting its mission of conserving depleting fish populations, it has overlooked missed deadlines, accepted inadequate plans and risked further decline by delaying necessary action.

²⁶ Unfortunately, there seems no escape from *politics* and the abuses of power, and the Department of the Interior is not immune to the problem. As Copes, *Op. Cit.* (note 18 on page 2 above), p. 14, put it:

The world of fisheries is highly politicized. The government and its fisheries managers ... cannot avoid becoming embroiled in controversy over allocations and being blamed for fishery failures... Increasingly they have found it prudent to build a consultative relationship with the fishing industry...

But when does a “consultative relationship” become a “conflict of interest,” in the sense used by Stump and Batker (cf. the quote accompanying note 33 on page 2 below). When even Department of the Interior officials are charged with obstruction of justice for the destruction of files in the face of a Congressional probe into conservation spending abuses and other “intentional misconduct” by the General Accounting Office – according to CNS Staff Writer Ben Anderson ([http:// www.capitolhillblue.com/Sept1999/093099/interior092999.htm](http://www.capitolhillblue.com/Sept1999/093099/interior092999.htm)) – how can we hope for real long-term improvement without ‘cleaning up’ the whole system?

²⁷ As Safina points out in note 17 on page 2 above, and in note 28 below.

2. The Dominance of Fishing Industry Interests on the Regional Councils

The crisis of fisheries management, as Safina attests so clearly, is sufficiently explained by the “biases” stemming from “the heavy fishing industry representation on the [regional] councils.”²⁸ Indeed, as another analysis put it, looking at the M-S Act and the gap between its effect and aim:

*...The most damning indictment against the present fisheries management council system is precisely its failure to prevent further overfishing in U.S. waters, or to restore overfished stocks to former levels of abundance. The councils have presided over the continued decline of fish and other marine wildlife stocks from the Gulf of Mexico to the Gulf of Alaska, from Georges Bank to the Bering Sea.*²⁹

Recall, again, *National Standards 1 and 2* as quoted above from the M-S Act: (1) to “prevent overfishing”³⁰ and (2) for policies “based on the best scientific information available.”³¹ The problem is that the overrepresentation of fishing industry interests sideswipes any attempt to enforce *Standards 1 and 2*. As of 1996, fully *one hundred percent* of the North Pacific Fishery Management Council members appointed by the Secretary of Commerce were associated with the commercial fishing industry, and, of the 143 (voting and nonvoting) members of all eight regional councils, *none* were employed by an environmental group.³²

The fisheries management council system has frequently come under fire for self-dealing and conflict of interest. This is not surprising given that a majority of council representation is comprised of members of the industry. ... The irony is that the industry representatives who dominate the councils have not even managed the fisheries resources in their own best interests. Industry pressure to set quotas at unsustainably high levels has resulted in the collapse of once-productive fish and shellfish species, causing severe

²⁸ Carl Safina calls for reform and a change of venue in *Op. Cit.* (note 13 on page 2 above), p. 41:

By creating the eight regional fishery management councils, the Magnuson Act mandated a unique form of participatory government. The act directs that the councils be comprised of “individuals who, by reason of their occupational or other experience, scientific expertise, or training are knowledgeable regarding the conservation and management of the commercial and recreational harvest.” In practice, members know a lot more about catching and marketing fish than about marine biology or natural resource stewardship. Indeed, the heavy fishing industry representation on the councils has resulted in biases so pronounced as to largely account for the failures to prevent overfishing. By comparison, we do not allow electric companies to sit on utility commissions. ...

Another significant flaw in the system is the political weakness of NMFS, ostensibly the nation’s marine steward. NMFS “is an agency with severe problems and challenges that require immediate attention,” reports the National Fish and Wildlife Foundation, a congressionally established nonprofit organization. NMFS has been marginalized by inadequate legal authority and the council system that gives the fishing industry more management authority than the agency’s own resource-management professionals, economists, and social scientists.

Foremost among the agency’s problems is that it is buried in the Commerce Department, which largely deals with manufactured commodities. It should be in the Department of the Interior, among groups that understand sustainable resource stewardship and its role in the economy. ...

²⁹ Ken Stump and Dave Batker, *Sinking Fast: How Factory Trawlers Are Destroying U.S. Fisheries and Marine Ecosystems* (Washington, DC: Greenpeace, 1996), p. 22.

³⁰ On this, cf. esp. the lengthy discussion in note 13 on page 2 above.

³¹ Cf. the cross-references in and the text accompanying note 27 above.

³² Greenpeace, “Frightening Factory Trawler Facts” (1996).

*economic dislocations for displaced fishermen. Meanwhile other public interests have little say in how public fisheries will be managed.*³³

The problem of fisheries management is that *commercial interests* have forced economic good sense and ecological stewardship into the back seat through wielding political influence in the regional councils *against* the scientific conservation mandates stated in the M-S Act. The allure of immediate private gain – over resource stewardship practice – simply has been too strong to resist. This is quite typical of regulation throughout its shameful history, at least according to many economists: Systems set up to protect the consumer from businesses’ strong incentive for reaping gain by exporting cost to innocent victims are often ineffective for reasons of preemption and political power abuse.³⁴

Surprising it is *not*, that this situation exists in fisheries management. The pursuit of economic advantage is a powerful goad, that needs to be checked, contained and restricted by government if free markets shall work as portrayed in ‘neoclassical’ theory. Otherwise: *Quis custodiet custodiet?*³⁵ This is the reason that ethics and stewardship (planning perspectives serving sustainable long-term management over immediate myopic gain) are tied to the ‘public trust’ doctrine about the government’s oversight duties as a trustee of common resources. Such values seem decreasingly evident as a motive for business activity, and the attempts of public authorities to stem the tide increasingly futile. The outright cooptation of fisheries management by commercial interests simply is another example of far more general issues and trends.³⁶

Yet here the failure is so dramatic and consequential in terms of undermining our resource base (if not our very life-support systems), and the economics so corrupted by unrealistic conceptions, science seems overwhelmed by the challenge of fighting off financial pressures.³⁷

³³ Stump and Batker, *Sinking Fast* (cf. note 29 above), p. 22.

³⁴ Douglass C. North, *Growth and Welfare in the American Past: A New Economic History* (Englewood Cliffs, NJ: Prentice-Hall, 1966), p. 176, notes that: “A continuing dilemma of regulatory agencies is that they can become vehicles whereby the regulated regulate the regulators, in the interest of the regulated – rather than that of the public.” Bruce M. Owen and Ronald Braeutigam provide some perspective on this process before a lengthy discussion of its methods, in *The Regulation Game: Strategic Use of the Administrative Process* (Cambridge, MA: Ballinger, 1978), p. 10:

Until the 1960s, the prevailing view of regulation was that it provided, or at least was intended to provide, a degree of protection for consumers from the depredation of monopolists, from shoddy and dangerous fly-by-night operators, or that it protected producers from the harmful effects of certain fundamentally unstable markets. ...

During the 1960s, the economics profession at least came to hold contrary (and sometimes inconsistent) views of regulation. We came to believe that regulation was ineffective in restraining monopoly power, that regulatory agencies were often captured by industry groups and used as cartel managers, and that regulation introduced potentially serious distortions in the resource allocation process ...

Even Alfred E. Kahn, an avid advocate of regulations’ effectiveness, says at the end of his classic two-volume treatise on *The Economics of Regulation* (Cambridge, MA: MIT Press, 1988), Volume II, p. 326, that the greatest danger is *politics*:

One inherent weakness of regulation is its inescapable involvement with the political process. ... This suggests in a way that the imperfections of regulation are inherent defects not of the institution itself but of the political process. ... How well the regulation is actually performed, in practice, will depend, in the last analysis, on the fundamental factors that determine the distribution of political power in modern capitalism.

³⁵ “Who will protect us from our protectors?”

³⁶ Paul Hawken, *The Ecology of Commerce: A Declaration of Sustainability* (New York: HarperBusiness, 1994), p. 3, put it disturbingly and jarringly (as well as ‘impolitely’!):

Quite simply, our business practices are destroying life on earth. ... We know that every natural system on the planet is disintegrating. The land, water, air, and sea have been functionally transformed from life-supporting systems into repositories for waste. There is no polite way to say that business is destroying the world.

³⁷ As Paul Hawken put it in his “Foreword” to Thomas Prugh’s *Natural Capital and Human Economic Survival*, 2nd ed.,

Social equity is impossible in a system bent to myopic concerns, over the common good and that of future generations (who are represented only by people with long horizons).³⁸ The problem of fisheries management – in its current and previous manifestations – stems from much profounder crises in academics, politics and the economics of ‘market process.’ So that is where we proceed, to *the economics and politics of ITQs*, on our way to examining international legal standards of fisheries management practice, and then to some more general ‘framing’ issues.

B. *The Economics and Politics of Fisheries Management through ITQs*

The economics of ITQs – as a panacea to fisheries management problems – seems to be based on a “faith” that privatization is a solution to the ‘externality’ problems stemming from the exploitation of public ‘common’ resources. The economics of ‘externalities’ strongly upholds such a view within the neoclassical literature, almost without dispute. For example, in a classic paper “On the Nature of Externalities,” Heller and Starrett define this problem as the “nonexistence of markets.”³⁹ There is another view, however, that “externalities ... reflect conceptual difficulties at the boundaries of microeconomic theory ... where deductive explanation becomes unsatisfactory” due to the *interdependence* of open socio-ecological systems.⁴⁰

co-authored with R. Costanza, J. H. Cumberland, H. E. Daly, R. Goodland and R. B. Norgaard (Boa Raton, FL: CRC Press, Lewis Publishers, 1999), pp. 19-20: “We are surrendering our living systems, social stability, fiscal soundness, and personal health to outmoded economic assumptions.” See *Section III* below on this issue.

³⁸ E.g., cf. the discussion in the last half of note 13 on page 2 above.

³⁹ Cf. Walter P. Heller and David A. Starrett, “On the Nature of Externalities,” the opening essay in Steven A. Y. Lin, ed., *Theory and Measurement of Economic Externalities* (New York: Academic Press, 1976), pp. 10, 15:

One of the prime attributes of the market system is that it isolates one individual from the influence of others' behavior... Viewed in this light, one can think of externalities as nearly synonymous with nonexistence of markets.

... The problem, in a broader perspective, is one of choosing an optimal set of institutions. Since institutions are inherently indivisible, marginal analysis will not work; this leaves us with a difficult cost-benefit problem. ...

⁴⁰ Cf. Sherman R. Krupp, “Analytic Economics and the Logic of External Effects” (*American Economic Review, Papers and Proceedings*, 53:2, May 1963), p. 223. This short paper is a beautifully terse statement on ‘externalities’ from a ‘systems’ perspective, where the problem is *theoretical*, having to do with the limits of ‘deductive’ frameworks (pp. 220-26):

... Externalities involve statements about the properties of aggregates, when these properties are not wholly deducible from their atomic elements. It is a difficulty which lies at the boundaries of microeconomic price analysis and which concerns the scope of ... deductive economic theory. ... In deductive systems, combinations of units obey the same laws as individual units. Theorems governing the operation of aggregates are deduced from laws operating in the smaller units and their combinations. The scope of a theory describes the range of application of its theorems. ... Poor explanations occur when sound theories are pushed too far.

... Externalities are not simple observables... They ... reflect conceptual difficulties at the boundaries of microeconomic theory. The problem of externalities concerns the interdependence that emerges when individual units are aggregated with consequences not predictable under theorems derived from the individual units. Externalities are introduced at the point in theory where deductive explanation becomes unsatisfactory. ...

The application of microeconomic theory to instances of externality constitutes a challenge to the scope of existing theory. ... The value of an explanatory system is demonstrated by the theory's capacity to grow in coherence and breadth... At present, the difficulty of adapting theorems drawn from axioms about independent units to permit handling phenomena of common interdependence must be recognized as a major structural problem in microtheory.

External effects derive from interdependence. ... Moreover, if interdependence becomes crucial..., the inability of microeconomic theory to deal with this aspect of economic behavior would be a severe limitation to the usefulness of the theory. ... How to make direct application of unmodified microanalysis to larger fields is still an open question as the theory stands.

So where ‘externalities’ have been conceived in ‘neoclassical’ economics (à la Heller and Starrett) as an absence or *failure of markets*, ‘systems’ approaches (according to Krupp) present a contrasting interpretation of ‘externalities’ as a *failure of theory* in economic analysis. The ‘neoclassical’ paradigm was not designed to deal with problems of interdependence and ‘externalities’ fully entwined in unbounded ecologies: This is the realm of ‘systems’ theory.⁴¹

Thus *an organizational view* will not turn automatically to *an extension of markets* (through a privatization of ownership rights) as a means to resolve an ‘externality’ problem arising from misalignment of *private* incentives with *social* effects. ‘Systems’ approaches shall look instead at the *balance* of individual costs and benefits with the overall needs and requirements of the encompassing system, and at the tightness of feedback loops supporting homeostasis in the dynamic adjustment processes.

Such an approach shall not support the acclaimed ‘efficiencies’ of ITQs, or their alleged incentive for ‘stewardship practice’ and conservation. Indeed, a ‘systems’ analysis shows a quite different behavior resulting from ITQs than ‘neoclassical’ theories suggest in *Sharing the Fish*. A source of that difference stems from how each framework conceives of ‘externalities.’

1. ‘Privatization’ as a Solution to ‘Externality’ Problems

The aim of privatization in *neoclassical economics* – especially in the presence of ‘externality’ problems – is *separation of interdependent decision effects* by placing an institutional barrier (through imposition of property rights or rational and territorial limits) on the impacts of choice: settling conflict through a creation of boundaries where there were none. The fact that our actions spill out over each other in their radiant impacts stands behind this scene: ‘Do I have a right to the view from my porch, or will your new red fence prevail?’ How we frame the issue involved determines how we perceive its solution.

An organizational theory starts from propositions starkly at odds with the ‘neoclassical’ view. Instead of *independence assumptions* (where ‘interdependencies’ are resolved by separating effort through ownership, privatization, markets and price), a *systems* approach – arising from an acceptance of *interactive variability* of each part (to be linked through *integration* of elements into a functioning whole) – looks at the problem through a quite inverse ‘selective focal’ lens. From this vantage, the tightness of feedback control loops in the alignment of private incentives with overall system requirements are of greater concern. *Sharing the Fish* – although it offers a nod to alternative views – singlemindedly endorses a ‘neoclassical’ economic construction, at the expense of any apparent awareness of ‘framing’ issues or problems with this selection of vantage.

This is, indeed, the chief failing of *Sharing the Fish* and the NRC panel’s analysis of ITQs. Strict adherence to one narrow ‘neoclassical’ outlook in economics – at the expense of any examination of institutional or organizational systems of thought, beyond nodding occasionally (and approvingly) in their direction – does not excuse a wanton neglect thereof in the findings so derived. There is no suggestion in *Sharing the Fish* – other than simple lip service – that any other approach than neoclassical economics shaped the *recommendations* so proposed by the NRC panel.

⁴¹ Cf. *Section III* below, especially *Subsections B and C*, as well as the references cited in note 466 on page 2 below.

And even *within* neoclassical economics, *Sharing the Fish* includes almost no discussion of Pigovian taxes, ‘value pricing’ approaches or ‘full-cost accounting’ measures, which would serve to *internalize* ‘externalities’ with an important difference from the ITQ plan as proposed. These alternatives also return the ‘rent’ from exploiting ‘common’ resources back to the *public sector* instead of to private industry hands. The failure of the NRC panel to address such issues opens questions about their ready endorsement of ‘propertarian’ answers on ‘neoclassical’ grounds.

Such a narrow approach is so well-suited to serving corporate interests at the expense of public concerns, suspicions start to rise about the exclusive focus on privatization at the expense of other outlooks with differing implications. Some of the issues ignored are institutional and political; others seem to be artifacts of a neoclassical view. One of the universal assumptions in ‘neoclassical economics’ is that *decisions are guided by our rational long-term interest*.

This is some of the justification for institutional and transactional arguments that our ‘rights’ evolve as needed for resolution of conflict (and other ‘social’ lacunae) arising from individuals’ self-seeking efforts, given our interdependence. An interposition of property rights serves not just to hold us apart, but also to warrant the *independence* assumptions suffusing all economic conceptions in neoclassical theory. In other words, the institution of property rights supports economists’ *theoretical ideology* in its *independence* assumptions (and avoidance of ‘systems theory’), as much as it operates as a justification of our rapacious society.

2. The Historical/Intellectual/Ethical/Legal Limits of Privatization

Yet the imposition of ‘private property rights’ shall not be an ‘easy out’ to resolving conflict of interest due to ‘externalities’ in every instance. First, there is an impressive history of ‘common property’ institutions in this sector that should be considered.⁴² The viability of any social arrangement also rests – centrally – on our *rationality* in not straying outside territorial lines. Standards of conduct, ethical limits, and a long cultural legacy are also part of the mix: society cannot function – or at least prosper in freedom and truth – in the absence of *self-generated discipline* (which, if not internally driven, must be imposed from outside).⁴³ Liberty is in danger unless we *choose* to ‘do no harm.’

Our legal system is only designed to secure the barn to protect against *the next* equine escape – and only after enough flights to identify them as a general problem in need of an *institutional* ‘lock.’ *Constraints* – self-imposed or externally forced – are a part of free-market function. Ethical limits are integral to economic efficiency and social equity in the endlessly interdependent domain that we were blessed to inherit from our forefathers and mothers.⁴⁴

Somehow, academic economists seem to have focused on other realms selectively in their attention. Not all – literature written by economists on these issues exists – but training in orthodox schools smoothly ignores such messy imbroglios by assuming rationality in the absence of

⁴² Cf., e.g., Ostrom, *Op. Cit.* (note 23 on page 2 above) on this subject.

⁴³ E.g., cf. Jacques Barzun, “The Wasteland of American Education” (*New York Review of Books*, 28:7, 5 November 1981), reprinted as “Preface” to his *Teacher in America* (Indianapolis: Liberty Press, 1982), p. xxi: “We cannot do without teaching – or governing. We see right now all around us the menace of the untaught – the menace to themselves and to us, which amounts to saying that they are unselfgoverned and therefore ungovernable. ...”

⁴⁴ Cf. esp. Kenneth Lux, *Adam Smith’s Mistake: How a Moral Philosopher Invented Economics and Ended Morality* (Boston: Shambhala Publications, 1990), pp. 87-89.

‘externalities,’ simply abstracting away from ‘market power’ or ‘political pull’ and their effects on institutional process or individual choice. Expectations are always met through individual action in a predictable institutional setting of ‘freedom and justice for all.’ But there are several problems with this superficial outlook.

First, the caricature of ‘open access’ as simple anarchy – as lacking any control over resource exploitation – needs revision. This simplistic conception ignored “the hundreds of ... fishing communities that organized themselves and have effectively managed their access to and use of fish stocks on which they were heavily dependent.”⁴⁵ Indeed, according to Elinor Ostrom, “substantial evidence exists that many communal proprietorships effectively solve a wide diversity of local problems with relatively low transaction costs.” Consequently, as Wilson’s studies show, “communal proprietorship systems are more efficient than thought.”⁴⁶

The case for community-based co-management systems – as another solution for resource management problems (especially for inshore fisheries) – is discussed in *Sharing the Fish*, but then not dealt with in their recommendations.⁴⁷ Some of the problem arises from a long-standing view in both economics and law “that private property is clearly superior to common property” in its “efficiency, equity, and sustainability” characteristics.⁴⁸ Indeed: “Economists tend to ... explain the growth of modern, Western societies in part as the result of changing from common property to private property.”⁴⁹ As a result, the virtue of ITQs as a privatization scheme – most especially in their (alleged) *efficiency* attributes – is not truly addressed or questioned by the NRC panel (as discussed in *Section IV.E.* below). The problem is one of ‘framing’ how we ought to look at the issues before us, and the dangers of ‘focal exclusion’ due to a single outlook.

3. ‘Framing Problems,’ ‘Paradigm Shifts’ and Political Economics

There is a very strong case to be made for attending to how our questions are posed and how we structure responses, in a world of boundedly rational understanding, irreversible impact and deeply-imprinted belief founded on mostly *tacit* assumptions.⁵⁰ *Selective focus* is part and parcel

⁴⁵ *Sharing the Fish*, p. 184; but also see discussion in *Section IV.E.7.*, esp. around pp. 2-2 below.

⁴⁶ Cf. Ostrom, *Op. Cit.* (note 23 on page 2 above), Section 6, page 13 of 50, and she in turn cites the following sources in support of this comment: Susan Hanna and Mohan Munasinghe, eds., *Property Rights and the Environment and Property Rights in a Social and Ecological Context: Case Studies and Design Applications* (Stockholm and Washington, DC: the Beijer International Institute of Ecological Economics and The World Bank, both in 1995); James A. Wilson, “When are Common Property Institutions Efficient?” (Orono, ME: Working Paper, University of Maine, Department of Agriculture and Resource Economics, 1995); Audun Sandberg, “The Analytical Importance of Property Rights to Northern Resources” (Colloquium presentation, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, 27 September 1993), “A European Debate Revisited” (Working Paper, Nordland College, Bodo, Norway, 1996), and “Against the Wind: On Reintroducing Commons Law in Modern Society” (presented at the sixth annual conference of the International Association for the Study of Common Property, Berkeley, CA, 5-8 June 1996); Mason Gaffney, “The Taxable Surplus in Water Resources” (*Contemporary Policy Issues*, 10, 1992), pp. 74-82; and Minoti Chakravarty Kaul, *Common Lands and Customary Law: Institutional Change in North India over the Past Two Centuries* (Oxford: Oxford University Press, 1996).

⁴⁷ Cf. *Section IV.E.7.*, esp. around pp. 2-2 below, for a more detailed discussion of this.

⁴⁸ Ostrom, *Op. Cit.* (note 23 on page 2 above), also as cited in note 46 above, Section 1, page 2 of 50.

⁴⁹ *Ibid.*, page 3 of 50, with reference to: Douglass C. North and Robert Paul Thomas, *The Rise of the Western World: A New Economic History* (London: Cambridge University Press, 1976) and D. C. North, Terry L. Anderson and Peter J. Hill, *Growth and Welfare in the American Past: A New Economic History* (Englewood Cliffs, NJ: Prentice-Hall, 1983).

⁵⁰ The works of many economists and philosophers come to mind on this point; perhaps the most important are Michael Polanyi, *Personal Knowledge: Towards a Post-Critical Philosophy* (Chicago: University of Chicago Press, 1958, 1962) on the subject of “tacit awareness”; Herbert Simon, in many writings, such as included in his *Models of Bounded Ration-*

of any philosophical outlook, giving our ideas strength and depth of perception and penetration. But any *emphatic concentration* is also *restrictive exclusion*; we cannot know what lies outside the analytical lens we adopt. The best, if not the only, means to open the blinders surrounding awareness is to entertain *multiple outlooks* as a test of focal omissions inherent to each alone.⁵¹

Neoclassical economics stands on assumptions set in place by Hicks in 1939, and then developed by Samuelson, Arrow, Debreu and others into a full-blown ‘general equilibrium’ theory of how market economies worked.⁵² This style of analysis has since been extended throughout the

ality, Volumes I to III (Cambridge, MA: MIT Press, 1982-97); and the general point is made, for example, by Zenon Pylyshyn, in his *Computation and Cognition: Toward a Foundation for Cognitive Science* (Cambridge, MA: MIT Press, 1984), p. 195: “It is common to discover that even logically equivalent beliefs and representations can lead to very different behaviors.” Nobel Laureate Kenneth J. Arrow, in a paper on “Risk Perception in Psychology and Economics” (*Economic Inquiry*, 20:1, January 1982), pp. 5-7, elaborated a bit on this general point:

I suggest that ... failures of the rationality hypothesis are in fact compatible with some of the specific observations of cognitive psychologists. ... One is the representativeness heuristic. The individual judges the likelihood of a future event by the similarity of the present evidence to it. ... In short, as much other evidence tends to confirm, there is a tendency to underestimate uncertainties. ...

The drawing of inferences depends then on preconceptions, which may be true or false. The cognitive psychologists refer to the “framing” of questions, the effect of the way they are formulated on the answers. A fundamental element of rationality, so elementary that we hardly notice it, is, in logicians’ language, its extensionality. The chosen element depends on the opportunity set from which the choice is...made, independently of how that set is described. ... It is an axiom that [a] change in description leaves the decision unaltered.

The cognitive psychologists deny that choice is in fact extensional, the framing of the question affects the answer. ... This...suggests the possibility that the implications of information in the market may change with alternative frames of reference...

⁵¹ Bruce J. Caldwell ends his *Beyond Positivism: Economic Methodology in the Twentieth Century* (London: Allen & Unwin, 1982) with a chapter entitled: “A Program for Economic Methodologists – Methodological Pluralism” which is defined on p. 250 therein as beginning “with the assumption that no single optimal methodology is discoverable.” Lawrence A. Boland, in *The Foundations of Economic Method* (London: Allen & Unwin, 1982), pp. 192-93, agrees:

Disputes over the choice of the best methodology ... presuppose that there is one correct, all-purpose methodology. We will argue that this is wrong. The best methodology for today depends on the problems that concern us today. ... There are many different methodologies, each of which contains prescriptive or proscriptive criteria that are only appropriate for a specific set of problems. Every given methodology has its limitations and may not be appropriate for other problems.

But as Caldwell suggests in the “Preface” to his edited *Appraisal and Criticism in Economics: A Book of Readings* (Boston: Allen & Unwin, 1984), on p. x, this does not make such questions either arcane or irrelevant: “Nearly all great debates in economics end up being fought on the methodological plane.”

⁵² Cf. John R. Hicks, *Value and Capital*, 2nd ed. (Oxford: Oxford University Press, 1939, 1946); Paul A. Samuelson, *Foundations of Economic Analysis* (Cambridge: Harvard University Press, 1947); Kenneth J. Arrow and Gerard Debreu, “Existence of an Equilibrium for a Competitive Economy” (*Econometrica*, 1954); G. Debreu, *Theory of Value: An Axiomatic Analysis of Economic Equilibrium* (New Haven: Yale University Press, 1959); K. J. Arrow and Frank H. Hahn, *General Competitive Analysis* (San Francisco: Holden-Day, 1971); and F. H. Hahn, “General Equilibrium Theory,” ch. 8 in Daniel Bell and Irving Kristol, eds., *The Crisis in Economic Theory* (New York: Basic Books, 1981). For a critical view, cf. Nicholas Kaldor, who spoke to U.S. economists on “What Is Wrong With Economic Theory” (*Quarterly Journal of Economics*, 89:3, August 1975), p. 347, introducing his subject thus:

...The logical system of general equilibrium theory ... has ended in a ‘cul-de-sac’... ...It starts from the wrong kind of abstractions and therefore gives a ... misleading impression of the nature and the manner of operation of economic forces.

Earlier, Kaldor had stirred up economists with a similar paper on “The Irrelevance of Equilibrium Economics” (*Economic Journal*, 82:327, December 1972), which starts out thus on pp. 1237-39:

...The prevailing theory of value – ... “equilibrium economics” – is barren and irrelevant as an apparatus of thought... ...The powerful attraction of the habits of thought engendered by “equilibrium economics” has become a major obstacle to the development of economics as a science... ...Unlike any scientific theory, ... the

field, into growth theory, public policy, industry organization, even economic history, as a way to imbue economics with a more rigorous ‘scientific’ approach through mathematical logic constructed along *physical* lines (specifically, thermodynamics).⁵³ But the mathematizing of economics cemented in place sufficiently unrealistic conditions to cast the *application* of frameworks so wrought to real-world decisions under a cloud.

The extreme *information* and *independence* assumptions seem most relevant to our resource management problems. *Certainty* is seldom if ever relevant to ocean fisheries, and the defining essence of any ecology is its *interdependence*. So any assumption of full understanding, complete information or ‘perfect knowledge’ should disqualify such economic constructions from applicability here.⁵⁴ And if fisheries swim and feed in totally interactive environments, simply abstracting away from ecosystem-based theory and distant effects shall not be adequate in this setting. The two issues – of information and interdependence – are also related.

A recognition of *fully-interdependent* decision environments, such that the impacts of choice spread outward forever, radiating in space and time, mandates suppositions of *boundedly rational* understanding. In other words, if freely-original actions send forth into the universe ever-extending consequences, then it is *we* who are the locus of frames surrounding awareness. *Systems of thought* truncate our ranges of vision tracing effects wholly unconstrained in their reach and extent. Therefore, recognition of *interdependence* shall lead directly into embracing ‘horizontal’ limits stemming from ‘boundedly rational’ choice.

So where a ‘neoclassical’ view would deem ‘*externalities*’ as *exceptions* to independent effects *set apart* by individual ownership, property rights and market transactions, systems approaches shall look at the problem as how *inherently interactive features* of an economy are to be coordinated *together*. Each outlook grounds its figures in totally inverse settings.⁵⁵ So what we have is a question about two ways of ‘framing’ an issue, which shall be consequential if viewing it thus shall bring conflicting conclusions. ‘Systems’ approaches are not even

basic assumptions of economic theory are either ... unverifiable ... or ... directly contradicted by observation ...

The process of relaxing the unreal basic assumptions has not yet started. ...

⁵³ E.g., cf. Philip Mirowski’s analysis of this evolution in his *More Heat than Light: Economics as Social Physics, Physics as Nature’s Economics* (Cambridge, England: Cambridge University Press, 1989), *passim*.

⁵⁴ As one Nobel Laureate put it, Kenneth J. Arrow, in his Presidential Address before the American Economic Association on “Limited Knowledge and Economic Analysis” (*American Economic Review*, 64:1, March 1974), p. 1: “...The uncertainties about economics are rooted in our need for a better understanding of the economics of uncertainty; our lack of economic knowledge is, in good part, our difficulty in modeling the ignorance of the economic agent.”

⁵⁵ The ‘figure/ground’ problem is a part of Wolfgang Koehler’s theory of the ‘gestalt’, as presented in his *Gestalt Psychology* (New York: Liveright, 1947), as explained in Frederick Perls, Ralph F. Hefferline and Paul Goodman, *Gestalt Therapy: Excitement and Growth in the Human Personality* (New York: Dell Delta Book, 1951), e.g., on p. 25:

A generation ago gestalt psychology ... made a scientific stir in this country. ... Scouting the notion that in seeing something one collects visual fragments and assembles them into the object seen, it insisted that seeing is organized from the start – that is, it is a gestalt or configuration. One’s visual field is structured in terms of “figure” and “background.” ... “Figure” is the focus of interest – an object, pattern, etc. – with “ground” the setting or context. The interplay between figure and ground is dynamic...

As Polanyi, *Op. Cit.* (note 50 on page 2 above), pp. 56-57 (also cf. pp. 128-29 therein for more on this point), remarked: “Subsidiary awareness and focal awareness are mutually exclusive. ... All particulars become meaningless if we lose sight of the pattern which they jointly constitute.” Pylyshyn, *Op. Cit.* (note 50 on page 2 above), p. 245, made a similar point:

A well-known phenomenon in psychology is that access to knowledge is highly context-dependent. ... The concept of tacit knowledge ... is one of the most powerful ideas to emerge from contemporary cognitive science.

acknowledged in *Sharing the Fish*; ‘neoclassical’ views are the only outlooks supporting ITQs addressed by the NRC panel.

This is not surprising, given the training of most economists. Just as psychologists study rats to understand human behavior, and geneticists study *drosophila* (fruit flies) because they reproduce so quickly, economists simply assume away our informational limits so we can tie all outcomes of choice to (observable) existential conditions. ‘Situational determinism’ – or ‘extensionality’ – is often treated as *axiomatic* to our representations in economics,⁵⁶ despite their ready exclusion of *human awareness* from our equations!⁵⁷ Epistemological limits shall not be included in ‘neoclassic’ constructions, since they would threaten the ‘objectivity’ of economic conclusions. So we assume ‘perfect knowledge,’ as if facts were free, information unbounded, and doubt never clouded our view.

Of course, economists see and live in the same myopic conundra as everyone else, but we are trained to abstract from passing events into underlying causes and long-term patterns or “regularities”⁵⁸ hidden behind them. An academic environment, though, encourages “splendid isolation,” as Nobel Laureate Wassily Leontief – frustrated – described it.⁵⁹ This sort of

⁵⁶ Cf., e.g., Spiro J. Latsis, “A Research Programme in Economics”, in Latsis, ed., *Method and Appraisal in Economics* (Cambridge, England: Cambridge University Press, 1976), pp. 16-17, who defines ‘situational determinism’ thus:

...*Situational determinism* ... has been the dominant research programme of neo-classical microeconomic theory. ... whose central characteristic is the autonomy of economic decision-making and the deliberate exclusion of the decision-maker’s inner environment from explanations of economic behaviour.

Arrow, *Op. Cit.*, explains the meaning of ‘extensionality’ in note 50 on page 2 above.

⁵⁷ Though realism and reason are on the rise in modern philosophy, economists still labor under the spell of Laplace’s dream of impersonal knowledge and objectivity in a *humanless* social science: cf. note 56 above, and Polanyi, *Op. Cit.* (note 50 on page 2 above), pp. 139-42:

The ideal of strictly objective knowledge, paradigmatically formulated by Laplace, continues to sustain a universal tendency to enhance the observational accuracy and systematic precision of science, at the expense of its bearing on its subject matter. This issue [is part of] ... a wider intellectual disorder: namely the menace to all cultural values, including those of science, by an acceptance of a conception of man derived from a Laplacean ideal of knowledge and by the conduct of human affairs in the light of such a conception.

Nicholas Georgescu-Roegen, in his masterful *Analytical Economics: Issues and Problems* (Cambridge: Harvard University Press, 1967), p. 104, expressed the problem more clearly from an economic perspective:

From time indefinite, the natural sciences have cherished a positivist epistemology according to which scientific knowledge covers only those phenomena that go on irrespective of whether they are observed or not. Objectivity, as this criterion is often called, requires then that a proper scientific description should not include man in any capacity whatsoever. This is how some came to hold that even man’s thinking is not a phenomenon. True, the ideal of a man-less science is gradually losing ground even in physics... However, for a science of man to exclude altogether man from the picture is a patent incongruity. Nevertheless, standard economics takes special pride in operating with a man-less picture.

As Richard B. McKenzie, in *The Limits of Economic Science: Essays on Methodology* (Boston: Kluwer-Nijhoff, 1982), p. 3, put it: “To the extent that a theory presumes a subjective capacity on the part of individual actors ... we must wonder in what sense economic science can be predictive...” Terence W. Hutchison, in *The Politics and Philosophy of Economics: Marxians, Keynesians and Austrians* (New York: NYU Press, 1981), p. 253, put the issue succinctly:

When errors, ignorance and uncertainty regarding expectations, are taken to be serious, then ... the thread of order and predictability, loosely holding economic decisions and actions together, becomes tangled or broken.

⁵⁸ Cf. Paul A. Samuelson, “Assumptions in Economic Theory” (*American Economic Review, Papers and Proceedings*, 53:2, May 1963), p. 236.

⁵⁹ Cf. Wassily Leontief, “Academic Economics” (*Science*, 217, 9 July 1982), reprinted as “Foreword” to Alfred S. Eichner, ed., *Why Economics is Not Yet a Science* (Armonk, NY: M. E. Sharpe, 1983). Leontief ended this letter thus:

Year after year economic theorists continue to produce scores of mathematical models and to explore in great detail their formal properties; and the econometricians fit algebraic functions of all possible shapes to essentially

‘framing problem’ manifests throughout *Sharing the Fish*: the NRC panel’s ‘selective focus’ is also *restrictive blindness* in the sense that the implications of matters seen as superfluous stay unexplored.⁶⁰ The fatal omission of this study appears in the *politics* of ITQs, which overrule and trump the economics in their effects.

Sadly, our myopic context does not work *as depicted* by an economics of free choice and totally rational long-term planning horizons and ethical conscience. Short-term myopia is not as self-contained or rational as such theories suggest, or require for their reliable use or application. Outcomes shall be different in the presence of ‘externalities’ (interdependence), rational (informational) limits and ethical failures (such as force, fraud or opportunism). Ours is not the benign world of ‘neoclassical economics,’ but rather the darker realm of institutional/organizational theories. Such approaches are less encumbered by the unrealistic conditions so rampant throughout traditional theories in ‘neoclassical’ orthodoxy, and *they imply a quite different outcome* of fisheries management through ITQs.

Such a difference suggests at least three plausible explanations. First, that ‘neoclassical economics’ is simply wrong, at least when applied so far outside the conditions specified in its assumptions. Second, that institutional systems theories cannot be applied to this case, so the dissonance can be assuaged without harming orthodox standards. Or, third, that *all three approaches* shall mislead us in a situation that, consequently, has something to teach. In any event, the absence of full acknowledgment of alternative views and their divergent implications in *Sharing the Fish* is a major flaw in its study of ITQs.

The only way to resolve a ‘paradigm conflict’ of this kind is to unfold the true implications and assumptions of each approach, and then to evaluate which is best fit to the situation at hand. The *assumptions* of a theory express its proper realm of application: Comparing its suppositions to real-life phenomena in this setting is the best way to proceed. That is why the present analysis studies three analytical frameworks, as a test of the rosy image of ITQs in *Sharing the Fish*. The *standards* by which ITQ systems should be assessed are also an important part of this process.

C. The Established Standards By Which an ITQ Plan Should Be Assessed

A serious value problem in *Sharing the Fish* is that it places *economic* concerns ahead of *social, local community* and – most especially – *ecological* interests. A clear ranking of priorities should have informed this study, at least to weigh options against these standards in terms of their relative values. Setting forth the “National Standards” stated in the M-S Act – to which the NRC panel is subject – does help, but in the absence of further discussion of other international and environmental guidelines, such remains insufficient to resolve the tradeoffs involved. Thus we start with a brief outline of fisheries management standards seemingly applicable *along with* those specified in the M-S Act.

the same sets of data without being able to advance, in any perceptible way, a systematic understanding of the structure and the operations of a real economic system.

How long will researchers working in adjoining fields, such as demography, sociology, and political science on the one hand and ecology, biology, health sciences, engineering, and other applied physical sciences on the other, abstain from expressing serious concern about the state of stable, stationary equilibrium and the splendid isolation in which academic economics now finds itself? ...

⁶⁰ Everyone does this. Selective focus is unavoidable – as we are ‘boundedly rational’ animals – so ‘exclusive’ amaurosis is part of the process of thought and decision. Only in ‘neoclassical economics,’ and in the Garden of Eden, are we unboundedly rational – and truly innocent – in our analyses.

1. Sustainability and the Precautionary Principle

The very first standard defined in the M-S Act declaration of “National Standards” is fisheries’ *sustainability* at an optimal level of yield: “(1) Conservation and management measures shall prevent overfishing while achieving, *on a continuing basis*, the optimum yield from each fishery for the United States fishing industry.”⁶¹ It was already argued above that “optimum yield” demands a *more conservative* fisheries management standard than implied by “maximum sustainable yield,” especially if adjusted to account for ecological, social and economic concerns.⁶² *Sustainable development* is defined by the United Nations as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” and implies “the maintenance, rational use and enhancement of the natural resource base that underpins ecological resilience and economic growth.”⁶³

In 1995, the Food and Agricultural Organization (FAO) urged prompt action by international organizations and government to review and reduce the capacity of fishing fleets to sustainable levels of yield.⁶⁴ In November of that year, the UN General Assembly endorsed a call to coastal and other ocean fishing states to “take measures to prevent or eliminate overfishing and excess fishing capacity and to ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources.”⁶⁵ The FAO “Code of Conduct for Responsible Fisheries” (FAO Code) reiterates this principle in Article 7.1.8., thereby assuring its application in national jurisdictions as well.⁶⁶

Articles 61 and 62 of the Law of the Sea Convention (LOSC) are the key articles regulating fishery exploitation in the 200-mile exclusive economic zones (EEZs) of nation states. Article 61 imposes a general obligation on coastal states of conservation toward all living resources; it thereby qualifies the sovereign rights of states in this zone. This requirement duly implies a *precautionary approach* in fisheries management, to avoid depleting any target species very far below its unharvested level. Habitat disturbance should also be kept to a minimum, especially if its potentially harmful effects cannot be known with certainty.

The term “maximum sustainable yield” (MSY) used in Article 61(3) of the LOSC refers to a constant amount of catch produced by a stock of fish for a given level of effort. In simple terms, this means the maximum yield that can be taken year after year without depleting the stock. Article 61(3) in no way implies that taking the MSY should be a management goal, however. To meet its requirements – and especially to restore overharvested species – the catch should be limited to considerably less than the theoretical MSY, especially in the face of uncertainty in the

⁶¹ *Ibid.*, p. 258 [emphasis added].

⁶² Cf. note 13 on page 2 above.

⁶³ UNEP Governing Council Decision 15/2 of May 1989, Annex II, UN General Assembly Official Records: Forty-fourth session, Supplement No. 25, p. 115.

⁶⁴ Cf. FAO, “The State of World Fisheries and Aquaculture” (Rome: FAO, 1995), discussed in John Fitzpatrick and Chris Newton, “Assessment of the World’s Fishing Fleet, 1991-1997” (Greenpeace International, May 1998), p. 1.

⁶⁵ United Nations, “Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks” (New York: United Nations, September 1995), Article 5, described by Fitzpatrick and Newton in *ibid.*

⁶⁶ FAO, “Code of Conduct for Responsible Fisheries” (Rome: FAO, 1995), described by Fitzpatrick and Newton in *ibid.*

assessment of stocks.⁶⁷ Otherwise, the yield may become unstable and risk collapse of the fishery and disturbance to the environment. This is why *a precautionary approach* is so important.⁶⁸

Furthermore, sustainability must be evaluated with respect to some management plan, which should be clearly specified as the implicit context of such assessments. Criteria for sustainability include at least three elements:

- (1) First, fisheries resources should be *harvested*, not mined: the fisheries management process should be designed to assure that average catches shall not decline over time.
- (2) Second, fisheries should be managed to *minimize risk* of collapse or depletion.
- (3) Third, depleted fisheries should be managed for *recovery* of fisheries stocks.

So the goal of sustainable fisheries management policy ought to entail a focus on *long-term sustainable yields*, *minimum risk* of depletion, and the *recovery* of overfished stocks.⁶⁹

Greenpeace's "Principles for Ecologically Responsible, Low-Impact Fisheries" calls for a similar long-range view, where: "The objective of fisheries management should not be to maximize the short term yield but to minimize the environmental impact of fishing. Such low impact fisheries would enable the long term benefits of the marine ecosystem to be sustained."⁷⁰ Furthermore:

*To compensate for humanity's enormous lack of understanding of marine ecological processes, fisheries management must be based on the Precautionary Principle with emphasis on prevention of damage, as opposed to attempts to repair mistakes through mitigation or restoration measures... [which should] operate within the broader context of overall protection for the marine environment from all potentially harmful human activities.*⁷¹

This broad view of fisheries management cannot be species-specific; it must encompass the whole ecological system in its seamless interdependence throughout the world.

2. Ecosystem-Based Fisheries Management

As the Greenpeace statement of "Principles" says, a systems approach to fishery management is implied by a risk-averse strategy in the face of uncertainty.

*Precautionary fisheries management regimes must take an ecosystem approach to assess fisheries impacts; that is, they must be designed to address the specific effects of fisheries on the ecosystem as a whole, not just their effects on a target species.*⁷²

An ecosystem-based approach is also implied in the M-S Act's statement of *National Standard 3* for fisheries management measures: "To the extent practicable, an individual stock of fish shall

⁶⁷ Also cf. note 13 on page 2 above on this point.

⁶⁸ Cf. Justin Cooke and Michael Earle, "Towards a Precautionary Approach to Fisheries Management" (*RECIEL* 2, 1993), p. 258.

⁶⁹ *Ibid.*

⁷⁰ Greenpeace, "Principles for Ecologically Responsible, Low-Impact Fisheries," May 1998, Section 2.1.

⁷¹ *Ibid.*, Section 2.2.

⁷² *Ibid.*

be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.”⁷³

Indeed, another recent NRC study, *Sustaining Marine Fisheries*, strongly urges such an ecosystem-based approach *as its primary recommendation*, where “sustainability of fisheries at an acceptable level of productivity and of the ecosystems they depend on requires a much broader understanding of appropriate and effective management than has been encompassed by traditional, single-species fishery management.”⁷⁴ The report defines such terms as follows:

Ecosystem-based management is an approach that takes major ecosystem components and services – both structural and functional – into account in managing fisheries. It values habitat, embraces a multispecies perspective, and is committed to understanding ecosystem processes. Its goal is to achieve sustainability by appropriate fishery management.

...By sustainable fishing, the committee means fishing activities that do not cause or lead to undesirable changes in biological and economic productivity, biological diversity, or ecosystem structure and functioning from one human generation to the next. Fishing is sustainable when it can be conducted over the long term at an acceptable level of biological and economic productivity⁷⁵ without leading to ecological changes that foreclose options for future generations.⁷⁶

Again, sustainable fisheries management demands *a risk-averse approach*, given all the many unknowns and uncertainties in ecosystem processes:

Managing single-species fisheries with an explicitly conservative, risk-averse approach should be a first step toward achieving sustainable marine fisheries. The precautionary approach should apply. ... Therefore, the committee recommends that management agencies adopt regulations and policies that strongly favor conservative and precautionary management and that penalize overfishing, as called for in the Magnuson-Stevens Fishery Conservation and Management Act of 1976 and the 1996 amendments to that act, often referred to as the Sustainable Fisheries Act of 1996.

...The committee’s recommendation for more conservative and precautionary management requires that the concept of maximum sustainable yield be interpreted in a broader ecosystem context to take account of species interactions, environmental changes, an array of ecosystem goods and services, and scientific uncertainty. ...

Many of the problems that fishery managers face are issues concerning long-term versus short-term goals and benefits. Uncertainty in stock assessments and in future allocations of those stocks has led to an emphasis on short-term benefits at the expense of long-term solutions. Uncertainties over shares when allocations allow open competition can compel individuals to adopt a short-term horizon for decisions related to fishing effort and investment. Management incentives and institutional structures must counteract these responses to uncertainty that jeopardize sustainability. This is especially true when stock

⁷³ *Sharing the Fish*, p. 258, as also referred to in note 14 on page 2 above.

⁷⁴ NRC, *Sustaining Marine Fisheries* (Washington, DC: National Academy Press, 1999), p. 3 [henceforward referred to as “*Sustaining Marine Fisheries*”].

⁷⁵ The authors supply a footnote here defining this term thus: “Economic productivity means the generation of net economic benefits or profits.”

⁷⁶ *Ibid.*, p. 2.

*assessments are uncertain, which makes it harder for managers to hold the line on conservation.*⁷⁷

In tying *ecosystem management to sustainability*, one must keep in mind the basic principle that: “We cannot really manage ecosystems per se; instead, it is human activities that are managed.”⁷⁸ This implies a control over, resistance to and incentives against the urge for excessive exploitation of biological resources for immediate private gain over their long-term sustainability, in the presence of very short horizons in the fishing industry (which ITQs are alleged to extend, according to *Sharing the Fish*).

3. *The Ranking of Ecological, Social, and Economic Concerns*

But directing human activities well implies social and economic along with environmental concerns should be counted in fisheries management plans. Indeed, the “National Standards” set out in the M-S Act include demands for fairness and equity, efficiency, limiting ownership shares, and the protection of fishing community interests through “sustained participation” to minimize adverse effects.⁷⁹ *Social concerns* should be ranked behind *environmental protection* – but ahead of immediate *economic gains* to special elites – in the balancing of priorities.

The primacy of ecology in the assessment of fisheries management plans stems from the fact that a healthy environment is a requirement of social equity and economic efficiency. Without a healthy environment, social harmony and economic growth are unlikely or impossible; within a healthy environment, meeting these other needs is more readily achieved.

The NRC Report is not entirely clear on this point. What it says are things like the following, discussing “First Principles” of fisheries law: “Conservation and sustainability of biological resources have a *high priority*.”⁸⁰ Yet the position of environmentalists on this issue is unambiguous. As Greenpeace spokesperson Niaz Dorry stated in her testimony before the NRC panel on the subject of ITQs:

*From Greenpeace’s perspective, the central question with which the panel should grapple is “Do ITQs aid in the conservation of fish stocks and the protection of the marine environment?” Greenpeace believes strongly that this is the key criterion upon which all fishery management and conservation schemes should be judged – and for numerous reasons, Greenpeace finds, in the case of ITQs, the answer to be a resounding “No.”*⁸¹

So the first thing to be said about the NRC Report is that its specification of “conservation and sustainability of biological resources” as “a high priority” is simply inadequate. Any *environmental effects* of ITQs should not be “a” priority, but our *highest* priority and “the key criterion” on which ecological policies should and must be judged. Social and economic effects, although admittedly of importance, cannot take precedence over the ecological systems supporting them, in the balance of human concerns.

Resolving the tradeoff of social and economic goals is harder. *Social equity* and representative fairness shall conflict at times with achieving cost-reducing *efficiency* in the creation or

⁷⁷ *Ibid.*, pp. 6-7.

⁷⁸ *Ibid.*, p. 15.

⁷⁹ Cf. text accompanying note 14 on page 2 above, especially standards 4, 5, 7 and 8.

⁸⁰ NRC Report, *Sharing the Fish* (1999), p. 140 [emphasis added].

⁸¹ Testimony by Niaz Dorry to “Members of the Panel” under “ITQs and Conservation,” page 1 [emphasis added].

redistribution of wealth for human needs. Many economists say that *competition* – to work successfully – yields inequitable allocations of income, but declare that this is a part of achieving efficiency.⁸² No incentive for individual effort – to work – can generate equal outcomes or rewards. So any economy always encounters an unavoidable tradeoff between efficiency and equity in the creation and distribution of wealth. In this view, *efficiency* ought to come first, to generate more for all, leaving everyone better off, as it ‘trickles down’ to the masses. But this ‘competitive’ frame of analysis stimulates some apprehension.

For one, if we perceive our well-being in *relativistic* – not absolute – terms, then *equity* is of greater importance in judging our institutions in terms of their ‘social welfare’ effects. Also, everyone knows from experience how a community pulls together under duress from external stress, suggesting *cooperation* as an alternative frame for human affairs. The ‘neoclassical economic’ ideology of competition is not the only way to organize social and economic concerns: Indeed, the case for community-based co-management systems in fisheries management is – in many respects – *stronger* than that for ITQs, as shall be argued in detail below.

In fact, the ‘race for fish’ can be seen as a *failure of competition* relative to a *cooperative frame!* Much of the argument over ITQs stems from a paradigmatic conflict in economics over underlying assumptions, on their realism and application. Is it true that “open competition can compel individuals to adopt a short-term horizon for decisions” in business settings, especially over resources, as the ‘other’ NRC study avers?⁸³ If so, it may be that judging our regulations in terms of their impact on *planning horizons* should be another criterion used to assess ITQs.

4. ‘Horizon Effects,’ Stewardship and the Alleged ‘Efficiency’ of ITQs

Indeed, their alleged extension of planning horizons seems a major source of support for ITQs, especially in their conservation effects. Even *The Wall Street Journal (WSJ)*, in its advocacy of business interests, crafted an editorial chiding Greenpeace on this very issue, arguing opposition to ITQs is irrational and “hard to fathom”:

... Governments all over the planet want fewer fish netted so that something’s left to catch tomorrow. The rational means to this goal are usually called Individual Transferable Quotas, or ITQs. Once allocated, customarily by prior use patterns, they can be exchanged or sold. It’s the same principle as trading pollution rights: replacing a tragedy of the commons with a form of property rights that inspires long-run thinking.⁸⁴

⁸² But see the discussion of this point in *Section III.B.6.* below, and throughout all of *Section III.B.* as well.

⁸³ *Sustaining Marine Fisheries*, p. 7, as quoted more fully over note 77 on page 2 above. For a general indictment of *competition* in contrast to *cooperation*, cf. Alfie Kohn, *No Contest: The Case Against Competition* (Boston: Houghton Mifflin, 1986), passim. Also cf. Hawken, *Op. Cit.* (note 36 on page 2 above), as quoted on this subject in note 462 on page 2 below. On page 96 therein, Hawken notes that: “The more able a company is to externalize its cost of doing business and to be ruthless in its practices, the greater return on capital it may achieve in the short-term.” Near the end of his book, on pp. 210-12, Hawken points to ‘horizontal’ aspects of what he calls “a restorative economy” thus:

...We have to look at how our present economic system consistently rewards short-term exploitation while penalizing long-term restoration, and then eliminate the ill-placed incentives that allow small sectors of the population to benefit at the expense of the whole. ...It is critical to have an overall vision, for ourselves, our communities, and our country. Only within the framework of a broader perspective can we address the issues of equitability and change... ...A restorative economy means thinking big and long into the future.

⁸⁴ *The Wall Street Journal*, 19 July 1995, p. A10.

Greenpeace – according to *WSJ* editors – opposes ITQs “because, *like most anything that promotes efficiency*, it will encourage commercial consolidation.” These editors do not shrink from market concentration, seeing it as a virtue instead: “To an economist, [that means] assets are being deployed more optimally.” On this ground, the Greenpeace argument is dismissed as just another regressive holding action against development in the interests of all: “Distaste for bigness is a recurring general sentiment...” From a pro-business perspective on ITQs, “the intellectual groundwork for this approach is solid, and those who eat and those who commune with fish are going to want the results that only rules consistent with human nature – that is, with property – can deliver. ...”⁸⁵ Efficiency ought to come before equity, ‘externalities’ are not a problem, nor are ‘politics’ relevant here, and economic concerns should outrank considerations of fairness and market power on this issue, at least according to *Wall Street Journal* editors speaking for the business community.

Yet there are other views on this subject – that take seriously issues of externalities, social and economic control, community interests, long-term planning horizons, ethics, environmental integrity, even *economic efficiency through conservation* into account – to find that ITQs shall not meet these standards in any regard, once their likely effects are realistically analyzed. *At the very least*, the case can be made for risk and doubt on the probable impact of and experience with ITQs wherever they have been tried. If so, a precautionary approach shall lead to *rejection of ITQs* as a fisheries management tool, due to their real long-term effects on both theoretical and empirical grounds. Sufficient justification for this conclusion is set forth in *Section IV*, after reviewing three alternative vantages on ITQs.

⁸⁵ *Ibid.*

III. Three Alternative Vantages on ITQs: ‘Framing’ Questions and Issues

Sharing the Fish adopts a ‘neoclassical’ view of ITQs, so recommends them as an ‘efficient’ means to restore and conserve fisheries from much current abuse. Some passing commentary on alternative views appears, but the *recommendations* stand totally on ‘neoclassical’ grounds:

ITQs are firmly rooted in the long tradition of Western thought and policy, where markets are the source of efficiency and, ultimately, of economic growth and social welfare; exclusive, transferable, and well-defined property rights are essential to markets. From this perspective, cases of overuse and abuse of the “commons” are caused by the failure of markets to give proper signals due to the lack of appropriately specified property rights. These arguments were articulated early in the eighteenth century in the work of economists such as Adam Smith... They express a particular political philosophy and social psychology, one that has come to define the “modern” era in the history of Western culture: that people and their societies are driven by individuals seeking maximization of their own welfare.⁸⁶

So ITQs are justified on ‘neoclassical economic’ grounds. They stand – or fall – on the basis of a single approach in economics, that happens to be dominant among academic economists.

Yet this system of thought is on the wane in economics, in a ‘paradigm battle’ which goes wholly unacknowledged in *Sharing the Fish*. The standard economic assumptions in neoclassical economics are not designed to fit *an open ecological system*. Indeed, they exclude this setting explicitly in their restrictive conditions.

So any addressing of ITQs should – by necessity – also ask what other models and frames have to say about ITQs. *Sharing the Fish* shows no awareness of any other approach, beyond occasional lip service to an alternative view here and there. The problem is that *every other approach shall lead to quite different conclusions* about the ITQ concept.

The implication is that the case for ITQs swims – or sinks – on the applicability of neoclassical economic constructions to ocean resources in an open ecology. And this – above all – is the fatal lacuna in *Sharing the Fish*: it takes a single approach out to its scientific conclusions, without exploring or addressing any alternative view of the problem. And *all* of these other approaches shall lead to *a negative view* of ITQs, for a diverse array of reasons.

But *every* analytical outlook carves symbolic constructions selectively out of a seamlessly-integral field, driven by *asserted essentials*⁸⁷ (which are only endorsed by using that theory, and

⁸⁶ *Sharing the Fish*, p. 26.

⁸⁷ As Nicholas Rescher put it, on p. 35 of his *Cognitive Systematization: A Systems-Theoretic Approach to a Coherentist Theory of Knowledge* (Totowa, NJ: Roman and Littlefield, 1979): “The consideration that we have no *direct* access to the truth regarding the *modus operandi* of the world we inhabit is perhaps the most fundamental fact of epistemology.” As David Dale Martin put it, in a paper on “The Uses and Abuses of Economic Theory in the Social Control of Business” in Marc R. Tool and Warren J. Samuels, eds., *The Methodology of Economic Thought, Second Edition, Completely Revised* (New Brunswick, NJ: Transaction Publications, 1989), p. 369:

The method of economic theorizing is to abstract from the multifaceted and rapidly changing social structure those few more or less persistent characteristics thought to be crucial in the ordering of economic activity.

Nicholas Georgescu-Roegen, in his monumental *The Entropy Law and the Economic Process* (Cambridge: Harvard University Press, 1971), pp. 340-41, explained it thus: “The choice of relevant facts is the main problem of any science ... it is the vital problem in economics...” Robert L. Heilbroner, on p. 492 of an essay “On the Possibility of a Political

cannot be proved).⁸⁸ The danger rises at the next step: particular outlooks, singly used, direct attention to what they deem ‘essential,’ away from everything else (seen as ‘unimportant’). The ‘selective focus’ of any approach involves – simultaneously – an ‘exclusive blindness’ to every other aspect: this implies an epistemological justification for *openmindedness* and the use of *multiple outlooks* as a test of each, in terms of analytical limits of vision.⁸⁹

In what is to follow, we examine ITQs from *three alternative vantages*, simply as a check on ‘neoclassical’ limits of view. We start with the *neoclassical* economic analysis of ITQs, emphasizing its positive aspects, setting the ground for alternative frames. Next, we will look at ITQs through an *institutional* lens, stressing political and economic power relations in society. Our third and final examination of ITQs is from an *organizational systems* analysis, with attention to feedbacks and timing delays in ecological settings. Each sheds light on aspects of ITQs ignored by the others, so one gains more understanding *of all* in terms of their relative virtues and drawbacks. We start with the neoclassical view, as presented in *Sharing the Fish*, although our version is also a caricature in terms of its overall praise.

A. *The Neoclassical Vision of ITQs in Sharing the Fish*

The case for ITQs in *Sharing the Fish* is based – as noted above⁹⁰ – on Adam Smith’s ‘invisible hand’ depiction of free markets, in which private gain yields social benefits through a system of property rights.⁹¹ In this scenario, I cannot damage anyone else by my own actions

Economics” in Warren J. Samuels, ed., *The Methodology of Economic Thought: Critical Papers from the Journal of Economic Issues* (New Brunswick, NJ: Transaction Books, 1980, 1982), suggested why such concerns shall matter:

The relevance of economic theory ... depends on two interdependent but separable aspects of the process of theorizing itself. The first consists in the capacity of a theory to filter out from the immense field of our perceptions those attributes deemed significant. The second consists of subsequent efforts to link these mental constructs into a relational system.

As Nobel Laureate John R. Hicks so wisely put it at the close of an essay on “‘Revolutions’ in Economics” in Latsis, *Op. Cit.* (note 56 on page 2 above), pp. 217-18:

Let me sum up by returning to what I said at the beginning. What we want, in economics, are theories which will be useful, practically useful. That means that they must be selective. But all selection is dangerous. So there is plenty of room for criticism, and for ... academic work... Much of it, I am well aware, works in its own ‘blinkers,’ seeing the mote that is in one’s brother’s eye but not the beam that is in one’s own. That, I am afraid, is the nature of the case. Still, one could learn a little humility. ...

⁸⁸ Cf. Ernest Nagel and James R. Newman, *Godel’s Proof* (New York: NYU Press, 1958), esp. pp. 85-102. As Mark Blaug expressed the point in an essay on “Kuhn versus Lakatos or Paradigms versus Research Programmes in the History of Economics” in Latsis, *Op. Cit.* (note 56 on page 2 above), pp. 156-57:

“The history of science,” Lakatos observes, “is the history of research programmes rather than of theories” and “all scientific research programmes may be characterized by their ‘hard core,’ surrounded by a protective belt of auxiliary hypotheses which have to bear the brunt of tests.” The “hard core” is irrefutable by “the methodological decision of its protagonists”... [emphasis added]

⁸⁹ As Terence W. Hutchison warned, on p. 4 of his *Knowledge and Ignorance in Economics* (Chicago: University of Chicago Press, 1977): “No kind of ignorance can be more dangerous than ignorance regarding the limits and limitations of one’s knowledge.” This sentiment was also expressed by Friedrich A. Hayek in *The Counter-Revolution of Science: Studies on the Abuse of Reason* (New York: Macmillan, Free Press, 1955), p. 92: “It may indeed prove to be far the most difficult and not the least important task for human reason rationally to comprehend its own limitations.” Also cf. note 51 on page 2 above, for other reasons from methodologists for a *pluralistic* approach.

⁹⁰ Cf. the statement as referred to in note 86 above.

⁹¹ Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (originally published in 1776; New York: Modern Library Edition, 1937), p. 423, explains how the marketplace works much like an “invisible hand” directing *private gain* to the ‘public good’ despite the absence of such motivations: “...every individual ... by directing

without being taken to court. The interdependent effects of any individual deeds shall be internalized through property rights and compensation for losses incurred. The solution to ‘externalities’ is the institution of property rights, so – when transgressed – I can sue against harm, preventing it through litigation. In this way, everyone gains from freely-agreed transactions.

1. The Neoclassical Economic Conception of Free Markets

The ‘neoclassical’ view emerged from ‘Marshallian’ and ‘Walrasian’ notions of markets, out of the 1930’s “wreckage”⁹² of equilibrium theory in the wake of the ‘Chamberlinian’ and ‘Keynesian’ revolutions. Structured on Hicksian grounds, a ‘general equilibrium’ model was first introduced by Samuelson, then further refined by Arrow, Debreu and colleagues in an intellectual quest that displaced all ‘lesser’ approaches.⁹³ The continued dominance of ‘neoclassical’ views in economics is striking, given the growth in dissent among economists during the last thirty years.

The neoclassical framework claims we are rational in our actions, such that decisions shall lead to optimal allocation of assets to ends. Self-seeking gain is our motive, focused to social advantage through the imposition of property rights. Scientific conclusions are reached through a *fully-objective analysis* of phenomena in economics; subjective values are rigorously excluded from mechanistic models by a strictly quantitative approach to explanation. No ‘fuzziness’ or ‘undefinable terms’⁹⁴ shall be allowed; economists strive to imitate the successes of physics in this regard.

The case for ITQs in neoclassical theory is based on the role of property in economics as a means of aligning ‘private’ incentives with their ‘social’ effects. In this setting, gain-seeking individuals act – despite their selfish intentions – as if guided by an ‘invisible hand’ to benefit all. The problem of *interdependence* – centerpiece of all other critiques – simply is swept aside through an idealization of propertarian boundaries. ‘Property rights’ in markets solve any conflicts among individuals stemming from ‘external effects’ (spillovers) from private decisions. So, resolving a ‘tragedy of the commons’ – due to ‘open access’ – shall be achieved through ‘private property rights’ *enclosures* such as seen two hundred years ago in Britain. Dividing the ‘public commons’ into owned domains fenced off from the rest (supposedly) tames an incentive for overuse in favor of stewardship practice. Such is the vision of ITQs supported in *Sharing the Fish*.

2. ITQs in *Sharing the Fish*: A Rescue of Fisheries Stocks

ITQs, in the NRC study, end the ‘race for fish’ and therewith the overcapacity problem of far more ‘harvesting power’ in the fleet than our fisheries can support. The process by which this occurs is important: first, the initial endowments – based on catches over some period set to

... industry ... [to] greatest value ... intends only his own gain, and he is, in this, ... led by an invisible hand to promote an end [the public interest] which was no part of his intention. ...”

⁹² The term is from Hicks, *Op. Cit.* (note 52 on page 2 above), p. 84.

⁹³ Cf. note 52 on page 2 above for references and relevant quotes.

⁹⁴ One of Milton Friedman’s objections – in his well-known and much debated essay on “The Methodology of Positive Economics” in his *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953), p. 38 – to a more realistic ‘monopolistic competitive’ view of economics is that it “introduces fuzziness and undefinable terms into the abstract model where they have no place, and serves only to make the theory analytically meaningless.”

reflect those ‘currently active’ in the fishery – are awarded as a percentage of annual TACs. Second, at least for any species so depleted that TACs are reduced, the smaller – less ‘efficient’ – participants shall not have enough fish in their quota to turn a positive profit. They will likely leave the market, selling out their ITQs – for the highest price – to the ‘most efficient’ harvesters (who outbid the rest) in an exit process ‘compensated’ by the ITQ buyer.

The ensuing *consolidation* of ownership – as capacity is reduced by transferring access rights to the ‘most efficient’ active vessels – simply is part of an industry shakeout of the ‘least efficient’ producers, who are also recompensed through a sale of their ITQ shares. So will a ‘sort of fairness’ emerge, as every ITQ seller receives some money on the way out of the industry as a ‘windfall’ gain. This may also be cheaper for taxpayers than a buyout – directly – of vessels. So what we gain in *efficiency* is a reduction of fishing capacity, and a compensation for exit without taxing the public coffers. So in the immediate term, overcapacity is reduced, the race for fish is ended (the boats can fish whenever they wish, instead of in ‘derbies’) and the harvesting pressure on ocean fisheries is relieved.

What about the enduring effects? Stewardship practice shall improve, for ownership brings control and, therewith, a motive for greater responsibility over resources – as ‘private incentives’ align with ‘social effects’ – since *profits shall grow with fisheries stocks*. Strong conservation incentives should thereby emerge from ITQs. Public authorities, through the TAC-setting process, stay in control, so ocean resources shall be better protected through restoration efforts. *Privatization ties social benefits to industry profits*, so the market acts more rationally in favor of long-term goals. Such is the story in *Sharing the Fish*.

3. The ‘Social Welfare’ Effects of ITQs in *Sharing the Fish*

Sure, there is consolidation, as overcapacity falls, but even that is more than offset by real economic gains. Some communities shall be excluded, but they are only the ‘least efficient.’ The net effect is that *everyone wins* – those who exit and those who buy shares, fisheries stocks, financial investors, and even the ‘inefficient’ vessels *should* be shifted out of the industry! From a ‘social welfare’ perspective (at least in this story), all are improved, ultimately and in the long run. Resources end up where they belong, in the hands of the *most efficient* producers.

Some minor problems may appear, but they can be solved as well. If ITQ ownership brings abuse – bycatch, highgrading, discards, etc. – surely enforcement efforts shall work to discourage this sort of act. Data fouling – as such offenses shall likely go unreported – can be offset through a precautionary use of the TAC-setting process. Self-policing comes through reliance on regional fisheries management councils, with the involvement of fishing industry members in these programs, from monitoring information and behavior to enforcing the rules. If all else fails, scientific control of the TAC-setting process stands in the way of further abuse.

Consequently, ITQs are enthusiastically recommended by the NRC panel to Congress for adoption as national policy, on both their *efficiency* attributes and their *conservation* effects, over the short and long term. This sums up the primary argument for ITQs in *Sharing the Fish*, along with the basis for recommending adoption of ITQs as national fisheries management policy.

4. Some of the Issues and Arguments in Opposition to ITQs

Although there are ‘neoclassical’ arguments in opposition to ITQs, most appear more forcefully under the other approaches below. And therefore, though what appears above is

overdone on the positive – favoring ITQs on neoclassical arguments shamelessly unconditional in their unstinting praise – such is a mostly accurate general outline of the case for ITQs set forth in *Sharing the Fish*. Such is also the basis on which Parzival Copes suggested that “the enthusiastic promoters didn’t look beyond their noses when they predicted marvelous results from the introduction of ITQs.”⁹⁵ Among the many issues ignored are: *politics*, *equity* and *communities* (institutional view) and *externalities*, *feedbacks* and *organizational integrity* (systems approaches). Each shall be addressed below.

The other two ‘alternative views’ shall look critically at the limits of ‘neoclassical economics,’ especially in its application to *open, interdependent, unbounded domains* such as are found in this setting. Conceptually, any economic construction designed to analyze simplistic, closed-system models of firms in a production economy is not applicable to organically interactive ocean ecologies. *Sharing the Fish* shows no real understanding of the underlying restrictive assumptions on which its position in favor of ITQs depends. So as a lead-in to what these alternatives say, a brief review of the primary axioms of ‘neoclassical’ theory ought to be of assistance.

5. The Underlying Assumptions of ‘Neoclassical Economics’

The (alleged) ‘*efficiency*’ of free transferability in ‘neoclassical economics’ stands on a raft of assumptions stating conditions of applicability. In this sense, as already noted, ‘assumptions’ specify ‘ifs’ surrounding and tying conclusions to relevance with respect to where they apply. *Outside this context*, the neoclassical theory may yield implications that we follow at the risk of finding out – too late for remedy – that the actual outcomes are not those depicted by our rigorous science. As Krupp put it: “the scope of a theory describes the range of application of its theorems. ... Poor explanations occur when sound theories are pushed too far.”⁹⁶ So any outlook contains specific conditions articulating the context to which it will pertain. Those state the “ifs” surrounding – and demarcating – “then” applications.

Such assumptions are relevant to the setting of policy choice. The model whose suppositions fit to its realm of application, will likely yield the best description of phenomena to be expected. This is an issue often neglected by orthodox standards and theorists.

So what the proper realm of factual application is, shall limit the settings in which any outlook can reliably guide choice. The ‘neoclassical’ framework is best designed for these situations:

- (a) where *knowledge* is either complete or where *informational limits* are not a problem, and no learning occurs;
- (b) where units and agents are generally independent enough for ‘*externalities*’ to be ignored as irrelevant;
- (c) where rules, institutions, customs, social and individual learning and preference, values and technology can be assumed as *static ‘givens*,’ so unchanging in the analysis;
- (d) where ‘rights’ and ‘initial endowments’ emanate from and support a ‘fair’ and just *distribution* of wealth and power;

⁹⁵ Copes, *Op. Cit.* (note 18 on page 2 above), p. 6, as quoted more fully therein.

⁹⁶ As quoted more fully in note 40 on page 2 below.

- (e) where each and every individual ‘optimizes’ self-seeking gain *independently* in the allocation of financial budgets among ‘given’ options in known ‘opportunity sets’ subject to no elemental uncertainty or unpredictable risk;
- (f) where markets are wholly *competitive*, firms small with no control over price, and capital markets subject to no ‘imperfections’ of foresight or influence other than purely *economic* concerns; and
- (g) where *intertemporal* allocations suffer no uncertainty and the needs of future generations are represented fully and fairly in current decisions.

Such is a rough compendium of conditions surrounding applications of ‘neoclassical’ theory, and defining its strict demarcations. Such are also the grounds supporting critiques of this approach.

But these suppositions should not be taken too literally, in any event. They show where a theory is safely used, though *any approach* has similar restrictions of some sort. The art of finding the best theoretical lens through which to view a problem means trying on different approaches to see which shows the best ‘fit’ between its explanations and fact.

The assumptions and their relevance to the application at hand is central, but the process suggests that trial – and error – are relevant too. The point is to be openminded, and to examine diverse systems of framing a problem in order to overcome the analytical limits of each. There is no escaping ‘selective focus’ – or ‘exclusive blindness’ – in any particular outlook. The chief failure of *Sharing the Fish* is in the use of a single approach, wholly unfit to its setting.

B. An ‘Institutional’ View: When Politics Overrule Economics

Institutional economics stands on a quite different set of assumptions, far more realistically applicable to ecological issues. Its centerpiece is *interdependence*, with an emphasis on distribution of *power* through property rights and the consolidation of markets. *Public concerns and social values* stand in the center of focus for any institutional economist: these are not to be taken as ‘given,’ dismissed into the background of individual ‘optimization.’ Narrow approaches – such as in ‘neoclassical’ theory – are rejected in favor of an embracing conception of fundamental human concerns seen in historical context through an institutional lens.

1. The Historical Roots and Intellectual Core of Institutional Theory

The institutional view arose in American economics as a pragmatic revolt against formalism, pure reason and natural law in the post-Darwinian era, with the work of Veblen, Commons and Mitchell, following the lead of Charles Pierce, John Dewey and William James. “This revolt appealed to *experience* rather than to universally valid reason, to *evolutionary change* rather than to the search for ‘normal’ or ‘natural’ conditions, and to *man as an active agent* rather than as a passive instrument registering the impact of pleasure and pain.”⁹⁷ As Jerry Petr put it:

*With its origins in American pragmatism, and carrying strong traits of integrative, evolutionary, cultural analysis, institutionalism has itself evolved, on an international scale, into a vigorous voice of dissent from the increasingly troubled and unsatisfying economic orthodoxy.*⁹⁸

⁹⁷ Henry William Spiegel, *The Growth of Economic Thought* (Durham: Duke University Press, 1983), pp. 628-29.

⁹⁸ Jerry L. Petr, “Fundamentals of an Institutional Perspective on Economic Policy” in Marc R. Tool, ed., *An Institu-*

Petr identifies ten essential features of institutionalist thought. “First, institutionalist economic policy is ‘*values-driven*.’ ... oriented ... toward life-enhancement. ... Second, institutionalist economic analysis and policy suggestions are *process-oriented*”; third, they are *instrumentalist*, emphasizing experiments; and fourth, they are also *evolutionary*, with a focus on changes in process. Fifth, “the institutionalist economist is an *activist*,” taking and using knowledge “as an instrument of control.” Sixth, the approach is *fact-based* and not theoretically elegant; seventh, the institutionalists see “*technical change as a prime mover* in societal evolution and as an instrumental provider of possibilities for life enhancement”; and, eighth, their analyses should be *holistic* and integratively framed. Ninth, “the institutionalists have learned to be *non-dogmatic*”; and, tenth, as society is organic, it also ought to “include *democracy*” as an essential aspect of public policy.⁹⁹

2. The Role of Power in Social Decisions

A central concern of institutionalists is with the role of *power* – economic and political – in the social effects of policy choice. Consequently, “institutionalists generally encompass a broader or deeper set of explanatory variables” such as “the formation and role of institutions, and the interrelations between economic and legal systems and between power and belief system[s].” So a “fundamental principle” of institutional economics is “that the real determinant of resource allocation is not the market but the organizational – institutional, power – structure of society.”¹⁰⁰

Keohane and Nye, political scientists, support this view with the comment that “economic theorists have abstracted away from politics in order to achieve more precise and elegant economic explanations. ... Political scientists tend to focus on power...”¹⁰¹ Thus, as Samuels states the point, “institutionalists, through their primary attention to power and belief system, in the context of their overriding concerns with social change and social control, have produced understandings ... of economic reality quite different from those of neoclassical economists.”¹⁰² Because ITQ ownership brings significant changes in power relations and economic control over resources, institutionalists see them quite differently than neoclassical theorists.

tionalist Guide to Economics and Public Policy (Armonk, NY: M. E. Sharpe, 1984), p. 2.

⁹⁹ *Ibid.*, pp. 4-10 [original emphasis].

¹⁰⁰ Warren J. Samuels, “Institutional Economics” in John Eatwell, Murray Milgate, and Peter Newman, eds., *The New Palgrave Dictionary of Economics* (“Palgrave”), Vol. 2 (E-J) (London: Macmillan, 1987), pp. 864-65 [emphasis added]:

In contrast with mainstream economics, which maintains that the central economic problems are the allocation of resources, the distribution of income, and the determination of the levels of income, output and prices, institutional economists assert the primacy of the problem of the organization and control of the economic system, that is, its structure of power. Thus, whereas orthodox economists tend strongly to identify the economy solely with the market, institutional economists argue that the market is itself an institution ... interactive with other institutional complexes in society. ... that it is not the market but the organizational structure of the larger economy which effectively allocates resources.

¹⁰¹ Robert O. Keohane and Joseph S. Nye, *Power and Interdependence: World Politics in Transition* (Boston: Little Brown, 1977), pp. 38-39.

¹⁰² Samuels, in *Palgrave* (note 100 above), p. 866.

3. The Problem of Interdependence

Institutionalists also emphasize *systems and interdependence*, circular reasoning in terms of causative feedbacks, and evolving incentives.¹⁰³ Samuels sees as central to institutional economics at least five mutual dynamic interdependencies, such as between: (a) *working rules and power relationships*; (b) *values and decision processes*; (c) *tastes and institutional structure*; (d) *choice sets and power structures*; and (e) *distribution of income and wealth and the use made of government*: “The primary fact of all social life is the interdependence of all variables.”¹⁰⁴

An emphasis on ‘systems theory’ and interdependence stretches throughout the institutional framework, compared to conventional ‘market economics,’ where: “The main issue today in the field of economics, in the opinion of the neoinstitutionalists, is not ‘efficiency,’ but rather it is wants, goals, or values.” Gruchy identifies “three value problems” of main concern: (1) the creation of wants and goals by producers; (2) obstacles to collective want determination in the public sector; and (3) the ignoring of social costs and externalities by economists.¹⁰⁵ So will the case for ITQs stand on a framework of argument seen as fallacious by institutionalists. Specific concern is centered on neoclassical ‘efficiency’ arguments.

4. The Issue of Economic Efficiency as a Tautology in Economics

Standard theory in economics stresses efficiency over all else – “*Efficiency uber alles!*” could be the marching cry of mainstream theorists – with little concern about distribution or equity issues or outcomes. Samuels argues at length that the orthodox standard of (“Pareto”) efficiency takes for granted the *status quo* of rules and property rights, so it “conservatively protects private power against legal alteration.” Not only does it beg questions about the *structure* of choice, but

¹⁰³ Gunnar Myrdal, “Institutional Economics” (*Journal of Economic Issues*, 12:4, December 1978), pp. 771-83, characterized this approach as “evolutionary or political economics” in which he describes his own conversion:

...I came to see that there are no economic, sociological or psychological problems, but just problems, and they are all mixed and composite. In research, the only permissible demarcation is between relevant and irrelevant conditions. The problems are ... also political and ... must be seen in historical perspective.

To recognize the duty of the student to transgress the inherited boundaries among disciplines ... became the essence of my conversion to institutional economics. ...

The most fundamental thought that holds institutional economists together is our recognition that even if we focus attention on specific problems, our study must take into account the entire social system... Foremost, among other things, is the distribution of power in society and, more generally, economic, social, and political stratification; indeed, all institutions and attitudes. ...

The dynamics of this social system are determined by ... circular causation. ... There is no one basic factor; everything causes everything else. This implies interdependence within the whole social process. ...

...The master model of institutional economics. ... must be holistic... I believe that the common denominator among institutional economists is their tacit acceptance of ... causal interdependence. ...

In calling the holistic approach the fundamental principle of institutional economics, I imply that our main criticism of ordinary economics is that it works within narrowly closed models, limiting the analysis to too few conditions. ... The seemingly greater precision in conventional economic analysis is only attained by ignoring a whole world of relevant things. ... Institutionalism will become more prevalent because a broader approach will be needed... I believe that much of present establishment economics ... will be left by the wayside as irrelevant and uninteresting. ... Institutional economics ... will gain ground in the near future ... because of the failure of ordinary economics to come to grips with ... policy problems...

¹⁰⁴ Warren J. Samuels, “Ecosystem Policy and the Problem of Power” in Samuels and A. Allan Schmid, *Law and Economics: An Institutional Perspective* (Boston: Kluwer-Nijhoff, 1981), p. 115.

¹⁰⁵ Allan G. Gruchy, “Neoinstitutionalism and the Economics of Dissent” in Samuels, *Op. Cit.* (note 87 on page 2 above), p. 29.

also: “At bottom it postulates that justice is what power can get in the market.”¹⁰⁶ Krupp presses the point home by exposing the *tautological nature of efficiency arguments*, on the basis of three mutually-reinforcing considerations. Since efficiency is a *relationship* – precluding exact definition, observation or verification¹⁰⁷ – *theoretical* justification for its assertion is needed.

According to Krupp, the self-fulfilling character of efficiency arguments stems from at least three issues. First, the “law of maximization,” as “the single universal law ... of theoretical microeconomics,” simply asserts at the outset the efficiency of “the optimal firm.” But then the “efficiency of the entire system takes for granted the micro-efficiency of the unit.” The theory starts by postulating efficiency in each unit, and then claims “the efficient allocation of resources is a logical deduction from the postulates.” Such is a tautological argument, as it assumes what it claims to prove.¹⁰⁸

Krupp’s second argument has to do with the *composition laws*, by which the optimality of each unit or firm is aggregated – through independence assumptions – into a *systemic* claim of efficiency. “Axioms of independence ... lead directly to the laws of substitution... Independence means that the behavior of the elementary unit can be described without reference to the behavior of other units.” But “interdependence can lead to *complementarity*,” according to Krupp, which shall imply a different outcome, as described by Myrdal in his explanation of “why circular causation normally will have *cumulative effects*.”¹⁰⁹ Substitution and complementarity also have quite different implications with regard to the optimal organization of human activities: substitution demands *competition*, where complementarity yields strong arguments favoring *cooperation*.

The problem with orthodox independence assumptions, such as are needed to make equilibrium models work in neoclassical economics, is that they exclude *externalities* from any role in economic constructions. So long as interdependencies are really absent from the phenomena under scrutiny, nothing is lost. “The dilemma for conventional theory, of course, is that *if externalities were not negligible*, the basic postulates would *not* provide adequate premises for explaining the efficient allocation of resources.”¹¹⁰ Institutionalists shall contend that *everything* is intertwined. If so, in the presence of interdependence, systemic claims of efficiency are not deducible from (allegedly) optimal units in any event. “As a result, the quality of efficiency has

¹⁰⁶ W. J. Samuels, “Welfare Economics, Power and Property” in Samuels and Schmid, *Op. Cit.* (note 104 above), p. 51.

¹⁰⁷ Sherman Roy Krupp, “Axioms of Economics and the Claim to Efficiency” in Samuels, *Op. Cit.* (note 87 on page 2 above), p. 388.

¹⁰⁸ *Ibid.*, pp. 388-90.

¹⁰⁹ *Ibid.*, p. 390. Also cf. Myrdal, *Op. Cit.* (note 103 above), p. 774. As Myrdal put it, in fuller context:

There is no one basic factor; everything causes everything else. This implies interdependence within the whole social process. And there is generally no equilibrium in sight.

One important aspect of this process is that most often, although not always, changes which are reactions to a more primary change tend to move in the same direction. ... This is why circular causation may have cumulative effects. Through feedback regularly causing more primary changes to have repercussions in the same direction, the results for good or ill may, after some time, be quite out of proportion to an initial change impulse of one or several conditions.

What this means is not just that “there is generally no equilibrium in sight” but rather that – in the presence of complementarity or, in systems language, ‘positive feedback loops’ – no equilibrium is *possible*, as so well explained in the two papers by Nicholas Kaldor referred to in note 52 on page 2 above.

¹¹⁰ *Ibid.*, p. 392 [emphasis added].

been tautologically built into the theory in still another way.”¹¹¹ A claim that ITQs are ‘efficient’ on neoclassical grounds stands on a view of individual choices and their effects as *independent*: this argument does not apply to an interdependent ecology (either social or biological).

The third tautological element in neoclassical ‘efficiency’ claims stems from their ‘restrictive exclusion’ of all sorts of phenomena into a “*ceteris paribus* box,” serving to insulate the framework from any real empirical challenge. “The conditions of the pound [or box] ... always provide a reserve for more complete explanations...” The theory is not “operational” due to its “highly conditional nature.” Krupp provides an example, that ‘theoretical time’ – the short and long run – is not tied to real or historical time, making the theory unassailable on the basis of facts (‘which may yet occur’).¹¹²

Krupp extends this point to the analysis of *distribution effects*, which are tied to efficiency, yet efficiency also rests on *skills*, and thus on income through *institutions*. If so, “the *ceteris paribus* pound may contain ... major determinants of efficiency or inefficiency.” And this, in turn, implies that “the postulate-deductive framework cannot explain an efficient resource allocation without significant help from non-economic external influences.” As such, “the difficulty of relating the theory to observables insulates [it] from refutation. Problems connected with the matching of theory to experience significantly affect the meaning of the efficient allocation of resources.”¹¹³

So Krupp puts forth his summary of the efficiency argument thus:

*The “efficient allocation of resources” is a highly tautological term with only very indirect correspondence with the actual world... I have suggested three reasons why this is so. The first concerns the efficiency put in the premises through the axiom of maximization. The second involves the total inapplicability of conventional micro-economic theory to the problem of externalities. The third results from the difficulties of including any but a few simple properties in the picture of reality. This restriction encourages the theory to insulate itself from refutation. Moreover, these difficulties ... may reinforce one another at various points in the theory. ...Economic theory ... is enormously useful as an organizing framework for description and for occasional prescriptions where the actual world fits the exacting limitations in its conditions... What is more tenuous, however, and all too frequently mixed in with the descriptions are norms for the correct allocation of resources.*¹¹⁴

So what Krupp is saying goes to the core of the case for ITQs: the ‘neoclassical’ argument that free market transactions are mostly efficient is simply tautological and self-fulfilling on its assumptions. So even where its suppositions fit the realm of its application, no inference on its

¹¹¹ *Ibid.*

¹¹² *Ibid.*, p. 393. Krupp puts it in this way:

... The theoretical formulations of time, for example, the short and long run, are undated and bear little resemblance to the clock-time of the actual world. The actual economic system is part of a cultural setting, which is also changing over time. The contingencies of culture and time provide important escape clauses for the predictions in economics; when predictions fail, culture or time can always be made liable.

The concept of time ... is usually introduced as the period necessary for forces producing specific effects to work themselves out. ... The time span within which the laws of substitution operate is practically never specified. ... Since theoretical time cannot be matched with historical time, the theory can escape confrontation with experience.

¹¹³ *Ibid.*, pp. 393-94.

¹¹⁴ *Ibid.*, p. 394.

‘efficiency attributes’ should be drawn. *Outside that context* – as already said – the theory is not a useful guide to private or policy choice, since its conclusions do not pertain. This is the role of assumptions in defining applicability. A tautological theory errs in *asserting* conclusions it claims to prove. The ‘efficiency’ of free market transactions cannot be justified thus.

5. Ignoring ‘Externalities’: The Assumptions of ‘Neoclassical’ Theory

Yet the real failure of neoclassical theory arises from its ‘selective exclusion’ of feedbacks, spillovers, and interdependent effects. As Nove expressed the point: “...Reasoning which abstracts from externalities cannot be applied to a situation in which they are present.” Nove adds that this sort of “*vulgarmarginalismus*, an oversimplified one-dimensionalism” must be avoided “because it does *economic harm*.”¹¹⁵ Malmgren made a similar point, that: “Market information is ... inaccurate when interdependent activities are decentralized...” within a competitive frame. *Externalities matter* in the use of economic conceptions to guide choices – social or individual – in any setting. Concluding that ITQs shall lead to ‘efficient’ outcomes in an ecologically interdependent environment does not follow from premises so irrelevant to this setting.

Externalities (interdependencies) also raise an issue of *power relations*, since the choices of any one actor affect the options of all (which are ‘given’ and thereby abstracted away into a ‘*ceteris paribus*’ box in neoclassical theory, as Krupp points out).¹¹⁶ The problem of interdependence suggests ‘separation’ (such as through property rights) shall not be an easy option, nor the solution neoclassicals claim, for the ‘tragedy of the commons.’ Worse, *solutions* to externality problems engender their own externalities, power and distribution effects, and disrupt decision environments in often unpredictable ways.¹¹⁷

The issue, again, is power relations, rights and social control: “the *sine qua non* of externality generation is ... power.”¹¹⁸ As a result:

The basic problem of externality policy is: which externalities, or which social benefits to pursue and which social costs to inhibit? Closely tied thereto are the correlative problems of: which structure of power, which structure of opportunity sets, and which pattern

¹¹⁵ Cf. Alec Nove, “Internal Economies” (*Economic Journal*, 79:316, December 1969), pp. 850-52; in fuller context: ...*Marginal or micro-decisions in the real world form part of multidimensional, multi-level classes of relationships and inter-relationships... It is erroneous, even in elementary or abstract analysis, to present margins as if they had no context. Virtually all decisions affect in some degree other decisions, persons, interests. ...*

...*Reasoning which abstracts from externalities cannot be applied to a situation in which they are present. ...*

... *Whether within firms, or in the relations of firms with one another or with public authorities, the point is surely to avoid what might be called vulgarmarginalismus, an oversimplified one-dimensionalism, because it does economic harm. ...*

¹¹⁶ Samuels, *Op. Cit.* (note 106 above), p. 52, puts it in this manner:

With coercion defined as the impact of the behavior and choices of others upon the structure of one’s opportunity set and the relative cost of alternatives, externalities comprise the substance of coercion, namely, the injuries and benefits, the costs and gains, visited upon others through the exercise of choice by each economic actor and by the total number of economic actors.

¹¹⁷ *Ibid.*, p. 59. For the relevance to ITQs, see Copes’ statement in note 20 on page 2 above.

¹¹⁸ As Samuels said, with a bit more context, in *ibid.*, p. 62:

While the process of generating externalities, such as pollution, is certainly more complex, we can state categorically that the sine qua non of externality generation is the structure of power. More precisely, our model of choice and power suggests that both the existence of any externality and the total pattern of externalities are functions ... ultimately of the structure of power.

of mutual coercion? The welfare economist cannot avoid the problem of power: with externalities a function of power and of change in power structure, to consider externalities is to consider power, to make externality policy is to make power-structure policy. Intertwined too is the problem of the distribution of sacrifice, of who is sacrificed to whom. The elemental questions of policy are: whose interests, whose freedom, whose capacity to coerce, who may injure whom, whose rights, and who decides? Nowhere are these problems more obvious and important than in the matter of externality solutions.¹¹⁹

So ‘externality’ issues – seen from the institutionalist view – involve economic control over rights, social values and distribution of wealth and power relations across society and through historical time. Most traditional economics simply ignores such things, setting them into a ‘ceteris paribus’ box of frozen contextual data on which ‘optimization’ proceeds. One of the implications of this schema is that any attempt to redistribute income more equitably and justly is seen to be ‘inefficient’ through a ‘neoclassical’ lens.

6. *A Question of the Distribution of Wealth and Power in Society*

The institutionalist view would deem much in neoclassical theory as simply irrelevant to these social issues and concerns. Institutionalists stress the role of externalities – and the control of power relations – in an interdependent world. These phenomena are assumed away in neoclassical theory, in its tautological case for allocative efficiency as an outcome of free trade and private property in a market economy. In this orthodox story, any *redistribution* of income and wealth is seen as automatically *inefficient*, as it disturbs the process of free exchange to mutual benefit that is seen as a source of efficiency, at least according to Martin’s analysis of these social policies. As Martin explains:

The most powerful argument brought to bear on government policy makers by economists is the efficiency argument. Almost all proposals to change legal rules are perceived by some groups as damaging to their own interests. Advocates of change are often motivated by a desire to enhance the welfare of a subgroup of which they are members. Each side gains strength in the political conflict resolution system by showing that its own interests are really consistent with the public interest.

The public interest is not easy to define. ... A decentralized, competitive market system offers much to a society desiring to assure individual freedom. Freedom, however, is multidimensional. Freedom from want as well as freedom from fear are important to us.¹²⁰

The problem is that dogma in economics shall lead to a stolid defense of existing income endowments, in defending *status quo* ‘rights’ on ‘economic efficiency’ grounds. If free markets are seen as ‘efficient’ – despite the tautologies in this claim – then *intervention is not*. The ‘optimality’ of free markets – at least as alleged in neoclassical economic constructions – serves to justify yesterday’s struggles for power in their present-day outcomes.¹²¹ Such *abuses* economic

¹¹⁹ *Ibid.*, p. 67.

¹²⁰ Martin, *Op. Cit.* (note 87 on page 2 above), p. 363.

¹²¹ But there is a lot of *inertial advantage* in a free market system, and a strong case for redistribution of income beyond what the market produces, as Martin explains in *ibid.*:

Each person is born into a society in which wealth and income are, in fact, distributed. He does not start in a new game. ... Those who enter the ongoing economic system as part of a family with a relatively large stock of material, legal and intellectual capital are doubly blessed. They not only are better off, but also

theory, according to Martin. The real question is *whose rights* are served by ITQs, and at what and whose expense? These are issues sidestepped by neoclassical economics.¹²²

7. 'Given' vs. 'Contrived' Scarcity in a Market Economy

But there are other abuses of economic theory as well, having to do with the role and effect of ignoring consolidation and market power and their potential anticompetitive, *inefficiency* outcomes. 'Scarcity' is not just 'data,' but also is *engineered* through restriction of output: This, in fact, is the 'problem of *monopoly*' in economics. So if, for example, ITQs increase economic control over markets – such as *Sharing the Fish* avers throughout discussions of overcapacity and the concentration effects of fishing vessel reduction – exploitation incentives and inefficiencies may not decline and could even increase.¹²³ Scarcity, if *contrived*, cannot be used to justify 'economic efficiency' of free markets in a privatization scheme. Instead, it will offer reasons for *restricting* market activity.¹²⁴

ITQ ownership brings with it the means and motive for 'contrived scarcity.' If fishing over the limit drives up profit today and prices tomorrow – as TACs are reduced to protect the

have the means to defend and enhance their advantages and those of their children. In a market system the rich will get richer unless the political conflict resolution mechanism redresses the balance.

¹²² Martin explains this more fully in *ibid.*, p. 364:

...To ... interfere with the market's 'Pareto-optimal' results. ...lessens 'efficiency.' But what about the effect on the distribution of income, wealth, and power? A dogmatic economist will wash his hands of that matter and say: "You can do anything you wish with the income distribution so long as you do not use a government measure that is inefficient." All government measures to redistribute income and wealth, however, are inefficient when judged in terms of the economist's welfare criterion. ... Dogmatic use of economic theory, therefore, is inherently conservative. It comes down on the side of the status quo. ...

The distribution of wealth does not arise from economically efficient public policies in an egalitarian society of the past. Today's wealth and income distribution is the result of yesterday's power struggles. ... To accept the distribution of wealth, income, and power now existing, and to argue that measures to redress the unbalance must be consistent with the Pareto optimality condition or else be economically "inefficient," are, to me, abuses of economic theory. To invoke that proposition as if it were a scientific finding devoid of value judgment is at best a delusion. ...

¹²³ The issue rests on *the relative values* of fishery conservation versus short-term exploitation as affected by economic control: is stewardship practice overruled by opportunistic gain? This shall be addressed directly in *Sections IV.A. and D.*

¹²⁴ As Martin put it, in *ibid.*, pp. 366-67:

... Economic theory is abused ... if it is used to denounce the governmental role in standardization without adequate consideration of the relative power of the business participants in any nongovernmental alternative standard setting mechanism. [Furthermore...] Without scarcity, market values do not exist. Therefore, a social system that encourages individuals, acting alone or in coalition, to enhance the value of their property, also may encourage actions that increase scarcity for society as a whole. A theory that takes the degree of scarcity as "given" must be used very carefully as a guide to government intervention in a business system in which business firms can gain by restricting the supply of productive services. Contrived scarcity is the basic issue of antitrust. The purpose and the effect of restraint of trade is literally to restrain trade. To the recipient, rent is income whether or not it results from contrived scarcity. ...

The effects of centralization of control of pricing and output decisions in particular markets have, of course, been the subject of much of the literature of microeconomic theory. Much less attention has been given, however, to the centralization of investment decisions or the preemption of resources. In the short run, scarcity in plant capacity is very real whether or not contrived. Government failure to intervene to prevent contrived scarcity of either resources or capital equipment vitiates any economic grounds for a government hands-off policy in the future short-run price-output decision process. ... The fact that scarcity is, in part, contrived gives rise to ... additional common abuses of economic theory...

resource – stewardship practice shall yield to an incentive for opportunistic gain. A motive for overexploitation dominates saving for reproduction, if private discount rates should exceed the expected discounted value of future growth of fisheries stocks *that can be captured* by an ITQ owner. As the old salts say, “A fish in the hand is worth ten in the water!”

A sure return now weighs more than an uncertain chance of future restoration, and *market prices* shall rise tomorrow if we overexploit today, as a means to ‘contrive’ future scarcity. Also, reducing the resource stock could put the small ITQ shares up for purchase! But this is not a strategic argument to be found in *Sharing the Fish*. Ownership and control lead to conservation, according to them, monopolization notwithstanding: market power will not be abused... There is no rational justification standing behind the “faith” in this claim.

8. Structures of Value, Rights and Taste: The Ethics of Economics

Arguments such as this stem from ‘property rights’ solutions supported by ‘public choice’ schools in economics, standing on notions “that individual preferences are the ultimate data” and “that voluntary exchange (using the free market) is desirable.”¹²⁵ But ethics and aspirations should be given more weight than ‘tastes’ in any normative economics.¹²⁶ Goldberg concludes with a view that the work of this school leads to...

*... the need for a more complex, eclectic welfare economics. Ethical judgments must be made concerning which preferences count (...), which ways of achieving those preferences are reasonable (...), and so forth. True, this requires that we must to at least some extent ‘play God.’ But given the ungodly alternative, play we must.*¹²⁷

Schmid addresses some different concerns about the ‘public choice’ school. The claim that property rights shall lead to maximum productivity emanates from a belief that private ownership brings external effects back on those who create them by internalizing interdependencies.

*The right to sell is the key. ... Sale internalizes all costs (externalities). ... We are not asked to inquire what affects the ability of the parties to make bids, as long as the reason is not the ‘artificial’ one of legal barriers to trade or regulations, that is, [all] other status quo rights are assumed.*¹²⁸

But there is a curious amaurosis here, as Schmid points out, that also appears in *Sharing the Fish*:¹²⁹ “The writers, notwithstanding their usual devotion to the competitive model, do not appear troubled by any other consequences of concentrated ownership.”¹³⁰

¹²⁵ Victor P. Goldberg, “Public Choice, Property Rights” in Samuels, *Op. Cit.* (note 87 on page 2 above), p. 403.

¹²⁶ Goldberg cites Gordon Tullock’s *The Logic of the Law* (New York: Basic Books, 1971) on this, in *ibid.*, pp. 405-6:

But if it is admitted that ethical principles affect people’s behavior (positive) and their welfare (normative), why should ethics be treated differently than goods? ... Surely, there is no a priori ground for treating Smith’s preferences for deodorants and doodads as inviolable, while at the same time treating his preferences for integration or due process [or fairness] as of no consequence to his well-being. ... A consistent individualistic position would require that tastes for goods and for ethics be treated equally.

¹²⁷ *Ibid.*, p. 420.

¹²⁸ A. Allan Schmid, “The Economics of Property Rights: A Review Article” in Samuels, *Op. Cit.* (note 87 on page 2 above), p. 435.

¹²⁹ Cf. especially *Sections IV.D and IV.E.* below for further discussion of this subject.

¹³⁰ *Ibid.*, p. 436.

9. Transferability in Neoclassical and Institutional Theory: The 'Efficiency' of Free Trade

The *salability* issue – which is the difference of ITQs from IFQs – solidly rests on the absence of either ‘external’ or ‘third party’ spillovers. “Salability is related to mobility, but anyone who has seen a town from which a major industry has moved knows that certain costs were ignored by market choosers as they sought the least cost (to them) location.”¹³¹ The problem is, ‘*status quo*’ rights should be questioned. Instead, “initial rights distribution” is not discussed in ‘neoclassical’ theory, but just taken as ‘given’:

*Inquiry is not addressed to the broader questions of the original and subsequent vestures of property rights among people. It speaks only to the secondary question of carrying out the logic of the costs implicit in a given rights distribution.*¹³²

But “cost minimization” is specific to “property rights distribution. Cost minimization then cannot be a guide to the choice of that distribution.”¹³³ Furthermore, the presence of ‘externalities’ sabotages the case: “Third party effects have the tendency to be diffuse and nonseparable. If these effects are to be protected by property rights, they are going to be communal or governmentally administered.”¹³⁴ Indeed, “nonsalability is a valuable property right in itself.”¹³⁵

The curious silence over consolidation effects should also be of concern to critics of ITQs, since *Sharing the Fish* and the ‘public choice’ school are equally unconcerned about the potential abuse of market powers stemming from ITQs. There is much discussion of economic corporate power in the institutionalist literature.¹³⁶ For institutionalists, power rises from “the impact a changing technology has on the prevailing institutional structures”¹³⁷ through the shifting concentration of wealth in society.¹³⁸

Indeed, the use of public authority “to offset or counter private power” for *efficiency* as well as *equity* reasons stands as central throughout the institutionalist doctrine.¹³⁹ As Klein puts it:

¹³¹ *Ibid.*, p. 437.

¹³² *Ibid.*, p. 439.

¹³³ *Ibid.*

¹³⁴ *Ibid.*, p. 440.

¹³⁵ *Ibid.*, p. 441.

¹³⁶ Philip A. Klein, “Power and Economic Performance: The Institutional View” in Marc R. Tool, ed., *Evolutionary Economics, Volume I: Foundations of Institutional Thought* (Armonk, NY: M. E. Sharpe, 1988), p. 406, explains it thus:

...The impact of economic power on the system has always been a basic tenet of institutionalist thought, conditioning the entire manner in which economic activity unfolds. ... Economic power emerges from comprehending the changing technology and deliberately manipulating the institutional response, often in the interest of a narrow group. Veblen called such groups “the vested interests.”

¹³⁷ *Ibid.*, p. 409.

¹³⁸ As Klein explains, in *ibid.*, p. 410:

Throughout the work of institutionalists there is a consistent ... recognition that concentration of economic power in the private sector requires a governmental sector that can somehow ... reflect the collective wishes of the participants as they would be expressed in the absence of ... power.

¹³⁹ In Klein’s words, from *ibid.*, pp. 411-13:

...A major difference between institutional and mainstream economists concerns the possibilities for reducing the inefficiencies as well as the perceived inequities in the operation of the system by using public power to offset or counter private power. ... That private power can constitute a sufficient threat to the efficiency of the system to justify efforts to develop public policy to cope with it is an enduring theme among convinced institutionalists. We should note that the argument here concerns efficiencies. Inequities engendered in

“The realities of economic power ... make ... resource allocation a politico-economic process.” Consequently: “An essential task for the economist is to cut through the ways economic power distorts the allocative process from what it would be otherwise.”¹⁴⁰ This is particularly true with respect to the *globalization* of corporate power:

*Indeed, a major implication of multinational corporate growth is that not only is economic power enhanced thereby, but the corporations involved manage to escape effective control by any national government. ... Many of the questions raised about the impact of concentrated economic power on [efficiency] are exacerbated by the internationalization of economic power and influence.*¹⁴¹

So institutionalists see ‘efficiency’ in a broader context than ‘neoclassical’ economists do. “Recognizing that wants are not ‘given,’ but emerge in the process of ... a modern industrial economy ... [as] part and parcel of the emergent value structure of the larger society, institutionalists must confront this value system.” Klein mentions, as social norms, standards of “equity ... freedom ... security and ... humaneness (or compassion).” His general point is that “constellations of power in the private sector can severely distort the total allocational thrust of the economy.”¹⁴² If ITQs shall lead to a centralization of economic control into the hands of multinational firms subject to little authority in a global market, they will likely yield *inefficiency*.

10. ‘Regulatory Failure’ in the Social Control of Business: An Institutional View

Trebing develops this theme by examining the history of *regulation*, tracing the institutionalist view back to seventeenth century British common law. “In *De Portibus Maris*, Lord Chief Justice Hale held that when private property was affected with the public interest, it ceased to be private property only.”¹⁴³ On this foundation, as Trebing explains: “The guiding factor for social regulation ... is to be derived from a consideration of social returns and social costs and not from formal equilibrium analysis.”¹⁴⁴ But this subject cannot be addressed without due attention to *regulatory failure*, rising from inflexibility and the preemption of public authority by private power. “The solution would be to reassert government primacy... But experience has proven that once lost, such power is hard to regain.”¹⁴⁵

large part by private power concentrations are also of concern to institutionalists. Mainstream economists either ignore or downplay these concerns... Equity ... is a major characteristic by which to judge economic performance. Concentrated power has as a preeminent consequence the likely result of either retarding movement toward greater equity, or of creating movement toward greater inequities.

¹⁴⁰ *Ibid.*, p. 414.

¹⁴¹ *Ibid.*, p. 416.

¹⁴² *Ibid.*, p. 417.

¹⁴³ Harry M. Trebing, “Regulation of Industry: An Institutional Approach” in Marc R. Tool, ed., *Evolutionary Economics, Volume II: Institutional Theory and Policy* (Armonk, NY: M. E. Sharpe, 1988), p. 291. Also cf. *Sharing the Fish*, pp. 39-45.

¹⁴⁴ *Ibid.*, p. 295.

¹⁴⁵ *Ibid.*, pp. 297-98. The effective irreversibility of private property rights has been a real concern throughout discussions of ITQs’ effects. E.g., cf. Parzival Copes, “Social Impacts of Fisheries Management Regimes Based on Individual Quotas” in G. Pálsson and Guðrún Pétursdóttir, eds., *Social Implications of Quota Systems in Fisheries* (Copenhagen: Nordic Council of Ministers, 1997), Section (A2). In a 1997 address, *Op. Cit.* (note 18 on page 2 above), p. 4, Copes said:

Once an ITQ or other transferable rights system is installed, it is very difficult to dismantle it, both for fiscal and other reasons. ... Transferable rights programs are therefore almost irreversible. ...

Trebing comments that neoclassical explanations of “regulatory behavior have essentially built upon ... capture theory ... [where] the public interest theory is swept away” by the power of private special interests.¹⁴⁶ So orthodox economists turn to *privatization* as a solution to regulatory failure in “an almost theological commitment to competition and market-oriented solutions.” As Trebing observes:

*...These models deny government any substantive or continuing role beyond the limited one of protecting property rights and enforcing neoclassical welfare criteria. In contrast, the institutionalist model takes government intervention as one of the most powerful instruments for promoting change and attaining public-interest objectives.*¹⁴⁷

The neoclassical approach “tends to reinforce the status quo,” ignores non-monetary aspects of value, understates the pervasiveness of ‘market failure’ and ‘monopoly power,’ and claims that privatization will lead to *competition* and not concentration and decreased accountability. At base, the argument pays no attention to any other outlooks, seeing competition not as a narrowing but an *expansion* of choice. “On balance, serious doubt can be raised whether the ... neoclassical models produce analytical concepts and public policy recommendations that are workable in modern national and global economic systems.”¹⁴⁸

In contrast, institutionalists see intervention as sorely needed to curb economic power abuses by private property interests. Institutionalists search for solutions to complex problems with “a predilection against simple market-oriented answers such as marketable pollution permits, bidding and social contract deregulation unless these options are considered in a holistic and historic context. In that case, they can usually be shown to be vulnerable to manipulation and abuse.”¹⁴⁹ *Sharing the Fish* underemphasizes such problems with ITQs.

11. The Power of ‘Centralized Private Sector Planning’ in the Economy

Munkirs elaborates such concerns in a paper on *corporate power*, and the need for democratic control of the rapid growth of “centralized private sector planning” in the economy:

*The theory is indeed a formidable one: namely, that inter- and intra-industry cooperation and coordination, that is, the institution of centralized private sector planning, has superseded Adam Smith’s vision of supply and demand equilibria in a market-force environment in a large and substantial part of our economic system.*¹⁵⁰

After citing “extensive and persuasive evidence” supporting his theory,¹⁵¹ and reviewing the economic literature on non-regulated industries, regulated monopolies and “the *autarchical powers* inherent in and derived from the institution of centralized private sector planning,” Munkirs summarizes his “basic argument ... that the autarchic powers inherent in the economy’s centrally planned [private] sector represent a quantum leap, and, indeed, challenge the very essence of the nature of our concept of a democratic society.”¹⁵²

¹⁴⁶ *Ibid.*, p. 300.

¹⁴⁷ *Ibid.*, p. 302.

¹⁴⁸ *Ibid.*, pp. 302-4.

¹⁴⁹ *Ibid.*, pp. 313-14.

¹⁵⁰ John R. Munkirs with Janet T. Knoedler, “The Existence and Exercise of Corporate Power: An Opaque Fact” in *Tool, Op. Cit.* (note 143 on page 2 above), p. 263. So maybe Smith’s ‘invisible hand’ is no longer quite transparent!

¹⁵¹ *Ibid.*, pp. 263-64.

¹⁵² *Ibid.*, pp. 265-67.

Munkirs estimates that this centrally planned private sector generates 50 to 60 percent of the country's output, and that its corporate leaders "are often capable of exercising plenary power over the enactment and enforcement of legislation passed by the country's governmental bodies" through a use and abuse of "laissez-faire" economic ideology. This view appears consistent with the formulation of ITQ policy by the NRC panel:¹⁵³

*Summarizing the argument: corporate leaders in the economy's centrally planned sector have been very successful in affecting and effecting the government's legislative agendas and in staffing key executive branch agencies ... with people who are, for the most part, simply unwilling to use government institutions as a countervailing power against corporate power on behalf of the general public.*¹⁵⁴

Calling it "The Veblenian Dilemma" of "poverty amidst abundance" as "the ultimate in absurdity and irrationality," Munkirs opines that "as long as the problem is viewed in a supply and demand market system context, there probably is no rational solution." This is because: "The divergence between society's two epistemological cultural heritages (instrumental/technical versus a priori/ceremonial) has become so great that rational action is now beyond the community's reach."¹⁵⁵ Munkirs states his conclusion thus:

*The country, although not consciously, is confronting and wrestling with a three-pronged problem: first, the efficient use of modern tools demands intra/inter-industry coordination and cooperation; second, community adherence to the prevailing ceremonial [laissez-faire ideological economic] knowledge is still a prerequisite for those in power to maintain their status and power. ... And third, since the U.S. economy is neither a market system nor a modified market system, but a planned economy, as Veblen might say – until this "opaque fact" is made transparent – our captains of planning will continue to plan, and to plan primarily according to their own self interest.*¹⁵⁶

¹⁵³ As Munkirs put it, in *ibid.*, pp. 270-72:

Corporate leaders in the centrally planned sector have traditionally pursued their governmental staffing goals for these agencies and commissions through the establishment of organizations that we categorize as private-public policy formulating committees on international ... and ... domestic affairs. These committees perform three primary functions: first, they are organizational vehicles for bringing together, creating discussion, and building a consensus among the country's political, intellectual, and business elite; second, they are informational conduits; and third, they are mechanisms for screening potential candidates for public office.

¹⁵⁴ *Ibid.*, p. 277.

¹⁵⁵ *Ibid.*, pp. 282-83.

¹⁵⁶ *Ibid.*, pp. 284-85.

In sum, the theory of ‘regulatory capture’ in economics suggests that big corporations are not controlled by agencies set to that purpose. In neoclassical economics, ‘efficiency’ only applies to ‘atomistic competitive firms’ in very large, impersonal markets. Such is in no way a representation of a developed economy of formidable corporate power. As Swanson notes in a paper on “environmental protection,” there is a fundamental conflict of interest in the regulatory process stemming from undue political influence by economic concerns:

*Regulatory efforts to date reflect a people at odds with their government – a government whose agencies, charged with protecting public health and the environment, have more fully represented the interests of regulated industries than the interests of the public.*¹⁵⁷

12. The Institutional Theory of Value and Environmental Priorities

So how would the institutionalists see the playing out of corporate power relations in an interdependent and ecologically-bound domain of social and economic concerns? Swaney’s paper puts the issue informatively and well. Swaney opens with the following explanation of difference:

*... A sharper contrast than that provided by a comparison of neoclassical and institutional approaches to the environment is difficult to imagine. The neoclassical approach, couched in a mechanical, reductionist worldview where everything is merely the sum of its parts and all values reduce to simple pleasure or pain, is premised on exogenous, independent utility functions, private ownership of everything valuable, an “efficient” but static property rights structure, and a system of perfectly competitive markets. The institutional approach, couched in an organic, holistic worldview where few things are merely the sum of their parts (...) and values are hierarchical and often conflicting, is premised on endogenous, interdependent “preferences” of individuals and groups, socially defined and limited private ownership, a variety of evolving entitlements, and a political economy where political and economic power mix with market forces in a process that serves both private interest and social need (although it may do neither well).*¹⁵⁸

Swaney explains that the methodological framework of neoclassical theory is simply unfit to address serious ecological issues and problems:

*The organic, holistic worldview of institutionalists is consistent with ecology ... and teaches the interdependence and interconnectedness of living systems. ... Modern ecology also teaches interdependence on a grand scale. ...*¹⁵⁹

Swaney integrates such ecological issues with *institutional value theory* as “the continuity of human life and the noninvidious re-creation of community through the instrumental use of knowledge.”¹⁶⁰ In this context, the overriding priority of *ecological health* over *economic concerns* should be obvious and explicit: “A threat to any ecosystem is a threat to the human community, because the ecology of every living thing on earth is connected to the ecology of every other living thing on earth, including people.”¹⁶¹ The institutionalist view of environmental issues is

¹⁵⁷ Larry D. Swanson, “Shifting the Burden of Environmental Protection” in Tool, *Op. Cit.* (note 98 on page 2), p. 227.

¹⁵⁸ James A. Swaney, “Elements of a Neoinstitutional Environmental Economics” in Tool, *Op. Cit.* (note 143 on page 2 above), p. 321.

¹⁵⁹ *Ibid.*

¹⁶⁰ *Ibid.*, p. 322; the phrase is from Marc R. Tool’s *the Discretionary Economy* (Santa Monica: Goodyear, 1979), p. 300.

¹⁶¹ *Ibid.*

summarized thus: “Generally, institutionalists recognize that the biosphere ... is composed of innumerable interacting, interdependent, complex, evolving ecosystems.”¹⁶²

The notion of *efficiency*, according to Swaney, “is a thoroughly and inherently value-laden term” and “goals or values, not efficiency, are the main issue. ... Both individual and social values are hierarchical and cannot be reduced to a common yardstick,” nor “be taken as exogenous.”¹⁶³ Swaney explores several views on environmental economics, such as that of D. W. Pearce:

*Pearce’s key point is that the life support system cannot be made to fit into the neoclassical framework because it is not produced, and because it is indivisible both sectorally and temporally. It can only be analyzed and understood as an evolving natural system that cannot be priced or otherwise allocated by the economy.*¹⁶⁴

He also discusses Alan Coddington’s argument that:

*The threat is not depletion of natural resources (...), but disruption of environmental functions by reckless application of modern technology and other abuses of the environment. Avoidance of this threat requires abandonment of obsolete habits of thought and pursuit of knowledge and technology that allows us to anticipate and avoid environmental mistakes instead of merely trying to adjust to the consequences after the fact.*¹⁶⁵

As Swaney introduced the point, which has to do with *planning horizons*: “‘Learning by doing’ is an obsolete, ceremonial attitude” that “we must change ... to ‘planning ahead.’ ... To argue that technology will come to the rescue is to miss the scale of the problem...”¹⁶⁶ Swaney then proceeds to address some general conceptual issues, such as social costs and property rights.

13. ‘Private’ versus ‘Social’ Cost: The Externalities of ‘Cost Shifting’

Swaney’s analysis of social cost starts with several examples of phenomena known as “cost-shifting” (or ‘cost externalization’). He cites several examples showing “that there is a systematic incentive to avoid costs by whatever means, and the more competitive the economy, the greater the pressure.” Such shall lead to important distinctions between “the firm’s accounting costs” and “the social opportunity costs of production.” Due to this sort of behavior: “Society’s total costs may even be *increased* as violators of ethical and legal rules find it worthwhile to produce misinformation. The resources thereby expended ... are deadweight social costs.” Such avoidance or “shifting” of costs should not be confused with *real cost reductions*:

¹⁶² *Ibid.*, p. 328.

¹⁶³ *Ibid.*, pp. 329-30.

¹⁶⁴ *Ibid.*, p. 337; the reference is to D. W. Pearce, *Environmental Economics* (London: Longman, 1976).

¹⁶⁵ *Ibid.*, p. 340; the reference is to Alan Coddington, “The Economics of Ecology” (*New Society*, 15, 9 April 1970).

¹⁶⁶ *Ibid.*, p. 331. As Allan G. Gruchy expressed the point, in *Op. Cit.* (note 105 on page 2 above), p. 32, with reference to Gunnar Myrdal’s *Challenge to Affluence* (New York: Pantheon Books, 1963), pp. 87-88:

The difference between the conventional view of economics as a narrow study of economic decision-making and the neoinstitutionalist view of economics as a broad study of the evolving goal-directed economic system is also the difference between a short-run view and a long-run view of the economic system. Gunnar Myrdal has severely criticized conventional economists on the ground that they are nearsighted and without a long-range view of the development of the industrial system. ... When the economist takes a long view of the economy, he necessarily views the economy as an evolving system. ...

*A more competitive economy will put more pressure on firms to avoid costs, whether by employing improved production techniques... or by shifting costs onto workers, the social infrastructure, or the environment. ...Pressures to shift costs arise from traditional accounting practices as well as from competition.*¹⁶⁷

Consequently, “in an environment of grossly inadequate legal and ethical restraints,” socially irresponsible firms “are rewarded for internalizing benefits and externalizing costs.”¹⁶⁸ Cost-shifting creates social costs, “suggesting that externalities are unavoidable, systematic, prolific products of the market system.” The problem “is endemic, and will continue to grow, bounded only by ... public budgets and the disruption of ... life-support services from the environment.”¹⁶⁹

This is where the neoclassical case for ‘privatization’ comes in, “as the solution to all problems of social cost.” The failure of this ‘solution’ is not *within* neoclassical theory, but in our very use of its system of thought.

These economists, declared Alan Coddington, “may be quite correct within their own frame of reference. What is wrong is that the conceptual framework itself is irrelevant to the discussion of externalities on the scale on which they are being generated and of the type we witness today.”

Calling Coddington’s critique “correct,” Swaney explains that “social costs are expansive, showing no sign of alleviation, and severe social costs are not amenable to bargained solutions” since “problems with bargaining are legion” as are “problems of information and knowledge.”

Swaney adds that Coddington doesn’t go far enough on this point, as “social need is not determined by aggregating individual wants and willingnesses to pay, so *bargained solutions would miss the mark even if they were practical.*” The institutionalist view takes society as...

*...organic; the distribution of wealth and power is unjust; integrity of environmental life support systems is beyond the reach of individuals; and future generations are society’s responsibility. In short, the property rights school has taken Coase’s scientific fiction, which was conceptually useful for understanding a narrow range of externality problems, and turned it into mere dogma.*¹⁷⁰

As Swaney explains, the problem lies in how we frame these issues, and neoclassical arguments are not correctly applied to ecological contexts. Their restrictive assumptions shall not fit to the setting in which they are used, with respect to ITQs’ effects in an interdependent domain.

14. *The Institutional Economics of Culture and Social Values*

Institutional economics adopts a *cultural* view of its subject, where (in Veblen’s phrase, according to Neale): “Institutions are the ‘habits of use and wont’ ... that allow people to act with a high degree of confidence in their expectations of how other people will respond to their actions.” So institutions serve as social glue in an interdependent economy: they “give meaning and continuity to actions and assure that each action fits with some of the actions of other people

¹⁶⁷ *Ibid.*, pp. 342-43.

¹⁶⁸ *Ibid.*, p. 345. Also cf. Hawken, *Op. Cit.* (notes 36-37 starting on page 2, and especially note 83 on page 2, below).

¹⁶⁹ *Ibid.*

¹⁷⁰ *Ibid.*, pp. 346-47. References are to Coddington, *Op. Cit.* (note 165 on page 2 above) and to Ronald H. Coase’s seminal paper on “The Problem of Social Cost” (*Journal of Law and Economics*, 3, October 1960).

to maintain ongoing processes."¹⁷¹ Neale identifies three characteristics of institutions: “*people doing; ...rules; ... [and] folkviews...*”¹⁷² where institutions are “a mental construct” which can only be observed through “the activities of people in *situations*.”¹⁷³

Alverson develops the cultural view of institutions with this somewhat discomfiting question: “...Is the economy ‘profitably’ to be seen as a set of people each playing a game, or are powerful institutions – the ‘game’ – in effect ‘playing’ the set of people?”¹⁷⁴ Interestingly, Alverson notes that the anthropologic conception of culture “is quite consonant with the classical conception of political economy and quite opposed to that predominating in modern [neoclassical] economics.” In what could almost describe the presentation of ITQs in *Sharing the Fish*, Alverson characterizes the ‘orthodox propertarian’ notion of institutions “in the marginalist view” as claiming its basis in “human nature” and the ‘natural law’ of “economizing behavior.”¹⁷⁵

This is contrasted with an anthropological view, which “relies on correlative difference among whole cultures,” emphasizing “three fundamental aspects...: ecology, institutional organization, and ... knowledge or ‘ideology’.”¹⁷⁶ Alverson adds that “all three dimensions ... are necessarily an aspect of all patterned behavior” and cultural organization.¹⁷⁷ “As the anthropologist Clifford Geertz has said, we live within ‘webs of significance,’ in a world of meanings.”¹⁷⁸ So any “comparative study of economy entails the comparative study of culture and vice-versa.”¹⁷⁹ And this view, in turn, implies that discussions of any economic policy ought

¹⁷¹ Walter C. Neale, “Institutions” in Tool, *Op. Cit.* (note 136 on page 2 above), pp. 229-30.

¹⁷² *Ibid.*, p. 232.

¹⁷³ *Ibid.*, p. 234.

¹⁷⁴ Hoyt Alverson, “Culture and Economy: Games that ‘Play People’” in Tool and Samuels, *Op. Cit.* (note 87 on page 2 above), p. 7.

¹⁷⁵ *Ibid.*, pp. 8-9. On p. 9, Alverson puts it this way:

In the marginalist view, institutions arise from ... individually motivated economizing behavior in production, distribution, and consumption. Thus, to explain the economizing behavior, which itself precedes institutional forms, one must invoke ‘human nature’ as a direct pre-cultural cause of such behavior.

For other versions of this argument, cf., e.g., the *Wall Street Journal* editorial cited over note 85 on page 2 above, where property rights are represented as the “only rules consistent with human nature...” For relevant claims, in *Sharing the Fish*, cf. the quote accompanying note 86 on page 2 above, for a more general – but similar – statement.

¹⁷⁶ *Ibid.*, p. 11.

¹⁷⁷ *Ibid.*, p. 13.

¹⁷⁸ *Ibid.*, p. 17.

¹⁷⁹ Alverson poses “five fundamental questions or issues” pertinent to “a comparative view of economy” from a cultural outlook, in *ibid.*, pp. 23-24:

... First... the comparative study of economy entails the comparative study of culture and vice-versa. ...

Second, by what criteria, principles or processes is control over the use of material resources or forces of production allocated? ...

Third, how are individuals, families, communities, regions, nations, associated with specialized aspects or tasks of material production and transformation? ...

Fourth, by what principles are the material transformations of the production process controlled, used, or exchanged? Which individuals, groups, regions, social positions, gain rights to effect and affect the appropriation and exchange of the results of setting in motion specialized labor and other factors of production? ...

Fifth, by what criteria and by what agents or agencies is the distribution of the products of labor for final consumption effected? ... The point is, a comparative study of economy, cum culture, requires that data or findings for particular economies/cultures constitute answers to a single set of very basic questions framed

to consider its social effect on existing cultures – such as that of ITQs on traditional fishing communities – as central to its ongoing impact on human well-being. Institutionalism thus endorses a wider evaluative frame than neoclassical theory on economic and social policy issues.

15. 'Institutional' versus 'Neoclassical' Economics and the Challenge to Social Democracy

In sum, the active vitality – if not the very existence – of democracy is at stake in how we frame our analyses of economic and social policies and decisions. The case for ITQs in *Sharing the Fish* is symptomatic of fundamental lacunae in neoclassical economic conceptions, as contrasted with the institutional view of social process. In part, the problem is that technology has outstripped our *means of control* over its social effects. To reestablish control, “channels of scientific inquiry and public information and dialogue must be expanded, broadened, and cleared.” How we ought to resolve this problem is in no way obvious.¹⁸⁰

But one thing is clear: *how we frame* public policy issues has a decisive impact on the measures we see as ‘solutions,’ within the standards that we impose. Social choices are not productively analyzed through a narrow, myopic construction that takes ‘externalities,’ ‘institutions,’ and ‘tastes’ as *given data*, and thus supports the *status quo* of existing power relations and rights structures ‘as if’ they had always been fair and just in their distribution. This is *especially* true in the presence of an alternative view – not considered in *Sharing the Fish* – that yields a radically different conclusion.

Gruchy addressed the implication of moving from “simplistic conventional economics” to the “long, non-simplistic view of ... neoinstitutionalists,” as symbolized by the move “from an advanced industrial society to a post-industrial society,” yielding enormous social and economic changes in democratic cultures and institutions. He says a more *participatory* process shall be needed due to this shift, with more attention to ethics and values “and less concern with efficiently making decisions but never asking what the decisions are really about.”¹⁸¹

16. The 'Neoclassical' Framework is Inapplicable to Complex Ecologies

Worse, the ‘neoclassic’ conception of economic concerns sidesteps interdependence and externalities sufficiently to make it totally and irremediably *inapplicable* to ecological systems.

in the metalanguage. The four or five suggested here are meant to be but prompts to further reflection and investigation.

¹⁸⁰ Swanson, *Op. Cit.* (note 157 on page 2 above), p. 247:

While the powers of science and technology are legally in the hands of those with the financial means to use them, the effects of their use of these powers is not so limited. All of society is affected, and therefore must assist in making decisions regarding the use and control of technology. ...

In developing these mechanisms of control, channels of scientific inquiry and public information and dialogue must be expanded, broadened, and cleared. They must be democratized. Precisely how this is to be accomplished is difficult to say. But then again, democracy is not supposed to be easy.

¹⁸¹ Gruchy, *Op. Cit.* (note 105 on page 2 above), pp. 34-37, makes the point in this way:

In the post-industrial society of the future the guidance of the economy will come less from the big business sector and more from the nation's educational, scientific, and artistic groups as well as from aroused citizens in general. The basic problem is, how will national priorities be determined in the post-industrial society? Before this problem can be met satisfactorily, new institutional arrangements will have to be made. We will have to substitute a new participatory democracy for our current outmoded ballot-box type of democracy ... which is obviously unable to cope with the problems raised by a technical society. ... Economics will increasingly come to have more concern with what people think is the Good Society, and less concern with efficiently making decisions but never asking what the decisions are really about.

Standards with an exclusive focus on *efficiency attributes* at the expense of equity issues simply ignore the distribution of *power* and its social effects. As Samuels said: “Ecological optimality, like economic optimality, substantively depends upon *whose choices are to count*.”¹⁸² The cost-price structure in an economy is *not just technical*, but derives from the structure of property rights:

*If persons do not have a right to something that others want for use in production, then their interests will not count as a cost to the others; if they do have ... a claim..., then they will enter as a cost factor. ... This cost-price structure (...) depends ... specifically upon the requirements of physical costs imposed by technology and the structure of rights in the market. The structure of rights in the market in turn is partially dependent upon the structure of power, in a system of general interdependence... This is to say that those who have greater power can get legal identification, assignment and protection of their interests, now called rights, as opposed to those with lesser power. ...*¹⁸³

So *economic costs* are not just ‘data’ on which to maximize profit: “They are dependent upon tastes, power structure, technology (...), and rights structure,”¹⁸⁴ and are often ‘externalized’ through ‘cost-shifting’ activities onto (nonparticipant) ‘third parties’ who become innocent victims subject to neither remedy nor recovery of their real losses incurred. As Samuels, Schmid and Shaffer put it succinctly: “Welfare maximization, in part through output definition, is governed by rights and regulations; and rights govern efficiency, not the other way around.”¹⁸⁵ This is not the argument to be found in *Sharing the Fish*, where ‘efficiency issues’ stand *prior to* ITQ rights as justification for their being ‘gifted’ from public control into private hands. Such is not the way institutionalists see this seizure of power.

The problem in ‘neoclassical’ economics seems – in large part – to emanate from its supposition that *interdependencies can be ignored* as ‘special cases’ of ‘externality’ in an imperfectly privatized domain of ‘property rights’ solutions to overlapping ‘common’ effects of privately-made decisions. Such is in no way an accurate depiction of economic concerns: such are ruled by interactive forces, circular cause and effect, and no inherent demarcations save for those we impose ourselves (since we cannot deal with holistic complexity due to our rational limits.)¹⁸⁶

Externalities, properly understood, are ubiquitous. It is impossible to eliminate all externalities; rather it is necessary to evaluate and choose between externalities, which choice will itself involve externalities. The problem is ultimately a distributional one: whose in-

¹⁸² Samuels, *Op. Cit.* (note 104 on page 2 above), p. 117 [emphasis added]. He adds that: “The design ... [and] evaluation of environmental systems, and the selection of ecological alternatives and tradeoffs all depend on some antecedent determination of who is to count.”

¹⁸³ *Ibid.*, p. 119.

¹⁸⁴ *Ibid.*, p. 120.

¹⁸⁵ Warren J. Samuels, A. Allan Schmid, and James D. Shaffer, “Regulation and Regulatory Reform: Some Fundamental Conceptions” in Samuels and Schmid, *Op. Cit.* (note 104 on page 2 above), p. 249.

¹⁸⁶ In *ibid.*, p. 115, Samuels puts it thus, as a direct consequence of *interdependence*:

The primary fact of all social life is the interdependence of all variables. ... All schools of economic, political and sociological thought recognize this general interdependence, but just as ... each [discipline] takes for its domain ... a subset of partial interdependencies, each school within each discipline tends to emphasize a particular set of variables or ... (partial) interdependencies. General interdependence is acknowledged but inter- and intra-disciplinary specialization tends to result in partial-interdependence models; one reason for this is the limited capacity of the human brain and the need for the reduction of variables to a manageable number.

terests are to count, whose to be sacrificed, and who is to decide? Concentration upon allocative efficiency typically tends to beg these questions.¹⁸⁷

17. The Singlemindedly 'Neoclassic' Conception of *Sharing the Fish*

Social policy choices select the “opportunity set of alternatives and tradeoffs” taken as ‘given’ in neoclassical economics, so: “A systems-analytic ecology must comprehend ... the problem of power if it is to understand ... [its own role] as science and as policy discipline.”¹⁸⁸ Any economic analysis, such as in *Sharing the Fish*, that takes a single approach – without devoting attention to any alternative view; without awareness of how its specific cognitive framework conflicts with its setting; and without taking other important domains of value into account – does not deserve attention, despite the thoroughness of its study in that one particular realm.

As Arrow once said in a different regard (that pertains so well to applying a system of thought designed for production economies to any interdependent, open, social and ecological systems, such as *Sharing the Fish* attempts in its use of the ‘neoclassical’ paradigm to the exclusion of other approaches with quite different conclusions):

... *The problem is that agreements are typically harder to change than individual decisions. When you have committed not only yourself but many others to an enterprise, the difficulty of changing becomes considerable. ... What may be hardest of all to change are unconscious agreements, agreements whose very purpose is lost to our minds. Some commitments are to purposes which involve much sacrifice and very great depth of involvement. A commitment to a war or a revolution or to religion [or to a single paradigm – FBJ] is typically one that is very hard to reverse, even if conditions have changed from the time when the thing started. Even if experience has shown the unexpectedly undesirable consequences of a commitment, the past may continue to rule the present. ...*

... *This thinking ... gives rise to the greatest tragedies of history, this sense of commitment to a past purpose which reinforces the original agreement precisely at a time when experience has shown that it must be reversed.*¹⁸⁹

This is the “tragedy” of ITQs, and it outweighs that of the “commons.” ‘Neoclassical’ economics – though fit to an undeveloped production economy of diminishing returns in known local markets of mostly competitive firms, where true information is always shared and agents are never confused – is simply inadequate to the interdependent, technical, highly concentrated, dynamic global marketplace in which ITQs are proposed. So after all is said and done, how would ITQs be viewed by an institutional theorist?

18. A Summary of the Institutional Opposition to ITQs

So what would institutionalists say, in sum, on ITQs? Several points shall come to mind: first, on the fit of assumptions to setting; second, on the efficiency claim; third, on distribution effects; and, fourth, on abuse of power at the expense of community values. Each is discussed below.

¹⁸⁷ *Ibid.*, p. 125.

¹⁸⁸ *Ibid.*, p. 127.

¹⁸⁹ Kenneth J. Arrow, *The Limits of Organization* (New York: Norton, 1974), pp. 28-29.

(a) *'Neoclassic' Constructions Shall Not Apply in Complex Social Ecologies*

The first objection to ITQs shall be on 'neoclassical' versus 'institutional' frames, in terms of their 'fit' to ocean ecologies. The premises of 'neoclassical' theory are not designed to be used in openly interdependent decision environments such as in fishery applications. Indeed, the neoclassical view assumes independent entities (so abstracts away from externalities), certainty (so we understand tradeoffs), technically 'given' costs (such that cost-shifting is not an option), and optimal group behavior (ruling out 'the race for fish') within a 'given' nexus of rights (suggesting that *changes in property ownership* part with the premises under these claims).¹⁹⁰

The institutional view appeared in reaction to rationalistic constructions, so is meant to reflect: the *interdependence* of economic effects; all the *uncertainties* sundering action in an evolving context; the notion that *costs* are related to *values* subject to abuses of *power*; and a focus on *organizational* aspects of individual actions and their (potentially anti-social) effects in a market dangerously open to well-financed economic control and undue political influence. The "ifs" supporting the "then" conclusions of institutional theory are closely matched to ocean and social ecologies, whereas the neoclassical premises simply are 'out of this world,' designed for rigor, elegance and 'convenience' but not for real application to complex social policy choices.

(b) *The 'Rationality' and 'Efficiency' Arguments in Neoclassical Theory*

Second, the 'externality' issue is the 'tragedy of the commons': such is where *individual 'rationality'* aggregates to *collective insanity* in 'the race for fish.' What is needed are rules and standards so private incentives are better aligned with their 'social' effects. The neoclassical argument is that 'property rights' are the answer, *as a means to rescue independence* of individual action. The institutional framework carries a richer range of alternatives, set on assumptions of fully interdependent domains suffused with overlapping effects and 'imperfections.'

Simplistic conceptions such as supplied in neoclassical models shall not apply to interdependent domains. So institutionalists see 'privatization' as simply a myth, imposing control by economically powerful interests over resources, at the expense of those without financial access to capital markets. The 'barriers' set through property are divisive, and tend to institutionalize status for 'elites' at the cost of community and democracy in economic society. An institutional look at the problem favors *cooperation* over competitive market solutions.

From the institutionalist view, the presence of 'externalities' simply obviates any claim to 'efficiency' as the outcome of private choice. Indeed, the claim is tautological: after assuming individual maximizing behavior, and that units are independent enough for aggregate optimality, any other aspects simply are locked in the pound of 'ceteris paribus' to protect these 'findings' from any exposure to challenge or refutation. 'Efficiency' arguments in scenarios so infused with political power ought to be viewed with suspicion, and dismissed as 'ceremonial.'

Also, institutional arguments tend to focus on *long-term effects*, where neoclassical theory is *myopic* in its short-term emphasis. So ITQs shall likely yield, not enlightened stewardship practice, but more rapacious exploitation. This is especially true in the presence of financial

¹⁹⁰ For an interesting perspective on this question, cf. Lawrence A. Boland, "Knowledge and the Role of Institutions in Economic Theory" (*Journal of Economic Issues*, 13:4, December 1979), pp. 957-72.

pressures from market demands, strengthened by absentee ownership and the dominance of accounting concerns over resource renewal, not to mention a strong incentive for shifting cost to others (alive and unborn). ITQs are just a facade to rationalize seizing control by powerful multinational entities, in an international market largely unaccountable for its local ecological impact, at the expense of both the ‘public commons’ and the ‘national interest.’

(c) *ITQs Shall Lead to Inequities and the Abuse of Power*

Consequently, the real issue is power and distribution of rights. As *Sharing the Fish* admits, consolidation effects from ITQs are very well established, though they are claimed to be ‘efficient’ and not to centralize economic control.¹⁹¹ Even neoclassical lessons about the anticompetitive *inefficiency* of market takeovers are ignored in favor of ‘single owner’ incentives for ‘stewardship practice.’ Such a consolidation of power relations is not just *inefficient*; it may yield distribution problems and threaten democracy and the balance of vital life-support systems.

The efficiency argument and dismissal of equity in the case for ITQs is simply a sham, as seen through an institutional lens. *Sharing the Fish* is sidestepping another concern about ITQs: that they are really a grab for power by international corporations subject to little or no control over exploitation incentives. Sold to us in neoclassical language as ‘stewardship’ (‘Protect the ecology!’), ‘efficiency’ (ideology and tautology), and for ‘equity’ (without any justification at all), ITQs are really aimed to accomplish something quite different. They, instead, are a bald-faced raid by the private sector on the ‘public pantry’ of ‘common resources’ through a ‘privatization’ scheme against the interests of all but one exclusive economic elite. Parzival Copes has warned us that it “is important to recognize clearly [that] ... a government’s move to install an ITQ regime ... is basically the expropriation without compensation of a community’s resource base.”¹⁹² Such implies another real concern about ITQs’ social effects on traditional fishing communities.

(d) *The Likely Impact of ITQs on Traditional Fishing Communities*

Power abuse through privatization – in the pursuit of gainful ends through resource exploitation at the expense of local ecologies – is a fourth concern about ITQs emerging from institutionalism. Communities shall be deprived of traditional livelihoods by an ITQ system, at the expense of fishing resources, social cohesion and cultural legacies. All these social effects are underplayed or ignored in *Sharing the Fish*, on the basis of fallacies so clearly portrayed in the institutional literature that the NRC panel ought to have dealt with all of these subjects.

The overwhelming consolidation effects of ITQs – so clearly established that they are not denied in *Sharing the Fish*, but deemed ‘efficient’ – are not only invitations for the *inefficient* abuse of economic control through a concentration of market power over resources, but also will be grossly inequitable in their devastation of fishing communities and traditions. Social policies should not harm any single group or region, especially those least able to absorb and deal with the consequent damage. As ITQs shall favor the wealthy at the expense of fishing communities solely dependent on ocean resources, they are all the more reprehensible in their social effects. If ‘feedback control loops’ – such as falling on local (and dodged by global) entities – are also weakened by ITQs, the initiative fails on four economic grounds and normative values of

¹⁹¹ Cf. Sections IV.D. and IV.E. below.

¹⁹² Copes, *Op. Cit.* (note 18 on page 2 above), p. 4.

efficiency, equity, economic community, and conservation. This is what the institutional arguments say – or at least imply – about any ITQ plan.

(e) *The ‘Exclusive Focus’ of Sharing the Fish on a Single View of the Problem*

This is the primary failure of the NRC’s study of ITQs: it used a single approach, without exploring other alternative views. The institutional arguments emphasize ideological bias in neoclassical ‘laissez-faire’ rationales for power abuse by corporations in modern global economies. *Social control over rights* – by whom, for what group, and to what ends? – shall be the issue wanting attention, and *Sharing the Fish* adopts a framework in which such matters are simply ignored.

The verdict of institutionalists on ITQs would be unambiguous, stated without much doubt: This scheme is not in the ‘public interest’ and the plan should be scrapped in favor of one that fosters efficiency, equity, conservation and community through a theory of *institutional organization* in a complex social environment. The neoclassical theory is simply unfit to any such use, serving to obfuscate the problem by ceremonial oversimplification, and does not address or resolve it with understanding or real application. The actual impact of ITQs shall likely harm our environment and disrupt the social process. *Sharing the Fish* should have seen this, and rejected the ITQ plan.

Organizational theory also incorporates similar issues, though with a somewhat different emphasis. *Systems approaches* stress interdependence, feedbacks and homeostasis, ethical and community issues, organizational learning, integrity, and cohesion in our society. Both the institutional arguments and the organizational outlook call for unambiguous opposition to ITQs, especially in open ocean ecologies.

C. *A ‘Systems’ View of ITQs: The Organization of Interdependence*

Systems approaches emerged out of fields so diverse as psychology, sociological theory and biology, as a means to address the interdependence of interacting units and agents. As Ackoff said: “Initially we can define a system broadly and crudely as *any entity, conceptual or physical, which consists of interdependent parts.*”¹⁹³ The problem is that defined by Krupp in *Section II.D.2(c)*: that ‘externalities’ so infuse the activities of individuals that the analysis of decisions as if independent destroys the potential for any accurate *generalization* of their total ‘systems’ effect.

1. *The Evolution and Basic Character of Systems Theory*

Systems theory evolved to overcome mechanistic ‘classical’ science, in a reaction against the application of *physical* models in complex *social and biological* settings where they cannot be applied, except to the detriment of society and our understanding thereof. Physics is simply different from any social or biological system, in its behavior, requirements, and dynamics of operation.¹⁹⁴ But systems theory is hard to classify in any obvious way, with its diverse array of

¹⁹³ R. L. Ackoff, “Systems Organizations and Interdisciplinary Research” in *General Systems Yearbook*, Vol. 5 (1960), Society for General Systems Research, as reprinted in F. E. Emery, ed., *Systems Thinking* (Baltimore: Penguin, 1969), p. 332 [original emphasis].

¹⁹⁴ Ludwig von Bertalanffy, *General System Theory: Foundations, Development, Applications*, rev. ed. (New York: Braziller, 1968), pp. 87-88. As Bertalanffy explains:

frameworks and applications in different domains. Each system model should be adapted to its specific context to fit the issue at hand.¹⁹⁵

The primary problem addressed by ‘system’ models shows in the analytical limits of a positivistic conception of how the world works, stemming from methodology and its epistemological base. “...Systems epistemology ... is profoundly different from the epistemology of logical positivism or empiricism” which “are obsolete.”¹⁹⁶

As Ludwig von Bertalanffy explained, “the necessity and feasibility of a systems approach became apparent only recently” as “the mechanistic scheme of isolable causal trains and meristic [quantitative] treatment ... proved insufficient to deal with theoretical problems, especially in the biosocial sciences...”¹⁹⁷ In the same sense as Krupp pointed out that ‘externalities’ show a limit to deductive frameworks,¹⁹⁸ systems problems address ...

The mechanistic world-view found its ideal in the Laplacean spirit – i.e., in the conception that all phenomena are ultimately aggregates of fortuitous actions of elementary physical units. Theoretically, this conception does not lead to exact sciences outside the field of physics – i.e., to laws of the higher levels of reality, the biological, psychological and sociological. Practically, its consequences have been fatal for our civilization. The attitude that considers physical phenomena as the sole standard of reality has led to the mechanization of mankind and to the devaluation of higher values. The unregulated domination of physical technology finally ushered the world into the catastrophic crises of our time. ...

We believe that the future elaboration of general system theory will prove to be a major step towards unification of science. It may be destined in the science of the future, to play a role similar to that of Aristotelian logic in the science of antiquity. The Greek conception of the world was static... Therefore classification was the central problem in science... In modern science, dynamic interaction appears to be the central problem in all fields of reality. Its general principles are to be defined by system theory.

Also cf. Michael Polanyi, *Personal Knowledge: Towards a Post-Critical Philosophy* (Chicago: University of Chicago Press, 1969), esp. pp. 139-142. As Polanyi put it on page 141:

...The spell of the Laplacean delusion remains unbroken to this day. The ideal of strictly objective knowledge, paradigmatically formulated by Laplace, continues to sustain a universal tendency to enhance the observational accuracy and systematic precision of science, at the expense of its bearing on its subject matter. ...

¹⁹⁵ As Bertalanffy addressed the matter, in *ibid.*, pp. 27-28 (despite that many modern ‘systems’ theorists strongly reject any theories of ‘hierarchy’ for those of ‘organization’ in systems theory):

...A concept or complex of concepts... indubitably is fundamental in the general theory of systems: that of hierarchic order. We presently “see” the universe as a tremendous hierarchy... ...

A general theory of hierarchic order obviously will be a mainstay of general systems theory. ... But the problem is much broader and deeper: The question of hierarchic order is intimately connected with those of differentiation, evolution, and the measure of organization... ...

Thus there is an array of system models, more or less progressed and elaborate. Certain concepts, models and principles of general systems theory, such as hierarchic order, progressive differentiation, feedback ... etc., are applicable broadly to material, psychological and sociocultural systems; others, such as open system defined by the exchange of matter, are limited to certain subclasses. As practice in applied systems analysis shows, diverse system models will have to be applied according to the nature of the case and operational criteria.

¹⁹⁶ *Ibid.*, p. xxii. Bertalanffy explains this as follows:

...Systems epistemology ... is profoundly different from the epistemology of logical positivism or empiricism ... determined by the ideas of physicalism, atomism, and the “camera-theory” of knowledge. These, in view of present-day knowledge, are obsolete. ... Compared to the analytical procedure of classical science with resolution into component elements and one-way or linear causality as basic category, the investigation of organized wholes of many variables requires new categories of interaction, transaction, organization, teleology, etc., with many problems arising for epistemology, mathematical models and techniques. Furthermore, perception ... and knowledge ... [are] an interaction between knower and known...

¹⁹⁷ *Ibid.*, p. 11.

¹⁹⁸ Cf. note 40 on page 2 above, along with the accompanying text.

... the limitations of analytical procedures in science. ... “Analytical procedure” means that an entity investigated be resolved into, and hence can be constituted or reconstituted from, the parts put together... This is the basic principle of “classical” science...

Application of the analytical procedure depends on two conditions. The first is that interactions between “parts” be nonexistent or weak enough to be neglected... The second condition is that the relations describing the behavior of parts be linear...

These conditions are not fulfilled in the entities called systems...¹⁹⁹

Simultaneously in different sciences, systems theory has emerged in the form of “conceptions ... concerned with ... problems of organization ... not understandable by investigation of their respective parts in isolation.”²⁰⁰ In their representation of “the development of human systems,” Massarik, Margulies and Tannenbaum indicate that “the past five or six decades have witnessed an increasing outpouring of research, formulation of theory, and modes of professional practice (...) that have shared a common thrust: to enable us to better understand and/or to effectively influence human behavior in organizational settings.”²⁰¹ The associated change in emphasis seems sharp and dramatic in its ‘selective focus’ on dynamically interactive forces:

...Systems approaches ... are ... *holistic*... True, a system at rest – not considering its dynamics – can be thought of in terms of parts and components. But the system in action does necessarily function as a whole, with the interdependence of both components and processes critical to its mode of operation, survival, and effectiveness. In this fashion, the more appropriate metaphor is closer to *organism* than *machine*, and the more suitable conceptual base is closer to Gestalt theory and field theory (...) than it is to particularism or reductionism.²⁰²

Thus the emphatic commitment of a systems approach is not to individual units simplistically tied through linear relations, but instead to a complexly unfolding flow of associations through time. “Consistent with what has been happening in management and organization theory, there has been a shift in the level or unit of analysis from individuals, groups, and organizations to the organization-environment interface, interorganizational relationships, and transorganizational development.” Also: “Issues of power and politics are no longer avoided in the field.”²⁰³

2. The Logic of Systems Interdependence

In an early formulation of systems analysis in psychology, Angyal outlined the basic concept that: “The problem of the integration of part processes in the total organism is the most important and at the same time the most difficult problem for a science of personality. The difficulty lies ... in the inadequacy of our logical tools. ... [as applied to] the study of wholes in general.”²⁰⁴ As Bertalanffy explains: “In one way or another, we are forced to deal with

¹⁹⁹ *Ibid.*, pp. 18-19.

²⁰⁰ *Ibid.*, p. 37.

²⁰¹ Fred Massarik, Newton Margulies and Robert Tannenbaum, “The Development of Human Systems: Basic Themes” in Tannenbaum, Margulies, Massarik and Associates (henceforward “TMMA”), eds., *Human Systems Development: New Perspectives on People and Organizations* (San Francisco: Jossey-Bass, 1985), p. 1 [original emphasis].

²⁰² *Ibid.*, pp. 10-11.

²⁰³ Anthony P. Raia and Newton Margulies, “Organizational Development: Issues, Trends, and Prospects,” ch. 11 in TMMA, *Op. Cit.* (note 201 above), pp. 254-55.

²⁰⁴ A. Angyal, “A Logic of Systems,” excerpted from ch. 8 of his *Foundations for a Science of Personality* (Cambridge: Harvard University Press, 1941), pp. 243-61, as printed in ch. 1 of Emery, *Op. Cit.* (note 193 on page 2 above), p. 17.

complexities, with ‘wholes’ or ‘systems,’ in all fields of knowledge. This implies a basic reorientation in scientific thinking.”²⁰⁵ The difficulty arises because “the structure of wholes cannot be described in terms of relationships” but only under a different “logical genus,” of “system.”²⁰⁶ Churchman put it succinctly, that “all systems are design nonseparable.”²⁰⁷

The essential distinction is that “a relation requires two and only two members (relata) between which the relation is established. A complex relation can always be analyzed into pairs of relata,” on the basis of “immanent attributes” such as “identity, diversity, or similarity,” whereas the “members of a system” become “constituents” thereof “by means of their distribution or arrangement within [a dimensional] system.”²⁰⁸ The *dimensionality* of a system makes it *nondecomposable* into its separate elements: “Multiplicity of objects is only possible in some kind of *dimensional domain* (a manifold),” which “participates in the formation of the system,” unlike with mere relationships.²⁰⁹ “*In a system the members are, from the holistic viewpoint, not significantly connected with each other except with reference to the whole.*”²¹⁰

As a result, the *apprehension* of systems and relationships differ: *relations* are “explained” through a “direct connexion between two objects,” whereas *systems* must be “understood” with reference to the positions of members in a “superordinate” dimensional domain or framework. Systems may include – but are not described by – “secondary relationships.” An important implication of this is that “wholes” are not derived by “additive aggregation” in systems, but are composed through *arrangement* therein: “...Aggregation and whole formation are processes of an entirely different order. ... The system cannot be derived from the parts; the system is an independent framework in which the parts are placed.”²¹¹

*That the whole is, to a large extent, independent of the individual parts has been frequently pointed out. ... If we recall that [a] system is a kind of arrangement in which the parts do not participate by means of their inherent characteristics but by means of the positional values [like a song played in different keys], the above-mentioned relative independence of the whole from the nature of the individual parts will be understandable.*²¹²

As Angyal says, wholes are not decomposable but are “always a *unitas multiplex*,” so we must place systems before their elements in our analyses: “The logical formulation of a given system states the construction principle or the *system principle* of the whole. ... [which] has its own characteristic dynamics.”²¹³

²⁰⁵ Bertalanffy, *Op. Cit.* (note 194 on page 2 above), p. 5.

²⁰⁶ Angyal, *Op. Cit.* (note 204 above), p. 17.

²⁰⁷ C. West Churchman, *The Design of Inquiring Systems: Basic Concepts of Systems and Organization* (New York: Basic Books, 1971), p. 62.

²⁰⁸ Angyal, *Op. Cit.* (note 204 above), p. 20.

²⁰⁹ *Ibid.*, p. 21.

²¹⁰ *Ibid.*, p. 22 [original emphasis].

²¹¹ *Ibid.*, pp. 24-27.

²¹² *Ibid.*, p. 27.

²¹³ *Ibid.*, pp. 27-29. The logic of the systems approach, according to C. West Churchman, in *The Systems Approach and Its Enemies* (New York: Basic Books, 1979), pp. 54-55, is that “the facts of nature are in reality tied together in a well-knit whole... ...Science in the last few centuries has learned that the explanatory whole of nature’s facts is really more adequately viewed as a vast circle or spiral lattice network in which it is not possible to identify ‘the basic facts’ of nature.” Churchman explains, in *ibid.*, pp. 63-65, that:

3. The 'Systems Approach' as a Paradigm Shift in Scientific Analysis

Bertalanffy introduces his seminal book on *General Systems Theory* with this statement: "The system viewpoint ... represents a novel 'paradigm' in scientific thinking."²¹⁴ The dimensions of this scientific confrontation are complex, spreading across society in its effects on diverse settings. Systems theory is truly a revolution in thought and inquiry, and the only issue is why orthodox science seems so resistant to its siren call for change. As Churchman said: "We can see the lines of the intellectual battle. It is a fight between pluralism and monism, between those who wish to see and design their world in pieces and those who wish to see and design it as a whole."²¹⁵

(a) *Systems Epistemology and 'The Scientific Method'*

From Churchman's point of view, *epistemology* is the key: our theories of knowledge and learning underlie our understanding of science.²¹⁶ The current scientific crisis in Western modes of thought and analysis have fostered a paradoxical impasse: "The paradox is that basic research, which is supposedly the most objective method of learning nature's secrets, becomes completely subjective when viewed as a system..." Addressing the "delicate" problem of how to reconcile inquiry and objectivity, Churchman notes that: "The question is closely related to the question of the boundaries of the basic science system."²¹⁷ He offers his own conclusion...

*...that we are faced today with some critical design problems we do not know how to solve. ...Science's mode of representing nature is very restricted, so that it cannot even talk about some of its most pressing problems and specifically its relationship to other social systems. ... As a system, science cannot discuss social change (implementation) in any but a very restricted sense.*²¹⁸

The [methodological] schema [of systems theory] pictures the world of the decision maker as stages in time. ... A specific decision maker may concentrate on his goals; the planner needs also to concentrate on the whole set of outcomes, intended or not.

The next thing to notice about the decision makers and their actions is that the ends never end. ...

To fill out the schema we need to talk about the environmental constraints on the decision maker. These are conditions ... that the decision maker himself does not control. ...

Thus the important feature of the systems approach is that it is committed to ascertaining not simply whether the decision maker's choices lead to his desired ends, but whether they lead to ends that are ethically defensible. Therefore, in the systems approach today, it is extremely important to understand which values are ethical and which are not...

... We must continuously think of ourselves as in a whole stream or process, constantly trying to become more and more comprehensive in our perspective.

²¹⁴ Bertalanffy, *Op. Cit.* (note 194 on page 2 above), p. xvii. The full context is also informative:

The system viewpoint has penetrated, and has indeed proved indispensable, in a vast variety of scientific and technological fields. This, and the further fact that it represents a novel "paradigm" in scientific thinking (to use Thomas Kuhn's expression), has as a consequence that the concept of system can be defined and developed in different ways as required by the objectives of research, and as reflecting different aspects of the central notion.

²¹⁵ Churchman, *Op. Cit.* (note 207 on page 2 above), p. 71.

²¹⁶ *Ibid.*, p. 17, where Churchman notes that: "In a way, we can regard the history of epistemology (theory of knowledge) not as a description of how men learn and justify their learning, but as a description of how learning can be designed and how the design can be justified." Also cf. Herbert A. Simon, *The Sciences of the Artificial*, 2nd ed. (Cambridge: MIT Press, 1981), passim.

²¹⁷ *Ibid.*, p. 58.

²¹⁸ *Ibid.*, p. 18.

The problem is that *systems* are different from simple aggregations, or what Angyal termed *relationships*: "...Simplicity by itself can never be a basis for system design."²¹⁹ Indeed, "the great contributions of rationalism and empiricism were not their theories of the origin of all knowledge, but rather their way of organizing knowledge..."²²⁰ The use and dominance of mathematics – which Bertalanffy identifies as "a tautological system of hypothetico-deductive nature"²²¹ – has succeeded at the expense of attention to real-world interdependencies. What Bertalanffy calls for instead is an "Organismic Revolution" based on "the notion of *system*" with a view of "*the world as organization*," not as a physical mechanism.²²²

The risk of 'pure reason' is "that its generalizations turn into (empty) tautologies," according to Churchman,²²³ of the kind that Krupp presents so well above in *Section II.D.2(c)*. Closed-system models shall lack contact with their environment, and deduction – divorced from induction (which "in fact, is always contextual"²²⁴) – is part of the failure of orthodox standards. Bertalanffy outlines "the progressive de-anthromorphization of science" as "a most remarkable trend" that has sought to eliminate human experience such that "what eventually remains is only a system of mathematical relations."²²⁵ This 'reductionist' thesis is contrasted with "perspectivism," in which: "The unifying principle is that we find organization at all levels."²²⁶

Another thread to the problem is scientific commitment to simple linkages, based on notions of independent agents subject to aggregation in fixed, stable, linear relations. "We may state as a characteristic of modern science that this scheme of isolable units acting in one-way causality has proved to be insufficient. ...We must think in terms of systems of elements in mutual interaction."²²⁷ The specializations of modern science have fragmented our understanding "into innumerable disciplines."²²⁸ Yet one observes an emerging general 'systems science' synthesis, spreading across all fields today, even in physical science.²²⁹

In a book "about two vast – and still largely underground – paradigm shifts" due to "the fragmentation and disintegration of faith in old assumptions and substantive constructs," as Lincoln explains, "the point is *fit*" between our theories and their applications.

...We need ... new geometries ... of human organization and inquiries. We need new ways of seeing organizations and we need new ways of exploring ... our new visions...

*In empirical terms, we are moving from a positivist era to a postpositivist era. This is an era of transition and transformation.*²³⁰

²¹⁹ *Ibid.*, p. 96.

²²⁰ *Ibid.*, p. 97.

²²¹ Bertalanffy, *Op. Cit.* (note 194 on page 2 above), p. 237.

²²² *Ibid.*, pp. 187-88.

²²³ Churchman, *Op. Cit.* (note 213 on page 2 above), p. 71.

²²⁴ Churchman, *Op. Cit.* (note 207 on page 2 above), p. 109.

²²⁵ Bertalanffy, *Op. Cit.* (note 194 on page 2 above), pp. 242-44.

²²⁶ *Ibid.*, pp. 49 and 247.

²²⁷ *Ibid.*, p. 45.

²²⁸ *Ibid.*, p. 30.

²²⁹ *Ibid.*, p. 32. As Bertalanffy said: "In this way, we postulate a new discipline called *General System Theory*."

²³⁰ Yvonna S. Lincoln, "Introduction" to Lincoln, ed., *Organizational Theory and Inquiry: The Paradigm Revolution* (Beverly Hills, CA: Sage, 1985), pp. 31-32. Egon G. Guba, "The Context of Emergent Paradigm Research," in Lincoln, *Loc. Cit.* (above), pp. 79-80, refers to a 1979 Stanford Research Institute study by Peter Schwartz and James Ogilvy, "The Emergent Paradigm: Changing Patterns of Thought and Belief" (Menlo Park, CA: SRI International, 1979), in

(b) *The Evolution and General Application of ‘Systems Approaches’*

Churchman gives a review of ‘systems’ approaches in the past, starting with the *I Ching* or *Book of Changes*, through the pre-Socratics.²³¹ “Aristotle ... stands as one of the great heroes of the systems approach, because he encompassed the whole universal system in one intellect ... [with an] emphasis on hierarchy of living beings...”²³² The reason for Aristotle’s stature as an early ‘systems’ thinker rests in his scientific approach: “The Aristotelian methodological point is that the entire conceptual scheme needs to be tied together and cannot be regarded in terms of separable components.”²³³ After reviewing Paul, Augustine and Descartes, Churchman turns to Kant: “Kant was the great synthesizer who set the stage for the methodology we use today in the systems approach...”²³⁴

Churchman explains that ‘systems’ styles of thinking got derailed during the 19th and 20th centuries by “those who believed that the road to comprehensiveness is through greater and greater precision” in a “model building” approach. Interestingly, “the use of ‘precision’ ...

which...

...the conventional terms we have been accustomed to using to guide inquiry are giving way to new and dramatically different terms. The penetrating analysis of Schwarz and Ogilvy ... suggests that this paradigm shift can be characterized along seven dimensions: complexity, heterarchy, holography, indeterminacy, mutual causality, morphogenesis, and perspective. ... This emergent paradigm also supports a new form of disciplined inquiry, the assumptions of which are polar opposites to the positivist ones with which most of us grew up.

Lincoln, in *Op. Cit.* (above), pp. 34-35, explains these seven paradigmatic adjustments as follows:

The first shift is from a simple and probabilistic world toward a view of reality that is complex and diverse. We have treated our world as a series of elements and processes that could be reduced to laws about their relationships and elements. We have behaved as if the world were simply additive... We are now beginning to understand that systems ... are separate entities that possess idiosyncratic, dynamic, and unique properties...

The second shift is from a hierarchically ordered world to a world ordered by heterarchy. Our belief that the old order was hierarchical, indeed pyramidal, and based on a “pecking order” of natural and social laws is rapidly giving way to a belief that there is not one set or order, but several or a plurality. ...

The third shift is from the image of a mechanistic and machine-like universe toward one that is holographic. ... Moving toward the metaphor of the hologram, we begin to recognize a world ... that is the creation of constant differentiation and interaction. ...

The fourth shift in world view is from the image of a determinate universe to that of an indeterminate one. ... The implication of such a shift is that future states of complex systems are not predictable. ...

The fifth shift is from an assumption of direct causality to the assumption of mutual causality. Most causal models proceeding from positivistic philosophies postulate some variety of an “if-then” [linear] notion of causal relationships. ... Mutual causality implies ... a symbiosis and a nonlinearity in systems...

The sixth shift in paradigms is reflected in the move away from the metaphor of assembly ... toward the metaphor of morphogenesis. Morphogenesis describes the creation of a new form. ... [out of] elements that are in part identifiable, but whose identity give no clue as to what the new configuration will be like. ...

Finally, the seventh shift is from one of pure objectivity ... to a posture that is perspectival. ... Objectivity as a pursuit in empirical investigations turns out to be a chimera... The concept of perspective ... implies multiple views of the same phenomenon, multiple foci ... and multiple realities...

... The authors [Schwarz and Ogilvy] argue that there is a paradigm shift occurring in two areas: the organizational theory paradigm and the inquiry or empirical paradigm... ...The two shifts ... are joined in such a way that the mutual shifting exhibits consonance, congruence, fit, sympathy, and power. We call this intellectual and methodological fit value-resonance.

²³¹ Churchman, *Op. Cit.* (note 213 on page 2 above), pp. 32-37.

²³² *Ibid.*, p. 38.

²³³ *Ibid.*, p. 40.

²³⁴ *Ibid.*, p. 43.

began with Cournot's work on the economics of the firm in the 1830s."²³⁵ An urge for rigorous science set the focus on 'partial' analysis and 'optimality' in economics, to the exclusion of *interdependence*. As Churchman notes, against this view: "...All so-called subsystems ... are strongly nonseparable from the whole system."²³⁶

The evolution of frameworks from positivist to a systems approach shall lead to alterations in academic content, method and disciplinary orientation. Harman finds a contradiction between the needs of democracy and the demands of orthodox science.²³⁷ The conflict also ramifies into ecological issues, since systems theory entails more attention to vital linkages with the environment, due to the open nature of living, ongoing organizations.²³⁸

The educational implications of systems theory are also important, in our problem-solving activities.²³⁹ The key to learning, according to Churchman, is not taking a narrow 'approach' but to develop a more embracing, expansive vision of things. Science starts, not with exactitude, but with an eye to *relevance*.²⁴⁰ The failure of 'pure reason' in economics (and throughout academe)

²³⁵ *Ibid.*, p. 44. Ironically, the reemergence of organizational theory in economics stemmed from Chamberlin's work on the problem addressed by Cournot a century earlier on the *interdependence of firms* in the larger economy!

²³⁶ *Ibid.*, pp. 45-46. On this subject, Churchman notes that "it is remarkable how intuition and common sense cooperate to convince the mind that success in being precise about one sector of reality implies that one is becoming more precise about the reality of the whole system..." The problem with this supposition lies in the *interdependence* of system parts, suggesting "why the intuitive, commonsense belief that precision about the description of a sector leads to precision about the larger system may be ... seriously wrong."

²³⁷ W. Harman, "The Nature of Our Changing Society" (Menlo Park, CA: SRI, 1969), reprinted as ch. 1 in John M. Thomas and Warren G. Bennis, eds., *The Management of Change and Conflict* (Baltimore: Penguin, 1972), p. 83:

We have already noted, in discussing the possible conceptual revolution, that a conflict exists between the basic premises of a democracy, that man is, by virtue of his transcendental nature, endowed with reason, will, and a valid sense of value, and the reductionistic, deterministic, physicalistic premises of the behavioral-science socio-political theory our universities give the budding sociologists and political scientists going into public life.

²³⁸ D. Katz and R. L. Kahn, "Common Characteristics of Open Systems," ch. 2 in their *The Social Psychology of Organizations* (Wiley, 1966), pp. 14-29, as excerpted in ch. 5 of Emery, *Op. Cit.* (note 193 on page 2 above), pp. 90-91:

Systems theory is basically concerned with problems of relationships, of structure, and of interdependence rather than with the constant attributes of objects. In general approach it resembles field theory except that its dynamics deal with temporal as well as spatial patterns. Older formulations of system constructs dealt with the closed systems of the physical sciences, in which relatively self-contained structures could be treated successfully as if they were independent of external forces. But living systems, whether biological organisms or social organizations, are acutely dependent upon their external environment and so must be conceived of as open systems.

²³⁹ Cf. Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Doubleday Currency Book, 1990), p. 3. The opening of this book concerns the process of *organizational learning*:

From a very early age, we are taught to break apart problems, to fragment the world. This apparently makes complex tasks and subjects more manageable, but we pay a hidden, enormous price. We can no longer see the consequences of our actions; we lose our intrinsic sense of connection to a larger whole. ...

The tools and ideas presented in this book are for destroying the illusion that the world is created of separate, unrelated forces. When we give up this illusion – we can then build "learning organizations," organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.

²⁴⁰ Churchman, *Op. Cit.* (note 213 on page 2 above), p. 145:

...The key to success ... seems to be comprehensiveness. Never allow the temptation to be clear, or to use reliable data, or to "come up to the standards of excellence," divert you from the relevant, even though the relevant may be elusive, weakly supported by data, and requiring loose methods.

appears in its scorn for *realism*: positivistic constructions simply are not designed for application to realistic contexts.

Harman closes his paper on the relevant issue at hand with regard to “the crisis in economic values” that: “The essential issue is the extent to which values which are non-economic, at least in the strict sense, shall be a part of our operational (as contrasted with declared) values. The issue is central to resolution of the revolutionary forces.” Given the impact of education on values, which shall be fostered? This issue relates, importantly, to a cultural “crisis in pluralism,” and the issue of power relations. Advanced societies cannot maintain a unimodal ethic:

*The question is not whether we shall have a multi-modal culture... Rather it is whether we shall have mutual hostility and exploitation of weaker groups by stronger ones, or whether we shall have between diverse groups mutual respect and cooperation.*²⁴¹

The introduction of ethics into our policies and educational processes simply is part of a systems approach in its shift of frame, method and treatment of various social concerns. As Massarik, Margulies and Tannenbaum put it, the impact will be profound – if we allow a systems approach to overcome the inertia of current traditions, and “rethink prevailing boundaries and the paradigms ... and practice that they define.”²⁴² These authors name the approach they endorse: “We now believe that the time is right ... for a new disciplinary designation. We think that *human systems development* is now appropriate.”²⁴³

4. A Systems Theory of Organizational Management and Design

Within this systems approach to organization appears an array of insights on how society and personality operate in diverse settings. Such shall lead to additional understanding of ITQs and their potential likely effects on both the environment and the public. A clear grasp of organizational process should be an integral part of any analysis of ITQs as a fisheries management plan.

Systems theories of organization include an array of insights. We start with the history of this approach to organizational management theory, and then examine a few of the founders and

Churchman, in *ibid.*, pp. 146-47, calls “the academic world of Western 20th century society ... a fearsome enemy of the systems approach” due to its insistent attention to “matters that are scholastically respectable but disreputable from a systems-planning point of view.” He assures us that “the excellence in minutiae that scholars often hold dear today has never been the sole criterion of excellence: some of the greatest minds of the past have advocated a comprehensive approach to human destiny.” Abandoning orthodox science shall not mean giving up “standards of excellence” but rather accepting openness and tolerance for other views.

We do have to relinquish the notion that there is “one best way” to conduct our research... “Objectivity” is a characteristic not of the data, but rather of the design of the inquiring system as a whole: does it try to be open to all those aspects it deems relevant? Here again we see the same principle of comprehensiveness at work. The narrow approach to objectivity tries to identify specific characteristics. ... In contrast, the question the comprehensive inquiring system asks when it gets widely diverse information, is what strategy to follow. ...

²⁴¹ Harman, *Op. Cit.* (note 237 on page 2 above), p. 87.

²⁴² Massarik et al., *Op. Cit.* (note 201 on page 2 above), p. 18. The full remark is as follows:

Looking ahead, the time now seems ripe to fundamentally rethink prevailing boundaries and the paradigms of scholarship and practice that they define. Boundaries are, after all, arbitrary, and their meaning emerges from what occurs inside them and at their periphery. Even the term interdisciplinary assumes the pre-existence of some specified set of disciplines. But all is fluid, and all is unity.

²⁴³ *Ibid.*, p. 15.

features of this approach. Social values and their rejection of positivist science is next, followed by a discussion of adaptive, flexible organizational learning in a *cooperative* frame as a challenge to market theories of competition. Then we turn to particular aspects of organizational management theories as they pertain to the economic case against ITQs.

(a) *A Historical Overview of the Shift in Organizational Theory*

The ‘orthodox’ organizational view – what McGregor would call ‘Theory X’²⁴⁴ – started with Weber’s theory of bureaucracy, based on direction and control by a hierarchic authority. The problem with this, as Bennis puts it, is that “the bureaucratic form of organization is out of joint with contemporary realities; ... new shapes, patterns and models are emerging which promise drastic changes in the conduct of the corporation and of managerial practices in general.”²⁴⁵ Weber saw enlightened bureaucracy as a system of control, coordination and direction that was more reliable, rational and efficient than “feudalism, with its foundation in charismatic authority.”²⁴⁶ The first translation of his work into English in 1947, after the end of World War II, made it right for the times. But the faith in organizational systems based on command, direction and hierarchic control began to break down during the 1960s, with an outpouring of arguments suggesting concerns with this view.

Evered offers a personal look at the issues and problems surrounding organizations in modern society: that they “are not working” and “need help” unavailable from social science (which is making things worse, not better), and so “our conception of science must be revised” to favor “reflectivity” in our organizations and management processes. Evered dubs the “immaculate conception” of value-free science and technology as the heart of the issue, where values must be addressed explicitly, and not just denied. He notes the importance of knowledge types and organizational learning activity in this science of management, as a revolution of *values*.²⁴⁷ But the range of views and issues in organizational management theory is so embracing, they are hard to summarize in any compact way.

Some of the insights in organizational management theory yield different metaphors and ways of framing concepts in the decision process. Others open new values and priorities to our attention, with explanations of why and where orthodox systems start to fail. Even taxonomic constructions suggest that diverse approaches shall offer a better chance of finding one that applies to a given dilemma. Indeed, this is the key: a ‘one-trick pony’ is not well-equipped for interdependent systems analysis. Simplistic constructions will not ‘do’ where relevant theory is sought: the models we use shall have to be fit to the application at hand. Diversity and openmindedness show in all sorts of contexts throughout discussions of management theory.

²⁴⁴ Cf. D. McGregor, “Theory X and Theory Y” from chs. 3 and 4 of his *The Human Side of Enterprise* (McGraw-Hill, 1960) in D. S. Pugh, ed., *Organization Theory* (Baltimore: Penguin, 1971), pp. 305-13.

²⁴⁵ Warren G. Bennis, “Changing Organizations” (*Journal of Applied Behavioral Science*, 2:3, 1966), pp. 247-63, in Thomas and Bennis, *Op. Cit.* (note 237 on page 2 above), p. 214.

²⁴⁶ David L. Clark, “Emerging Paradigms in Organizational Theory and Research” in Lincoln, *Op. Cit.* (note 230 on page 2 above), pp. 44-45.

²⁴⁷ Cf. Roger D. Evered, “Transforming Managerial and Organizational Research: Creating a Science That Works” in TMMA, *Op. Cit.* (note 201 on page 2 above), pp. 419-55, *passim*.

(b) *A Look at Some Early Management Theories: Selznick, Simon, Etc.*

One of the many potential confusions in organizational systems theory appears in its breadth of application among an array of fields and disciplines due to what Selznick calls “structural-functional homologies” where, in systems theory, “it is the *logic*, the *type* of analysis, which is pertinent.”²⁴⁸ Selznick characterizes “formal organization” as “the structural expression of rational action,” whose primary institutional act is one of *delegation*. But “these formal structures ... never succeed in conquering the non-rational dimensions of organizational behavior” which are indispensable to our understanding of systems.

Organizations, according to Selznick, ought to be viewed as “*cooperative systems*,” functioning both as “an *economy*” and “an *adaptive social structure*,” interacting with their environments in frequently unpredictable ways.²⁴⁹ One of the prime motives of organization is *self-preservation*, i.e., “the maintenance of the integrity and continuity of the system itself.”²⁵⁰ Organizations engage people in making *commitments* to wider goals than their own immediate needs, suggesting a *tension* between the aims of a system and individual wants.²⁵¹ As Selznick explains: “A theory of organization requires more than a general frame of reference... What is necessary is the construction of generalizations concerning transformations within and among cooperative systems.”²⁵² Such include defensiveness, ideology and cooptation; all are means of protecting organizations from outside challenge.²⁵³

Simon was one of the early leaders in organizational theory development, due to a dissatisfaction with analyses in traditional modes. Simon addressed the *process* of choice in interdependent domains as having three phases: search or “*intelligence activity*”; devising options or “*design activity*”; and deciding or “*choice activity*.”²⁵⁴ Simon distinguished programmed from nonprogrammed decisions by organizational level and economy of thought and action in these systems, where “organizational form must be a joint function of human characteristics and the nature of the task environment.” Simon advanced the view that: “Hierarchy is the adaptive form for finite intelligence to assume in the face of complexity.”²⁵⁵ The emphasis in organizational theory is on teamwork: *cooperation*, not competition, allows systems to work, grow, and thrive in changing environments. Simon identifies *satisfaction* as part of successful organization of factory (and diverse) systems, in contradistinction to Weber:

*Man does not generally work well with his fellow man in relations saturated with authority and dependence, with control and subordination, even though these have been the predominant human relations in the past. He works much better when he is teamed with his fellow man in coping with an objective, understandable, external environment.*²⁵⁶

²⁴⁸ Cf. P. Selznick, “Foundations of the Theory of Organizations” (*American Sociological Review*, 13, 1948), pp. 25-35, reprinted in ch. 13 of Emery, *Op. Cit.* (note 193 on page 2 above), p. 270.

²⁴⁹ *Ibid.*, pp. 261-63.

²⁵⁰ *Ibid.*, p. 268.

²⁵¹ *Ibid.*, pp. 272-73.

²⁵² *Ibid.*, p. 275.

²⁵³ *Ibid.*, pp. 276-79. The “structural-functional homologies” that Selznick finds in systems theory imply that these self-protective strategies apply as well to paradigms and to psychology as they do to firms and institutions in our society.

²⁵⁴ Herbert A Simon, “Decision Making and Organizational Design” from his *The New Science of Management Decision* (Harper and Row, 1960), pp. 1-8 and 35-50, reprinted in Pugh, *Op. Cit.* (note 244 on page 2 above), pp. 189-90.

²⁵⁵ *Ibid.*, p. 204.

²⁵⁶ *Ibid.*, p. 210.

(c) *Some Features of Organizational Theory*

Bertalanffy addresses several features of psychological organization, such as the limits of *homeostasis*; the ubiquity of diversity or *differentiation* in learning contexts; *centralization*; *regression* as disintegration; organizational *boundaries*; *symbolic activities* and dynamic aspects of all personality.²⁵⁷ As *psychological* issues underlie all social systems design – despite the attempt to erase ‘subjectivity’ in neoclassical economics and by orthodox scientists in the ‘positivist’ tradition – there is a great deal of very wide-open discussion throughout the organizational literature of features shared diversely, and thus *inderdisciplinary* in nature.

Indeed, a serious source of management problems, according to Culbert and McDonough, is just this failure to recognize ‘subjectivity’ among organizational members by executives. Successful organizations seem to progress by encouraging *open minds*, so people can work with a range of models in an adaptive framework connected to whatever reality brings.²⁵⁸ Such is not the emphasis of any orthodox scientific concept taking positivism as its epistemological base. Indeed, the thrust is quite the opposite, to expunge emotions from attention and dehumanize science in a quest for *objectification*. Both the institutional and the organizational paradigms share a central concern with *values* as an important domain of inquiry.

(d) *Social Values and Subjectivity as a Challenge to Positivism*

Davis suggests that “neither organizational design nor technical design can proceed without agreement on the *social values* that will guide the new organization or society...”²⁵⁹ All private, social, organizational and strategic choices structure and adapt to *goals*, serving as explanations thereof. Values are *essential* to any organizational action. Design is purposive effort, taking account of space and time, moving through interdependent domains subject to endless shocks and disruption. The organization of vital endeavors shall live or die on their ‘reflectivity,’ using Evered’s term.²⁶⁰

²⁵⁷ Bertalanffy, *Op. Cit.* (note 194 on page 2 above), pp. 205-21.

²⁵⁸ Cf. Samuel A. Culbert and John J. McDonough, “How Reality Gets Constructed in an Organization” in TMMA, *Op. Cit.* (note 201 on page 2 above), p. 141 [emphasis added]:

Operating with an enhanced understanding of the subjective basis of reality ... enables management to perform at a much more realistic level. ... Management is able to read organizational situations more accurately, create more options for achieving team effectiveness, and more confidently predict the impact of their actions.

We take pains to add, however, that progress depends on managers working with an improved model... ...Managers do not respond enthusiastically to the exposure of their deficiencies... Most managers are well aware of their limited understanding of subjective forces. What they seek are increments of insight and prescriptions. What they need, however, are models that restructure their thinking to see that subjectivity and self-interested participation are part and parcel of every organizational action and perception, models that allow them to include this factor in their everyday organizational thinking. It is to this end that our work has been and continues to be directed.

²⁵⁹ Louis E. Davis, “Guides to the Design and Redesign of Organizations” in TMMA, *Op. Cit.* (note 201 on page 2 above), p. 151.

²⁶⁰ Cf. Evered, *Op. Cit.* (note 247 on page 2 above), p. 425. Evered’s scheme addresses the failure of orthodox science in this regard, on pp. 433-37, thus:

The uncritical adoption of the epistemology of the physical sciences into social inquiry was initially perpetuated by Comte (...) in the 1830... ...

The Comptean world view (that is, positivistic social science) purposefully leaves out a number of critically important features of most social/organizational/human phenomena. Specifically, it omits ... motives and purposes ...; the process of interpreting and evaluating events and facts; ... the actor’s “phenomenal world” ...;

Davis explains that every organization operates “as a complex of four interacting entities...: a *transforming agency*...; an *economic entity* ...; a *small society* ...; [and] a *collection of individuals*...” These systems include “internal boundaries” (their placement is very important) and “*building blocks*” (which “should be miniature version[s]” of the organization), and are best designed to meet the following goals: “high commitment ... high quality of working life ... [good] career opportunities ... adaptability ...” and effective teamwork.²⁶¹ In contrast with the dehumanized demeanor of orthodox science, systems theory is ‘out of control’ in terms of phenomena it depicts. Perhaps Churchman captured it best, “that design, properly viewed, is an enormous liberation of the intellectual spirit” to *learn* beyond the constraints of “accepted practice,” where “the student of modern science ... has been trained – rather than educated.”²⁶²

The emphasis of organizational theory on learning incentives, systems design for growth and development, and the internal cohesion of members, seems quite alien to any orthodox science. Its orientation is totally opposite to traditional habits of thought, despite the astonishing range of phenomena to which a ‘systems’ story applies. So one explanation of why the NRC panel ignored this schema is simple: linguistically, it ‘speaks in tongues’ – in terms set outside the frame of values endorsed by established disciplines – so is seen as ‘unscientific.’

(e) *Adaptive, Flexible Organizational Learning in a Cooperative Frame*

Consulting the literature on the adaptive flexibility of firms in dynamic contexts shows another reason for resistance to change by organizations subject to stress, such as by using a ‘paradigm management system’ meant to protect the ‘core’ of a discipline. Perhaps Senge explains it the best, that: “Learning organizations are possible because ... we are all learners.” Indeed, “the most salient reason for building learning organizations is that we are only now

the reality of self-observation, self-reflection, and introspection ...; ...collaborative interaction [between researcher and actor]; and the realities of human action, language and consciousness. It is difficult to see how an epistemology that systematically excludes any of these factors could ever generate meaningful knowledge that pertains to the practice of management. These factors can no longer be systematically excluded from our science; we have to develop ways of building them back into our science – defining concepts and methods. ...

The assumptions underlying the traditional ‘objective’ science paradigm lead to a view of the managerial practitioner as primarily a user of science-based techniques. ... [but] there do seem to be limits to the technification and rationalization of a living system. ...The reality of the living system asserts itself as contradictory to technical rationality. Human beings seem to exhibit ... behaviors that arise from sources other than science-based technical rationality – imagination, curiosity, pain, playfulness, perversity, deception, randomness, boredom, collaboration, love, self-expression, personal survival, thoughts about the future, and a wide range of needs for affiliation, power achievement, esteem, body functioning, and self-actualization. ...

In addition to value conflicts, people in living organizational systems generate uncertainty, volatility, and turbulence that technical rationality is ill equipped to deal with, since it is designed for certainty, order, and stability derived from a world that is assumed to be structured, ordered, stable, and tidy. ...

There are at least three other aspects of reality that are particularly irksome for the positivist science/technical rationality mind-set, because its methods cannot deal with them. First, an essential truth about reality is that every situation is in some way unique or distinctive. ... Second, appropriate action is based in part on how the situation is defined (...), and this depends on [its] historical development..., how [it] is framed in language (...), and the declared commitments of actors. ... Third, when theory is separated from practice ... the effect is to reduce the practitioner’s competence... The consequence of objective research and technical rationality is the fostering of helplessness and dependency in the practitioner...

The reality that practicing managers in live organizations face daily is composed of the characteristics of real people, which do not nicely fit the neatness of technical rationality.

²⁶¹ Davis, *Op. Cit.* (note 259 above), pp. 152-63.

²⁶² Churchman, *Op. Cit.* (note 207 on page 2 above), p. 13.

starting to understand the capabilities such organizations must possess.”²⁶³ Senge’s whole book can be read as a metaphor on the failure of orthodox science to deal with the organizational language of interdependent systems, be they institutional, ecological, economic or psychological. This ‘circular reasoning’ – self-referential and therefore reflexive – forces one out of orthodox standards into another epistemological mode tuned to this style of analysis. *Sharing the Fish* is simply oblivious to any underlying concerns about the use of *positivist* theories in a *systems* setting.

Organizations in change and transition have been the focus of many analyses throughout the corpus of systems theory, and issues of *power and politics* show as influential here. “There is a growing perspective that organization development is, in fact, a political process in and of itself.” A *cultural* element also appears in “the use of organizational myths, symbols and metaphors” as important determinants of behavior.²⁶⁴ The whole language of systems theory involves significant changes in our representation of phenomena and their apprehension. The issues specific to organizational understanding of ITQs shall be: open and closed systems; homeostatic control, feedback, integrity and incentive alignment; organizational learning and culture; cooperation, not competition; and the search for meaning and values.

5. *Open vs. Closed System Models and the Environment*

The model of firms and organizations in neoclassical theory involves a closed circle of flowing input through an ‘optimizing filter’ (a black box of technology – usually linear – as a ‘production function’) outputting ‘goods and services’ in a mathematical frame. Managing organizations subject to wild, disruptive forces from the environment does not appear in orthodox economic analysis, since ‘business schools deal with that stuff.’

But all living systems – psychological, sociocultural, intellectual, ecological, economic – are open to external influence, and the difference of open from closed systems shall lie in their physical limits. Indeed, the evolution of organizations suggests a violation of physical laws of thermodynamics: subsystems show *negative entropy* in their increasing order, at the expense of entropic increases in disorder elsewhere in the environment.²⁶⁵ And this is a way to examine the problem of fishery exploitation. Tracing causality in this setting – attributing cost to options or actions (spatially and temporally) – is in no way a straightforward task. Closed-system models are not a reliable guide to ‘open system’ effects in ecological living organizations in the real world.

(a) *Establishing Contact with the Environment through ‘Open Systems’ Assumptions*

Open system models shall live on exchanges with their environment; thus suppositions of closure wrongly ignore the *context* of firms’ survival. Assuming that prices solve the problem by adjusting to resource supplies shall put more reliance on ‘rational markets’ than they really can bear (‘races for fish’ notwithstanding). *Openness* is also a critical feature of ‘learning organizations’; Senge devotes a whole chapter to the issue of *openmindedness* as “a relationship you have with others. It is a change in spirit, as well as a set of skills and practices.”²⁶⁶

²⁶³ Senge, *Op. Cit.* (note 239 on page 2 above), pp. 4-5.

²⁶⁴ Raia and Margulies, *Op. Cit.* (note 203 on page 2 above), pp. 268-69.

²⁶⁵ That’s the 2nd law. The 1st is also violated, in the ‘energy model’ of economics, since ‘total utility’ is not conserved. For a useful perspective on this sort of issue, cf. Mirowski, *Op. Cit.* (note 53 on page 2 above), *passim*.

²⁶⁶ Senge, *Op. Cit.* (note 239 on page 2 above), p. 284, quoting William O’Brien, CEO of Hanover Insurance.

So one dominant feature of a systems approach to management is *attention to the environment* of the organization. Thinking of firms or individual agents as a closed system – as self-contained and independent – will lead to “misconceptions” and a profusion of unintended effects. “Thinking of the organization as a closed system, moreover, results in a failure to develop the intelligence or feedback function of obtaining adequate information about the changes in environmental forces. ...”²⁶⁷ So *feedbacks* are important as well in our understanding of systems. Indeed, the whole approach implies a different way of thinking about the world in which we live, and how we tie individual actions into an ‘ecological’ whole as we move through space and time.

(b) *Closed-System Models Shall Not Apply to Open Ecologies*

Managing economic complexity yields another concern about the application of closed-system models to open ecological settings: troubles are overlooked, then met with tighter restrictions and rigidity; last, inadequate treatment of problems spawns further resurgent dangers. Short horizons and escalating crises may ensue, with the risk of organizational or psychological limits being encountered in a breakdown of system management process. As Trist explains, “when a system’s response repertoire cannot match increases in variety emanating from the environment, that system’s survival is endangered.”²⁶⁸ So many issues and applications should come to mind in this context, that it is hard to know where to start (much less stop)!

Bertalanffy addresses the problem of framing organismic chemistry in a closed-system model, where “reactions even in simple organismic systems cannot be written in a closed system of equations; this is possible only for isolated partial systems.”²⁶⁹ He points out that: “The maintenance of the system in a continuous flow and exchange of material and energy ... [is one of] the central problem[s] of organic metabolism.”²⁷⁰ But, as Terreberry observes: “Sociological, social psychological, and business management theorists often still treat formal organizations as closed systems.”²⁷¹ Such should be seen as *unscientific*, if firms and other life forms are *open systems*, as Katz and Kahn aver: “living systems, whether biological organisms

²⁶⁷ Katz and Kahn, *Op. Cit.* (note 238 on page 2 above), pp. 100-102.

²⁶⁸ Eric Trist, “Intervention Strategies for Interorganizational Domains” in TMMA, *Op. Cit.* (note 201 on page 2 above), p. 171. The full text of the quote is of interest, starting with a reference to his earlier work with Fred Emery:

Developing the argument further is conceptual work ... on what we called the “causal texture of organizational environments” ... Distinguishing the contextual environment as supplying the boundary conditions for transactional relations was an important step in the original analysis; for, as the environmental field becomes more richly joined (...), as the parts become more interconnected, there is greater mutual causality (...). The denser the organizational population in the social habitat (and the more this itself is limited by the increasing constraints emanating from the physical environment, whose resources are no longer perceived as boundless), the more frequently do the many causal strands become enmeshed with each other. This means that forces from the contextual field begin to penetrate the organization set. This creates what we have called turbulence for the organization, whose initial repertoire may only too easily lack the requisite variety for survival. Ashby’s law of requisite variety states that, when a system’s response repertoire cannot match increases in variety emanating from the environment, that system’s survival is endangered. This is our situation at the present time. The contemporary world environment is characterized by much higher levels of interdependence and complexity than hitherto existed. These have led, in turn, to a much higher level of uncertainty. The consequent variety overload is experienced by the organization and the individual alike as a loss of the stable state.

²⁶⁹ Bertalanffy, *Op. Cit.* (note 194 on page 2 above), p. 123.

²⁷⁰ *Ibid.*, pp. 123-24.

²⁷¹ S. Terreberry, “The Evolution of Organizational Environments” (*Administrative Science Quarterly*, 12:4, March 1968), pp. 590-613, reprinted as ch. 4 in Thomas and Bennis, *Op. Cit.* (note 237 on page 2 above), p. 144.

or social organizations, are acutely dependent upon their external environment and so must be conceived of as open systems.”²⁷² The interaction of organizations with their environments shows the inadequacy of focusing only upon the internal interdependence of firms.

(c) *The Texture of the Environment: Complexity and Cooperation*

Organizational theorists have also examined what Emery and Trist defined as “the causal texture of the environment” in its ‘system design’ implications. Starting with an important point – that “the laws connecting parts of the environment to each other are often incommensurate with those connecting parts of the organization to each other, or even with those which govern the exchanges”²⁷³ – they proceed to identify “four ‘ideal types’ of causal texture.” The first is “the *placid, randomized environment*” of a ‘competitive market’; the second is the ‘imperfect competitive’ form of “*placid, clustered environment*.” Third, “the *disturbed-reactive environment*” of oligopoly is then followed by a fourth, the “*turbulent field*,” that has no analogue in economics. After a short discussion of “social values [which] are here regarded as coping mechanisms ... to deal with ... uncertainty,” Emery and Trist state their rather surprising conclusion that:

...*Turbulent fields demand some overall form of organization that is essentially different from the hierarchically structured forms to which we are accustomed. Whereas type 3 environments require ... competitive organizations ..., turbulent environments require ... relationships that will maximize cooperation... We are inclined to speak of this type of relationship as an organizational matrix. ...*²⁷⁴

These “matrix organizations” then transform into *institutions* in turbulent environments, “through the embodiment of organizational values which relate them to the wider society.”²⁷⁵

Terreberry extends this insight to reflect the rejection of optimization by many economists, and the development of alternative frames of interorganizational linkage. He reports a trend toward increased stress on *cooperation* – and away from competition – in dynamic, uncertain environments such as where practical *learning* is sought.²⁷⁶ Trist developed this schema into an “*organizational ecology* in the general systems sense [which refers] to an interdependent set of organizational entities that, in order to survive, must learn in some mutually acceptable way to share the limited resources of a common environment.”²⁷⁷

This is the ‘tragedy of the commons’ in a ‘turbulent field’ domain, and what Ostrom would call a ‘community-based comanagement system.’²⁷⁸ Trist discusses it in different terms, but the two would come to the same conclusion that the solution has more to do with cooperation than competition. Trist suggests a conception of *interindustry associations* set up by and regulated by stakeholders in ‘turbulent fields.’

²⁷² Katz and Kahn, *Op. Cit.* (note 238 on page 2 above), p. 91.

²⁷³ F. E. Emery and E. L. Trist, “The Causal Texture of Organizational Environments” (*Human Relations*, 18, 1965), pp. 21-32, reprinted in ch. 12 of Emery, *Op. Cit.* (note 193 on page 2 above), p. 243.

²⁷⁴ *Ibid.*, p. 253.

²⁷⁵ *Ibid.*

²⁷⁶ Cf. note 271 above for reference.

²⁷⁷ Trist, *Op. Cit.* (note 268 on page 2 above), p. 167.

²⁷⁸ Cf. Ostrom, *Op. Cit.* (note 23 on page 2 above), *passim*.

*The importance of regulation by stakeholders can scarcely be overemphasized, for the danger is considerable that the organizational fashioning, the institution building, the social architecture ... will either take the wrong path or will not be attempted at all. By “the wrong path” is meant organizational elaboration in terms of bureaucratic principles that would extend central power and hierarchical form throughout a domain. ...*²⁷⁹

(d) *ITQs as “The Wrong Path” in a “Turbulent Field” Domain*

The Trist depiction of “the wrong path” is strangely evocative of the ‘modern nobility’ of the ITQ owners, with their effectively feudalistic control over non-owning captains and crews of vessels ‘serf-fishing’ their shares. Icelandic owners – according to *Sharing the Fish* – “are habitually referred to as ‘quota kings’ or ‘lords of the sea.’²⁸⁰ The lesser quota kings are likened to medieval landlords, and, conversely, small-scale lessees become ‘tenants’ or ‘serfs.’” Indeed, as *Sharing the Fish* explains:

*In summary, many Icelanders seem to have a sense of having been cheated by the designers of fisheries policy, drawing attention to the failures of the democratic political process. ... Originally, the ITQ program was presented as a short-term “experiment.” Given, however, the relative irreversibility of social transformations of this kind, the ITQ program was hardly the innocent experiment that policymakers tended to speak of. Moreover, the program was presented as a fairly limited and technical exercise. There were no serious indications or warnings of the large-scale structural transformations that later took place. In fact, some of the proponents of the program indicate that a pure market-based program was introduced in moderate doses to avoid public rejection at an early stage.*²⁸¹

The general point is that turbulent fields are *incompatible with competition*, and call for cooperation and *collaboration* instead. As Trist states the point, in this context:

*A negotiated order will need to be founded on collaboration rather than competition, collaboration being the value base appropriate for the adaptive cultivation of interdependence. ... This change to a new logical type ... requires a reversal of the customary relations between competition and collaboration.*²⁸²

The problem here is that turbulent fields are *cognitive* as well as *organizational*, and must be “appreciated” as such, in Vickers’ sense of that term.²⁸³ As Trist so wisely warns, in words so apt to the problems suggested in Iceland:

*It is most important that the identity of the domain is not mistaken through errors in the appreciative process; otherwise, all subsequent social shaping becomes mismatched with what is required to deal with the metaproblem. ...*²⁸⁴

²⁷⁹ *Ibid.*, p. 170.

²⁸⁰ *Sharing the Fish*, p. 341.

²⁸¹ *Sharing the Fish*, p. 342.

²⁸² Trist, *Op. Cit.* (note 268 on page 2 above), pp. 172-73.

²⁸³ Trist refers to G. Vickers, *The Art of Judgment* (London: Chapman and Hall, 1965), and defines it thus: “Appreciation is a complex perceptual and conceptual process that melds together judgments of reality and judgments of value.”

²⁸⁴ Trist, *Op. Cit.* (note 268 on page 2 above), p. 173. On pp. 170-71, in a statement continued in note 268 above, Trist offers additional insight to this sort of “matrix organization” and its stabilizing influence on a turbulent field through self-regulation within a participatory democratic cooperative frame:

... *Socioecological principles imply the centrality of interdependence, entailing some surrender of sovereignty*

6. 'Homeostasis' and 'Feedback' in Dynamically Interdependent Domains

Strictly speaking, 'equilibrium' models apply in *static* contexts and to entropically *closed* systems. Within dynamically open, complexly interdependent environments, 'steady states' of exchange and transformation are achieved through 'homeostasis' by means of 'feedback control loops' serving to moderate subsystem transactions with the field as a whole. The overall system moves and changes in largely unpredictable ways, responding to impulses as they occur from other subparts of the domain. Disaggregating the process into *relations* between its separate elements simply ignores and dismisses the very essence of systemic connections. Standard theory in economics is not designed to analyze systems in open, unbounded domains, and generate truthful insight to their behavior, for reasons having to do in part with the nature of 'homeostasis' and 'feedback.'

(a) *'Homeostasis' and 'Equilibrium' in Ecology and Economics*

The notion of 'equilibrium' – based on the second law of thermodynamics in physical theory – involves *states of rest* in which no work is done. 'Homeostasis' involves *steady states* of flowing matter and energy in a dynamic balance of forces, such that "the capacity of the organism for work, without which adaptability, and hence survival, would be impossible" is maintained at an optimal level of full, living potential.²⁸⁵ Consequently, as Koehler explained in 1938, although "an equilibrium theory of organic regulation" appears acceptable, it is "entirely misleading," given the functional principles of homeostatic control based on both "the second law" and "the law of dynamic direction."

*To express the main argument against such a theory [of organic 'equilibrium'] quite briefly: neither is the standard state of an organism a state of equilibrium in the common sense of the word, nor do organic processes in their totality generally tend to approach such an equilibrium.*²⁸⁶

Cannon, writing in 1932, dubbed this phenomenon 'homeostasis,' saying that equilibria apply to closed systems, "where known forces are balanced," whereas "the word homeostasis does not imply something set and immobile, a stagnation."²⁸⁷ As Cannon explained, according to Koehler:

along with considerable diffusion of power [instead of the concentration of power resulting from actual ITQ systems – FB]. There is no overall boss in a socioecological system, though there is order, which evolves from the mutual adjustment of the parts, the stakeholders. Any overriding purpose that emerges from their sense of being in the same boat would depend on their arriving at a shared understanding of the issues. ...

Socioecological principles enable the organizational life of the society to be strengthened at the domain level in ways that are self-regulating rather than becoming autocratic or remaining ineffectual. If self-regulation is democratic, then the establishment at the domain level of an order that conforms to democratic values is a major project of our times. A level of complexity has now been reached that renders authoritarianism and laissez-faire maladaptive and unviable as societal modes. Facing a future of increasing complexity means trying self-regulation within interdependence, learning how to cultivate the new logical type. We do not have much experience of self-regulation at the domain level. Much evolutionary experimentation will be required.

²⁸⁵ Emery and Trist, *Op. Cit.* (note 273 on page 2 above), p. 242.

²⁸⁶ Wolfgang Koehler, "Properties of Open Systems" excerpted from ch. 8 of his *The Place of Values in the World of Fact* (New York: Liveright, 1938), pp. 314-28, in ch. 3 of Emery, *Op. Cit.* (note 193 on page 2 above), p. 61.

²⁸⁷ W. B. Cannon, *The Wisdom of the Body* (Norton, 1932), ch. 1, as quoted in *ibid.*

*... no organism is detached from the rest of the world... These systems are not closed. ... From the point of view of physics it is, therefore, simply impossible to state it as a rule that transformations in organisms occur in the direction of equilibria.*²⁸⁸

After a series of examples, serving to illustrate the point, Koehler remarks that: “These arguments must, I believe, convince everybody that an ‘equilibrium theory’ of organic homeostasis is not compatible with elementary biological facts.”²⁸⁹ He describes the flame of a candle as a process of homeostasis, saying: “A general view of the organism shows us a situation which resembles strongly that of the flame. The organism is not a closed system; it is part of a larger functional context.”²⁹⁰

The secret to understanding homeostasis lies in the interaction of systems with their environments and the concept of ‘feedback control loops.’ As Bertalanffy put it, “feedback mechanisms ... are responsible for homeostasis.”²⁹¹ The process of “feedback regulation, which is basic in cybernetics and was biologically formulated in Cannon’s concept of homeostasis” has several “essential criteria: (1) Regulation is based on preestablished arrangements (‘structures’ in a broad sense). ... (2) Causal trains within the feedback system are linear and unidirectional. ... (3) Typical feedback or homeostatic phenomena are ‘open’ with respect to incoming information, but ‘closed’ with respect to matter and energy. ...”²⁹² As a result, the existence of homeostatic ‘steady states’ in open, dynamically interdependent systems stands on rather restrictive foundations, such as are often challenged – if not rejected – by organizational theorists.

*Generally, the homeostasis scheme is not applicable (1) to dynamic regulations ... taking place within a system functioning as a whole (...); (2) to spontaneous activities; (3) to processes whose goal is not reduction but...building up of tensions; and (4) to processes of growth, development, creation, and the like. We may also say that homeostasis is inappropriate as an explanatory principle for those human activities which are nonutilitarian – i.e., not serving the primary needs of self-preservation and survival and their secondary derivatives, as is the case with many cultural manifestations. ... It should not be forgotten that Cannon (1932, p. 323), eminent physiologist and thinker that he was, ... explicitly emphasized the “priceless unessentials” beyond homeostasis.*²⁹³

So even homeostasis cannot be used to analyze unbounded, dynamic social and biological systems subject to ongoing change and disruption. The concept is simply too narrow in its embrace and conditions to be applied to open ocean ecologies without devoting close attention to feedback control loops and how they work. Closed-system management does not apply to *unstable learning environments*: such shall need a more complex system of feedback control for regulation of vitally active forces. Steady-state growth, though right on the edge of Bertalanffy’s

²⁸⁸ *Ibid.*

²⁸⁹ *Ibid.*, p. 63.

²⁹⁰ *Ibid.*, p. 65.

²⁹¹ Ludwig von Bertalanffy, “The Theory of Open Systems in Physics and Biology” in Emery, *Op. Cit.* (note 193 on page 2 above), p. 83. In fuller context:

...The theory of feedback mechanisms ... is related to the theory of open systems. Feedbacks, in man-made machines as well as in organisms, are based on structural arrangements. Such mechanisms ... are responsible for homeostasis. However, the primary regulability ... is based on direct dynamic interactions.

²⁹² Bertalanffy, *Op. Cit.* (note 194 on page 2 above), pp. 161-63.

²⁹³ *Ibid.*, pp. 210-11.

conditions, shall be as far as ‘homeostasis’ stretches in its application to open, dynamically interactive fields such as in any ocean ecology.²⁹⁴

(b) *The Role of ‘Feedback Control Loops’ in Open, Dynamic Ecologies*

How an open, dynamic ecology – either social or biological – moves through space and time is a function of ‘feedback control loops’ and how they impinge on the course of vital activity. If feedbacks are weak, control is lost: *strong connections* cementing cause to effect determine how well a system survives in dynamic contexts. Systems shall adapt or fail on the strength of their *responsiveness* to incoming information about disruptions in the environment. These signals – seen, decoded, translated, and transmitted to action – are key to whether responses shall lead to expected, amenable outcomes. Survival lies in the interplay of *feedbacks* with their effects.

Both *internal adaptability* and the *external linkage of action to impact* determine the role of feedback control loops in a decision ecology. And how effective *feedbacks* are relates to a system’s ‘efficiency’ in its use of physical energy as a means to achieve its ends. So one of the critical issues in evaluating *system performance* centers upon the tightness of feedback control loops and their regulation of organizational process.

Senge identifies ten *dilemmas* in what he calls “the fifth discipline” of organizational learning: *causal loops* are number seven, and they are described thus:

7. Cause and effect are not closely related in time and space. *Underlying all of the above problems is a fundamental characteristic of complex human systems: “cause” and “effect” are not close in time and space.*

Furthermore, in *nonlinear* systems, searches for key elements shall affect their ‘efficiency’ in the relation of input to output. The simplistic conceptions of physical laws and their economic counterparts shall not even touch – much less inform us in – this setting. As Senge addresses the issue:

8. Small changes can produce big results – but the areas of highest leverage are often the least obvious. *Some have called systems thinking the “new dismal science” because it teaches that most obvious solutions don’t work – at best, they improve matters in the short run, only to make things worse in the long run. But there is another side to the story. For systems thinking also shows that small, well-focused actions can sometimes produce significant, enduring improvements, if they’re in the right place. Systems thinkers refer to this principle as “leverage.”*

Tackling a difficult problem is often a matter of seeing where the high leverage lies, a change which – with a minimum of effort – would lead to lasting, significant improvement.

²⁹⁴ Katz and Kahn, *Op. Cit.* (note 238 on page 2 above), pp. 97-98, tell why. The first lesson of organizational theory in terms of ‘homeostasis’ is that “the basic principle is *the preservation of the character of the system.*” This shall demand the importation of “more energy than is required for...output... to insure ... some margin of safety beyond the immediate level of existence.” Consequently, “in adapting to their environment, systems will attempt to cope with external forces by ingesting them or acquiring control over them.” This survival effort will lead, in turn, to...

...an expansion of the original system. Thus, the steady state which at the simple level is one of homeostasis over time, at more complex levels becomes one of preserving the character of the system through growth and expansion. ... Living systems exhibit a growth or expansion dynamic in which they maximize their basic character.

The only problem is that high-leverage changes are usually highly nonobvious to most participants in the system. They are not “close in time and space” to obvious problem symptoms. This is what makes life interesting.

How we look at problems – a question of ‘framing’ – is central: “Learning to see underlying ‘structures’ rather than ‘events’ is a starting point.... Thinking in terms of processes of change rather than ‘snapshots’ is another.”²⁹⁵ But ‘tightness’ – the *linkage* – of feedback control loops should be addressed as well.

(c) *The ‘Tightness’ of Feedback Control Loops as a Means to ‘Systems Integrity’*

The *integrity* of a system – in both intention and effects – shall be important to its ‘efficiency.’ If forces (efforts and tradeoffs) are not well-aligned, then energies shift from *production of value* into *resolving conflict*: this is a waste of vital resources if viable, more cohesive frameworks exist for incentive alignment. The problem is subtle, addressed in this way – it is, after all, our issue of ‘externalities’ in new garb – but its solution is not the imposition of ‘private property rights’ (shifting cause and effect into ‘boxes’ separate and divisive in nature), but the *integration* of values and the extension of vision to ‘wholes.’

Systems analysts speak of integrity and cohesiveness in many ways, with respect to both its internal (intra-organizational) and external (inter-system) aspects. “Stable segments in organizations are ... small,” according to Weick, and so: “Whenever complex organizations unravel, they fall back into these small stable units” as a result, due in part to our “limited thinking capacity.” Indeed: “when a large group is under pressure, stable pairwise interactions will become the most common structure.”²⁹⁶ This suggests a knowledge of linkages and connections between its subparts should be important predictors of a system’s strategic conduct.

So Weick, addressing the issue, observes that: “In most organizations ... connections among segments are variable rather than constant.” He also adds that “longer chains are looser than shorter chains.” Weak connections arise from doubt about underlying causal linkages and “from managerial self-interest” (which undermines ‘subpart engagement’).

*Loose coupling can be observed in many places. Connections among parts are loosened when solutions are asserted into organizations that have no problems requiring that solution. Computer purchases are a good example. ... [where] the machine now becomes a required step in every process. Existing controls are disrupted and parts of the system that previously had been self-regulating are disconnected. No one knows what is occurring and everyone knows less about the organization than they did before, because interdependencies have been made more variable.*²⁹⁷

Weick counts “four general features of organizations that directly affect the strength of connections: (1) rules ... (2) agreement on rules ... (3) feedback ... [and] (4) attention...,” but cautions that every organization differs in its design. “The image of a loosely coupled system is important more as ... a way to think about organizations than as a precise technical description

²⁹⁵ Senge, *Op. Cit.* (note 239 on page 2 above), pp. 63-65.

²⁹⁶ Karl E. Weick, “Sources of Order in Underorganized Systems: Themes in Recent Organizational Theory,” ch. 4 in Lincoln, *Op. Cit.* (note 230 on page 2 above), pp. 116-17.

²⁹⁷ *Ibid.*, pp. 118-19.

of ... organizational structure.”²⁹⁸ These connections are also not ‘objective’ features of positivist science:

*The importance of presumptions, expectations, justifications, and commitments is that they span the breaks in a loosely coupled system and encourage confident interactions that tighten settings. The conditions of order and tightness in organizations exist as much in the mind as they do in the field of action.*²⁹⁹

Another realm in which the integrity and efficiency of a system appears is in the alignment of private intentions with organizational goals.

(d) *The Alignment of Private with System Needs: ‘The Tragedy of the Commons’*

The issue of incentive alignment applies at all levels of system management, i.e., from planning a party all the way out to our planet’s ecology. In a business setting, “the biggest impediment to ... integration of personal needs and organizational considerations lies in managers’ lack of understanding about ... the ways self-interests shape ... personal realities...”³⁰⁰ Two things affect the efficiency of all management systems and group procedures:

*The concept alignment provides management with a model for understanding how individuals attempt to fuse and integrate their personal needs with the needs of the organization. ... The concept dominant reality provides management with a model for understanding how groups of individuals with different self-interested pursuits negotiate what often gets represented as the “objective” reality of an organization. ... Our use of alignment and dominant reality emphasize just how tightly the self-interests of individuals and the needs of organizations intertwine.*³⁰¹

But this is the same ‘externality issue’ of private incentives with social effects (or ‘organizational’ impact) that was addressed as the ‘problem of interdependence’ underlying ‘The Tragedy of the Commons’ solved by ITQs, according to *Sharing the Fish!*

Senge raises the quintessential organizational question of how we “achieve control without controlling.” His solution is “localness” in the sense of “moving decisions down the organizational hierarchy” as a means of “unleashing people’s commitment by giving them ... freedom to act ... and be responsible for ... results. ... Localness is especially vital in times of rapid change.” But this is no panacea: “localness also means new challenges, unmet and unsolved in traditional hierarchical organizations.”³⁰² Among a series of problems Senge addresses in this context, the last may be the most daunting:

Lastly, in the absence of systems thinking, local decision making can become myopic and short-term. This happens because local decision makers fail to see the interdependence by which their actions affect others outside their local sphere.

There is a particular systems archetype, first identified by ecologist Garrett Hardin and called “The Tragedy of the Commons,” which is especially relevant for making localness

²⁹⁸ *Ibid.*, pp. 120-21.

²⁹⁹ *Ibid.*, pp. 127-28 [original emphasis].

³⁰⁰ Culbert and McDonough, *Op. Cit.* (note 258 on page 2 above), pp. 125-26.

³⁰¹ *Ibid.*, pp. 138-39.

³⁰² Senge, *Op. Cit.* (note 239 on page 2 above), pp. 287-88.

work. It describes situations where what's right for each part is wrong for the whole. ... In all these situations, the logic of local decision making leads inexorably to collective disaster. ... Each individual (...) focuses only on his own needs, not on the needs of the whole. In the short run, individuals gain by acting selfishly. This selfishness leads to success, which reinforces the actions that led to the success. ... But, the sum total of all the individuals acting in their self-interest ... add up to a "total activity" with a life of its own. ... The problem cannot be solved until most decision makers act together for the good of the whole.³⁰³

Senge correctly addresses this problem, not as an 'ecological' issue, but rather as a general artifact of our *interdependence*. He also remarks that: "Tragedy of the Commons structures are most insidious when the coupling from individual action to collective consequence is weak in the short run, yet strong in the long run."³⁰⁴ This is due to weak connections in the causal loops, such as are solved by *localization, participation and democratic control*.

But *systems thinking* as a means of framing 'The Tragedy of the Commons' is central to its solution through understanding and organization:

Systems thinking is a discipline for seeing wholes. It is a framework for seeing interrelationships... [and] patterns of change...

Today, systems thinking is needed more than ever because we are becoming overwhelmed by complexity. ... Systems thinking is the antidote to this sense of helplessness that many feel as we enter the "age of interdependence." Systems thinking is a discipline for seeing the "structures" that underlie complex situations, and for discerning high from low leverage change. ...

I call systems thinking the fifth discipline because it is the conceptual cornerstone ... of how learning organizations think about their world.

*There is no more poignant example of the need for systems thinking than the U.S.-U.S.S.R. arms race. ...*³⁰⁵

Senge's subsequent treatment of the arms race as a 'systems problem' is so perfectly applicable to the 'race for fish' because – from a systems perspective – *they are both the same problem* (or 'systems archetype'). "The roots of the arms race lie not in rival political ideologies, nor in nuclear arms, but in a way of thinking both sides have shared." The difficulty illustrates our desperate need for systems analysis. As ITQs are recommended by the NRC panel as a means for resolving the 'race for fish' by imposing 'property rights' on ocean resources, so encouraging *competition* as its solution, Senge's 'systems' analysis of this problem is of commanding relevance to the topic under review, as it points in precisely the opposite direction: toward *cooperation*.

(e) *A Systems Analysis of Dynamic Complexity in the 'Race for Fish'*

Senge's analysis of the arms race – so also the 'race for fish' – shows a lot about the failure of *Sharing the Fish* as a study. The fact the NRC panel exhibits no understanding at all – or, at the very least, affords no mention – of a systems approach is symptomatic of the 'paradigm problem' poisoning everything in their report. The oversight is surprising, although – as Churchman noted

³⁰³ *Ibid.*, pp. 294-96.

³⁰⁴ *Ibid.*, p. 296.

³⁰⁵ *Ibid.*, pp. 68-69.

above – “the academic world ... is a fearsome enemy of the systems approach.”³⁰⁶ The intellectual lines of the battle – again, according to Churchman – “is a fight between pluralism and monism, between those who wish to see and design their world in pieces and those who wish to see and design it as a whole.”³⁰⁷ The issue appears explicitly in the divergent treatments of ‘externalities’ already outlined above at the beginning of *Section II.B.*

We have already explained in detail, from multiple angles and viewpoints, that the framework of argument for and justification of ITQs stands on an outmoded theoretical base that – even at best – does not apply to open ecological contexts and turbulent field domains. ‘Interdependence’ is not an *exception* that generates ‘externalities,’ and therewith a need for ‘privatization’ to rescue *independent* decisions. Systems theories see interdependence, instead, as *the way of the world*. Competition is not the solution to the ‘race for fish,’ but the problem; the answer is *cooperation*.

Senge’s discussion of the arms race and how it was addressed describes *Sharing the Fish* so well in its “selective focus is also restrictive blindness” style of framing that the parallelism is striking. As Senge said: “There is no more poignant example of the need for systems thinking than the U.S.-U.S.S.R. arms race.” So too with the ‘race for fish’! How could we go so wrong? Cannon and Koehler were writing about this ‘systems approach’ in the 1930s, so why – in the face of such a threat to the survival of civilization – could we not *think* our way out of the problem by using *cooperation*?

Senge offers a narrower rationale for the failure. The reason a ‘systems view’ was not applied to this situation, according to him, is that our “sophisticated tools of forecasting and business analysis, as well as ... strategic plans ... are all designed to handle ... *detail complexity*,” when the overwhelming organizational and institutional problems of modern society rise from “*dynamic complexity*,” a drastically different domain:

*When the same action has dramatically different effects in the short run and the long, there is dynamic complexity. When an action has one set of consequences locally and a very different set of consequences in another part of the system, there is dynamic complexity. When obvious interventions produce nonobvious consequences, there is dynamic complexity. ... The real leverage in most management situations lies in understanding dynamic complexity, not detail complexity. ... Unfortunately, most “systems analyses” [of the consulting kind, distinguished from the studies reported above – FBJ] *focus on detail complexity not dynamic complexity.*³⁰⁸*

The problem is that “the arms race” – and therefore also the ‘race for fish’ – “is, most fundamentally, a problem of dynamic complexity.” Consequently, as Senge explains: “Insight into the causes and possible cures requires seeing the interrelationships... It requires seeing the delays between action and consequence... And it requires seeing patterns of change...”³⁰⁹

Seeing the major interrelationships underlying a problem leads to new insight into what might be done. ... The practice of systems thinking starts with understanding a simple concept called “feedback” that shows how actions can reinforce or counteract (balance)

³⁰⁶ This statement is quoted and discussed more fully in note 240 on page 2 above.

³⁰⁷ As quoted in the text accompanying note 215 on page 2 above.

³⁰⁸ *Ibid.*, pp. 71-72.

³⁰⁹ *Ibid.*, p. 72.

*each other. It builds to learning to recognize types of “structures” that recur again and again ... Eventually, systems thinking forms a rich language for describing a vast array of interrelationships and patterns of change. Ultimately, it simplifies life by helping us see the deeper patterns lying behind the events and the details.*³¹⁰

(f) ‘Positive’ versus ‘Negative’ Feedback Control Loops and the Effect of ‘Delays’

The notion of feedback control loops, so central to systems analysis, supports circular – and so nonlinear – relations of causality. Furthermore, anthropocentrism and ‘objectivity’ are also out of frame for systems analysis. “From the systems perspective, the human actor is part of the feedback process, not standing apart from it. This represents a profound shift in awareness.”³¹¹ We no longer stand apart from the systems that we examine. One dimension of feedback control loops surely of importance is *time*: the longer it takes for responses to action, the less secure is the causal linkage – or at least our knowledge thereof – and the less stable the system.

Senge identifies three fundamental elements of all systems: ‘positive’ or “reinforcing (or amplifying) feedback processes are the engines of growth.” These are equivalent to institutional notions of “cumulative causality,” and in the theory of interdependence, this is the concept of ‘complementarity.’ The second is ‘substitution,’ normally called ‘negative feedback’: “Balancing (or stabilizing) feedback operates whenever there is a goal-oriented behavior.” Finally: “In addition, many feedback processes contain ‘delays,’ interruptions in the flow of influence which make the consequences of actions occur gradually.” These three aspects of systems theory are its central concepts, says Senge: “All ideas in the language of systems thinking are built up from these [three] elements... Once we have learned the building blocks, we can begin constructing stories [about] the systems archetypes [such as the ‘arms race’ or ‘race for fish’]...”³¹²

Delays in feedback control loops are of particular relevance to a system’s stability and dynamic characteristics, such as efficiency in its performance and the integrity of its subsystems seen in terms of the whole. How well organizations survive and thrive in the presence of unexpected disturbances shall be affected by any lags in responses to action, not only due to adjustment delays but also rising from causal uncertainties:

Delays between actions and consequences are everywhere in human systems. ... But delays are often unappreciated and lead to instability. ... Virtually all feedback processes have some form of delay. ... Unrecognized delays can also lead to instability and breakdown, especially when they are long. ... That’s one of the lessons of balancing loops with delays: that aggressive action often produces exactly the opposite of what is intended. It produces instability and oscillation, instead of moving you quickly toward your goal. ...

The systems viewpoint is generally oriented toward the long-term view. That’s why delays and feedback loops are so important. In the short term you can often ignore them; they’re inconsequential. They only come back to haunt you in the long term.

³¹⁰ *Ibid.*, pp. 72-73.

³¹¹ *Ibid.*, p. 78 [original emphasis].

³¹² *Ibid.*, pp. 79-80.

*Reinforcing feedback, balancing feedback, and delays are all fairly simple. They come into their own as building blocks for the “systems archetypes” – more elaborate structures that recur in our personal and work lives again and again.*³¹³

(g) *Personal Growth Through Systemic Contact with One’s Surrounding Context*

The timing and tightness of feedback control loops shape our understanding of the environment and the impact of our decisions in diverse ways. If feedback connections are loose, we may not trace the ‘effect’ to our ‘causal action’ or relate them properly. Our understanding is structured through awareness of ‘feedback causality.’ If feedback gets too attenuated, we may not draw a connection between the pattern of responses and how our impulse started its cycle. Learning involves *seeing connections* between our acts and their ripple of outcomes, both through feedbacks and empathy in a concern for effects on others.

Understanding our radiant impact tightens feedback control loops since we implement the linkages into our rational apprehension of how the world responds to our actions. As Senge said, “a neglected dimension of personal growth lies in ‘closing the loops’ – in continually discovering how apparent external forces are actually interrelated with our own actions.” The problem is that too many of us stop learning new things about our effects: “sometime early in life this process of closing the loops is arrested. ... We become locked into ways of looking at the world” and at ourselves.³¹⁴ Such is a problem of organizational life-cycles and growth: that *programmed decisions start to overrule learning new things*.

Systems approaches suggest to us surprising insights spanning across so many organizational applications, science shall likely advance very rapidly as its influence spreads. “Self-awareness” – such as seen in number theory as a ‘reflexive relationship’ – “in living systems is based ... on ... feedback,” Kremyanskiy asserts. “Cybernetics has called attention to the part played by feedback in the organization of living bodies. ... Physiology studied feedback long before the appearance of cybernetics, and did not exaggerate its truly major importance.”³¹⁵

Organizational learning and growth from adjusting to or incorporating causal loops of feedback in a rapidly changing, complex environment – turbulent fields especially – imply “a deepening interdependence among the economic and other facets of society.” One of the implications of this is “that economic organizations are increasingly enmeshed in legislation and public policy.” Another is “that maximizing *cooperation*, rather than competition between firms – particularly if their fates are correlated [in *complementary* ways] – may become a strong possibility.”³¹⁶ Indeed, the primary insight of Emery and Trist’s work on the causal texture of organizational contexts suggests that “the rate of evolution of environments exceeds the rate of evolution of component systems.”³¹⁷ If so, a theory of organizational learning and culture is what we need to keep abreast of the process.

³¹³ *Ibid.*, pp. 89-92.

³¹⁴ *Ibid.*, p. 170.

³¹⁵ V. I. Kremyanskiy, “Certain Peculiarities of Organisms as a ‘System’ from the Point of View of Physics, Cybernetics, and Biology” (*General Systems*, 5, 1960) from the Society for General Systems Research, pp. 221-30, although it originally appeared in Russian in (*Voprosy Filosofii*, August 1958), pp. 97-107, and now is to be found in ch. 7 of Emery, *Op. Cit.* (note 193 on page 2 above), p. 134.

³¹⁶ Bennis, *Op. Cit.* (note 245 on page 2 above), pp. 221-22 [emphasis added, along with the bracketed insertion].

³¹⁷ Terreberry, *Op. Cit.* (note 271 on page 2 above), p. 148.

7. Organizational Learning and Culture in Rapidly Changing Environments

So what does ‘organizational learning’ mean in a ‘systems’ analysis? For one, it denotes an increase in the “comprehensiveness” of views, *beyond the self-interest of individuals to an expansive vision of ethics* in a broader social environment (that we might choose to call ‘conscience,’ ‘social morality’ or ‘planning horizons’). But systems survive and thrive on the ‘programming’ of decisions within a ‘shared vision,’ ‘dominant reality,’ or ‘organizational culture.’ And that behavioral system – as it develops routines, procedures and expectations – selects certain things for attention at the expense of all else. Signals shall be processed or ignored within this model of thought, and therefore routed through filters on its way to executive action. *Openmindedness* shall be the way to avoid defensiveness – therefore rigidity – in a rapidly changing context.

(a) *Expanding the Vision: Beyond Self-Interest to Ethical Action*

The NRC panel in *Sharing the Fish* endorses an economic environment driven by individual gain in a competitive frame. But organizational theory offers a rather different take on acquisitive values in our society, as a compensation for *need-deprivation* at higher cultural levels. So organizational learning and human development through a process of personal growth involve – from this perspective – value transformation through a *transcendence* of vision beyond the self to embracing grander realms.³¹⁸ Indeed, the focus on individual gain is seen as symptomatic of organizational failure to address such ‘higher’ human needs. Systems theory in this regard demands a change of view, with a hard look at the ways of our world and culture as self-fulfilling conundra.

Senge notes the “self-fulfilling” character of the assumption “that people are motivated by self-interest and by a search for power and wealth.” As Senge explains:

*If people are assumed to be motivated only by self-interest, then an organization automatically develops a highly political style, with the result that people must continually look out for their self-interest in order to survive. An alternative assumption is that, over and above self-interest, people truly want to be part of something larger than themselves. ... When organizations foster shared visions, they draw forth this broader commitment and concern. ...*³¹⁹

Indeed, this lack of vision – the loss of ‘connectedness’ to society – is symptomatic of failure to achieve an organizational orientation through a ‘systems’ approach. We still see ourselves as *individuals* separate and alone, engaged in a struggle over resources within a competitive frame. What better example of this is seen than the ‘arms race for fish’ on our oceans? Such a narrow outlook – casting aside its ‘social effects’ on the world – is simply not the ethical line adopted by a ‘systems’ approach.

³¹⁸ As C. W. Churchman puts it, this “ideal of comprehensiveness of the systems approach inquiry is in effect exactly the same in intent as the classical approach to science...” in *Op. Cit.* (note 213 on page 2 above), pp. 66-67:

Just as the classical physicists saw no reason why their fact nets could not eventually encompass the entire universe, so today in the systems approach its adherents see no reason why all matters of human concern should not be tied together in one grand imagery of purposeful behavior. Consequently, says the systems approach, all our goals can be tied together in a meaningful schema...

³¹⁹ Senge, *Op. Cit.* (note 239 on page 2 above), p. 274, quoting Joseph L. Badaracco, Jr. and Richard R. Ellsworth, *Leadership and the Quest for Integrity* (Boston: Harvard Business School Press, 1989).

Instead, as Churchman put it, “we must continually think of ourselves as in a whole stream or process, constantly trying to become more and more comprehensive in our perspective.”³²⁰ Values in a system must include *learning* at top priority, as part of the “enormous liberation of the intellectual spirit” that the organizational view enables.³²¹ “Inquiry is [not just] the creation of knowledge or understanding; it is a reaching out of a human being beyond himself to a perception of what he may be or could be, or what the world could be or ought to be.”³²² In discussing Carl Jung’s belief that *individual* moral behavior is necessary for social morality, Churchman wonders “whether the opposite of Jung’s thesis is not more correct; individual morality presupposes the solution of social morality.”³²³ Or are the causes two-way and interdependent, as most systems thinkers would argue? In any event, “ethics is not just a body of theory substantiated by facts. Instead, it is a process of continuously ... discussing and debating ... the issues.” In addition, ethics must be *applied*: “ethics has to flow through real actions as well as through real ideas.”³²⁴ But ethics should not be imposed from outside; they ought to rise from within.

(b) *Personal Growth and Organizational Learning in Our Society*

But touching one’s outermost limit through individual growth and achievement is also affected by organizational attributes and institutional culture. Massarik, Margulies and Tannenbaum make commitments in their professional practice “not only to individual growth but also to an organization’s growth toward a realization of its own positive potential.”³²⁵ This, in turn, is done by using the tools of organizational learning as specified by Senge: *systems thinking* (connecting to ‘wholes’); *personal mastery* (extending our vision); *mental models* (understanding our own); *building shared vision* (for organizational integration); and *team learning* (alignment of effort).³²⁶ Many organizational thinkers see Maslow’s psychological theory of hierarchical human needs as a framework of systems analysis, such that values are ranked from *physiological* needs at a basic level up through *safety*, *social* and *egoistic* needs to that for *self-fulfillment*.³²⁷ There is a very important point hidden within this frame: “A satisfied need is not a motivator of behavior! This is a fact of profound significance.”³²⁸

*The deprivation of [human] needs has behavioral consequences. ... The man whose needs for safety, association, independence or status are thwarted is sick, just as surely as is he who has rickets. And his sickness will have behavioral consequences. We will be mistaken if we attribute his resultant passivity, or his hostility, or his refusal to accept responsibility to his inherent ‘human nature’. These forms of behavior are symptoms of illness – of deprivation of his social and egoistic needs.*³²⁹

McGregor goes on to note that: “As Chris Argyris has shown dramatically in his *Personality and Organization*, conventional managerial strategies for the organization, direction, and control

³²⁰ Churchman, *Op. Cit.* (note 213 on page 2 above), p. 65; also cf. Senge, *Op. Cit.* (note 239 on page 2), pp. 366-71.

³²¹ Cf. Churchman as quoted in the text accompanying note 262 on page 2 above.

³²² Cf. Churchman, *Op. Cit.* (note 207 on page 2 above), p. 276.

³²³ Churchman, *Op. Cit.* (note 213 on page 2 above), p. 133.

³²⁴ *Ibid.*, p. 118.

³²⁵ Massarik, Margulies and Tannenbaum, in *TMMA*, *Op. Cit.* (note 201 on page 2 above), p. 8.

³²⁶ Senge, *Op. Cit.* (note 239 on page 2 above), pp. 6-10.

³²⁷ McGregor, *Op. Cit.* (note 244 on page 2 above), pp. 307-9.

³²⁸ *Ibid.*, p. 308.

³²⁹ *Ibid.*, p. 310.

of the human resources of enterprise are admirably suited to the capacities and characteristics of the child rather than the adult.”³³⁰ Argyris speaks of the stages of human development from *passivity to activity* and *dependence to relative independence*, from *few to many behavioral options* and from *immediate to wider ranges of interest*, from *short to longer time perspectives*, from *being subordinate to equal or superordinate relations*, and from *lack of self-awareness to self-control* as an adult.³³¹

*The adult ... tends to develop a sense of integrity and ... self-worth. ... One of the most important needs of workers is to enlarge those areas of their lives in which their own decisions determine the outcome of their efforts. ... [But] Growth ... is a matter of degree [and emphasis]. ... Keeping these qualifications in mind, we define one characteristic of a mature individual in our culture, as an individual who is predisposed toward the [mature] ends of the continua and who while striving toward growth behaves in such a way so that he simultaneously permits others to do the same.*³³²

Argyris shows that *mature* individuals, when placed in conventional organizational settings, show symptoms of ill health, including “frustration, failure, short time perspective and conflict.” Thus, he explains: “The nature of the formal principles of organization cause the subordinates, at any given level, to experience competition, rivalry, intersubordinate hostility and to develop a focus toward the parts rather than the whole.”³³³ In this observation – generalized – Argyris seems to imply that the dominant traits of modern economy and its ‘neoclassical’ justification are symptoms of immaturity and the frustration of higher human needs.

He also addresses himself to how we “react to the formal organization by creating informal activities” such as ‘social (or organizational) climbing’ and psychological disengagement, as means to maintain “individual self-integration” consistent with system integrity.³³⁴

*The theoretical framework predicts that as the degree of congruency increases between the individual’s needs and the organizational demands, the need for the informal activities will tend to decrease and as the degree of congruency decreases the need for the informal activities will tend to increase.*³³⁵

The concept of “self-actualization” from Maslow was used “because it helps to create a scheme that integrates much of the existing research.” But “organizational actualization is equally important. *Each needs the other.*”³³⁶

(c) *Bureaucracy and Control Lead to Symptoms of ‘Value Deprivation’*

Within this analytical context, McGregor explains that: “Direction and control are of limited value in motivating people whose important needs are social and egoistic.”³³⁷ *Commitment to organizational goals* supplants authority and bureaucratic control; better rewards will lead

³³⁰ *Ibid.*, p. 313.

³³¹ Chris Argyris, “The Impact of the Formal Organization upon the Individual” in Pugh, *Op. Cit.* (note 244 on page 2 above), pp. 262-63.

³³² *Ibid.*, p. 263.

³³³ *Ibid.*, pp. 268-69.

³³⁴ *Ibid.*, pp. 269-71.

³³⁵ *Ibid.*, p. 273.

³³⁶ *Ibid.*, pp. 274-75 [original emphasis].

³³⁷ McGregor, *Op. Cit.* (note 244 on page 2 above), p. 312.

employees to *seek* – not *dodge* – responsibility in a properly-integrated organizational setting. “The principle of integration demands that both the organization’s and the individual’s needs be recognized. ... [or] *the organization will suffer.*”³³⁸ One of the implications of organizational stress – self-generated by a frustration of higher-order individual needs – suggests a major revision of how we interpret the overwhelming materialism of our modern society. As McGregor explains...

*...the fact that management has provided for these physiological and safety needs has shifted the motivational emphasis to the social and egoistic needs. Unless there are opportunities at work to satisfy these higher-level needs, people will be deprived; and their behavior will reflect this deprivation. ... People will make insistent demands for more money under these conditions. It becomes more important than ever to buy the material goods and services which can provide limited satisfaction of the thwarted needs. Although money has only limited value in satisfying many higher-level needs, it can become the focus of interest if it is the only means available.*³³⁹

But organizations – as they age – shall either *mature* and stay young and open to organizational learning, or they *ossify* into a rigid “dominant reality,” according to Culbert and McDonough.³⁴⁰ Part of the problem is that the realm of ‘programmed’ decisions spreads, cementing itself into routines and procedures simply unquestioned and automatic throughout the organization, much like personal ‘habits’ of individuals. Such shall make it difficult for any organization to change or adapt to keep pace with its environment. The problem underlies Burns’ distinction of organismic from mechanistic concepts of organization, as mechanistic control is only “appropriate to stable conditions,” whereas: “The organismic form is appropriate to changing conditions.”³⁴¹ Burns identifies several “pathological forms of the mechanistic system” which emerge in response to environmental change: “the *ambiguous figure* system” (of internal political manipulation); “the *mechanistic jungle*” (through speciation of organizational branches); and “the *super-personal* or committee system” (where temporary sub-parts are created to devise ‘solutions’).³⁴²

Companies stressed by environmental changes shall not easily alter their organizational structure into an organismic form because of territorial interests and turf fights among their members.

*Interlocking systems of commitments – to sectional interests and to individual status – generate strong forces. These divert organizations from purposive adaptation. Out of date mechanistic organizations are perpetuated and pathological systems develop, usually because of ... internal politics and the career structure.*³⁴³

Thomas and Bennis, in their introduction to an important collection of essays on managing organizational change, outline their basic conclusions thus:

³³⁸ *Ibid.*, p. 319 [original emphasis].

³³⁹ *Ibid.*, p. 311. Also cf. Paul L. Wachtel, *The Poverty of Affluence: A Psychological Portrait of the American Way of Life* (Philadelphia: New Society Publishers, 1989), *passim*.

³⁴⁰ *Op. Cit.* (note 258 on page 2 above), pp. 128-37.

³⁴¹ T. Burns, “Mechanistic and Organismic Structures” in Pugh, *Op. Cit.* (note 244 on page 2 above), pp. 49-50.

³⁴² *Ibid.*, pp. 51-54.

³⁴³ *Ibid.*, p. 55.

What we can discern about the nature of change and its likely impact on corporations says something about the deficiencies of many contemporary approaches to planned organizational change. In general, these have tended to be primarily oriented to the internal dynamics of the organization ... and relatively unconcerned with affected constituencies other than the formal members of the organization.

*Yet the nature of change is such that there are increasing pressures in the socio-political-cultural environment of the corporation for new forms of planned change which will make the corporation more responsive to external interest groups [or the ecology?]. ... The message ... is that our paradigms of planned change need to be broadened to account for the goals and concerns of outside interest groups and to incorporate models of management which are more innovative and far-reaching. ... [such as] a conceptualization of the organization as an open system where the nature of its environmental transactions is the critical dimension, [and] an analysis of the problem of adapting an organization to become more pluralistic, thus enabling it to pursue new management goals...*³⁴⁴

The problem of ‘organizational openness’ stretches beyond the ebb and flow of exchanges with the environment; the issue entails psychology in how an organization deals with sources of stress and signals of important changes suggesting a need to adjust.

(d) Organizational Openness, Not Defensiveness, as the Secret to Growth

Does an organizational leader accept the augur of an incipient change, or is the message erased or removed (at the expense of the messenger)? Organizations shall protect against any threat to their identity: appreciate that *self-preservation* is their ‘prime directive.’³⁴⁵ Selznick counts “self-defensive responses or mechanisms” among the methods adopted by organizations to deal with environmental change, including construction of ideologies and cooptation as self-protection.³⁴⁶ In an intriguing analysis of the *process* of organizational change, Tannenbaum and Hanna address its psychology of “Holding On, Letting Go, and Moving On” as three stages of frequently agonizing and painful adjustment. To ease one’s hold upon the familiar, anxiety must be faced.

*As psychoanalyst Ernest Schachtel insightfully explains: “The anxiety of the encounter with the unknown springs ... from the person’s fear ... that without the support of his accustomed attitudes, perspectives, and labels he will fall into the abyss or flounder in the pathless... Letting go of every kind of clinging opens the fullest view... But it is this very letting go which often arouses the greatest amount of anxiety.”*³⁴⁷

Tannenbaum and Hanna offer a useful insight on the tenacity of an organizational effort to defend its identity in a situation perceived as a threat to its self-protective values: “All human systems ... have boundaries. ... That which is within the boundary gives the system ... its identity (its ego or its self-definition). This identity ... is experienced by the system as essential to its survival.”³⁴⁸ These two organizational theorists identify a series of steps in “The Process

³⁴⁴ Thomas and Bennis, “Introduction” to their *Op. Cit.* (note 237 on page 2 above), pp. 33-35.

³⁴⁵ Cf. Katz and Kahn, *Op. Cit.* (note 238 on page 2 above), pp. 97-98, as quoted in note 294 on page 2 above.

³⁴⁶ Selznick, *Op. Cit.* (note 248 on page 2 above), p. 276.

³⁴⁷ Ernest G. Schachtel, *Metamorphosis* (New York: Basic Books, 1959), p. 195, as quoted in Robert Tannenbaum and Robert W. Hanna, “Holding On, Letting Go, and Moving On: Understanding a Neglected Perspective on Change” in *TMMA, Op. Cit.* (note 201 on page 2 above), p. 100.

³⁴⁸ *Ibid.*, p. 101.

of Letting Go and Moving On” that are: (1) “consciousness raising” (through self-awareness); (2) “re-experiencing” (as a means of getting in touch with the deeper reasons for holding on); (3) “mourning” (“for the loss of the old ways of seeing reality”); (4) “letting go” and then (5) “moving on” (“to new possibilities and new ways of seeing things”).³⁴⁹

They also note that: “The consciousness raising, re-experiencing, and mourning make possible the letting go, involving a lowering of defenses, a vulnerability, and a receptivity.” They further remark that: “Although our focus ... has been on the individual, ... what has been said about the individual has wide applicability (with appropriate translation) to all human systems.”³⁵⁰ The ease with which ‘letting go’ is achieved depends upon a number of variables, including: “humanistic values ... interpersonal trust ... stability ... realistic patience ... [psychological maturity and centeredness] ... openness ... psychological strength ... [and] a great need for support (particularly psychological support) as a system moves through the process...”³⁵¹

Tannenbaum and Hanna offer encouragement to people in this process, suggesting that though what has been said implies “that this basic change process is rooted in anxiety and pain... as it unfolds, it also releases joy, vitality, and meaningfulness.”³⁵² They also ask why this subject has been ignored by organizational theorists, and offer three explanations. “First, there is a deeply embedded fear and reluctance to explore elements in the preconscious or unconscious self...” Second, we are “fearful of [our] own feelings” and do not cope well with those of others. “Third, there is the need to mourn,” and confront deep fears of our own mortality.

As a result of these fears, psychological, business and philosophical systems show a resistance to change with a tenacious ‘holding on’ that needs to be understood: “this avoidance carries with it most serious consequences.”³⁵³ As so well-explained by these two authors, the

³⁴⁹ *Ibid.*, pp. 108-13.

³⁵⁰ *Ibid.*, p. 113.

³⁵¹ *Ibid.*, pp. 114-15.

³⁵² *Ibid.*, p. 115.

³⁵³ *Ibid.*, pp. 118-20 (also cf. Arrow’s remarks with note 189 on page 2 above). The entire statement is worth quoting:

In conclusion, ... it is puzzling (...) that so little attention has been given ... to ... the need to hold on – together with the related facilitation of letting go and moving on. ... This avoidance has ... at least three fundamental reasons to explain it...

First, there is a culturally embedded fear and reluctance to explore elements in the preconscious or unconscious self... And yet consciousness raising is an essential step in dealing with the need to hold on. ...

Second, there is the culturally grounded and pervasive fear of feelings (...), particularly of their expression. Most individuals are fearful of their own feelings, and they are threatened by and not sure how to cope with the feelings of others. ... And yet, the re-experiencing of earlier childhood events, together with associated feelings ... is also an essential step in dealing with the need to hold on.

Third, there is the need to mourn... To mourn means to face death ... in order to make a rebirth possible. ... Our intuitions lead us to the possibility that the avoidance by managers and change agents of the need to let go ... is in part, at least, related to a deep fear that involvement in these processes would bring them too close to a confrontation with their own mortality.

In closing, we can only leave the reader with a gnawing dilemma. ... The area to which we have just given our attention is a seriously neglected one... ... Efforts directed at deep change often fail or fall short of desired results because the need to hold on and its working through seem to be so persistently avoided. At a time in history when the demands for change constantly impinge on organizations, this avoidance carries with it most serious consequences. ... At present, we have little wisdom to offer as to how this dilemma can be resolved. But we do have faith that, with an increasing and more pervasive understanding..., it will be resolved in the best interests of all

process of organizational learning is sensitive to widely variant aspects of system design, theoretical models, psychological attitudes and human culture, that are hard to summarize in any easy, accessible way. A systems approach invites so many insights into ourselves, society, ecological issues and academic research and its stances, such are resistant to simplification.

The next section addresses some more controversial implications arising from organizational theory, on the relative virtues of *competition* versus *cooperation* as two alternative and mutually exclusive forms of social design. As we show, the case for ITQs stands precariously with one foot in the boat of '*competitive virtue*' (with its endorsement of *rivalrous systems*), and the other on the dock of valuing *cooperation* (through its "sole owner" recourse to a '*monopoly*' justification of stewardship and the emphasis on *participation* of industry ITQ owners in the design and implementation of this management system).³⁵⁴ Most economists stand for *competition* as the organizational principle best suited to the production of value and social well-being; most organizational analysts – and nearly all social theorists outside economics – suggest instead that *cooperation* is how we should organize social affairs. So we shall look into what organizational theory has to say on this subject as well in our review.

8. 'Competition' and 'Cooperation' as Two Alternative Value Systems of Organization

'Neoclassical' economics supports *competition* as the solution to most economic problems. Special cases of 'market' or 'competitive failure' are resolved to 'efficient' outcomes through institutionalizing 'property rights,' or by other government intervention of various sorts. As seen, 'institutional' economics suggests that *political and market power* are real dangers to efficiency, equity and community – as well as ecological values – in a modern economy, and must be curbed and diverted to useful ends. Organizational arguments seem to have nothing good to say about the effects of competition in an organizational context, though are divided on the relative virtues of rivalry outside (and therefore *between*) individual organizations. The economics of market process seem unassailable on their own ground, though we have already questioned the assumptions behind this approach. Now is the time to analyze such ideas from a 'systems' perspective.

(a) *The Case for Cooperation over Bureaucracy and Competition*

First, the organizational outlooks we have examined thus far appear to advocate *cooperation* more consistently than *competition*, at least as a general observation. McGregor's 'Theory Y,' Argyris' 'matrix organizations,' Churchman's 'inquiring systems,' Senge's 'fifth dimension' of 'organizational learning,' Burns' 'organismic systems,' Emery and Trist's 'socioecological theory' of 'turbulent field domains,' *all endorse cooperation*, not competition, as the most productive form of social organization. 'Cooperation' does not mean *control*; indeed, it is just the reverse. Social organization based on cooperation demands *trust* and *willing participation* of all those entering its embrace.

Second, the arguments seem persuasive for cooperation, not competition, as the organizing principle of economic society. Yet we have very real fears of both economic conformity and control, and the 'utopian' dream of fellowship promised by the application of Marxist theory to half the earth has led to unmitigated disaster on the political, ecological and democratic fronts.

participants in organizational life.

³⁵⁴ This issue will be addressed specifically in *Section IV.D.* below.

The active failure of free markets, socialism and democracy in too much of the world has stranded us out on a boundless sea of uncertainty and evolving complexity, adrift without sails, bearing or rudder, with no idea what to do. Organizational theorists suggest the adoption of a 'systems approach' as a way out of our problems, so we ought to consider this seriously, especially if we truly inhabit an interdependent domain.

(b) *Toward a New Theory of Organization: Participatory Engagement*

As Argyris introduced a paper on "Today's Problems in Tomorrow's Organizations": "There is a revolution brewing in the introduction of new organizational forms to complement or replace the more traditional pyramidal form" of bureaucratic control and direction by authority. Yet how far will this upheaval extend through our rapacious society? Does organizational theory offer an answer to all of our problems, as some would declare? Is it the panacea that – as we have seen – ITQs are not? The answer is, *there are no easy answers*, but only many approaches. Multiple models suggest 'the more the merrier' in "turbulent field domains" and "dynamically complex" situations.³⁵⁵ Systems theories suggest that *organizational learning* and *openmindedness* have a lot to teach us, if we would only attend to the lesson.

According to Likert: "Based upon the principles and practices of the managers ... achieving the best results, a newer theory of organization and management can be stated."³⁵⁶ The characteristics of "the general pattern of operations of the highest-producing managers" include, first: "A preponderance of favorable attitudes on the part of each member of the organization toward all other members... [and] toward all aspects of the job." Second: "This highly motivated, cooperative orientation ... is achieved by harnessing effectively all the major motivational forces ... Reliance is not placed solely or fundamentally on the economic motive... On the contrary, the following motives are all used fully ... in a cumulative and reinforcing manner...: (a) the ego motives. ... (b) the security motives. (c) Curiosity, creativity, and the desire for new experiences. (d) The economic motives. ..." Third: "The organization consists of a tightly knit, effectively functioning social system. ..." Fourth: "Measurements of organizational performance are used primarily for self-guidance rather than for superimposed control. To tap the motives which bring cooperative and favorable rather than hostile attitudes, participation and involvement in decisions is a habitual part of the leadership processes."³⁵⁷

So what is the critical element here?

*Widespread use of participation is one of the more important approaches employed by the high-producing managers... [who] have developed their organizations into highly coordinated, highly motivated, cooperative social systems. ... This general pattern of highly motivated, cooperative members seems to be a central characteristic of the newer management system being developed by the highest producing managers.*³⁵⁸

³⁵⁵ These are terms defined and discussed in *Section III.C.5.(c) and (d)* for Emery and Trist's notion of "turbulent fields," and *Section III.C.6(e)* for Senge's concept of "dynamic complexity."

³⁵⁶ Rensis Likert, "The Principle of Supportive Relationships" from his "An Integrating Principle and an Overview" from *New Patterns of Management* (McGraw-Hill, 1961), pp. 97-118, reprinted as ch. 15 in Pugh, *Op. Cit.* (note 244 on page 2 above), p. 279.

³⁵⁷ *Ibid.*, pp. 280-82.

³⁵⁸ *Ibid.*, pp. 282-83.

So what is the magic of this success? “Consistently, in study after study, the data show that treating people as ‘human beings’ rather than as ‘cogs in a machine’ is a variable highly related to the attitudes and motivation of the subordinate at every level in the organization.”³⁵⁹

(c) *Competition as a Threat to Participatory Engagement*

Likert takes a brief look at the “effect of competition between [organizational] functions,” stating that in this scenario:

Each man ... is trying to enlarge his area of responsibility, thereby encroaching on the other’s territory. He is also trying to get decisions from the president which set easily attained goals for him and enable him to achieve excellent performance. ...

One consequence of this struggle for power is that each department or operation has to be staffed for peak loads, and job responsibilities and boundaries have to be precisely defined. ... [at the expense of cooperation – FBJ]

*The tighter the hierarchical control in an organization, ...the greater tends to be the hostility among subordinates. In autocratic organizations, subordinates bow down to superiors and fight among themselves for power and status. Consequently, the greater the extent to which the president makes the decisions, the greater is the probability that competition, hostility, and conflict will exist between his vice presidents and staff members.*³⁶⁰

So this is significantly in contrast to the ‘group participation’ model of organization based on cooperative value standards. The latter will lead to a rather different approach to organizational systems structure and design. Indeed, in a paper on “democratizing” organizational development (OD), Elden concludes that “at least two conditions” are needed for this result: first, “worker interests” must be “authoritatively represented” in some powerful manner; and, second, the field of “OD itself needs to be reconceptualized. Democratization implies not just implementing certain forms of organization, such as semiautonomous groups, but real participant control over organizational self-study and change. ...”³⁶¹ The fact that democracy calls for *participation* in organization as well as society is no surprise. A much more robust defense of *cooperation* – debunking competition – derives from *organizational learning* characteristics and drawbacks.

(d) *The ‘Organizational Learning’ Case for ‘Concerts of Interest’ and Cooperation*

Senge appears to avoid the issue of competition or cooperation as ‘organizational learning’ strategies, beyond treating the ‘arms race for fish,’ an example of the “systems archetype” called ‘the tragedy of the commons,’ as solved through collaboration.³⁶² Churchman is not so reluctant to say that “the environment which the inquiring system critically needs is a cooperative environment. ... because inquiry is evidently needed to create cooperation and cooperation to create inquiry.”³⁶³ Furthermore, if we address social long-term trends of historical growth: “The measure of progress must include cooperation, which cannot be separated from production-science. ... In other words, progress is not linear, but a very complicated nonlinear relationship

³⁵⁹ *Ibid.*, p. 283.

³⁶⁰ *Ibid.*, p. 293.

³⁶¹ Max Elden, “Democratizing Organizations: A Challenge to Organizational Development,” ch. 9 in TMM, *Op. Cit.* (note 201 on page 2 above), p. 220.

³⁶² Cf. the discussion in *Sections III.C.6(d) and (e)* above.

³⁶³ Churchman, *Op. Cit.* (note 207 on page 2 above), p. 200.

between the enabling forces of production, science, and cooperation.”³⁶⁴ Notions of cooperation are central to learning and economic growth, at least according to Churchman.

The case for *learning as a cooperative value-driven process* is strong, and it takes on ‘neoclassical’ economics with a challenge to its most fundamental assumptions. In neoclassical theory, ‘utility’ or well-being is always a function of physical output of goods (Q). Materialism appeals, however, mostly to *physiological* and *safety* needs in Maslow’s scheme, and not to higher-order *social* and *egoistic* goals, much less to any yearning for *self-fulfillment* through ‘actualization.’ Needs only affect behavior when they are not being met, though if frustrated at higher levels we overcompensate through accelerating our ‘race’ for material wealth. Thus one way to examine the emphasis on competition – and the trend to overconsumption in our society – is as symptoms of *higher-order need deprivation*.

In Maslow’s hierarchical ordering of human needs from *material* up to those of *culture and community*, there is a clear progression from physical to informational levels. Systems of educational learning can be used as a proxy for those sectors of the economy in which most transactions are *nonmaterial*, like cultural linkages and community-oriented activity. *Information* in economics is always seen as a ‘public good,’ at least wherever it is not ‘privatized’ for greater ‘efficiency.’ The Internet is a good example of free exchange of information, despite the ongoing effort to subdivide and partition this system by ‘privatizing’ its open domain (much like an ‘open access’ ocean ecology). So what is the point of all this?

A system of *competition* is designed to maximize *physical output* in an environment that is defined by substitution, scarcity and general ‘conflict of interest.’ *Transactions of physical output* differ in an essential way from educational learning and trading of information (or exchanges of any *nonphysical* sources of value). In this economic context, dominated by *complementarity* and a systemic ‘concert of interest,’ the optimal organizational form is *cooperation*, not competition.

Indeed, the use of rivalrous systems in complementary settings shall have very counterproductive effects on achievement of personal and social goals. Such shall offer an explanation of the resistance to organizational change observable in academic contexts against the systems approach and new innovative ideas of all kinds. In complementary learning environments, *competition* has the same effect as *monopoly* in traditional contexts of substitution: *output declines*, so power and status supplant productive value and purpose. Such is the process of organizational breakdown in a society.

(e) *The Effect of Competition on Our Social and Educational Systems*

The impact of competition on learning activity has been documented by many educational and organizational theorists.³⁶⁵ As suggested above by Tannenbaum and Hanna, personal learning and change is a risky and vulnerable endeavor, and it demands supportive venues within a cooperative frame. As Kohn explains, however, in his analytic critique of competition and its social effects:

³⁶⁴ *Ibid.*, pp. 202-3.

³⁶⁵ For an excellent overview of the educational and teaching aspects, cf. David W. Johnson and Roger T. Johnson, *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*, 4th ed. (Boston: Allyn & Bacon, 1975, 1994), *passim*.

Whereas cooperation apparently contributes to high self-esteem, competition often seems to have the opposite effect. ... Psychological health requires unconditionality... In competition, by contrast ... self-esteem is conditional. ... Something very like an addiction is at work here...: the more we compete, the more we need to compete. ...Rollo May [called] competition... “the most pervasive occasion for anxiety” in our culture. ...Competition dampens creativity. ... The chief result of competition ... is strife.³⁶⁶

However, an overwhelming consensus among economists shall endorse a view that competition encourages individual effort and difference, ‘standing out from the crowd’ through an eager pursuit of excellence. According to Kohn, nothing could be further from the truth about the real impact of competition on human behavior and learning:

...Competition does not promote ... substantial and authentic ... individualism. On the contrary, it encourages rank conformity [and] ... dampens creativity. ... Creativity is anti-conformist at its core; it is a process of idiosyncratic thinking and risk-taking. Competition inhibits this process. ... [and] affects the personality. Turning life into a series of contests turns us into cautious, obedient people.³⁶⁷

Encountering Kohn’s analysis as an economist trained to orthodox standards simply was a shock. “Can this be?” I asked myself, for such a perspective fought against all I was taught in college and graduate school about what seemed to be a strong economic case for competition. Kohn has an explanation for the failure of competition to do what economists say it will:

The simplest way to understand why competition generally does not promote excellence is to realize that trying to do well and trying to beat others are two different things. ... At best, the stressfulness of a competitive situation causes us to try to avoid failure. And trying to avoid failure is not at all the same thing as trying to succeed. ...³⁶⁸

But the mantra of neoclassical theory is a vision of competition as the route to efficient production; this belief is simply not questioned or challenged within neoclassical orthodoxy in economics. Any such view would be treated as heresy in neoclassical circles, with its promulgator rejected as suffering from malodorous scientific insanity in no need of attention. Neoclassical theory is unable to cope with – or coopt – the view which Kohn addresses so well:

Competition ... precludes the more efficient use of resources that cooperation allows. ... Beyond the greater efficiency of cooperation, it is also true that competition’s unpleasantness diminishes performance. ... Competition does not promote excellence.³⁶⁹

Near the end of my teaching career, I wrote an essay – in truth, a lament – to my students about what I’d discovered about the impact of competition on our educational systems. Some of what I said was this:

Cooperation itself must be learned, along with a reasoned resolve to dispute. We teach competition and ‘getting ahead,’ where ethics are ‘purely’ for God or the classroom. In a world of tradeoffs and ‘substitution,’ my needs and yours will conflict. If markets reward ‘by the curve’ – as we teach – then everyone gains at another’s expense. “In that world,

³⁶⁶ Kohn, *Op. Cit.* (note 83 on page 2 above), pp. 108, 110, 113, 123, 130 and 143 [original emphasis].

³⁶⁷ *Ibid.*, pp. 129-31.

³⁶⁸ *Ibid.*, pp. 55 [original emphasis] and 63-64.

³⁶⁹ *Ibid.*, pp. 61-62 and 65 [original emphasis].

*baby, you're on your own; I'm looking out for myself!" Divided, we still try to conquer. Will we never learn?*³⁷⁰

(f) 'Substitution' and 'Complementarity' in a Theory of Interdependence

So how to reconcile this view – within a 'systems' perspective – with that in 'neoclassical' economics (favoring competition) emerges as our next challenge. In truth, the language is there to do so in neoclassical economics, along with the institutional view and the systems approach as well. All assembles around a 'general theory of interdependence,' under which *interdependence* can be defined either as 'substitution or complementarity,' as 'cumulative or self-damping' causal effects, or as 'positive and negative' feedbacks. Such are the neoclassical, institutional and organizational languages for interdependence.

So the question becomes one of fact: do our relations among each other reflect – to put it in common terms – a '*concert*' or '*conflict*' of interest, in the most generalized sense? In other words, shall my well-being *align* or *clash* with yours? Or, alternatively, are there distinct cases in which either one or the other applies? If so, we can integrate these three outlooks.

We should start by examining the assumptions in 'neoclassical' theory as they relate to interdependence. *Substitution* is the primary emphasis in 'neoclassical' arguments showing competition as the optimal organizational frame for firms in a market domain. Indeed, the aggregation principle in neoclassical theory is centered on groups of *rival* consumers and firms composed into 'industry' groups. Such shall encompass 'wine *versus* beer' in its 'selective focus,' at the expense of another 'restrictive exclusion' of complementarity in the synergy of 'wine *and* cheese' or 'beer *and* pretzels.' So we are still left with a question: does *substitution* capture the basic characteristic of human relations – as 'neoclassical' theories suppose – or is *complementarity* more fundamental? The issue will matter, in large part, because *substitution implies competition*, but *complementarity argues for cooperation* as the primary organizational principle in society.

Another angle from which to consider this problem has to do with the cost curve, and the neoclassical lineage of assuming 'diminishing returns' (or decreasing returns to scale). The claim is that *unit cost rises* after some minimum point on the function relating output to marginal or average cost. The reason for rising cost per unit of output has never been well-established; it was made by Hicks for 'convenience' to save equilibrium theory.³⁷¹ *Increasing returns* suppositions are better founded in theory and fact – that *unit costs fall* throughout their range – but that would destroy conventional theory, so has not been pursued within neoclassical academic science.³⁷² The implications of falling cost – as Kaldor explained so well³⁷³ – lead to a generalized complementarity and thus a case for *cooperation*.

³⁷⁰ Frederic B. Jennings, Jr., "Academy, Society, and Personal Growth: Some Thoughts on Our Modern Malaise (To My Students)" (*The Tufts Meridian*, 1:3, April 1983).

³⁷¹ Cf. Hicks, *Op. Cit.* (note 52 on page 2 above), pp. 83-85.

³⁷² E.g., cf. Melvin W. Reder, "Chicago Economics: Permanence and Change" (*Journal of Economic Literature*, 20:1, March 1982), *passim*, on this; the 'monopolistic competitive' frame (rejected by Reder's 'Chicago School') opened up the 'increasing returns' issue in economics, and then developed into industrial organization and systems theories. In these subdisciplines, such ideas are openly accepted and entertained (though often not addressed with respect to their generalized social implications).

³⁷³ Cf. Kaldor, *Ops. Cit.* (note 52 on page 2 above), *passim*.

Myrdal, as an institutionalist, declared for complementarity in the form of a circularity of causation that was *cumulative*, i.e., as he put it, that:

*One important aspect of this process is that most often, although not always, changes which are reactions to a more primary change tend to move in the same direction. ... This is why circular causation normally will have cumulative effects. Through feedback regularly causing more primary changes to have repercussions in the same direction, the results for good or ill may, after some time, be quite out of proportion to an initial change impulse of one or several conditions.*³⁷⁴

Such implies complementarity, and thus a case for cooperation, which shall fit with the institutionalist distrust of competitive ‘virtues.’ So institutionalists seem to endorse a generalized argument for *cooperation* over *competition* as the best route to social well-being and the achievement of ethical values in a very broad frame.

And organizational theory also endorses cooperation over competitive values and goals. Senge addresses the role of ‘feedback’ in a systems view, with a distinction of *negative* “balancing” from *positive* “reinforcing” control loops: here again do we find terms equivalent to substitution and complementarity in neoclassical theory, and Churchman takes the plunge for ‘inquiring systems’ supporting *cooperation*. In the context of Emery and Trist’s theory of firms in “turbulent fields,” many others also offer ready endorsement to a cooperative view. As Bennis said:

*...The organizational environment of the firm is rapidly changing. ... [and] turbulent ... and there is a deepening interdependence among the economic and other facets of society. This means that economic organizations are increasingly enmeshed in legislation and public policy. ... [and] that maximizing cooperation, rather than competition, ... may become a strong possibility.*³⁷⁵

(g) *The ‘Horizonal’ Nature of Interdependence in Social Systems Analysis*

Yet Senge also emphasized *delays* as a third system building block, and all of the arguments favoring cooperation also encourage a longer and larger perspective on economic events and ethical standards of value (with the sole exception of ‘neoclassical’ theory, in its short-term ‘marginalistic’ constructions). And this implies, in turn, a *spatial and temporal* linkage of interdependence: that foresight and general outlooks allow a greater role for complementarity, and thus stronger longer-range arguments for cooperation therewith. This suggests that the primary justification for a competitive vantage is *short-term and narrow*, in that all long-run feedbacks support the case for complementarity – ‘concerts of interest’ – and therefore recommend *cooperation*, not competition, as the optimal organizational form for a humane society. If so, then neoclassical theory has led us down “the wrong path,” to use Trist’s term for the problem.³⁷⁶

Meaning is always elusive in such turbulent, interdependent domains, although – with openness, scientific honesty and a dash of humility – one can often discover rational indications of how to proceed. The case for ITQs suggests strong arguments for a systems approach applied to

³⁷⁴ Myrdal, *Op. Cit.* (note 103 on page 2 above), p. 774, as quoted in and discussed over note 109 on page 2 above.

³⁷⁵ Cf. Bennis, *Op. Cit.* (note 245 on page 2 above), pp. 221-22, as quoted also with note 316 on page 2 above.

³⁷⁶ Cf. *Section III.C.5(d)* above for reference, along with the quote referred to in note 279 on page 2 above.

ecological issues, since orthodox science shall not apply in this setting on any ground. Defensive feints shall not excuse shoddy, unscientific constructions applied to holistic contexts: as Churchman expressed the point, twentieth-century academics shuns organizational outlooks since “scholastically respectable” studies show up as “disreputable from a systems-planning point of view.”³⁷⁷ We must try to relax our grip on neoclassical theory, to the extent that what has been said above appears to make any sense. Instead of “holding on,” we must “let go” and then “move on” to more realistic concepts and claims.³⁷⁸ Systems theory invites a new look at how we think about social values in an our endless search for meaning through organizational learning.

9. Social Values and the Search for Meaning through Organizational Learning

Organizational learning is a *process* and not just ‘structure.’ Indeed, the *immaterial aspects* of informational acquisition imply a case for complementarity and cooperation that is strong enough to justify all the power of Churchman’s endorsement thereof with regard to ‘inquiring systems.’³⁷⁹ So one of the ‘social values’ suggested by organizational outlooks shall be an eager pursuit of *learning activity* through systematic *cooperation*. Our educational system moves slowly in directions supporting cooperation as an effective means to encourage learning activity in and out of the classroom. Indeed, a whole literature on cooperative learning approaches has been emerging over the last twenty years. Such implies a strong case *against competition* in learning environments, and many other results suggest that competition discourages learning.

(a) *The Importance of Values for the Integration of Social Endeavors*

Part of the organizational learning concept teaches that active values shall be an integral part of any systematic cohesion. Indeed the ‘glue’ which holds social process intact is *understanding* and the sharing of value priorities. So would Davis state as a “crucial learning ... that neither organizational design nor technical design can proceed without agreement on ... social values...” An essential step at the outset of any planning process is that: “Developing a statement of organizational philosophy is the first order of business in the process of organizational design following the creation of the steering committee and design team.”³⁸⁰ Agreement on values and goals serve to guide design decisions toward whatever result is imagined as their ultimate destination. No planning process is possible in the absence of values.

“...Values are central to human endeavor” and two particular aims are identified by Massarik, Margulies and Tannenbaum as specifically applicable to organizational work: *authenticity* (where people are free to be genuine) and *intentionality* (encouraging purposive action).³⁸¹ “The pervasive issue of *personal self-identity* [also] enters the picture” as a balance between *differentiation* and *integration* through one’s interaction with the whole system.³⁸² “As human beings all we have is experience flowing through time.”³⁸³

³⁷⁷ As quoted in note 240 on page 2 above.

³⁷⁸ Cf. Tannenbaum and Hanna, *Op. Cit.* (note 347 on page 2 above), pp. 108-13, and note 353 on page 2 above.

³⁷⁹ As quoted above in *Section III.C.8(c)* over note 363 on page 2 above.

³⁸⁰ Davis, *Op. Cit.* (note 259 on page 2 above), p. 151.

³⁸¹ Massarik, Margulies and Tannenbaum, *Op. Cit.* (note 201 on page 2 above), pp. 5-7.

³⁸² *Ibid.*, p. 11.

³⁸³ *Ibid.*, p. 13.

But *integrating* individuals into an interdependent domain in a cohesive framework is the organizational challenge of the next century's social thought. This shall demand alignment of private tradeoffs with social effects, by means of an ethical linkage of value acceptance and *engagement* in our relations. As Katz and Georgopoulos state the point:

*Values, norms and roles tie people into the system at different psychological levels and in different ways. Values provide the deepest basis of commitment in their rational and moral statement of the goals of a group or system. ... Normative involvement refers to the acceptance of system requirements about specific forms of behavior. ... At the level of role behavior people make the system function because of their interdependence with others, the rewards of performing their roles, and the socio-emotional satisfactions from being part of a role-interdependent group. ... It is apparent that these three levels of involvement are not necessarily intrinsically related. ... In a well-integrated system, however, there is some relationship between these levels such that they are mutually reinforcing.*³⁸⁴

The *values* entertained and discussed, with respect to their impact on social cohesion, include traditional goals along with the worth of *cooperation*:

*The great need of our time is a reformulation of social values. ... In the first place, research and observation show that the norm of reciprocity, of cooperation, of mutual helpfulness, runs wide and deep. Organizations could not exist without many uncounted acts of cooperation which we take for granted. ... In the second place, justice and fairness are not outmoded values. ... It is important to emphasize the importance of justice and fairness in the operation of an organization and to introduce reforms where inequity is the practice. In the third place, social responsibility ... has a potential that remains to be developed. ... All of these values are related to, if not an integral part of, the democratic ethic which is still our basic creed. ... Organizational reform needs such a value base both as a set of social principles and as guidelines for action.*³⁸⁵

(b) *The Importance of Values in Academic Science and General Knowledge*

All these views suggest that the *integration* of organizational function is a matter of normative values shared through *cooperation*. In turn, a systems approach invites some major revisions in outlook conditioned by orthodox suppositions in economics and academics. "Scientism" – as Hayek called it³⁸⁶ – has led to a fragmentation of our education and understanding into warring competitive views. "There is little if any sense of center or integration, because there have been few if any norms and values about remaining centered and integrated."³⁸⁷ As Churchman said, "the lines of the intellectual battle" lie "between pluralism and monism, between those who wish to see and design their world in pieces and those who wish to see and design it as a whole."³⁸⁸ The only additional insight that we can now offer on this subject of fragmentation in academics is its systemic cause: The problem emerges from

³⁸⁴ D. Katz and B. Georgopoulos, "Organizations in a Changing World" (*Journal of Applied Behavioral Science*, 7:3, 1971), in Thomas and Bennis, *Op. Cit.* (note 237 on page 2 above), pp. 122-23.

³⁸⁵ *Ibid.*, pp. 136-38.

³⁸⁶ Cf. Hayek, *Op. Cit.* (note 89 on page 2 above), *passim*.

³⁸⁷ Peter B. Vaill, "Integrating the Diverse Directions of the Behavioral Sciences," ch. 22 in TMMA, *Op. Cit.* (note 201 on page 2 above), pp. 571-72.

³⁸⁸ As already quoted over note 215 on page 2 above.

competition in education through its self-destructive effects in any sort of *complementary* setting.

As Vaill explains, “the story of science that the applied behavioral sciences have uncritically adopted from the physical sciences. ...still stands as the official version of what the applied behavioral sciences are.”³⁸⁹ Recommending a different approach has simply fallen on deaf ears within academic confines, since such contravenes the *modus operandi* of fighting to guard one’s own intellectual turf from any invasion or defeat in the ‘race for recognition’ that has supplanted the search for rational truth in this setting. *Competition* is the source of the organizational disintegration into incommensurate disciplines seen throughout the academy. If knowledge involves *integration* and a *broadening* of understanding, then the failure of competition can be seen as well in the pattern of fragmentation throughout the organization of our economic and social affairs.

(c) *The Need to “Let Go” and “Move On” to New Learning*

“A conclusive case can be made for the need for a very different mode of inquiry from that developed in the physical sciences” by academics. Indeed, we must redefine – or ‘re-image,’ to use the modern technospeak – concepts of “field” and discipline throughout our research and knowledge-based institutions:

The field is a human enterprise and a system of social processes among academics, professionals, practicing managers, students, and program administrators... It is a community of inquiry and planned change..., not an abstract collection of theories and research findings. It is a community of ideas and meanings. Without the sense of community and the system of practices that sustain and develop it, the theories and research findings indeed do fragment in all directions. Various persons do become radically cut off from each other, both in modes of practice and, more importantly, in values.

*It is the historical mission of the applied behavioral sciences that gives rise to the imperative of community as an organizing and integrating principle.*³⁹⁰

The process of organizational learning, communication and integration is often taken as statically ‘given’ in – so its structural aspects are therefore removed from – orthodox science. Any concept of realistic growth is thereby also excluded by the metaphorical model employed to frame our understanding. Community issues and cooperation are often understated or ignored as a result. The impact on our interrelations and knowledge of organizational process has been nothing short of disastrous. As Kaplan observes:

*Here is the shortcoming of applying to interpersonal communication the depersonalized model so useful in the mathematical theory of information. In that model, coding by the transmitter and decoding by the receiver are separable and independent processes. In the life of dialogue, however, there is a continuous interaction between them. What is happening is not ... transmission ... but the emergence of a shared meaning... The interchange is not just communication but a species of communion by which alone, as Martin Buber elaborated, each participant in the dialogue first becomes a person.*³⁹¹

³⁸⁹ *Ibid.*, p. 572.

³⁹⁰ *Ibid.*, pp. 572-73.

³⁹¹ Abraham Kaplan, “Understanding Method in the Study of People” in *TMMA, Op. Cit.* (note 201 above), p. 478.

This statement captures the very essence of a cooperative frame.

10. The Lessons of Organizational Systems Theory on ITQs

So what are the lessons of organizational systems theory for ITQs? Summarizing all we have said daunts the imagination, with the overwhelming complexity and embrace of systems analysis. Spread throughout the exposition of organizational systems theory are the following insights that directly pertain to the NRC panel's support of ITQs, at least as presented in *Sharing the Fish*.

(a) The 'Systems Failures' of *Sharing the Fish*

First and foremost, the fact that the NRC panel elected to address an inherently ecological issue with nary a mention, much less any use, of systems analysis is scientifically inexcusable and impeachable in the extreme. Models should fit to their realm of application through the assumptions they make, and the methodological orientation of neoclassical economics is simply and utterly irrelevant to interactive fields. The use of frameworks so far removed from the problem being considered devalues any implications or recommendations so derived. This is the failure of *Sharing the Fish*, and it is sufficiently overwhelming in its effect on the recommendations that the damage is fatal.

The second defect of *Sharing the Fish* is that the NRC panel – looking at ITQs through a single lens – sidestepped an issue of prime concern within a systems analysis: the *tightness of feedback control loops* is related to local enterprise and drastically attenuated by any globalization of fishing activity through ITQs. *Sharing the Fish* acknowledges that ITQs shall lead to a concentration of fishing quota ownership, placing communities under duress, but treats this shift of control as *efficient!* There is no attention paid to what the loosening of feedback loops shall mean in terms of ITQs' stewardship and conservation effects. Systems theories suggest that the consequences of placing international fleets in charge of ocean resources shall likely yield inefficiency and inequity, undermine community, and threaten the viability of the ecological system.

The third disappointment with *Sharing the Fish*, as seen from a systems perspective, is its slavish devotion to *competition* as a system of value without any real heed to whether its underlying assumptions apply in this setting. Interdependence is seen as an 'externality problem' to be solved by a privatization of ownership rights within a competitive frame, when both the organizational and institutional views see the *problem* as competition – the 'arms race for fish' – and that *cooperation* is needed. The substitution assumptions in neoclassical theory are never addressed with regard to their relevance here, in the presence of complementarities as an alternative form of interdependence. *Competition in complementary settings shall lead to market failure*, in the same way that consolidation of substitutes is inefficient. The issues of interdependence and "dynamic complexity" in the environment are never raised or resolved (or even acknowledged) in *Sharing the Fish*.

The fourth and maybe the most disturbing oversight – due to its simple importance – is the total absence in *Sharing the Fish* of any attention at all to rates of discount, planning horizons or intertemporal issues with regard to the (alleged) incentive for conservation from ITQs. As shown, the issue will matter, and a simple example addressed in a footnote³⁹² debunks the notion

³⁹² Cf. the discussion of this point in *Section IV.A.1.* below.

that any incentive for stewardship practice will emerge from an ITQ system. Indeed, the example implies the opposite outcome from ITQs, that the ‘maximum profit’ course of action will be total liquidation of fisheries for a better return elsewhere from the immediate gain (like clearcutting virgin forest to get the money into a better return from some other asset). The incentive for ‘raping the resource’ is not abated by ITQs; it will likely strengthen instead due to rising enforcement costs.

(b) *A ‘Systems Perspective’ on ITQs*

The basic conception of *Sharing the Fish* is a neoclassical argument that is applied in a systems setting: an epistemologically and theoretically illegitimate error. The problem is not that they used the approach, but that they never questioned the premises from an alternative vantage. Any awareness of the methodological impropriety of framing questions within a system of thought, the assumptions of which are so completely at odds with the facts of its application, ought to have forced at least a skeptical look through a multiple lens. That no such thing was done is surprising; it raises some questions about the integrity of the process employed to review what amounts to a very important and largely irreversible change in ‘property rights’ and economic control over resources in our society. Such a decision deserves more care.

A systems approach shall lead to radically different conclusions about the efficiency and the equity of an ITQ plan, as well as about its effects on fishing communities and the ecology. As Senge explains, the ‘tragedy of the commons’ is a “systems archetype,” best resolved through *cooperation*, not more competition (which is seen as ‘the hair of the dog,’ or rather, ‘mistaking a poison as cure’). In a systems setting, ‘quick fixes’ seldom perform as expected: one needs to examine dynamic connections and tightness of feedback control loops, but even then most systems seem to possess a mind of their own.

The essence of a ‘systems’ theory is that the whole acts *separately* from its subparts’ behavior, and that “dynamic complexity” always has surprises in store for us. Simple management plans shall not work in this situation: one needs to examine nature’s organic balance – the homeostasis throughout the system, in terms of feedback control loops – and try to see how interactive forces shall be affected by any human planned intervention. This was not done in *Sharing the Fish*, and so we are left with no reliable way to anticipate or predict the likely effects of ITQs from the analytical arguments as presented in the NRC study.

What was needed – from multiple vantages – was to show where a “fulcrum” might be placed to establish “leverage” over the system as a whole, to move it properly in the desired direction. No analysis of this sort appears in *Sharing the Fish* because in neoclassical economics simple ‘closed-system’ models show no need to attend to ‘external environments’ of the actions studied. The ‘figures’ in neoclassical theory are not tied to their ‘grounding context’: there is no ‘gestalt’ to which our results should defer. Instead, the world is seen as ‘separate parts’ in ‘partial interdependence,’ as if that were enough for our ‘understanding of the moment.’ For an effectively irreversible centralization of market power rising from ITQs – acclaimed as ‘efficient’ in *Sharing the Fish* – such an approach misses the mark completely.

A ‘systems analysis’ shall be needed to deal with a ‘systemic crisis,’ and there is simply no role for neoclassical theory in this situation. It does not ‘see’ the *process*, pose appropriate questions or result in adequate answers on the real issues at stake in a ‘systems’ setting. The framework doesn’t apply. A systems approach is so radically incommensurate with conventional

economics in its ‘selective focus,’ that we are left without a reliable understanding of ITQs’ (hypothetical) likely impact after reading *Sharing the Fish*. The problem is, such doubts are never raised or revealed in *Sharing the Fish*: Its ‘single model’ – like any theory – is simply oblivious to its own limits,³⁹³ to all the ‘restrictive exclusions’ behind its ‘selective focus’ on what it ‘sees’ as essential (at the expense of all else).

And what is placed in the ‘pound of *ceteris paribus*’ by neoclassical theory are: ‘externalities’ and interdependence; *ignorance*, risk and uncertainty; *discount rates* and planning horizons; *feedback control loops and delays* in a ‘homeostatic’ context; the role of *localization* in the internalization of cost; the patterns of *organizational learning*; the role of ‘*social values*’ in the alignment of private with social effects; the relative virtues of *competition and cooperation* in systems settings; the role of *political and market power* rising from consolidation; the need to address and deal with the market as an ‘*open system*’ interacting with its environment in complexly unpredictable ways; etc. There are so many restrictions surrounding a use of neoclassical theory – especially in a systemic context – that the NRC panel’s commitment to this single approach is surprising, like ‘carrying all of their eggs in one basket.’ The entire analysis fails since its sole approach is wholly inapplicable to the problem addressed.

D. A Summary of ‘Framing Questions’ with Respect to the ITQ Issue

Every analytical outlook carries ‘selective focal’ limitations on what can be seen through its own theoretical lens. ‘Selective focus’ is always (simultaneously) an ‘exclusive blindness’: such implies an epistemological (axiomatic) case for *openmindedness* in science and for inquiries such as this.³⁹⁴ Single approaches – unless their assumptions are perfectly matched to their application – do not guide us reliably in the absence of ‘framing questions.’ If there is one lesson *Section III* of “*Scaring the Fish*” has to teach, it is this: multiple models shall be our only check – beyond the fit of assumptions to facts – on the accuracy and reliability of any outlook. Carrying all of our analytical ‘eggs’ in one intellectual ‘basket’ is an invitation to risk – if not disaster – in our results.

Just as each of us has but one life to live and to spend as well as we can, we have but one ecological system. If our intrusions – because of venality, arrogance, short-sighted selfishness, stubborn denial or “refusal of consciousness” (to use Schumacher’s term)³⁹⁵ – undermine the integrity and viability of our life-support systems, we will have no place to hide for protection from the resulting ‘cascade’ of feedback. In our economic competitive frenzy of acquisition without regard to its consequential effect across systems on which we depend, there is no recourse and no escape from this self-destructive failure. Rapacious indifference – the ‘arms race for fish’ – must stop; it threatens us all.

Locking down a problem means understanding it from many angles, none of which may apply exactly. Each sheds light on the others’ ‘selective exclusions’ so all lend insight to the limits of

³⁹³ Cf., e.g., the statements by Hutchison and Hayek in note 89 on page 2 above.

³⁹⁴ The suggestion was made that the narrowness of academic inter- and intra-disciplinary specialization – the fragmentation of knowledge and the ‘speciation’ of forms (and the defensive frames surrounding them, protecting turf from incursion) – is an artifact of *competition* in complementary learning environments. Such is an implication of organizational systems theory, as an insight to a ‘ground’ taken as ‘given’ in neoclassical theory.

³⁹⁵ Cf. the statement by E. F. Schumacher quoted in note 430 on page 2 below.

any one. This is why openmindedness is an axiomatic concept, to be assumed by any ‘inquiring system’ or research process. Science simply cannot proceed if forced into a ‘prefab box’ of formulaic conclusions. Single outlooks say nothing about the effects of phenomena they ignore and dismiss as ‘insignificant.’ And we have no direct access to ‘right essentials’ in any problem, so must study it from as many perspectives as we can safely encompass.

‘Systems approaches’ – as ‘institutionalism’ mostly is, and as ‘positivism’ and ‘neoclassical economics’ surely are not – demand *a broader view* overall, especially of ecological matters, and *a precautionary approach* in the face of vital lacunae omnipresent throughout our understanding. Academic research shows the unintended effects of competition in education of a disintegration of function: a ‘systems approach’ is oriented instead to the *reintegration* of organizational learning and understanding in all ‘inquiring systems.’ No wonder, as Churchman expressed it, “the academic world of Western twentieth century society is a fearsome enemy of the systems approach.”³⁹⁶ It represents a death threat to intra- and inter-disciplinary arguments, squabbles and turf fights, as well as to the resulting fragmentation of human knowledge.

Indeed, this is another example of a familiar “systems archetype”: what Senge identifies as a generalized ‘tragedy of the commons.’ Short-sighted specialization needs to be integrated into an intellectual system or our energies shatter against each other in conflict instead of fostering growth. This is the challenge of our Age, and *denial* is the primary enemy under attack by any endorsement of ‘open systems analysis.’ So we must try to release our grip, and overcome our need to ‘hold on’ by ‘letting go’ and ‘moving on’ to a new and unfamiliar approach. Such shall look a lot more dangerous than it will prove to be: our continued thrall with outmoded theories stands as a far graver threat to our ecological and social health.

The next section addresses specific claims of *Sharing the Fish*, with respect to six questions. Does *Sharing the Fish* show that ITQs promote *conservation*; that they take *a precautionary approach*; that they are not ‘*private property*’; that they yield *stewardship practice*; that they benefit *local communities*; and that the research in *Sharing the Fish* reflects the *experience with ITQs*? The answer to each of these questions, according to *Sharing the Fish*, is “Yes.” But the frame of analysis on which all such claims are based is fatally flawed and – in any event – is wholly inapplicable to the issue at hand. The purpose of *Section IV* is to show why all of these questions should be answered with a resounding “No!”

³⁹⁶ As quoted in note 240 on page 2 above.

IV. The NRC Report: Do Its Claims Live Up To Its Standards?

The standards as explored in *Section II* include the following: conservation, sustainability and the precautionary approach; the need for ‘ecosystem-based’ over ‘species-specific’ management tools; and due concern with general social and economic considerations such as equity, efficiency, ethics, community, power, politics and ‘horizon effects’ from ITQs. On these grounds, the argument over ITQs shall be fought and decided.

The case against ITQs is strong and decisive on each of these standards, strangely in spite of all the allegations in their favor by economists, business spokespeople, academics and newspaper editors. *Sharing the Fish* is selectively focused upon the best features of ITQs, and underemphasizes or ignores their most dangerous defects, seen very clearly through any other lens than ‘neo-classical’ theory. So there is another side to this story, unvoiced in the NRC Study, arguing for rejection of ITQs not only on equity issues, but also – and more importantly – on the very environmental and economic grounds upon which they are defended, as well as on allegations of beneficial long-term ‘horizon effects’ stemming from this proposal.

In order to show the inadequacy of ITQs as a management tool, a series of six questions shall be addressed and discussed, starting with (a) *conservation concerns*, and whether ITQs support this standard of vital importance. The other five issues to be examined are: (b) whether adoption of ITQs is consistent with *the precautionary approach* to environmental management; (c) do ITQs conflict with the ‘public trust’ doctrine in their *privatization* of assets entrusted to the public sector; (d) will ITQ ownership enhance *stewardship* of ocean resources; (e) shall *traditional fishing communities* benefit from ITQs; and (f) does the NRC study accurately and objectively represent *the experience with ITQs* both in the United States and elsewhere?

On all of these counts, ITQs fail to meet the standards of fisheries management, both as specified in the M-S Act and by international law and agreement, and therefore should not be adopted as national policy by either the U.S. Congress or other fishing countries. Their promise stems from illusion, due to inadequate information, incorrect theory and the narrow selective focus of the NRC’s study. A broader view would dispel the ruddy glow around this proposal.

A. Does Sharing the Fish Allay the Conservation Concerns about ITQs?

The primary arguments favoring ITQs – as shown in the *WSJ* editorial cited above³⁹⁷ – are efficiency, conservation and long-term planning horizons (stewardship). The first issue we address in this critique of *Sharing the Fish* are *conservation concerns*, and whether they are resolved by ITQs. The problem of conservation involves efficiency and long planning horizons because of a ‘race for fish’ mentality arising from *competition*. ITQs are designed to resolve the problem by institutionalizing competition through establishing ‘private property’ rights to resources, seemingly in the same manner as transferable ‘rights to pollute.’

Does *Sharing the Fish*, however, really address how the ‘race for fish’ is supposedly stopped by ITQs? A superficial answer is *yes*: ITQs should end the uncertainty of who has the ‘right’ to partake in a fishery and at what level. In this regard, the ‘race for fish’ should be explained more fully, as it does encourage inefficiency and short planning horizons.

³⁹⁷ Cf. the text accompanying note 84 on page 2 above.

The ‘race for fish’ arises from the nature of public ‘common’ resources: no individual ‘owns’ a fishery in its free (fugitive) state in the wild. The only way to capture control of the resource, and to enjoy its fruits, is to remove it through ‘harvest.’ Therefore, a strong incentive exists – especially in a competitive system – to seize as much as one can, because someone else might do so first otherwise, at which point the option is lost. The only way to *control* the resource, and take advantage of its value, is through its depletion. The common assumption behind the ‘race for fish’ is, indeed, that *the resource is doomed*: the only matter at issue is, *who* will capture its spoils? This sort of competitive frenzy will lead to, and too often has spawned, destruction of fisheries stocks.

The great promise of ITQs is that they purport to remove the self-defeating incentive for overharvesting fish and depleting the resource. Here, the problem is seen – too narrowly – as one of ‘freedom of access,’ where we all lack control and the only way to secure it is through a ‘race for fish.’ But this is not a system under *control*, but rather a *breakdown* thereof, where resources are being overexploited by a corporate fleet driven by debt to work as hard as it can to stay afloat in as much a *financial* as a *physical* ocean. The overcapitalization and myopia are but a symptom of an ‘open access’ fishery, which ITQs successfully close, at least according to *Sharing the Fish*.

Theoretically, this should work. Quotas – set in percentage terms of a total allowable catch (TAC) – control the overall take, give fishing concerns an individual limit on what (but not when) to harvest, in a market domain where tradable shares should gravitate to the owners with the most efficient techniques. *In theory*, ITQs offer a nice solution to what is widely admitted to be a massive failure of fisheries management to establish control over ocean resources.

Indeed, the degree and extent of this crisis seems a primary selling-point for any ITQ plan. Drowning people do not pick and choose which piece of driftwood is ‘best’: anything doing the job is better than no flotation at all! But *crises* are not the best setting for rational planning or resource management, and the massive failure of previous schemes gives no real warrant to ITQs. And sailors expect to be rescued; there is no rescue from ITQs: once set, they become irreversible, legally and institutionally.

Yet ITQs seem to work, conceptually, yielding control of the race for fish to corporate ownership of ocean resources ‘in the wild’ by closing off ‘freedom of access’ and – essentially – fencing the ‘public commons.’ “Shall this system perform as predicted?” is the question to ask. We find the answer is: “No.”

“Why?” At least four reasons come to mind as to why ITQs shall not work as portrayed in *Sharing the Fish*. First, the *short horizons* of business are not extended by ITQs: instead, the urge to exploit without limit is solidly anchored in place by this system. Second, ITQ plans have *no application* beyond the 200-mile limit defining exclusive economic zones (EEZs) on each coast. Third, the very success of this system is based on the accuracy and integrity of fish biomass estimates and their total allowable catch (TAC), within an intractably ‘species-specific’ context in which broader, *ecosystem-based management tools* are required. Fourth, an ITQ system only performs as described in the presence of *full and strict enforcement of rules* and willing adherence to ethical standards. No strong case has been made that any of these conditions shall hold.

1. Short-Term (Myopic) Horizons and the Problem of High Discount Rates

In *Sharing the Fish* there is almost no mention, much less any extended discussion, of the role of short horizons and high discount rates as a causative factor in the overharvest of fisheries, although the ‘other’ NRC study, *Sustaining Marine Fisheries*, stresses both as central to the incipient disinvestment of natural capital:

... *Fishery resources are a form of natural capital. ... Refraining from fishing and enhancement activities are investments in the resource. Fishing in excess of sustainable yield, and thus depleting the resource, is disinvestment.*

... *Investment in the resource requires a current sacrifice ... while disinvestment provides immediate economic returns at the cost of lower future returns.*

*A key factor in investment decisions is the rate at which the investor discounts future economic returns as compared with current returns. The lower the discount rate, other things being equal, the greater will be the incentive to invest; higher discount rates lead to a lower incentive to invest.*³⁹⁸

The case for ITQs relies on assertions that *discount rates will fall* (and planning horizons shall lengthen) in the presence of ‘property rights’ over resources subject to private control (instead of public mismanagement). The argument is that privatization ought to reduce uncertainty, and thus raise investment through longer planning horizons and lower risk. Consequently, a stronger incentive for resource conservation ought to ensue when future returns are discounted less steeply against the immediate payback from overharvesting fish, as so well explained in the ‘other’ NRC study, *Sustaining Marine Fisheries* (although the issue is not discussed or acknowledged in *Sharing the Fish*):

The payoff from the investment is enjoyed in the future, so resource investment, like other investment, involves uncertainty about the future. As a result, most individuals and societies give less weight to (risky) future than to current returns. In other words, risk is one cause of the future’s being discounted, which reduces the incentive for investing. If the risk to future returns is high enough, the incentive to invest can disappear and disinvestment will occur. ...

The above has made capture fisheries difficult to manage in economic terms, mainly because of poorly defined property rights. ...

*The poor definition of property rights has two major consequences. First, individuals have a strong incentive to discount future returns heavily and not to invest ... [so] to increase their own share of the available resource by fishing more, rather than less. The second major consequence, which follows from the first, is fleet (and perhaps processing) overcapacity. These conditions – increased fishing effort and increased capacity – make overexploitation more likely.*³⁹⁹

³⁹⁸ *Sustaining Marine Fisheries*, p. 72; also cf. the text with notes 77 and 83 on pages 2 and 2, respectively.

³⁹⁹ *Ibid.*, pp. 72-73. Also cf. note 13 on page 2 above on this subject. Part of the problem here – unresolved by ITQs and unmentioned in *Sharing the Fish* – is a divergence between *private* and *social* discount rates (or what some people call a difference between ‘nature’s time’ and human ‘attention spans’ or ‘planning horizons’ in economics). As Timothy Mount explains, in his essay on “Redirecting Energy Policy in the USA to Address Global Warming,” the concluding chapter in Dore and Mount, *Op. Cit.* (note 13 on page 2 above), p. 303:

Many environmentalists and economists recognize the fact that market rates of discount are typically too high to value events in the future correctly from a social perspective. ... Hence the problem for resource economists, in

The case for privatization through ITQs is one for control over resource shares and their exploitation, on a claim that discount rates shall fall with ensuing reduction of risk. But does this follow as night after day, or might this be a *non sequitur*, if viewed in accord with a more realistic conception of ‘how things work’ in our world of politics, power and ‘pull’? This is indeed ‘the rub.’ There is no realistic case to be made – nor empirical evidence supporting the view – that ITQs shall lead to stewardship practice by lowering discount rates or extending planning horizons.

The contradiction behind this story is an unproven claim that ITQs shall lead to ‘control over resources’ simply by handing them over to unaccountable international interests, subject to almost no public constraint, while locking the door to *undoing* this system by two relevant means: first, due to a strong incentive for *consolidation of ownership* by all-powerful economic interests; second, through – in essence and likely effect – a *permanent and irreversible grant* of property rights to corporations who do not depend directly on natural resources in a particular region for their survival or profit.

In other words, to put it bluntly, a fisheries management system that has failed dramatically to resist the overwhelming pressure of business interests for overexploitation is now effectively giving control away (irreversibly) to these same parties!⁴⁰⁰ Somehow (without any explanation) these big corporations shall magically overcome their rapacious strategies and transform into conservationist stewards, simply by being granted total ownership of the resource. Somehow... Worse, this scheme to hand over rights to otherwise commonly-owned resources stipulates *no public compensation* for this largesse!⁴⁰¹

Is it any wonder that private fishing industry interests seem to be lobbying hard for this plan? They stand to gain a windfall worth millions from the public trust with this scheme, if initial endowments are based on actual catches in earlier years, and are not auctioned but ‘gifted’ for free. And this is another reason that a ‘horizontal lengthening’ is unlikely to result from this program. If fishing success in previous years shall serve as the basis of ownership shares – without regard to legality or violations of fishery rules – *the most dishonest participants* shall end up with the largest share endowments. Such is not a plan designed to reward long planning horizons.

Quite the reverse, in fact: ‘cheaters shall always be winners’ in the ‘gifting’ of quotas on catches. There is suggestive evidence in New Zealand that this occurred in the initial allocation of ITQs in the snapper fishery, and direct evidence of the problem in the mid-Atlantic surf clam and ocean quahog (SCOQ) fishery when ITQs were awarded. These are not the individuals likely to conserve fisheries: setting them up with enduring control ought to *hasten depletion*, instead.

The ethical limits of ITQs – with their implied ‘horizon effects’ – shall not be conducive to conservation or restoration but *exploitation*, with fewer restrictions as well to curb blatant abuses

practice, is to determine how the high market rates of discount can be lowered when alternative investments or policies are evaluated. ... Nevertheless, it is unlikely that this type of argument would influence decisions made by an oil company operating an oil-field in an unstable region [or by an international fishing fleet in an unstable ocean – FBJ]. Getting a financial return on the investment as quickly as possible would be the primary goal. ... Consequently, the problems associated with high rates of discount will not be resolved in a global economy in which international markets are the dominant force behind economic decisions.

⁴⁰⁰ E.g., cf. Davis, as quoted in the text accompanying note 527 on page 2 below.

⁴⁰¹ E.g., cf. Copes as quoted in 18 on page 2 above.

of power. International fleets – seeking quick catches and short-term profit to feed the gaping maws of financial backers stretched to the limit by uncertain earnings – shall not respond to conservation or resource investment incentives.⁴⁰² The argument just is not there.

Another way of seeing this point is to relate the ‘internal rate of return’ (IROR) from *not harvesting fish* – and so *investing* in the resource – with the yield on other investments in the private domain. The IROR is based on the reproduction rate of fisheries stocks for which a percentage quota is owned, multiplied both by that share percentage *and* the average ratio of the TAC to the total resource (adjusted downward for risk). In other words, if I own 10 percent of the TAC for a species, and the resource shall grow at 20 percent per year if left unharvested – and the TAC is 30 percent of the stock – then my (risk-free) incentive for conservation earns me an IROR of 20% times 30% times 10%, or no more than 0.6 percent (before further reduction for risk)!

If yields on any other investments surpass that rate of return, then my incentive for conservation is nonexistent: I will ‘liquidate’ the resource by harvesting all that I can – like clearcutting forests, save you can plant them again – and place my immediate gains somewhere else for maximum yield. The ‘conservation incentive’ for ‘stewardship practice’ is simply illusory, and only enforcement efforts stand in the way of my ‘conscienceless’ greed. But where in *Sharing the Fish* shall one find this elementary argument? Discount or interest rates are not even listed in its index.

Furthermore, the enforcement capability of an ITQ system may have no effect on fishing capacity even if vessels decline, especially if ITQ shares can be *leased* as well as sold. The captains and crews affecting the resource shall have far fewer reasons to protect it than ITQ owners. As Fitzpatrick and Newton describe the problem in their assessment of the world’s fishing fleet:

*...Some developed states have implemented Individual Transferable Quotas (ITQs) to fishing vessels as a means to reduce the size of their national fleets, and avoid the financial implications associated with fleet reduction programs. In most cases ITQs reduce the size of the fleet, but the practice of leasing quotas by quota holders will, in turn, increase the capital requirements for active fishing vessels. ITQs therefore reduce the number of fishing vessels but do not necessarily reduce the overall capital demand from the resource. In addition, the benefits of ITQs to conservation and management have at this time not been sufficiently demonstrated to allow for unqualified endorsement for implementation.*⁴⁰³

So owning ITQs may *increase* the financial pressure – and discount rates – on fishing vessels instead of reducing them. If so, ITQs will shorten horizons, and hasten resource depletion. *Localization* and *tight feedback loops* are better for resource investment and conservation of fisheries stocks than any consolidation of ownership into international private hands untouched by local effects.

2. *The International Fishing Fleets and Territorial Limited Access*

The implementation of ITQs by coastal fishing nations to control the harvest in EEZs shall not apply outside their own territorial limits. So the ‘race for fish’ shall continue in the open

⁴⁰² E.g., cf. “The Debt-Driven Economics of Factory Trawling” in Ken Stump and Dave Batker, *Sinking Fast: How Factory Trawlers are Destroying U.S. Fisheries and Marine Ecosystems* (Washington, DC: Greenpeace, 1996), ch. 6.

⁴⁰³ Fitzpatrick and Newton, p. 10, as cited in note 64 on page 2 above.

deep-water oceans, unabated by ITQs. But, this being the case, who is to say where fish in the holds of vessels were really caught? Is enforcement so well-informed to know when fish were harvested from an EEZ and then described (dishonestly) as from international waters, so outside the realm of ITQs? Using up ITQs on a catch shall be avoided wherever possible, especially as their worth increases.

A use of ‘flags of convenience’ (FOCs) on the high seas is also a means to avoid the regulations imposed on ships registered by coastal nations, both for safety and to protect the ocean environment.⁴⁰⁴ These ships tend to be older, and underfinanced with poorly-paid crews, and they are more often engaged in illegal fishing than ships flying the flags of legitimate port and coastal states.⁴⁰⁵ Renegades sailing the high seas are known to underreport their catches and to fish in violation of international treaty accords, and the use of FOCs serves to facilitate this noncompliance. Such behavior will limit ITQs’ (allegedly) beneficial effects on conservation, efficiency and environmental protection, to the extent that they abide cheating and abet the externalization of cost through financial pressure for profit by international fleets.

3. The Accuracy of Species-Specific Estimates in a Systemic Context

The acclaimed virtues of ITQs shall rest totally on their use of fishery biomass estimates and TACs to limit the overall catch, of which ITQs are percentage shares. But some fisheries stock assessments are based on information provided by fishing industry members and, increasingly, other research institutions not independent of commercial interests, and are subject to lobbying and political pressure by well-financed industry advocates. So even at best, these studies are subject to ranges of variability and uncertainty that demand a very conservative interpretation, and the prudent use of precautionary approaches in application.

The fishing industry, on the other hand, takes a much shorter view of the process, spending money and using considerable economic power and influence to persuade authorities that these limits should be relaxed, through any means open to them. By doing so, their short horizons and high discount rates are revealed, along with their real concern over resource depletion versus immediate profit. The claim that ITQs shall (somehow) encourage a transformation of this short-term myopia into a long-term planning perspective for resource stewardship seems very naïve. The evidence for this sort of farsighted transmutation of lead to gold is simply not to be found.

Parzival Copes also raises another relevant point about the *inflexibility* of an ITQ management system in committing to TACs before the season has started, and then not being able to change them over the course of the year as new information appears about stocks. Such adjustments will likely be important for conservation – especially under precautionary approaches, and as required by “National Standard 6” under the M-S Act – but ITQs’ ‘stewardship properties’ (at least those supposed in *Sharing the Fish*, although without justification) do not allow any intra-seasonal changes in TACs since they interfere with private planning and would discriminate among those who fish early and late in a season.⁴⁰⁶

⁴⁰⁴ Cf. International Conference of Free Trade Unions, Trade Union Advisory Committee to the OECD, International Transport Workers’ Federation, Greenpeace International, *Troubled Waters: Fishing, Pollution and FOCs*, Major Group Submission for the 1999 CSD Thematic Review: *Oceans and Seas*, March 1999.

⁴⁰⁵ *Ibid.*

⁴⁰⁶ Parzival Copes, “Social Impacts of Fisheries Management Regimes Based on Individual Quotas” in G. Palsson and Gudrun Petursdottir, *Proceedings of the Eighth Conference of the International Institute of Fisheries Economics and*

In addition, the use of *species-specific* quotas and TACs under ITQs is inconsistent with the calls for *ecosystem-based* management tools. Sure, an interdependent model of fisheries stocks should be developed to show the interrelations of forage activity across species of fish, but for every outcome and prediction there will likely appear another intended to serve fishing industry interests. After all, the commercial sector is far better financed than government scientists, and they will have their own well-paid expertise spreading a ‘party line’ that TACs should rise, since the resource is not in danger, the numbers are wrong, etc., as we all like to believe (voters in particular). Currently, we do not know enough about the interdependence of species in the ecological system to identify – much less specify or model – their complex interrelationships, food web patterns and energy balances to resolve such questions.

Science is not immune to politics, nor are stock assessments and TACs. Every applied academic and any practicing consultant in the social and biological sciences sees this sort of thing every day. The game of ‘model wars’ as a cover for the pursuit of political and economic gain is ubiquitous. Science is not all it seems: true objectivity is elusive in a world of focal limits, ignorance and narrow views. In a 1992 analysis of ITQs in New Zealand, Sissenwine and Mace said these concerns were well-founded, though others maintain the system has since then improved:

*The general conclusion is that TACs are not closely tied to the best available assessments of the fisheries resources, nor are catches strongly controlled by the TACs. Some valuable stocks have probably declined in abundance. To date, the track record of ITQ management with respect to conservation is not good.*⁴⁰⁷

So we must not assume that TACs shall be set on the basis of purely scientific criteria based on accurate data and certain knowledge. Instead, an ongoing argument will occur – along with a lot of political pressure behind the scenes – against too-limited TACs and due precautions for resource conservation. If money and influence shape political outcomes, science and caution will lose. Shortsighted decisions, supported by pseudo-scientific constructions set up to warrant the overexploitation of fisheries stocks, shall continue to rule the waves.

Species-specific quotas are not conducive to ecosystem-based tools of fishery management process, such as called for by the NRC, Greenpeace and many others. The fact that ITQ rights shall be effectively permanent does not contribute to the expansion of focus sorely needed in this setting. Again, the impact will not be to widen the range, and lengthen the time, over which outcomes of policy choice are considered, but rather to reinforce a narrow view at precisely the moment that a broader one is sought.⁴⁰⁸ This is another reason why ITQs should be rejected: they take us in the wrong direction, away from ecosystem-based tools, and lock us into a virtually irreversible species-specific quota system of fisheries management. This is not what Congress should do, under the M-S Act.

4. *The Problem of Enforcement and Cheating in a Competitive Frame*

The whole integrity of an ITQ system is based on two things: the quality of *information* and the objectivity of the scientific analyses setting TACs; and the overall *ethics* of fishing cultures

Trade (Casablanca: Office National des Pêches, December 1996), Section (A2).

⁴⁰⁷ M. P. Sissenwine and P. M. Mace, “ITQs in New Zealand: The Era of Fixed Quota in Perpetuity” (*Fisheries Bulletin*, 90:147-160), as quoted in *Sharing the Fish*, p. 359.

⁴⁰⁸ On this point, cf. the statement by Arrow referred to in note 189 on page 2 above.

and practices subject to regulation, monitoring and control.⁴⁰⁹ In the absence of voluntary compliance – especially in the presence of strong incentives to cheat and thereby gain an unfair edge in the ‘race for fish’ – it is *the least scrupulous*, not the most upstanding, who win. Normal, healthy markets shall reward those with the highest-quality methods and the most ethical practices with a better return on investments, since inefficiencies shall be costly (unless such expenses can be *externalized* onto rivals, society or the unborn in the absence of adequate feedbacks).

Indeed, there is a “Gresham’s Law” of socioeconomic process that “bad ethics drive out good” in informationally asymmetric contexts.⁴¹⁰ In other words, a ‘tragedy of the commons’ system archetype – to use Senge’s term for the problem – appears when *cost externalization* is treated as simple ‘efficiency’: anyone trying to be ethical, in not shifting costs onto others or unborn generations, shall not survive in this sort of market. They cannot compete with those who wantonly shed these costs. Such is why Paul Hawken makes the accusation that “our business practices are destroying life on earth.”⁴¹¹

An international consolidation of fishing effort through ITQs shall *loosen* feedback loops, and therewith environmental safeguards. As Simon Levin puts it in his recent book on ecosystems, which emphasizes “tight feedback loops” as the key to ecological health:

There is a very profound lesson here for human societies...: where the consequences of one’s actions are felt most quickly and strongly, the motivation for environmentally wise behavior is greatest. To get people to “think globally, but act locally,” one really needs to get them to think locally. The most effective ways to do this are to close feedback loops so that the consequences of individual and corporate behaviors rapidly come home to roost.

*The larger the coalition, the weaker the sense of belonging and the less effective the feedback loops. Once again, localization of networks of interaction is seen to strengthen the force of selection.*⁴¹²

⁴⁰⁹ *Sharing the Fish* is painfully clear on these points, as shown in the following quote from p. 175 therein, discussing “Considerations for a National Policy on IFQs” on “Effective Monitoring and Enforcement”:

Regardless of how well any fishery management plan is designed, noncompliance can prevent the attainment of its economic, social and biologic objectives. Plans containing IFQs are no exception. Noncompliance not only makes it more difficult to reach stated goals, it also makes it more difficult to know whether the goals are being met, due to data fouling. Much of our understanding about the health of a fishery is derived from an analysis of its commercial catch. Therefore, if the landed catch is unrepresentative of what actually is harvested (as would be the case with highgrading or high rates of bycatch discards), incorrect inferences would be drawn from the landed catch. Not only would true mortality rates be much higher than apparent mortality rates, but the age and size distribution of landed catch would be different from the size distribution of the initial harvest (prior to discards).

⁴¹⁰ “Gresham’s Law” in economics says that a debased currency will displace any of higher value if the two are treated as of equal value for transactional purposes: “Bad money drives out good.” In a socioeconomic context, where ethical rules are not enforced and consumers cannot distinguish the two at the moment of purchase, then: “Bad ethics drive out good.”

⁴¹¹ As quoted in note 36 on page 2 above.

⁴¹² Simon Levin, *Fragile Dominion: Complexity and the Commons* (Reading, MA: Perseus Books, 1999), p. 143. Levin talks about “tight feedback loops” throughout this book, esp. cf. pp. 2, 17, 143, 148-51, 154-56, 162-63, 171, 195-97, and 201-5. For example, on p. 202, he draws a link from the globalization of institutions to the risk of environmental loss:

If there is balance in nature, it is to be found only at the broadest scales of space, time, and organizational complexity. ...In modular structures, there is buffering against cascades of disaster. ...Complex adaptive systems

The globalization of fishing effort through ITQs shall lead to an *increase* in natural systems abuse, and not to better resource stewardship. There is almost no enforcement at all of international standards of fishery conservation, and no effective institutional means of achieving it in the near future. Instead, we see a reliance on threats, ethics and diplomacy as a means to encourage compliance with the treaties signed by our leaders. Such efforts are made in the breach, over dramatic cases, spending ‘political capital’ only where it truly counts. No routine enforcement measures on the high seas are being considered as a part of this plan, at least beyond territorial waters, and even those inside the EEZs are largely ineffective without the willing compliance of vessels and crews. As *Sharing the Fish* explains: “How well a natural resource management system performs is determined in part by how well it is accepted by users of the resource.”⁴¹³

So ethics shall matter, and they – in turn – arise from a sense of fairness and justice in how regulations affect the people directly involved with the resource. How well-served are the captains and crews of vessels under an ITQ system, and how will that affect their motive for conservation activities? This is the question one needs to ask with regard to the resource conservation effects of ITQs.

Sharing the Fish shows unmistakably how ITQs shift the balance of power from crews and captains to ITQ owners, at the former’s expense, in two related ways. First, the leasing of Icelandic quotas, “usually referred to as ‘fishing for others,’ is becoming increasingly widespread within the [fishing] industry.”⁴¹⁴ The way these leases are often structured, the payment *to vessels* for the catch is dropped by up to 50 percent, with the rest directed *to ITQ owners*. Second, shares are generally leased from massive, vertically-integrated firms with boats and processing plants, so what is paid for the fish is thus an ‘internal’ (accounting) price in a closely-held transaction used as a tool for channeling profits away from crews to company ITQ owners.⁴¹⁵

In both these cases, since crews’ compensation is in proportion to vessel revenues, a use of ITQs has served as a means to *reduce* such payments by up to 50 percent of crew wages.⁴¹⁶ Such is not a situation conducive to longer horizons or to conservation effects, but to more effective exploitation and dominance over resources. This is not a sign of efficiency, but of market power abuse by *cost externalization* that is enabled by ITQs. With ITQ owners seizing as much as half of what went to vessel employees – as compensation for ‘harvesting rights’ – non-owning captains and crews are being impoverished by this shift in control. Here we face a tradeoff between environmental ethics and the financial incentive to work the resource harder to make up the difference.

Shall *ethics* supersede *economic incentives* in this situation, and – if so – to what degree? An international fleet of fishing vessels owned or controlled by big companies – supertrawlers

witness evolutionary forces toward modularization and compartmentalization that buffer systems against such cascades. ...Increasing trends toward globalization make the world a smaller place, and weaken modularization. Especially dramatic effects may be seen in the interconnectedness of international financial markets... Modularity has broken down, compromising and threatening the resiliency of humanity.

⁴¹³ *Sharing the Fish*, p. 189.

⁴¹⁴ *Ibid.*, p. 336.

⁴¹⁵ E.g., cf. *ibid.*, pp. 294-95.

⁴¹⁶ *Ibid.*, pp. 86 and 336-37.

included – does not bend to the same constraints as a local fishing community must. This is because of feedbacks and trust that develops among close neighbors. Simon Levin addresses the point at the end of his book:

*As we have seen throughout this book, evolution works most effectively when individuals interact most with their near neighbors. Through ... repeated interactions, trust can develop... The key is that the community is still small enough for trust to be maintained. ... At the global level, such trust is missing; through centuries of conflict and competition, the same forces that build trust within cultures pit one against another.*⁴¹⁷

The problem of competition and the ‘race for fish’ is not resolved by any ITQ plan: the case for ‘resource conservation effects’ has not been made. The NRC’s study, *Sharing the Fish*, attends to their *economic* and *theoretical* virtues at the expense of more realistic concerns about ethics, politics and the power of money to work its way in the darker recesses of our institutions, especially when democracy is not transparent or voters fully informed. The actual living experience with ITQs in New Zealand, Iceland and elsewhere reveals a quite different story than that reported in *Sharing the Fish* (as suggested above and discussed below at more length).

Perhaps in a rational, ethical world of full information and tight feedback loops – as ‘neoclassical’ economists tend to assume throughout their analyses – ITQs would work as described so benignly in *Sharing the Fish*. Alas, in the harsher reality that we inhabit, things are different. Power politics and the financial incentives embodied in ITQs shall lead to another outcome entirely, one that *devalues* environmental capital for an immediate gain. *Taking a poison for remedy is unlikely to cure our rivalrous ills of fishery overexhaustion*. If so, ITQs should be scrapped. The answer to the question posed – Does *Sharing the Fish* allay conservation concerns about ITQs? – simply has to be: “No.”

B. Does *Sharing the Fish* Meet the Requirements of a Precautionary Approach?

Given what has already been said, this answer also is: “No.” The risks surrounding this plan are many, and dangerous in the extreme due to its irreversible lock on the resource. Some of the arguments already made deserve further attention, regarding their risk components. Several others should also be raised on this particular issue. First, the reasons for caution ought to be emphasized once again.

The ecological system will not bend to economic incentives: it dances by its own tune, to a beat that *we humans* must follow. Its movements are hard to anticipate, with limited understanding, yet the attempt to *force* the environment to comply with our needs shall fail. Nature rules, and we can only try to learn the game well enough to work *within its sphere* to achieve whatever our wants and demands. This is why ecology must take precedence over economic concerns in the play of human desire, ambitions and development. Otherwise, we may invisibly lose much more than we ever gain. And this is really the subject of economics, and the justification of ‘fully accounting’ nature’s value.

1. Rational Limits, Interdependence, and the Precautionary Approach

The ecological system is seamlessly planet-wide in its scope. Our human perspectives are not. This suggests the importance of ‘treading lightly on this earth’ because we cannot possibly

⁴¹⁷ Levin, *Op. Cit.* (note 412 on page 2 above), p. 205.

understand the rippling impact of all that we do. Nature is resilient to a point, but economic activities are reducing that resilience through a loss of inter- and intra-species diversity, habitat and ecological balance. We do so largely in ignorance, but nature is not forgiving. Consequently – in this setting – we must take a *precautionary approach* to our interventions.⁴¹⁸

In this regard, danger lies in narrow outlooks that do not count the spreading effects of our individual actions on Nature's scheme. Some marine ecosystems are already threatening us with impending collapse. The reason lies in a breakdown of human control over resource depletion, due to an absence of feedbacks sufficient to offset the economics of *cost externalization* for private gain at the expense of future and public concerns.

Standards should be established to internalize 'externalities' and to tighten feedback loops so economic control is secured. This is the aim of ITQs. Do they live up to this promise?

2. The Unresolved Dangers of ITQs as an 'Unacceptable Risk'

As shown above, their conservation effects have not been demonstrated or proven in *Sharing the Fish*. The ethical problem of short horizons and high discount rates is not even mentioned, despite its significance in the erosion of nature's capital stock through rapid, uncontrolled disinvestment. Instead, control of this system is to be given away by public authorities into the hands of those responsible for all this abuse, simply because of a dream that 'private property rights' shall succeed where 'public management processes' seem to have failed so badly. Yet there are no grounds for the claim that planning horizons shall lengthen (and discount rates should decline) under ITQ systems, especially for the captains and crews, whose actions have the most direct impact: after all, they are the ones on the scene, affecting ocean resources by the way they wield their resourceful efforts in the pursuit of fish.

Furthermore, the 'race for fish' is only influenced by ITQs in waters where they apply, within the EEZs of countries adopting this scheme of fisheries management. Elsewhere the 'race for fish' shall continue, outside the span of such control, by international fleets subject to little or no constraint. The widespread use of 'flags of convenience' (FOCs) exacerbates the problem, by allowing older, less safe vessels to fish – often illegally – on the open seas. As ITQs become more valued, these sorts of avoidance and enforcement troubles should only increase.

ITQs also introduce species-specific quotas into a situation where most experts agree that broader, *ecosystem-based* management tools are required to fix a fishery out of control. Worse, they foster a nexus of powerful economic interests centered on maximizing the worth of their 'rights' to a fishery under duress. But the argument for ITQs stresses benign 'horizon effects' of 'property' and the ensuing sense of control over resources in private hands, with almost no attention to the sorts of concerns stated above.

3. The 'Rational World' of *Sharing the Fish* vs. A Harsher Reality

Such assertions may apply in a rational, ethical, well-informed world without 'externalities' or abuse of political or market power. With TACs subject to overwhelming pressure by a consolidated industry made up of multinational firms in possession of ITQs, science shall likely be corrupted by economic concerns. Any attempt to introduce complex system (multispecies)

⁴¹⁸ A use of the word "interventions" suggests a problem of framing here, as we no more exist 'outside' this system than anything else on the earth. Thus, we must learn to see ourselves as part of an interactive process in delicate homeostatic balance, that we should not disturb or disrupt beyond easy repair. ITQs shall likely do just that to our ecological system.

models of fisheries stocks shall open new doors to manipulation of TACs through well-paid ‘industry’ science supporting a ‘party line’ of denial appealing both to resource consumers and voters.

So will longer planning horizons survive and prevail in this setting, over rapacious short-term incentives? *Sharing the Fish* asserts that they will, on a foundation of “faith”:

Another rationale given for implementing an IFQ program is the promotion of conservation. ...The holder of the quota has an incentive to ensure that the fishery continues to be productive and that the quota continues to be valuable. It is argued by some that this incentive will encourage behavior to conserve the resource, conduct needed research, and assist the enforcement and monitoring of the fishery so that the health of the stock and the future value of the quota are preserved. Similar assumptions are implicit in much discussion of fisheries management and were explicit in testimony to the committee. Much of the political support for IFQs is similarly driven by faith in the assumptions that privatization will foster ecological sensibility.⁴¹⁹

This is a lovely image of human rationality and of foresight, radiating from ITQs and the privatization of ocean resources. It must be taken on “faith” (in ‘neoclassical economic’ constructions), because there is *no other reality* in which it would apply. As noted already in *Section IV.A.1.*, even the most simplistic glance at internal rates of return from conservation activities shall not diminish any incentive for rapid depletion and ‘liquidation’ of fisheries stocks in favor of other investments showing a higher return.

An easier route to raising the value of quotas – than through ‘restoration’ or “ecological sensibility” – is by wielding political influence and economic control to ‘work the system’ to (“rent-seeking”)⁴²⁰ advantage. An ITQ plan *enables* such options by fostering consolidation, and diluting the power of feedbacks signaling local environmental effects (so *all costs* are accounted into the private tradeoffs of fishery interests). Thus ‘horizontal lengthening’ from ITQs shall likely be overwhelmed by *immediate profits* from boundedly opportunistic gains from ‘first-mover’ advantages, given all the inherent uncertainties and information asymmetries here.⁴²¹

⁴¹⁹ *Sharing the Fish*, p. 35.

⁴²⁰ Cf. Ann O. Krueger, “The Political Economy of the Rent-Seeking Society” (*American Economic Review*, 64, 1974).

⁴²¹ One predatory scenario would be to *overharvest* a fishery, ‘as if’ it were really in good health (through an undue raising of TACs by pseudoscientific corruption of fishery management choice), and then *sell it off* for a high price, before real conditions are known. Oliver E. Williamson calls this a problem of “information impactedness,” which – in the presence of “opportunism” and “bounded rationality” – leads to transactional “hazards” and social loss: cf. his *Markets and Hierarchies: Analysis and Antitrust Implications* (New York: Macmillan, Free Press, 1983), pp. 31-33:

Information impactedness is a derivative condition that arises mainly because of uncertainty and opportunism, though bounded rationality is involved as well. It exists when true underlying circumstances relevant to the transaction ... are known to one or more parties but cannot be costlessly discerned by or displayed for others. ...

The relation of information impactedness to first-mover conditions [such as initial ITQ ownership – FBJ] ought also to be emphasized. The reason why outsiders are not on a parity with insiders is usually because outsiders lack firm-specific, task-specific, or transaction-specific experience. Such experience is a valuable resource and can be used in strategic ways by those who, by being awarded initial contracts, have acquired it.

It is generally conceded that if information is asymmetrically distributed between the parties to an exchange, then the exchange is subject to hazards. ... [due to] selective disclosures or distortions. ...

In any event, information impactedness need not impair market exchange if (1) the parties are not opportunistic, (2) an unbounded rationality condition were to obtain, or (3) a large-numbers competition condition prevails

The nice scenario represented in *Sharing the Fish* should be contrasted to a more realistic, contrary outcome: *monopolization* of ocean resources into multinational corporate hands subject to *fewer restraints* on “ecological sensibility,” and defending their ‘right’ to overexploit the fishery through all legal and other means at their disposal.

Lovely images notwithstanding – we *all* like ‘happy endings’! – stories of fishery conservation efforts stemming from privatization are unrealistic in the extreme, based on illusion, wishful thinking and ‘neoclassical economic’ conceptions, so far removed from any contact with the world as it truly operates, they should be given no credence. *Short horizons* shall be anchored in place, effectively on a permanent and irreversible basis, by an adoption of ITQs as “national policy” as NRC recommends.

At the very least, doubts are warranted on their remedial impact, though the author of the present study is fully convinced of their hazards. Even the sparest interpretation of a precautionary approach shall urge their rejection on these grounds. Such a conclusion is strengthened by the effectively irreversible *permanence* of these ownership rights, cemented in place through legislation, despite their advocates’ claims to the contrary. For these reasons, *Sharing the Fish* does *not* meet the requirements of a precautionary approach: “No.”

C. ***Does Sharing the Fish Prove that ITQs Will Not Become Private Property?***

Fisheries are the last bastion of an ancient ‘hunting and gathering’ culture, where resources are held ‘in common’ until wrested out of ‘the wild’ through application of effort. One is reminded of Locke’s theory of ownership rising out of ‘mixing one’s labor’ with land to make ‘property.’⁴²² Here – in the oceans – fish are free for the taking until they are caught, where *expenditures on the chase* stand as the only accounted cost. This is – in part – the problem of fishery overexploitation through capacity built to ‘race for fish.’ There is no rising price on a fishery – to reflect its scarcity value – when the resource shrinks, as in other more settled domains. The ‘externality’ problem of fishing the oceans too hard is also a problem of *cost externalization* due to a lack of ‘full-cost accounting’ of environmental and social costs, which have no weight in private decisions to overexploit the resources in ‘nature.’⁴²³

– both presently and prospectively. ...

It is worthy of note that *none* of these last three conditions shall “obtain” against the aforementioned “hazards” that might “impair market exchange” of ITQ shares. The implications are clear that the danger exists in this situation of fisheries management through ITQs.

⁴²² Karen Iversen Vaughn, in her study of *John Locke: Economist and Social Scientist* (Chicago: University of Chicago Press, 1980), p. 82, explains “Locke’s theory of property” thus, quoting from Locke’s *Second Treatise of Government*, in Peter Laslett, ed., *Two Treatises of Government* (Cambridge, England: Cambridge University Press, 1953), p. 306, in which the last two phrases are key:

The entire world, according to Locke, is a vast pool of resources which God has given to all men in common to maintain themselves. These common resources are only the raw materials of life which must be rendered useful to men through the medium of labor. Since a man’s labor is also part of himself, as soon as he mixes his labor with a portion of the common pool of resources, he creates something new which is also a part of himself and so can belong to no other man. He creates valuable property, and since he creates it, he alone has a right to own it: “It being by him removed from the common state Nature placed it in, it hath by his labour something annexed to it, that excludes the common right of other Men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joyned to, at least where there is enough, and as good left in common for others.”

⁴²³ Indeed, the proper internalization of cost is a major theme in the literature, which makes the NRC’s neglect of the

1. ITQs as a Property Right vs. the 'Public Trust' Doctrine

An old legal tradition with common resources is called the 'public trust' doctrine: "a common law doctrine (i.e., judicially developed, rather than statutory) that reflects ... the idea that the resources of the seas within U.S. jurisdiction belong to the public and that the government holds them in trust for the public."⁴²⁴ 'Public trust' resources shall not be abrogated by public authorities, and are inalienable in that sense. As such, ITQs cannot become 'property' in the same way as other resources – with an exclusive right of control and disposal thereof – without violating this 'public trust' doctrine. The government – through its agents – shall be responsible for 'common' resources, and must take care of them for the public as stewards and trustees. "The contemporary view is that the state has no title to fish as personal property but they are nevertheless 'owned' by government in its sovereign capacity as trustee for the benefit of its citizens."⁴²⁵

The sorry job of mismanagement that these 'stewards' have performed on behalf of ocean and other resources for the public has led to a search for other institutional options. Many believe that open access to worldwide fisheries should be ended in favor of property rights or pricing regimes to internalize 'social costs' into private decisions. Such should end the self-destructive frenzy of a 'race for fish,' along with the overcapitalization of fleets and fishing effort. This notion fits with the current trend toward the privatization of everything, opening all to market transactions serving the general good:

*Although their history is short – ...two decades – IFQs are firmly rooted in the long tradition of western thought and policy, where markets are the source of efficiency and, ultimately, of economic growth and social welfare; exclusive, transferable, and well-defined property rights are essential to markets.*⁴²⁶

'Public trust' doctrines stand in the way of a trend that is gaining ground, due to the overwhelming urgency of fixing the fishery problem before marine ecosystems collapse irreparably. Yet this legal principle may not be abrogated by government, so ITQs are presented in *Sharing the Fish* as *permits subject to revocation* and not permanent rights. However, the NRC also recommends that they be *secure*: that sunset provisions should not be imposed; that their value

issue rather bizarre. Paul Hawken's "Foreword" to Prugh, *Op. Cit.* (note 37 on page 2 above), states the point with force:

The fact that we have excluded natural capital from the balance sheet of companies, countries, and the world is an extraordinary omission and error... ...

Our prices have failed us for the most simple and frustrating of reasons: bad accounting. Natural capital has never been placed on the balance sheets of companies, countries, or the world. ...Capitalism cannot be fully attained or practiced until ... we have an accurate balance statement. ... When natural capital is placed on the balance sheet, not as a free amenity of infinite supply, but as an integral and valuable part of the production process, everything changes. ...

...A rational economic system ... is right before us. It requires no new theories, only common sense. It is based on the proposition that all capital be valued. While there may be no "right" way to value a forest or river, there is a wrong way, which is to give it no value at all. ... The work of the future is the absorption and integration of the worth of natural and living systems into every aspect of our culture and practices, so that human systems are mimetic of natural systems, and so that our culture reflects growth and harmony rather than suffering and discord. ...

⁴²⁴ *Sharing the Fish*, p. 39.

⁴²⁵ *Ibid.*, pp. 42-43.

⁴²⁶ *Ibid.*, p. 26, as quoted more fully above at the start of *Section III*. But cf. as well, Lux, *Adam Smith's Mistake* (cf. note 44 on page 2 above for reference), esp. pp. 87-89, as discussed in Frederic B. Jennings, Jr., *Nature's Song, Inhuman Society: A Fly Cast to the Wild (Fishing for Truth in Economics)* (Draft: 12 March 1999), p. 13.

ought to be subject to legal defense; that they should be traded in markets; and that they ought to be usable as collateral for raising capital. In other words, ITQs should have all the *attributes* of property but be called a ‘revocable privilege’ under the ‘public trust’ doctrine.

2. “Having Our Cake and Eating It Too”: The Property Rights of ITQs

Does this claim make sense? They say you can’t retain your cake, after consuming it all. The introduction of ITQs shall abrogate the ‘public trust’ doctrine – as their advocates surely believe – as another step progressing toward the privatization of fishing and other resources so as to bring them under markets and out of public control. Proponents of free market systems shall not deny that this is their aim, and do not shrink from privatization as a means to social advance. Indeed, they attribute the failure of markets to their limited scope: private property is not ‘the problem’ but *the solution* to economic growth and social well-being. The role of government ought to be curbed, and markets should be expanded into every aspect of life, for efficiency and development. ITQs simply offer another step on the way to ‘*progress*.’

Those opposing ITQs are seen as resistant to institutional change and embracing efficient techniques, just like the news editorial said.⁴²⁷ The effort to dismiss opposition to ITQs as simple nostalgia for inefficient tradition ignores a lot of important concerns about their actual limits and drawbacks. Not the least of these significant dangers is their likely irreversibility in the creation of *property rights* to the public commons. Such shall fly in the face of the ‘public trust’ doctrine in U.S. law.

Why is this so? How will this happen? In order to respond, one needs to understand how *common law* works. First a precedent is established, such as those in Icelandic courts where, *despite the official definition of ITQs* – stated in Iceland’s 1990s fisheries management legislation as the “public property of the nation” – ITQs in Iceland are assuming quite rapidly all the attributes of ‘private property rights’:

... *ITQs are to be reported as ‘property’ on tax forms and ... selling of ITQs involves a form of ‘income.’ Some evidence indicates that in legal practice, quota shares are gradually acquiring the characteristics of full-blown private property, despite legal clauses to the contrary.*⁴²⁸

Owners also depreciate their value as capital assets for taxes, and pass them on to heirs as inheritance. Recently a divorce court included them in a husband’s estate. “Thus the use rights of fish resources are becoming increasingly entrenched as private property while the resources themselves (i.e., the fish stocks) are proclaimed as being publicly owned.”⁴²⁹ It looks like a duck, smells like a duck, walks like a duck, makes noise like a duck, but we are told it’s a caged canary, eager to sing to us for its supper! But it nevertheless sounds like quackery, all dressed up to go out on the town, when “the party is over” according to E. F. Schumacher’s sage essay.⁴³⁰

⁴²⁷ Cf. note 84 on page 2 above and accompanying text.

⁴²⁸ *Sharing the Fish*, p. 337.

⁴²⁹ *Ibid.*, p. 338.

⁴³⁰ Cf. E. F. Schumacher, “The Party Is Over” (*Resurgence*, 6:4, Sept.-Oct. 1975), reprinted in his *This I Believe and Other Essays* (Devon, UK: Green Books, 1997), pp. 21-24:

The present situation ... is the end of an era. As Barbara Ward put it very simply a year or so ago: “The party is over.” What sort of party was it? ... We allowed ourselves to be entertained by three illusions:

3. The Problem of Value and Pricing

If fisheries swimming alive in the ocean truly were without value, overfishing would not be a problem. ITQs are designed to resolve fishery overexploitation by rationing access to ocean resources through a quota system, meant to institutionalize an economic incentive for resource stewardship. By owning a right to harvest a certain percentage of species-specific catches – TACs set on the basis of scientific population estimates – strong motivation to protect and enhance the worth of this asset through conservation efforts should result. Thereby ought the tradeoff faced by private decisions align with the public interest, just like Adam Smith's 'invisible hand' depicts. The pursuit of private gain will lead to outcomes serving the 'public interest',⁴³¹ through ITQs, or at least so their advocates say.

But conservation is slow, against the urgent demands of business. Securing capital gains through resource conservation activity is not the prime motive for big corporations' support of ITQs. Instead they see an opportunity to remove from public control an asset of great value in exchange for no compensation at all: these quota shares have always been 'gifted' to active fishing industry members in proportion to size. "The committee knows of no cases in which initial recipients have been charged for their quotas."⁴³² So one way of viewing this plan is as a government 'giveaway' of valuable public assets and control into private hands for free!

As said already, if fish 'in the wild' were worthless, their exhaustion would be as *socially* as it is *privately* costless. If economics has something to teach, it is hard to imagine a more fundamental lesson than the following: *Treating something of value as 'free' assures that it will be wasted.* The 'externality' problem of open access competitive fishing is that the gains are fully internalized but the costs are shared by all. In the absence of 'full-cost accounting,' ocean resources are being exhausted due to a misalignment of private and social tradeoffs in this sense.

4. The Evolution of ITQs from Permits to Property Rights

So ITQs are recommended by the NRC panel as a means to internalize social losses of value into private decisions of ITQ owners of fisheries shares. Investors will have a motive for resource stewardship as well, when ITQs are used as loan collateral and traded as secure assets. So all these resource-saving incentives are based on the long-term stability of ITQs as a 'right' to the ownership and disposal of fishery claims.

It looks like property, smells like property, talks like property, acts like property, and will irreversibly over time become a *property right*. Does this suggest that ITQs are an abrogation of

First, there was the illusion of an inexhaustible supply of cheap fuels and raw materials.

Second, there was the illusion of an almost equally inexhaustible supply of workers ...

Third, there was the illusion that Science and Technology would soon, very soon indeed, make everybody so rich that no problems remained except what on earth to do with all our leisure and wealth.

These illusionary entertainers ... have completely vanished: they ... cast a spell and had taken us on a trip. In fact, we all know that the three entertainers will not return; that the party is over. But ... we prefer to indulge in that great and reassuring psychological exercise which has aptly been called 'the refusal of consciousness.'

... The scientific establishment practices the art of 'refusal of consciousness' with perfection. ... Survival will depend on our ability to overcome the 'refusal of consciousness' which defends totally outdated philosophies of 'economic progress' and scientific truth as if they were (to quote Bertrand Russell) "if not quite beyond dispute ... yet so nearly certain, that no philosophy that rejects them can hope to stand."

⁴³¹ Cf. note 91 on page 2 above for reference and explanation.

⁴³² *Sharing the Fish*, p. 142.

‘public trust’? The NRC panel in *Sharing the Fish* argues that they are not, that ITQs are *not a right but a permit*, not a ‘grant in perpetuity’ on its way to permanent ownership but an inherently revocable access privilege regulated and controlled by public authorities. Thus the state retains – at least in theory – an option to revoke quotas, though once bought and sold for a price reflecting their real market value, what will happen when an attempt is made to withdraw them *without compensation for loss* under the M-S Act? What are the *politics* and the other realities of this story?

If I, as an ITQ owner – after investing a great deal of money in shares – see a threat to their value from any source (save for reasons of fishery management, conservation or related to environmental protection), I am expected and even encouraged to sue for all losses incurred. The recommendation of the NRC panel on this subject is clear:

Recommendations: *The M-S Act should be amended to make it clear that the nature of the privilege embodied in an IFQ encompasses the right to protect the long-term value of the IFQ through civil action against the private individuals or entities whose unlawful actions adversely affect the marine resource or the environment. The act should be clear that it does not authorize actions by IFQ shareholders against federal, state, or local governments for actions designed to protect marine resources and the environment through area closures or other modifications or revocation.*

Findings: *IFQ programs will achieve greater benefits if the interests they create are stable enough to encourage long-term investments, to be useful as loan collateral, and to engender in quota holders a sense of long-term stake in the resource. To the contrary, the moratorium on new IFQ program development and proposals to amend existing IFQ programs (e.g., to allocate increases in the TAC among a new set of stakeholders) could undermine the security of the interest, discourage transfers and purchases of additional quota shares, and destabilize the lending environment. The revocable nature of an IFQ and congressional discussions of uniform sunset provisions may have impaired the security of these interests. ...*⁴³³

These arguments say that ownership of ITQs should be sacrosanct, to protect their ongoing conservation effects (as so alleged). They also assert these rights, since they are revocable without compensation by statute (Section 303[d][3][C] of the M-S Act),⁴³⁴ do not transgress the ‘public trust’ doctrines enshrined in U.S. common law. We can be assured that anyone paying a very high price for ITQs shall do as expected and defend their rights in court, if faced with the prospect of their revocation by the NMFS.

The argument would go like this: Are *resource conservation incentives* served by making ITQ ownership insecure for everyone in the United States and elsewhere? If not, then declaring them as inviolate property rights serves conservation, *not* their revocation. Therefore establishing ITQs as permanent *does* consist with “actions designed to protect marine resources and the environment” – the language used by the NRC panel in their recommendation that the

⁴³³ *Ibid.*, p. 200.

⁴³⁴ Section 303[d][3] of the M-S Act declares, as quoted in *Sharing the Fish*, p. 247, that:

(3) *An individual fishing quota or other limited access system authorization – (A) shall be considered a permit...; (B) may be revoked or limited at any time in accordance with this Act; (C) shall not confer any right of compensation to the holder ... if it is revoked or limited; and (D) shall not create, or be construed to create, any right, title, or interest in or to any fish before the fish is harvested.*

M-S Act be amended thus – so one can imagine a court accepting this argument to resolve an apparent conflict in fisheries law. At that point, *de facto* property rights shall be institutionalized into established doctrine through common law and precedents set by the court. This process is already well underway in Iceland and New Zealand, where ITQs already exist and are evolving into permanent property rights, slowly but surely.

5. *The Theory of ITQs is Based on Securely-Held Property Rights*

And this is what the propertarian economists want to happen, despite the NRC panel's insistence that ITQs are only 'permits.' Others seem more forthcoming. In an editorial opinion, Munro and Pitcher remark that: "The theory behind ITQ schemes is that they create what amounts to a property right..."⁴³⁵ Runolfsson and Arnason, for example, argue that:

*Economic theory suggests that the efficiency of an ITQ system stems from its creation of private property, in harvesting rights. This suggests that the higher the quality of this property right, in terms of security of title, permanence, exclusivity, flexibility, divisibility and transferability, the greater will be the resulting efficiency of the ITQ system.*⁴³⁶

Indeed, the argument is that ITQs will not be effective if they are not entrenched property rights. Neher reflects this view, arguing "that quota stripped of the essential qualities of genuine fishing rights [of ownership] are worse than no quotas at all."⁴³⁷ But politicians and administrators insist that ITQs are not 'property' but titles or revocable permits. Status of ITQs shall vary according to national legal language as well, as Robin Connor wrote in a personal communication:

*The rhetoric and the law in Australia and New Zealand is that ITQs are private property rights, subject to special provisions of fisheries law. This differs from the situation in the United States, for example, where the language is that of privileges and entitlements. U.S. constitutional provisions (fifth amendment) mean that any impact by a government decision on the value of property rights is controversial and may be subject to compensation. The characterization of quotas as property rights would make the adjustment of TACs for management purposes, which affects the value of the quota rights, politically untenable.*⁴³⁸

So the status of ITQs in common law will likely evolve, firming up property rights at the expense of fisheries management options through TAC adjustments and other measures affecting their value, especially in a *political* process. The denial in *Sharing the Fish* that ITQs shall end up as property rights simply underestimates the *politics* of this process. So does *Sharing the Fish* prove that ITQs will not become private property? Again, the answer is: "No."

⁴³⁵ Gordon R. Munro and Tony J. Pitcher, Editorial (*Reviews in Fish Biology and Fishes*, 6, 1996), pp. 1-3.

⁴³⁶ Birgir Runolfsson and Ragnar Arnason, "Evolution and Performance of the Icelandic ITQ System" (University of Iceland, Internet, <http://www.hag.hi.is/~bthru/iceitq1.html>).

⁴³⁷ Philip Neher, "Fishing Quota Quality and Fishery Performance," Points of View (*Reviews in Fish Biology and Fisheries*, 6, 1996), pp. 113-16. Also cf. Carl McCamish, "Fisheries Management Act 1991: Are ITQs Property?" (*The Federal Law Review*, 22, 1991) and Anthony Scott, "Development of Property in the Fishery" (*Marine Resource Economics*, 5, 1988?), pp. 289-311.

⁴³⁸ Robin Connor, Center for Resource and Environmental Studies, Australian National University, Canberra, "personal communication" with Leith Duncan on "Fishfolk," 22 July 1999.

D. Does Sharing the Fish Establish the Stewardship Effects of ITQs?

As shown above, fostering “ecological sensibility” and the stewardship of our resources stems from extending planning horizons (and lowering risk and discount rates) by establishing long-term property rights in ocean resources through ITQs (supposedly). As *Sharing the Fish* avers, somewhat disarmingly: “Much of the political support for IFQs is ... driven by faith ... that privatization will foster ecological sensibility.”⁴³⁹

Is this an argument to be given credence in the absence of further verification and data that this system plays out that way? Short horizons are endemic in the business community, especially under financial pressures in an uncertain decision environment driven by quarterly earnings and not by capital asset value enhancement. Are ITQs a magic cure for ocean resource depletion? If so, what is the argument justifying this claim?

1. Monopolistic Control and the “Sole Owner” Argument

The sentence that follows the one quoted above answers the question. Both should be stated together, as they indicate the line of thought behind this stewardship claim:

*Much of the political support for IFQs is ... driven by faith ... that privatization will foster ecological sensibility. This argument is based on the premise that the community of IFQ holders will behave in a manner analogous to the sole owner ...*⁴⁴⁰

This statement deserves attention: it captures so well the fallacy underlying the “faith” in market-based systems such as ITQs, stemming from Adam Smith’s ‘invisible hand’ and how the market is said to work in aligning ‘private’ with ‘social’ benefits in a free enterprise system.

The notion that “the community of IFQ holders” will act in a manner equivalent to a “sole owner” assumes a *concert of interests* between all participants such that their efforts seamlessly integrate to an essentially *cooperative* framework. After all, a “sole owner” – in economic terms – is equivalent to either a socialist central planner or a completely collusive group of joint-profit-maximizing companies acting like a monopoly. The argument turns into one about the failure of *competition* in this setting compared to *monopoly*.⁴⁴¹

Although this sounds strange, it is a proper reading of the situation in fisheries management, and a fair characterization of the case for ITQs. What is being commended here is a non-collusive ‘competitive’ system because it will act *just like a monopoly* in its strategic concerns!

⁴³⁹ *Sharing the Fish*, p. 35, as quoted more fully above in the text accompanying note 419 on page 2 above.

⁴⁴⁰ *Ibid.* The example appearing in *Section IV.A.1.* can be used to debunk this claim, while at the same time explaining its substance. The internal rate of return in that case was 0.6 percent for restoration of fisheries stocks. If ITQ ownership were 100 percent – the “single owner” case of monopoly – IROR rises from 0.6 to 6 percent, with no effective change of incentive (although the *intra-species* ‘externalities’ are reduced by the consolidation process).

⁴⁴¹ Some economists have challenged the standard model of ‘monopoly’ in an uncertain, dynamic world. S. Y. Wu, in “An Essay on Monopoly Power and Stable Price Policy” (*American Economic Review*, 69:1, 3/79), pp. 69-71, concluded:

... When we move away from the static certainty situations, my analysis suggests that the shortcomings of monopoly may not be compared unfavorably with those of pure competition. ...

In a world of dynamic uncertainty, the firm performs intertemporal arbitrage... Social marginal cost diverges from the firm’s marginal cost of production. Under these circumstances, the static certainty-oriented normative criterion – price equals marginal cost – ceases to be valid...

A new welfare criterion is needed for judging optimal resource allocation. ...The neoclassical welfare criteria are no longer adequate to guide policies in an economy with uncertainty.

Instead of *public ownership* planning and actively managing ‘common resources,’ private parties securely possessing proportional ‘rights’ to a fishery are expected to cooperate like a monopolist in their profit-seeking ‘service’ to public concerns ... *somehow* ...

We are asked to take it on “faith” that markets succeed *through competition* to work for the ‘common good’ despite their focus on private gain. The argument seems so disconnected to its source and assumptions that it is almost incomprehensible. Let us attempt to untangle what it is saying in actual fact: the *virtues of competition* cannot be used to support a *monopoly system*.⁴⁴²

2. *The Failure of Competition to Protect Ecological Values*

The first point is that *competition does not work in this setting*: the failure of ‘open competitive frameworks’ in fisheries management is so well-grounded, there is no argument here. *Competition* among participants has succeeded in decimating our fisheries and other resources almost to irreversible lengths. *A total integration of effort* – through management of our resources as a *whole system* – is required. This is a ‘sort of monopoly’ argument for a co-management system.

The *fragmentation of effort through competing goals and acquisitive values* shows self-defeating effects in the realm of fisheries management and conservation. Shortsighted selfishness – and any system based on this sort of appeal – is not an approach that in any sense is amenable to a stewardship attitude. *The opposite is required*: an expansive vision, inclusive of farreaching impacts on the environment and the future of our resources – such as described by our common notion of ‘conscience’ – shall be the standard we need to impose upon this situation. *Ethics and wisdom* bring stewardship.⁴⁴³

This is the justification of a “sole owner” analogy, as a monopolistic concept. The argument is this: free competition does not work in this setting, so let us reengineer the system so it will operate like a monopoly (without addressing it thus). *Somehow* (without any justification), competing quota owners, securely placed in possession of their ‘rights’ to a fishery (if allowed – and even encouraged – to defend the value of these rights in court against any non-governmental source of financial loss) shall lead to a ‘conservation ethic’ kindred to that of a total consolidation of the resource by a ‘single owner’ *monopoly*.

And then we are asked to accept this story on “faith” that markets shall work *competitively* in the same way as *monopoly* would to conserve our ocean resources! The problem is that *competition has failed* in this situation, and we need to admit that fact. The ‘race for fish’ through

⁴⁴² But there are institutional and systems theories supporting *cooperation* as a solution to ‘externality’ (interdependence) problems stemming from excesses of competition, but those are (very emphatically!) *not* the arguments here.

⁴⁴³ Charles H. Peterson and Jane Lubchenco, in “Marine Ecosystem Services,” ch. 10 in Gretchen C. Daily, *Nature’s Services: Societal Dependence on Natural Ecosystems* (Washington, DC: Island Press, 1997), p. 178, put it this way:

Unfortunately, the short-term costs of establishing a regulation to protect the environment are relatively easily quantified and immediate, whereas the costs of not protecting environmental quality and not preserving natural ecosystem services are less readily quantified and possess longer time horizons. This same inequity in the character of the costs has led to widespread overharvest of marine fish stocks and dramatic long-term loss of income to fishermen. ... Fisheries management has repeatedly mortgaged the future for short-term gain, even while espousing a devotion to maximizing sustainable yield. ...

As Levin puts it, in *Op. Cit.* (note 412 on page 2 above), p. 196: “In economic parlance, we heavily discount the future. Thus, in both space and time, the immediate takes precedence over the distant.” As Simon noted in *Op. Cit.* (note 216 on page 2 above), p. 180: “Our myopia is not adaptive, but symptomatic of the limits of our adaptability. It is one of the constraints on adaptation belonging to the inner environment.”

overinvestment in fishing capacity has to stop: productivity and profit through *cost externalization* is not the solution to resource stewardship problems. Private property – unencumbered by local ecological feedbacks – shall not divert the overexploitation of fisheries stocks, especially in the hands of *monopoly*. A “sole owner” argument does not fit with any ‘invisible hand’ defense of free markets or an (alleged) extension of planning horizons and stewardship practices here. Instead, there will be a quite different result.

3. The Consolidation Effects of ITQs in Theory and Fact

The consolidation effects of ITQs are clearly established, theoretically and empirically, and admitted throughout the NRC’s study.⁴⁴⁴ Indeed, the “sole owner” rationale leads to a blithe sense of complacency on the dangers of economic concentration and its political administration through ‘regional councils.’ For example, in its summation of consolidation in Iceland: “Two things must be noted ...

*... First, some concentration of quota holdings is inevitable and desirable. The purpose of the ITQ program is to restrict access and reduce overfishing and overcapacity. ... Second, concentration of quotas in large firms is probably an inevitable consequence of increasing the efficiency of the industry. There are most likely economies of both scale and scope in fishing and fish processing, and the fact that the quotas have been bought and sold freely in an open market indicates that they have gravitated to the most cost-effective firms.*⁴⁴⁵

⁴⁴⁴ Cf. *Sharing the Fish*, p. 4 {on concerns about the “consolidation of quota shares (and thus economic power)”}, p. 33 {about “excessive accumulation and concentration in [the mid-Atlantic SCOQ fishery and other] industries under IFQs”}, pp. 66, 76, and 87 {“Many Icelanders are wary of the rapid concentration of ITQs in the hands of large vertically integrated companies.”}. On pp. 97, 171 and 174 respectively (also cf. pp. 102-4), *Sharing the Fish* says the following:

The concern about the potential monopolization of fisheries through IFQ accumulation or aggregation is prominent [in existing ITQ programs], and significant (although not legally monopolistic) accumulation and aggregation of IFQs has clearly occurred in some fisheries subsequent to, and as an artifact of, an IFQ program.

In ... the mid-Atlantic SCOQ fishery, some of the large firms have broken up since the implementation of IFQs, countering the otherwise strong tendency for concentrated ownership in this industry. However, even in that case quota shares tended to concentrate in the hands of those with the largest shares at the initial allocation.

Concentration of quota ... may unduly strengthen the market power of quota shareholders and adversely affect wages and working conditions of labor in the fishing industry.

The discussion continues on pp. 209-10 {where the potential limits of share restrictions as a means for controlling consolidation are discussed}, pp. 297 and 333 {In Iceland: “Evidently ... the giants ... have been accumulating quotas to a disproportionate degree. ... Quotas are becoming concentrated in the hands of fewer vessel owners and companies.”}, p. 335 (as quoted over note 445 below), and pp. 337, 339 and 341, respectively, thus:

Evidently, then, the Icelandic fishing industry is undergoing an extensive restructuring process, in which large vertically integrated companies have strengthened their position while smaller operators are being marginalized or forced out of business.

Smaller [Icelandic] communities ... have lost a much larger share of their quota than larger communities. ... Loss of quota in the smallest communities is particularly painful. ... often there are no alternative jobs.

The initial allocation of quotas to vessel owners is often criticized. Crew members ... say vessel owners have become millionaires, while crew members, some of whom have a long fishing history, are disenfranchised. ... There is much concern with the emergence of the relations of dependency associated with fishing for others.

Often, heavily loaded feudal metaphors are used to describe this state of affairs.

⁴⁴⁵ *Ibid.*, p. 335. And this “concentration” (naïvely) is seen to reflect “cost-effectiveness” and not ‘cost avoidance’ – through a ‘neoclassical’ lens – without any question about or justification for that interpretation. The counterargument here is that small communities and owner-operator vessels can be deployed more flexibly and benignly, with less harm to environmental habitats and better knowledge of local conditions.

The transformation of economic power into political influence so infuses systems of ITQ ownership, privatization needs to be *curbed*, not placed in control! The NRC panel, in *Sharing the Fish*, adopts a passive view of the problem, interpreting calls for “participation” and cooperation as an argument for *releasing control* into corporate hands, *as a system mandate*:

*Some committee members believe that the evolution of an IFQ program to feature broader participation and cooperative management should be one of the key objectives of the program’s initial design. This process could be assisted by requiring holders of IFQs to participate in management decisions and to assume responsibility for some of the management functions, such as the observer program and dockside monitoring.*⁴⁴⁶

As one environmentalist put it, discussing the overwhelming influence of fishing industry members on the regional management councils – which have “frequently come under fire for self-dealing and conflict of interest”.⁴⁴⁷ this “is like letting the fox guard the henhouse.”⁴⁴⁸ Such is also an abrogation of the ‘public trust’ doctrine, under which government should be acting as *stewards and trustees* of our resources, not taking them – permanently and irreversibly – out of the public domain and handing them over to the private sector as a ‘grant in perpetuity’ and thus a *property right*.

The claim that privatization will lead to stewardship practice and long horizons has to be taken on “faith” in ‘neoclassical economic’ assumptions, because it has no foundation in fact or actual life experience. Hidden away in *Appendix G*, on “Case Studies” of ITQ systems, *Sharing the Fish* describes the “Outcomes of the ITQ Program” in Iceland with this revealing glance at the reality of its effects:

One of the arguments for the development of ITQs emphasized that the privatization inherent in quota programs would encourage stewardship, as the new “owner” of the resource (or fishing rights) realized that he or she would benefit directly from caring for the resource. Discarding small and immature fish during fishing operations and highgrading the catch seem, however, to continue to be serious problems in the Icelandic fishery and these problems may have escalated with ITQs. Since quotas are fixed and excessive catch is a violation of the law and subject to prosecution, a quota shareholder tends to land only the portion of the catch that generates the highest income.

*... According to many fishermen, [when ITQs are leased to cover an excess of harvested fish ...] this results in considerable amounts of dead fish being thrown back into the sea, especially toward the end of the fishing year when ITQs are scarce and the lease price is inordinately high. ITQs may, therefore, contribute to the waste of living resources, resulting in the erosion of ecological responsibility. ...*⁴⁴⁹

So *reason* ought to overcome “faith ... that privatization will foster ecological sensibility” in the use of ITQs. The evidence shows otherwise; Schumacher’s statements about a “refusal of

⁴⁴⁶ *Ibid.*, p. 223 [emphasis added]. This suggestion is so naïve it is hard to fathom its justification, except as a corrupted distortion of an ‘Emery and Trist’ sort of argument: cf. the discussion of this in *Section III.C.5(c) and (d)* above.

⁴⁴⁷ Cf. Stump and Batker, *Sinking Fast* (as cited in and quoted above note 33 on page 2 above), p. 22.

⁴⁴⁸ Bill Mott. Of the Marine Fish Conservation Network, as quoted in Dick Russell’s “Vacuuming the Seas: Unprecedented Factory Fishing Operations Have Created a Global Crisis, As Species Dwindle and Catches Decline” (*E: The Environmental Magazine*, July/August 1996), p. 32.

⁴⁴⁹ *Sharing the Fish*, pp. 329-30 [emphasis added]. This result was anticipated by Parzival Copes: cf. note 20 on page 2.

consciousness” come to mind as well.⁴⁵⁰ The answer to whether ITQs shall lead to resource stewardship is not the “Yes” claimed by the NRC on “faith” without any justification. Instead it is, simply: “No.”

E. Does Sharing the Fish Show Traditional Fishing Communities Benefit from ITQs?

The tendency of ITQs to consolidate all fishing activity into the hands of big corporations is so well-established it needs no defense.⁴⁵¹ The NRC panel, in its support of ‘neoclassical’ economics, sees the concentration of ITQs as more a *virtue* than vice. So they dub this outcome both “inevitable and desirable” as an effect of fishery access restrictions and the removal of excess capacity. In sum, consolidation of market power is simply *efficient*, despite the teachings of virtually any introductory course in economics. “Sole owners” – in this ‘sort of monopoly’ argument taken on “faith” – shall (somehow) adopt a stewardship posture if placed in total long-lasting control of fishery access (and, indeed, of the fisheries management process as well)!⁴⁵²

1. The Economic Question: Is Market Power Really ‘Efficient’?

All this (somehow) works in accord with Adam Smith’s ‘invisible hand’ to align private with social incentives so privatization – despite the concentration of market power – will lead to an optimal long-term outcome. Monopoly, in this story, yields stewardship and conservation effects, and not the blatant abuse of market power so often attributed to it. The argument is so weirdly at odds with its ‘neoclassical economic’ grounds that it is hard to reconcile its two empiric claims: first, about the ‘competitive’ virtues of markets (Smith’s ‘invisible hand’) and, second, that ‘monopoly’ yields stewardship and conservation.

There is a thread of sense in this view, but it is never revealed by *Sharing the Fish* in any event. The problem is that *economic concentration* may be efficient in the presence of scale and scope economies and/or complementarities, but only in the absence of (potential) market power abuse. Such assumptions shall not apply in the fisheries situation. The real explanation for this ‘sort of monopoly’ argument – in its relation to a ‘competitive’ frame – must deal with the current crisis in economics, which is undergoing a ‘paradigm shift’ away from ‘neoclassical’ theories into alternative views (which have not yet jelled to a single approach).⁴⁵³

Neoclassical economics is the ‘whipping boy’ of the ‘paradigm battle’ raging today. Yet *Sharing the Fish* accepts its standards without more than a cursory nod to any other approach or interpretation of ITQs. Perhaps another reprise of the assumptions we are asked to accept on “faith” in this study ought to be given, just to show how weak they are applied to this situation.

Neoclassical economics assumes *certainty* and *rationality*, in the *absence of ‘externalities’* and *political opportunism*. Institutions successfully operate – through evolution of property rights – to mediate territorial limits and interpersonal losses by resolving conflict through law. Within this system, meting out justice and ruling on truth through courts, social processes shall

⁴⁵⁰ As quoted in note 430 on page 2 above.

⁴⁵¹ Cf. note 444 on page 2 above.

⁴⁵² As recommended in *Sharing the Fish*: cf. the quote accompanying note 446 on page 2 above.

⁴⁵³ There are all sorts of references that one could cite on this subject: Bell and Kristol, *Op. Cit.* (note 52 on page 2) come to mind, as do discussions in Latsis, *Op. Cit.* (note 56 on page 2 above). Also cf. Eichner’s *Why Economics Is Not Yet A Science* (cf. note 59 on page 2 above for full reference), and the work of Nicholas Kaldor and Herbert Simon, just to mention a few examples of a large and rapidly-growing literature exploring alternatives to neoclassical economics.

unfold toward the ‘best’ solution for all concerned. Despite the pains of adjustment, expectational losses and disappointment, this Panglossian neoclassical view is ‘the best of all possible worlds’ in spite of its sundry imperfections. So these economists say, anyway.

The (alleged) virtues of this ‘sort of monopoly’ – in the presence of ‘externalities’ – stand on at least two grounds. The first is best addressed through a metaphor, aptly applied to fisheries, of an oil field ‘drilling rights’ problem, on which – I suspect – the causal linkage of “privatization” with “stewardship practice” is fundamentally based. The second is a *horizontal* argument about the advantages of ‘market power’ in an unstable and unpredictable, dynamic, uncertain world.

Both imply a serious flaw in ‘neoclassical’ theory, and that ‘competition’ is not all it’s cracked up to be in our introductory courses. All lead to a case for ‘systems approaches’ in economics, such as endorsed by institutional, ecological and horizontal outlooks. The failure of orthodox standards – specifically in our theories of market structure, industrial organization and social welfare analysis – stands behind the NRC’s case for ITQs and *why it is so wrong*. Richard Nelson described the situation almost twenty-five years ago in a book review thus: “Industrial organization is a field that is in deep intellectual trouble. The source of that trouble is that old textbook theory that we all know so well.”⁴⁵⁴

2. The ‘Oilfield’ Case for Consolidation to ‘Internalize Externalities’

The problem of the *interdependence* of economic effects and incentives shall undermine ‘neoclassical’ *independence* assumptions so vital to its system of thought and belief.⁴⁵⁵ *Substitution*, *independence* and *decreasing returns* are in the ‘hard core’ of the neoclassical paradigm. These suppositions cannot be relaxed without negating the framework itself: *increasing returns* and *complementarity* are, consequently, ignored, treated as ‘special cases’ when they arise but denied the status of fundamentality that they ought to be granted. Both imply a case for *cooperation*, not competition, as the optimal institutional form for social organization.⁴⁵⁶

A *systems approach* is needed to address these sorts of phenomena, with a change of focal emphasis onto homeostatic control, organizational learning and planning horizons, and the tightness of feedback loops and their effect on a system’s stability and the efficiency of its

⁴⁵⁴ Richard R. Nelson, “Review” of Goldschmid, Mann, and Weston’s *Industrial Concentration: The New Learning* (*Bell Journal of Economics*, 7, Autumn 1976), p. 732. For the full flavor of his critique, I quote from pp. 729, 731-32; the whole excerpt could serve as a valid description of the economic approach assumed throughout *Sharing the Fish*:

... Almost all of the authors appeal to old style textbook microeconomic theory as a basis for their arguments. Yet that theory often has no real grip on, or is inconsistent with, the various phenomena upon which the policy debate is focused. A major weakness of the volume is that authors and discussants alike seem strikingly unaware of this difficulty. Recent theoretical work, which has attempted to deal with some of the issues, is ignored. ...

...The book reflects the weakness and schizophrenia of the theoretical structure underlying the issues of industrial organization. ... The problem is that [the] theory is so weak that it does not provide sharp guidance on the facts to be gathered. ... In such a situation, theoretical preconceptions dominate the discussion. ... Underlying the analysis ... is a textbook theory that is static and too simple institutionally to grip the subject matter. ... The theoretical problem here is never even posed. ... Industrial organization is a field that is in deep intellectual trouble. The source of the trouble is that old textbook theory that we all know so well. ...

⁴⁵⁵ As so well explained by Krupp in note 40 on page 2 above.

⁴⁵⁶ Cf. Frederic B. Jennings, Jr., *Public Policy, Planning Horizons and Organizational Breakdown: A Post-Mortem on British Canals and Their Failure* (Stanford University: Ph.D. Dissertation in Economics, June 1985); “Time, Knowledge and Pricing: Toward a Horizontal Theory of Choice” (unpublished draft: 28 June 1991); “Four Choice Metaphors and Their Pricing and Growth Implications” (unpublished draft: 31 December 1994).

performance. This is not the place to promote the ‘paradigm shift’ in economics, or to analyze where it is going, but only to indicate this as the context for inadequate explanations of the issue at hand: the ‘externality’ problem of fishing and how it is ‘solved’ through consolidation, according to what the NRC says. A useful way to examine the question is through an ‘oilfield drilling’ analogy.

Here are the economics: suppose you have a single field, the rights to which are multiply-owned by companies drilling wells independently. Each has strong incentives to pump as much and as quickly as possible – in a ‘race for oil’ like our ‘race for fish’ – because ‘If I don’t, someone else will, and then I’ll lose my chance!’ So the oil field is exploited too fast, at a cost of its full potential,⁴⁵⁷ if competing concerns pump *independently* from multiple wells. Such a scenario ought to sound familiar at this point.

The problem of ‘externalities’ here is serious⁴⁵⁸ and will lead to irrational overexploitation if left to itself and not resolved. The solution typically offered is a *monopoly ownership* of the whole field – assuming its boundaries can be established (through petro-geological science) – so one “sole owner” controls (and thus can optimize) its depletion. Multiple ownership of the wells tapping a field demands *strict control* over resource extraction rates through pumping quotas, a rationing plan or some other form of ‘access restriction.’ Otherwise, an incentive for *cheating* is overwhelmingly strong and very hard to repress or even observe through ‘monitoring and enforcement.’ Does this strike any chords?

But total monopolistic control is possible in this situation only because of a bounded field, divorced from all the others, such that property rights shall remove ‘externalities’ suffered by independent wells (where, though each captures the total benefits, some of the costs spill out upon others or are lost to the wind). The ‘propertarian’ outcome – monopolizing the resource – works solely *since the oilfield is separate* from all the others. Such is the critical part of the metaphor, and it *does not translate* to fisheries.

But this is the key issue: a “sole owner” resolution cannot be applied outside this scenario, if the oilfield is an integral part of a larger system.⁴⁵⁹ *Monopolization of an entire ecology* is impossible – or, at the very least, undesirable – as a ‘privatization’ scheme. But this is the point of the ‘public trust’ doctrine, and what *government* ought to be doing! The purpose and nature of government is to impose standards between individuals, such that the ‘public effects’ of

⁴⁵⁷ I have been given to understand that there is an ‘optimal’ rate of exploitation in this situation, in terms of the total amount attainable (ultimately) from such a field.

⁴⁵⁸ Some believe that this scenario was a cause of the Persian Gulf War.

⁴⁵⁹ Parzival Copes made a closely-related point on this subject, in *Op. Cit.* (note 18 on page 2 above), p. 5:

The avowed purpose of the promoters of the ITQ has been to bring the efficiency advantages of private ownership to the fishery. The attempt to do so has been a failure. For privatization of the fishery to be substantially complete and to meet the test of economic efficiency would require giving every fishing enterprise exclusive rights to, and exclusive control over, a particular identified set of fish along with the ecology that produces those fish, in the same way that a farmer owns and controls specific animals and all the productive facilities of the farm necessary to raise and bring those animals to market. It is patently impossible to operate in such a fashion in the marine fisheries, because of the nature of the resource. Fish in the ocean are fugitive and cannot be segregated, identified and assigned to different owners. The ecology that nurtures them is the seamless multi-use ocean environment that cannot but remain in common use for fishing, recreation, transportation and many other purposes. Fish stocks and the ocean environment that produces them, by their very nature are common use and common property resources. Neither the stocks, nor the environment can be divided into self-contained and separately managed units to which specified property rights may be attached.

(interdependent) private decisions shall not lead to interpersonal conflict through a *breakdown of organization*. Such is the problem at hand.

The failure of government to establish control of fisheries management due to a cooptation of the process by fishing industry interests shall not be solved by a giveaway of the public commons into their hands!⁴⁶⁰ Indeed, that is precisely the opposite of what is required. The only “sole owner” outcome possible here – if that is the recommendation – is for our resources’ ‘public trustee’ to establish proper control over the commons through regulation *not exposed to private direction*. The predatory incentives of fishing industry interests – in its short-term myopic concerns with quarterly earnings and dumping costs – are not the answer; *they are the problem*.

The ‘oil field’ case is not an analogue: it has some metaphorical likeness, but falls short at the key point that warrants “sole owner” solutions. An oil field is distinctly bounded, thus separable from the rest.⁴⁶¹ That is why a monopolization over the field can work: it does permit total control over rates of exploitation, in a setting where *multiple owners* shall yield to strong cheating incentives. The ocean fisheries situation is such that cheating is *not preventable* through monopolization.

Instead, the incentive for cheating endures, and the exploitation continues, under an ITQ management scheme. Control does not come from privatization, so the ‘race’ goes on. Indeed, due to a loss of control, planning horizons may actually shrink (and discount rates rise) with this ‘solution,’ especially if it leads to a globalization of fishing activity in which environmental loops of feedback are *relaxed*, not tightened. This is why consolidation incentives of ITQs shall be so pernicious in their effect on the fishery: *localization* of fishing effort is the means to stewardship practice, not the *exclusion* of fishing communities! But there is still another remaining argument to be attacked: that the aggregation of market power will lead to longer horizons and therewith stewardship practice.

3. The ‘Horizontal’ Case for Monopolization: Foresight Through Organization

Thirty years ago, I wrote the following in my undergraduate honors thesis at Harvard, and it is still worth quoting today:

In addition to economic progress, however, perfect competition fails to be “ideal” in another area where dynamic considerations are deemed important. In conservation it has proved to be the more highly concentrated industries and the larger enterprises which have best provided for a long-term and prudent exploitation of natural resources. In forestry, agriculture, petroleum, and other areas it has been the case that ...

...rational use by competing individuals leads to more rapid use over time than would be the case if the resource were worked by a single owner in his own (or society’s)

⁴⁶⁰ As Anthony Davis put it in “Barbed Wire and Bandwagons: A Comment on ITQ Fisheries Management” (*Reviews in Fish Biology and Fisheries*, 6, 1996), p. ?? (more fully quoted below over notes 523 to 527 on pages 2-2: “Even the supposed premise of fostering an ecologically sustainable fishery is compromised by investing control over the resource in the hands of the very fishing sector most closely associated with overfishing.”)

⁴⁶¹ Cf. R. Hannesson, “On ITQs: An Essay for the Special Issue ...” (*Reviews in Fish Biology and Fisheries*, 6:1, 1996), pp. 91-96, the “Abstract” for which notes the following:

ITQs amount to exclusive and transferable rights to harvest. Such rights follow automatically from the ownership of land, while ownership of sea territory is mostly nonexistent and would in any case seldom amount to exclusive rights to harvest, because of the fugitive character of fish stocks.

interest. Furthermore, competing owners will, in the short run, create excess exploiting capacity and therefore waste other factors of production in their haste to remove as much as possible within a given period.

*This outcome is partly due to knowledge problems of the kind previously discussed inherent in perfectly competitive industries, and to the associated high risks that result. Because these factors lead to higher uncertainty than that which would be experienced under more concentrated conditions, we observe that there exists a tendency of firms with less control over market conditions to engage in shorter-range planning of investments. As I have attempted to show above, it is precisely because firms in the more concentrated industries exhibit more control over their markets that there exist incentives to develop new products and techniques and hence to provide for long-range economic efficiency and growth. The neglect of dynamic considerations in erecting the model of perfect competition as a “welfare optimum” have thus led to its inapplicability in the additional realm of resource conservation.*⁴⁶²

The notion is that ‘collusion’ (or *cooperation*, a friendlier word) is to be sought in uncertain, unstable environments as a means to ‘cure’ the myopia of small firms unable to ‘see the forest for the trees.’ The best and most dramatic example is the regular ‘boom and bust’ cycle of farms’ production and pricing through time, called the ‘cobweb’ or ‘corn-hog’ cycle.

This can be seen as an ‘externality problem’ of *short horizons*. Small firms in a large market are only efficient in a static context certainly known. In dynamic, unsure realms, small concerns cannot see an oncoming change until it descends upon them. By then, it is much too late to react. The atomistic competitive firm – portrayed as ‘ideal’ in textbook, course and theory throughout economics – simply is not the most efficient market form in a dynamic context.⁴⁶³ The virtues of firm size cannot be seen through a static conceptual lens, such as that in ‘neoclassical’ theory.

As organizational analysts say, adaptive efficiency in dynamic, uncertain environments shall be achieved through institutional (local) networks, system modularities and tight feedback loops: systems approaches offer a novel language and a new perspective on these sorts of problems. And ecological issues should be addressed through a ‘systems’ approach. Unfortunately, *Sharing the Fish* adopted a ‘neoclassical’ lens to look at a ‘systems’ problem, misconstruing its source and solution.⁴⁶⁴ But there is an argument through a ‘systems approach’ that might be used to justify (incorrectly) a “sole owner” argument as a means to efficiency and stewardship practice.

⁴⁶² Cf. Jennings, *Competition Theory and the Welfare Optimum: A Methodological Analysis* (Harvard Department of Economics: undergraduate honors thesis, March 1968), pp. 53-54 [emphasis added]. The internal quote is from p. 64 of Anthony Scott, *Natural Resources: The Economics of Conservation* (Toronto: University of Toronto Press, 1955). Paul Hawken put it more strongly on p. 159 of *The Ecology of Commerce* (cf. note 36 on page 2 for reference), that:

... There is a large and overwhelming body of evidence demonstrating that competition in human culture, whether it be in business or other endeavors, does not improve the species, but is maladaptive and far from being the most intelligent cultural strategy. ... A restorative economy will have as its hallmark a business community that coevolves with the natural and human communities it serves. This necessitates a high degree of cooperation, mutual support, and collaborative problem-solving. It depends on very different skill-sets than those that are being drummed into us in sports, movies and business schools. Competition for the consumer or between businesses is impractical, wasteful, expensive and degrading to all involved. It imitates an immature ecosystem, and in this day and age, that is retrogressive, not progressive.

Also cf. Alfie Kohn, *No Contest: The Case Against Competition* (Boston: Houghton Mifflin, 1986) for a general sociological indictment of competition in its effects, strongly supporting what Hawken says.

⁴⁶³ E.g., cf. note 441 on page 2 above.

⁴⁶⁴ And inappropriate disaggregation of interdependent effects shall lead to *suboptimal* outcomes. Recall a previously-

Simon says it the best. The purpose of organizing economic and business activity into hierarchical levels is to free up attention at top echelons for unprogrammed decisions and long-range planning activity.⁴⁶⁵ High-frequency changes are resolved by those ‘on the scene’ at *lower hierarchical levels*, where reactions can be ‘programmed’ into routines of automatic response. Since short-term issues are dealt with there, only ‘unprogrammed’ events are ‘kicked upstairs’ to a higher authority with a ‘larger view’ of the system. At the top executive level, longer horizons shall rule the game (maybe).⁴⁶⁶

Monopoly arguments stem from managerial long horizons, such that larger firms with more democratic control lend to a more embracing conception of spreading effects. So one might take this literature as a ‘green light’ to *consolidation* as a means to stewardship practice and economic efficiency. Yet this argument does not apply to fisheries management problems any more than the ‘oil field’ analogy, and for a similar reason. The problem is that long horizons stem from *predictable outcomes* (in learning environments fostering a sense of engagement among

quoted remark by Nove, in note 115 on page 2 above, who cautioned that “reasoning which abstracts from externalities cannot be applied to a situation in which they are present.” As H. B. Malmgren explained, on p. 419 of his “Information, Expectations and the Theory of the Firm” (*Quarterly Journal of Economics*, 75, August 1961): “Market information is ... inaccurate when interdependent activities are decentralized independently of one another.”

⁴⁶⁵ Simon, in *Op. Cit.* (note 216 on page 2 above), p. 217, said this:

It is probably true that in social as in physical systems the higher-frequency dynamics are associated with the subsystems and the lower-frequency dynamics with the larger systems. It is generally believed, for example, that the relevant planning horizons of executives is longer, the higher their location in the organizational hierarchy.

⁴⁶⁶ The “maybe” here is important. The failures of hierarchical organizational forms are also well-documented in the organizational literature, with regard to the role of *authority* vs. *participatory management*. The argument for an extension of planning horizons stemming from organization has to do with *learning effects* and the *sense of engagement* that occurs in healthy management systems. It also needs to be understood that large organizations – if not democratically structured to foster learning and a sense of engagement – will lead to *reduced horizons* through a *loss of responsibility* for their effects and *disengagement* from the decision process by its members as well. Organizational size, here, offers no panacea: systems should be judged on their success (or failure) to lengthen horizons, where opening spans of control and responsibility for participants is the *means* to learning and longer horizons. Authority structures and power abuse shall lead to *short horizons*; the route to longer horizons through organizational systems design is *profoundly democratic* in nature, and depends on *cooperation* (not competition) within the firm as well as in its surroundings. ‘Small’ may also be ‘beautiful’ in this setting, from a ‘systems’ perspective, for the promotion of longer horizons and tight feedback control loops. On this subject, cf. some of the extensive literature on organizational learning in business management settings. Some of these sources were also relied upon in *Section III* above: Wolfgang Koehler, *The Place of Value in a World of Facts* (New York: Liveright, 1938); P. Selznick, “Foundations of the Theory of Organizations” (*American Sociological Review*, 13, 1948); Kenneth E. Boulding, *The Image: Knowledge in Life and Society* (Ann Arbor: University of Michigan Press, 1956); Chris Argyris, “The Impact of the Formal Organization upon the Individual” (1960) in D. S. Pugh, ed., *Organization Theory* (Baltimore: Penguin, 1971), pp. 261-78; D. McGregor, “Theory X and Theory Y” (1960) in Pugh, *Op. Cit.*, ch. 16; T. Burns, “Mechanistic and Organismic Structures” (1963) in Pugh, *Op. Cit.*, ch. 3; D. L. Katz and R. L. Kahn, “Common Characteristics of Open Systems” (1966) in F. E. Emery, ed., *Systems Thinking* (Baltimore: Penguin, 1969), ch. 5; Ludwig von Bertalanffy, *General System Theory: Foundations, Development, Applications* (New York: Braziller, 1968); Boulding, *Beyond Economics: Essays on Society, Religion and Ethics* (Ann Arbor: University of Michigan Press, 1968); C. W. Churchman, *The Design of Inquiring Systems: Basic Concepts of Systems and Organizations* (New York: Basic Books, 1971); Argyris, *Reason, Learning and Action: Individual and Organizational* (San Francisco: Jossey-Bass, 1983); Manfred F. R. Kets de Vries and Danny Miller, *The Neurotic Organization: Diagnosing and Revitalizing Unhealthy Companies* (San Francisco: Jossey-Bass, 1984); Mara Selvini Palazzoli et al., *The Hidden Games of Organizations* (New York: Pantheon, 1986); Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Doubleday/Currency, 1990); and M. J. Marquardt, *Building the Learning Organization* (New York: McGraw-Hill, 1996).

participants) – so are *extended* by knowledge, wisdom and ethics, and *shrunk* by instabilities. As Simon put it, describing what has been called ‘horizon effects’ in my work:⁴⁶⁷

*It is a commonplace organizational phenomenon that attending to the needs of the moment – putting out fires – takes precedence over attending to the needs for new capital investment or new knowledge. The more crowded the total agenda and the more frequently emergencies arise, the more likely it is that the middle-range and long range decisions will be neglected.*⁴⁶⁸

Thus the flaw in the argument tying organizational hierarchy to long planning horizons is that the larger the firm, the greater the *separation* of executive action from its real-world effects (especially those spreading outward beyond the bounds of firms’ attention and goals, and – even more emphatically – in an age of myopic concerns, short-term investment incentives, financial pressures and rapid management turnover based on quarterly earnings performance and not on asset value enhancement). What we want to measure here – with respect to ‘horizon effects’ – is the degree of ‘internalization’ (through ethics or ‘conscience’) of environmental and social effects from private decisions with respect to the scope and scale of industry organization. From this vantage, the problem becomes one of firm members’ *sense of engagement* with the ongoing impact of their resource-using activities. Such implies a strong case for *localization of control* and *participatory co-management* through fishing communities whose survival depends on the state of the resource, and *not for globalization* by international interests severed from local loops of feedback consequent to ecological loss!

4. The ‘Horizon Effects’ of ITQs Shall Be Negative, Not Positive

The ITQ plan (as proposed by the NRC panel) awards a ‘property right’ (denying it is anything more than a ‘permit’), granted ‘in perpetuity’ as a ‘gift’ of valuable ‘public common’ resources for no return compensation on the basis of fishing ‘success’ over a particular period (with little or no apparent attention to the *legality* of that catch), claiming that stewardship practice shall (somehow) ensue from ‘privatization’ (to be accepted on “faith”). This sort of argument has been endorsed by the National Research Council as satisfying the “National Standards” of the M-S Act.

In other words, ITQs: (1) shall “prevent overfishing”; (2) are “based on the best scientific information available”; (3) account for the interrelations of fish stocks; (4) are (a) “fair and equitable,” (b) “reasonably calculated to promote conservation” and (c) implemented so as to limit “excessive shares”; (5) are efficient, (6) flexible, (7) cost-effective, and (8) will protect traditional fishing communities, (9) minimize bycatch, and (10) promote “safety.” Theory and evidence show that *none* of these features has been established definitively in *Sharing the Fish*.

Short horizons stemming from ITQs shall be our current concern. There is no basis for an assertion that the ‘race for fish’ (or quota busting, highgrading and data fouling) shall be abated by an adoption of ITQs, *or* that planning horizons shall lengthen due to any such program.⁴⁶⁹ Indeed,

⁴⁶⁷ Cf. note 456 on page 2 above, for references.

⁴⁶⁸ Simon, *Op. Cit.* (note 216 on page 2 above), p. 185.

⁴⁶⁹ Parzival Copes, in *Op. Cit.* (note 18 on page 2 above), suggests that: “In an ITQ fishery participants will not ‘race for fish’ to beat out competitors,” but goes on to link quota busting, highgrading and data fouling to the incentives embodied in ITQ systems, which can be seen as part and parcel of the same exploitive pattern. For example, N. Vestergaard did a formal economic analysis of “Discard Behavior, Highgrading and Regulation: The Case of the Greenland Shrimp Industry” (*Marine Resource Economics*, 11:4, 1996), pp. 247-66, to show – as reported in the “Abstract” – that:

...In a nonregulated fishery, either multispecies or single species/multisize, where the only constraints are the hold capacity and the length of the season, the fisherman may have rational incentives to discard/highgrade, if the

the likely ‘horizon effect’ will be negative for those nearest the resource, such as captains and crews: financial pressure on them is *intensified* and not reduced by an ITQ system. If so, then stewardship ought to *decline*, not rise with ITQs, along with “ecological sensibility” and conservation incentives.⁴⁷⁰ So “faith” must cede to reason in this particular application. Another aspect of this issue – of consolidation effects vs. local community interests – is *transferability*: Is there any real difference between *transferable* ITQs and *nontransferable* INQs?

5. *The Transferability Issue: Should IFQs Be ITQs or INQs?*

Sharing the Fish implies that there is no significant difference between ITQs and INQs, speaking of “IFQs” in the study although *recommending* ITQs. There are discussions about transferability of IFQs, but the argument doesn’t develop the question in any great detail. The twin notions of IFQ and ITQ are used interchangeably, as if they were the same. But the matter of fishing quotas’ transferability is important in assessing IFQs’ impact on communities, conservation and stewardship. Indeed, the difference may be decisive – if IFQs are adopted.⁴⁷¹

From a ‘neoclassical’ economic perspective, transferability is the reason that ITQs work. Consolidation is not to be feared, it is part of what makes the system *efficient* in its reduction of overcapacity and local fishing activity. Only ‘factory vessels’ – sailing the seas in search of more fish – shall be ‘efficient’ in this conception, due to scale and scope economies in an international market. The whole story adheres together so well, it is seldom addressed or attacked, except by

marginal trip profit of an extra fishing day is greater than the average trip profit. Regulation by TAC does not change the incentives to discard. However, under INTQs [i.e., nontransferable ITQs] and ITQs, the incentives to discard increase. The incentives to discard decrease under ITQs compared to INTQs, if the unit quota price is smaller than the shadow price of the quota. The model is applied to the Greenland shrimp fishery, where it demonstrates the reported discard behavior in the fishery. ...

Also, with the uncertainties of fishing taken into account, the ‘race for fish’ under ITQs may change in intensity and not be ended, especially with the *leasing* of quotas. Copes concedes that ITQs *may* yield some efficiency gains in discouraging overcapacity, overloading and unsafe fishing activities due to the ‘race for fish’ (in *Op. Cit.* above), p. 6, but E. Eythorsson’s analysis, “Theory and Practice of ITQs in Iceland: Privatization of Common Fishing Rights” (*Marine Policy*, 20:3, 1996), pp. 269-81, appears to challenge that view. The “Abstract” to his paper reports that:

In Iceland ... the assumption that an ITQ-regime will lead to an immediate reduction of catch capacity and discourage investment in the fisheries seems questionable, as the ITQ-regime seems to represent an input of “new” capital into the fisheries. As a result of quota leasing arrangements, tenancy relations have developed between parts of the coastal fleet and companies with large quota holdings. Crew wages have in these cases dropped, a situation that has provoked two strikes among fishermen. Municipalities are in a number of cases significant participants in the quota market, as there are strong ties between companies and municipalities. A redistribution of wealth and income is taking place as a result of this system.

⁴⁷⁰ Parzival Copes suggests this as well, in his cogent and thoughtful analysis of the incentives and likely effects of an ITQ system, in *Op. Cit.* (cf. note 18 on page 2 above), pp. 6-9, in a discussion of two types of “new externalities” introduced by ITQ systems: those from *management requirements* and from *behavioral incentives*.

⁴⁷¹ This specific concern about the importance of *transferability* is reflected in the analysis by B. J. McCay, C. F. Creed, A. C. Finlayson, R. Apostle and K. Mikalsen of “Individual Transferable Quotas (ITQs) in Canadian and U.S. Fisheries” (*Ocean and Coastal Management*, 28:1-3, 1995), pp. 85-115, the “Abstract” of which states this point very clearly:

Among the lessons learned from the comparative study [of U.S. SCOQ ITQs in the Mid-Atlantic and the Canadian groundfish ITQs in the Scotia-Fundy areas] are the critical importance of decisions about transferability of quotas and the political and historical context, and pre-existing industry structure, to the acceptance and performance of ITQs. In addition, the research shows mixed results for questions about relationships between exclusive property rights and stewardship, on the one hand, and between individual quota systems and co-management on the other. ...

apologists for tradition (at least as seen by its sundry advocates). But there is another side to our tale, less sympathetic and neat.

Appreciate that ‘transferability’ – in the sense of ‘trade to mutual benefit’ – is the wellspring of almost all economic conceptions of ‘optimality’ and ‘social welfare.’ So any constraint on tradability is automatically seen as bad, by limiting *realization of value* with no observable loss. Indeed, the author of this report took a long time to reject transferability, due to its significance as an *axiom* of economics. This may also be why the NRC *assumes* that IFQs should be traded for best advantage. As a result, the real underlying dangers of transferability are not addressed in *Sharing the Fish*.

There is a lengthy discussion of transferability in the report. “Most IFQ programs used worldwide allow transferability. ... [which] is one of the most contentious issues in IFQ management. It can be expected that in fisheries that allow easier transferability, consolidation of quota will occur.”⁴⁷² But the whole discussion of transferability in *Sharing the Fish* is about “balancing two opposing goals: economic efficiency and social equity.” No question about whether transferability is, in fact, efficient (or ecologically sound) is ever raised or addressed. Instead, “economic efficiency is [said to be] maximized when ... quota shares are freely transferable...”⁴⁷³ Period.

The problem is, “economic efficiency” works against “social equity,” due to “side effects” of ITQs: “To the extent possible, these [side] effects should be reduced with as little infringement on transferability as possible, to minimize the economic losses involved.”⁴⁷⁴ The largely unquestioned efficiencies of ITQs in *Sharing the Fish* shall lead to inequities ‘solved’ by share, vessel or regional restrictions, and ‘owner-on-board’ requirements.⁴⁷⁵ But Doeringer’s “kinship” argument – to be found earlier in the report – is nowhere acknowledged in this discussion, despite its singular relevance:

A confounding factor complicates the economic efficiency arguments: not all components of commercial fishing industries operate according to a common economic logic of firms. Abundant empirical evidence exists to demonstrate that these [economically logical] assumptions are not always true. In their study of fisheries in the Northeast, Doeringer et al.

⁴⁷² *Sharing the Fish*, p. 167.

⁴⁷³ *Ibid.* This unquestioned assumption is strongly challenged by many opponents of ITQs; for example, cf. Copes, *Op. Cit.* (note 18 on page 2 above), as also quoted in or over notes 459, 469 and 470 above. As G. Palsson and A. Helgason put it in the “Abstract” to their “Figuring Fish and Measuring Men: The Individual Transferable Quota System in the Icelandic Cod Fishery” (*Ocean and Coastal Management*, 28:1-3, 1995), pp. 117-46, in a manner reflecting, with an uncanny precision, our critique of *Sharing the Fish* in its selective focus on narrow economic issues at the expense of broader social effects and ecological risks:

Statistical findings with respect to the cod fishery ... show that ITQs have been increasingly concentrated in the hands of the biggest companies. Many of the small-scale boat owners that still hold ITQs are increasingly compelled to enter into contracts that involve fishing for larger ITQ holders. It is suggested that the distribution of ITQs, as well as their evaluation in social discourse, represents an important field of research. In Iceland, public discontent with the concentration of fishing rights and the ensuing social repercussions is increasingly articulated in terms of loaded metaphors including ‘profiteering’, ‘tenancy’ and ‘lords of the sea.’ It is argued that the ultimate efficiency of management programs may be jeopardized if managers ignore the history and culture of the fisheries involved and the likely social and ecological consequences of their programs.

⁴⁷⁴ *Sharing the Fish*, p. 168.

⁴⁷⁵ *Ibid.*, p. 169.

(1986)⁴⁷⁶ differentiate between what they call a kinship sector and a capitalist sector and indicate that the kinship sector thrives and expands under conditions that are detrimental to the capitalist sector. ... The existence of the kinship sector means that features of fisheries management that assume that individuals will make decisions on strictly economic grounds may be invalid and that management measures such as IFQs and other limited entry systems may have economic effects different from those that might be predicted on purely theoretical grounds.⁴⁷⁷

In *Sharing the Fish*, the fact that transferability yields consolidation is seen as ‘efficient’ and thus encouraged, unless ‘social equity’ intercedes. “To some extent, regional concentration of quotas is unavoidable, a healthy sign of increased economic efficiency. The social costs, however, may outweigh the gains in economic efficiency. ...”⁴⁷⁸ These costs include disruption of “the internal dynamics of fishing communities,” especially as ITQs “can alter relations of power between vessel owner and crew.”⁴⁷⁹ All these effects are especially evident under *leasing* arrangements.

*Absentee ownership can develop when the transfer of quotas is unrestricted. Rather than selling their quotas, quota shareholders may choose to lease them and gain unearned income on their quota wealth. This may tear at the social fabric in fishing communities, where absentee ownership is often seen as unfair. ... [Leasing of quota by] a small-scale harvester ... [from] a large vertically integrated firm ... may create a new kind of social structure with permanent divisions among those who live from leasing quota shares and those who rent them and do the fishing. ... In the case of Alaska, the desire to eliminate this feudal structure was a primary motivation for statehood.*⁴⁸⁰

There is some discussion of a possible conflict between concentration and economic efficiency (from market power abuse), but it is mostly waved off:

*In regard to the conflict between concentration and efficiency, it is important to assess whether this conflict is serious and what trade-offs might exist. The usual antitrust arguments do not seem very relevant to management of IFQs. The fishing industry is not in a position to dominate its market to any appreciable extent. Fish from a particular IFQ-managed fishery compete with fish from other sources. In addition, fish markets are global and there are many possible substitutes for most fishery products from any given region... Even if the IFQs of one particular fishery were owned by a single company, the company’s influence on the market price of its fish is likely to be negligible. In contrast, such a firm might exert a strong influence in local factor markets (e.g., labor).*⁴⁸¹

The focus in *Sharing the Fish* is on the *economics* of market structure and process, without regard to ecosystem-based theory or long-term effects. *Economic efficiency* – stemming from transferability of IFQs – is never questioned, nor is standard ‘neoclassical’ theory as a conceptual framework (despite an earlier nod to ‘kinship’ patterns and community-based co-management systems as other approaches).

⁴⁷⁶ Peter B. Doeringer, P. I. Moss, and D. G. Terkla, *The New England Fishing Economy: Jobs, Income, and Kinship* (Amherst, MA: University of Massachusetts Press, 1986).

⁴⁷⁷ *Sharing the Fish*, pp. 34-35. Also cf. notes 453 and 454 starting on page 2 above, and note 40 on page 2.

⁴⁷⁸ *Ibid.*, p. 170. But cf. comment and references in note 473 above.

⁴⁷⁹ *Ibid.*, p. 171.

⁴⁸⁰ *Ibid.*, pp. 172-73.

⁴⁸¹ *Ibid.*, p. 174.

And so the NRC panel arrives at its statement of “Findings” and “Recommendations,” and even here they do not seem to mesh – almost as if they had to voice doubt in their “Findings” so to excuse its total neglect in their “Recommendation”:

Findings: *Many objectives of IFQ programs require some degree of transferability or flexibility for industry participants (particularly for purposes of economic efficiency). However, unrestricted transferability can lead to socially negative side effects such as an excessive degree of consolidation or regional shifts in access to a fishery. ...*

Recommendation: *Permanent transfers of quota shares should generally be allowed without any restriction among eligible quota holders.*⁴⁸²

On the problem of consolidation, at least, the panel proposes some restrictions on quota accumulation:

Recommendation: *Congress should require the creation of limits on the accumulation of quota share by individuals or firms in each new IFQ program. ...*⁴⁸³

In sum, the argument by the NRC panel in *Sharing the Fish* is that *transferability will lead to consolidation* of quota ownership at the expense of local labor conditions and community access to fishing, but that these ‘social inequities’ are just a cost of all the *efficiencies* that are achieved thereby, as “many objectives of IFQ programs require some degree of transferability ... (particularly for purposes of economic efficiency).” Therefore, “permanent transfers of quota should generally be allowed without any restriction among eligible quota owners.”⁴⁸⁴

Social effects should not interfere with the urgent demands of efficiency. Yet Parzival Copes deems the “efficiency advantages” of ITQs “a failure,”⁴⁸⁵ a *screen* for other exclusionary and acquisitive aims:

*The claim that ITQs will bring the efficiency advantages of privatization to the fishery is mere pretence. ITQs have not turned fish stocks and their environment into divisible pieces of exclusive private property, that are managed separately and efficiently by their owners. What the installation of an ITQ program does do is give away to a limited group the tradable rights to participate in a common property fishery according to a particular set of rules. In legal essence this is no different than the installing of limited entry programs with transferable licenses, which has been going on for a long time before ITQs were ever considered. In both cases the fish stock remains a common property resource, a pool of fish no part of which belongs to anyone in particular until it is caught. The real question still needs to be answered: will the fishing rules of the ITQ make the fishery more efficient ... or less so?*⁴⁸⁶

Furthermore, in every context that ITQs are used, local fishing communities suffer a loss of their livelihood: Even *Sharing the Fish* acknowledges this for Alaska, the mid-Atlantic coast, Iceland and Canada⁴⁸⁷ and other sources suggest the same outcome in New Zealand as well.⁴⁸⁸ Also, in

⁴⁸² *Ibid.*, pp. 208-9.

⁴⁸³ *Ibid.*, p. 210.

⁴⁸⁴ *Ibid.*, pp. 208, 210, as quoted just above.

⁴⁸⁵ As quoted earlier in note 459 on page 2 above.

⁴⁸⁶ Copes, *Op. Cit.* (note 18 on page 2 above), p. 5.

⁴⁸⁷ *Sharing the Fish*, pp. 170-71.

⁴⁸⁸ Cf. Graham Parker and James Hufflet, “The Northland Seafood Industry: Its Importance and Place in the Region” (Wellington, NZ: Economics Section, New Zealand Fishing Industry Board, June 1993) and David Hawkey, “Property

neoclassical economics, ‘social equity’ issues stand behind ‘efficiency’ attributes in their rank and priority. As the argument goes, ‘supply efficiencies’ should be first and ‘distributional equities’ second as greater output means more for everyone (with a bigger pie all around). This significant bias suggests a clear response to our question: will local communities benefit from an ITQ program, as *Sharing the Fish* would contend, to meet *Standard 8* of the M-S Act? The answer has to be: “No.”

6. ITQs in ‘Neoclassical’ vs. ‘Systems’ Theory: A Paradigmatic Confrontation

There is a schizophrenic conflict throughout *Sharing the Fish*, in its use of ‘neoclassical’ theories where ‘systems’ approaches are needed. The problem may be best seen in the notion of ‘externalities’ as defined above in two quotes from Heller and Starrett (the ‘neoclassical’ outlook) and from Krupp (a ‘systems’ perspective).⁴⁸⁹ Each view will be compared in brief, as a lead-in to the next section.

First, as shown, ‘neoclassical’ views – according to Heller and Starrett – tie ‘externalities’ to an *absence of markets* (so ownership rights ‘solve’ the problem by feeding economic spillovers back into market transactions at fully-accounted prices). Here, the solution is *separation of interdependence through privatization*, and the institution of market transactions where there were none. This is the way that free individuals solve ‘externality’ problems: defining a ‘right’ that imposes a boundary over which others may only pass by compensating its new owner accordingly for access. Social harmony is achieved by an *institutionalized division of interdependent effects*, such that we are rightfully *individualized* through property ownership: either mine ‘to my view,’ or yours ‘to your red fence.’⁴⁹⁰ So will ‘good demarcations’ make ‘good neighbors’ (apologies to Robert Frost).⁴⁹¹

The ‘systems’ view is quite different, in a rather revealing way.⁴⁹² In this schema, ‘externalities’ are *not* seen as an absence of *markets* – and thus a demand for privatization – but rather as a boundary of *theoretical application*. In other words, the issue is specified as *a failure of theory*, not as *a failure of markets*. Such implies an opposite take on the oldest of philosophical issues: on whether reality ought to be made to conform with theoretical outlooks, or just the reverse. Should theory adjust to experience, or do we force actuality into a mold to fit theoretical models? The latter is called “hubris,” and is a chronic characteristic of many profound ecological failures and other engineering disasters.

Another way to frame the question is one of *the primacy of existence* vs. that of *theory*. We only see the world through a lens, so how do we tell the flaws in the glass from those in the object of vision? The only way to address such questions is by trying on diverse views, simply to see how each affects our perceptions and understanding. The narrow outlook in *Sharing the Fish* – its use of a ‘neoclassical’ lens without considering other frameworks save as a passing distraction – is the chief failing of this study.

Rights, ITQs and the Slice of the Fish Pie: An Appraisal of Fishery Culture and Conflict in the Northland Region” (unpublished research essay, Department of Economics, University of Auckland, NZ, 1994).

⁴⁸⁹ Cf. quotes in notes 39 and 40 starting on page 2 above.

⁴⁹⁰ Cf. first paragraph in *Section II.B.I.* above, where this subject was first discussed.

⁴⁹¹ Robert Frost, “Mending Wall” (1914).

⁴⁹² In what follows, the ‘institutional’ view addressed in *Section III* is treated as a ‘systems’ approach – which it is – without distinguishing them as before.

A 'systems' approach sheds light by offering other conclusions on ITQs in terms of their likely effects. The NRC panel's unquestioned assertion that "concentration of quotas is ... a healthy sign of increased economic efficiency"⁴⁹³ is to be challenged, if not rejected out of hand: a 'systems' view would deny this claim, based on other concerns, priorities and causal relations. *Sharing the Fish*, in never raising questions about the 'neoclassical' theory, avoids the critical issue, where *localization* is a source of both *economic efficiency* and *ecological stewardship practice*.

Systems approaches scrutinize 'internalization' right at the outset, through an attention to 'feedback control loops' as the key to whether economies work as they are designed, to align social with private incentives through some institutional means. 'Homeostatic control' is the *essence* of a systems approach, and ITQs shall *loosen* these sorts of feedbacks through an accumulation of quota away from fishing communities subject to local environmental effects, and so *weaken* any incentive for conservation and stewardship.

Systems analysis opens another interpretation of ITQs, starkly at odds with that based on 'neoclassical' theory. And this is the failure of *Sharing the Fish*: it blames the 'externalities' seen through a 'neoclassical' lens on 'open access' to the 'public commons' and not on the *theoretical limits* (selective focus) of the particular glass through which it is looking.

A *systems approach* shall find the ITQ plan inadequate on several grounds. First, as already noted, *tight feedback loops* shall be essential for economic incentives to work as predicted in 'neoclassical' theory. Yet ITQs – specifically in *transferability* as a cause of *economic consolidation* of market and political power in an international sphere – will *loosen* these sorts of feedback loops by increasing the distance of vessels and crews from local environmental effects of their ecological practices. So long-term 'asset enhancement' strategies shall be overcome by a *stronger incentive* for opportunism and the continued depletion of fisheries, such as the evidence shows without doubt. The ethics of fishery conservation and stewardship practice shall not stand against the urgent demands of financial gain to be earned from overharvesting ocean resources into exhaustion, if not total collapse.

The only bulwark against this onslaught is the TAC-setting process, which is supposed to be scientifically-based and not politically-driven. And this is the second point on which a systems approach has questions as well: the scientific process is in no way immune to political influence. The fact that ITQs shall lead to agglomerations of market power and economic strength brings with it a real potential for corrupting the scientific TAC-setting process through economic control. This shall likely occur in two ways: first, directly, by working for larger TACs against scientific opinion, and, second, to generate pseudo-scientific contentions supporting continued overharvests of fish.

Last, the *consolidation* of ITQ property rights shall not yield longer horizons and lower discount rates – so more investment in natural capital – in a magical turnaround of fishing cultures and attitudes. First, local 'feedback loops' are weakened by ITQs and, second, market discount rates shall likely exceed the internal rates of return from restoration activities, so overharvesting ought to continue. Also, by adding to the financial stress on non-owning captains and crews, ITQs should raise the incentive for exploitation and cheating for greater returns, if only to make up that loss. If so, waste through bycatch, highgrading and discards should *rise*, and not fall, along with data

⁴⁹³ *Sharing the Fish*, p. 170, as already quoted above in note 478 on page 2 above.

fouling, quota busting and other rapacious behaviors.⁴⁹⁴ Short horizons shall not be extended by privatizing these stocks.

Systems approaches – selectively focused on tightness of feedback loops, social influence through abuse of economic and political power, and ‘horizon effects’ – suggest a quite different array of effects from ITQs than ‘neoclassical’ theory. If so, we need a way to resolve ‘framing problems’ here: when two dissimilar views lead to widely-divergent projections of outcomes, we must choose the ‘frame’ best fit to the application at hand.⁴⁹⁵

The *assumptions* of a theory express the *conditions* in which it applies: they state the “ifs” surrounding the “then” conclusions of any outlook. Consequently, in this setting, a test of *relevance* can be based on the relative fit of assumptions to the reality of ocean fisheries in an open marine environment. The core assumptions and the selective focus of neoclassical theory are best applied to *production economies* for which it was designed, with independence, separability, full information, knowledge and prices stable, and expectations certain.

Systems approaches were developed by organizational theorists as a means to understand complexly interdependent transactions, social and cultural patterns, and the workings of biological life in an open, unbounded ecology. As such, a systems theory is devised to fit this situation, assuming interdependence, interactivity, bounded rationality, uncertainty and dynamic tradeoffs shifting always through space and time. In fact, the notion of ‘planning horizons’ – and ‘horizon effects’ – starts with the view that our understanding is limited though our impacts are not (and that, indeed, those effects spread outward forever).

So a ‘neoclassical’ argument that ITQs shall lead to efficiency and conservation – while *loosening feedback loops* and *centralizing financial control* into international hands in a global economy (at the expense of equity), in the context of a corporate ‘giveaway’ of public ‘common’ resources for an immediate ‘windfall’ gain worth millions of dollars to elites appealing to short-term acquisitive values – simply is self-contradictory. The likely outcome of ITQs should be seen

⁴⁹⁴ Cf. Sissenwine and Mace, *Op. Cit.* (note 407 on page 2 above), Palsson and Helgason, *Op. Cit.* (note 473 on page 2 above), and Copes, *Op. Cit.* (note 18 on page 2 above).

⁴⁹⁵ Even *within* ‘neoclassical’ theory, as Q. R. Weninger and R. E. Just reveal in “An Analysis of Transition from Limited Entry to Transferable Quota: Non-Marshallian Principles for Fisheries Management,” presented at an International Workshop Meeting on Assessment and Distribution of Harvest Quotas in Fisheries in July 1996 at Geiranger, Norway, published in (*Source*, 10:1, 1997), pp. 53-83, the choice of models shall matter with respect to the findings about ITQs’ alleged *efficiency properties* and the reduction of fishing *capacity*. The “Abstract” of this paper reveals that how the problem is *framed* – namely, in static Marshallian terms vs. in non-Marshallian game-theoretic constructions (which are also often used to explain the interplay of *political interests* with economic concerns, as well as the economic impact of rent-seeking and opportunism) – makes a great deal of difference in the conclusions so derived, implying results often assigned to ‘reality’ may instead be an artifact of the theory or frame imposed on the problem:

Static analysis shows that individual transferable quotas (ITQs) can dramatically increase economic efficiency comparable to a limited entry (LE) management [system] by releasing excess capital. However, the transition from LE to ITQ management presents further efficiency questions. This paper shows that the rate of retirement of excess capital is determined by the opportunity cost of holding ITQ harvest rights on cost inefficient vessels. While restructuring is immediate with perfect foresight, delayed exit occurs with uncertainty and low opportunity costs of holding ITQ. Nearly cost-efficient fishers anticipate increasing their payoff by waiting for higher ITQ prices, e.g., game theoretic principles rather than static Marshallian principles apply. The results raise policy questions about allocating ITQ to incumbent fishers at no charge. The Mid-Atlantic surf clam and ocean quahog [SCOQ] fishery which switched from LE to ITQ management in 1990 is analyzed as a case study. Results show that a large surplus was possible but unattained under LE management but also that adjustment has been slow and costly, consistent with the results of this paper.

through a theoretical lens appropriate to this setting, and a ‘systems’ approach implies a quite different pattern than that depicted in ‘neoclassical’ language (on the basis of unrealistic conditions wholly inapplicable to marine fisheries and ocean ecologies).

But theory should not be our only guide. The *primacy of existence* says we must look not at theory but *to reality* for the answers we seek. The ‘externality’ problem may not be a “*failure*” of *markets* (‘out there’ in the world, according to Heller and Starrett)⁴⁹⁶ to divide us sufficiently into ‘privatized’ domains subject to fully-accounted and priced transactions. Instead, the ‘problem of interdependence’ suggests a *theoretical failure* rising from pushing economic conceptions beyond their realm of application as specified by their (patently unrealistic) assumptions, such as Krupp presents so persuasively!⁴⁹⁷ So what has been shown is only that two different outlooks yield divergent projections about the impact of ITQs, and that ‘systems’ frames are better fit to this setting than ‘neoclassical’ models. The implication is that the NRC panel – adopting a ‘neoclassical’ analytical framework – closed the door to other assessments specific to a ‘systems’ approach that lead to rather different conclusions about the effects of an ITQ plan.

But two opposing *economic approaches* saying opposite things shall not even touch the problem of whether inherently *economic* analyses are the best way to address social and environmental issues. Sure, a ‘systems’ approach implies that *localization* engenders more responsive feedback than *globalization*, and thereby attributes to fishing communities a more *efficient* – as well as more *equitable* – economics of fishing activity. Yet this story endorses only *economic concerns* as standards of value in the assessment of vital “national policy” interests. ‘Social sciences’ are not just economics: sociology, social psychology, anthropology, even political science are part of this group. What do these social scientists say about how we should judge ITQs?

7. *Beyond Economics: ‘Social Science’ Perspectives on ITQ Management Systems*

As an economist, this author ought to admit a personal bias in favor of *economic concerns* over a ‘social science’ perspective (from the way I was trained to think). But this suggests no reason to ignore any other approach, and gives no justification at all to dismiss ‘social science’ perspectives in general just because they are ‘not economics’! Indeed, the ‘selective focus’ of single outlooks simultaneously involves a *restrictive blindness*, so one ought to examine diverse systems of thought to test one’s own, especially in any broad application. The alternative is too risky, as it dismisses significant theories in other disciplines not because they are wrong, but only as *unfamiliar*. At the least, their implications should be noted with respect to whether they offer reinforcement to either a ‘neoclassical’ or a ‘systems’ interpretation (or neither).

Wassily Leontief, a Nobel Laureate in economics, excoriated his own profession on its “splendid isolation,”⁴⁹⁸ another reason to open the blinds and check out the view from a broader vantage. And ITQs have been considered from other perspectives than economics: indeed, the composition of the NRC panel itself implies the importance of fields beyond economics in judging ITQs. Of the fifteen IFQRC members, only four were economists; they were joined by four anthropologists and one political scientist as two-thirds of the NRC panel. What do other social scientists say about ITQs?

The impression that this economist draws from other related disciplines in the social sciences gives support to Professor Leontief’s point: the priorities special to economics (“*Efficiency uber*

⁴⁹⁶ As discussed in the text accompanying note 39 on page 2 above.

⁴⁹⁷ Cf. note 40 on page 2 above.

⁴⁹⁸ Cf. note 59 on page 2 above.

alles!’) are not common to other fields. Social scientists outside economics seem to rank *community process* before individualistic gain and trading relationships, *social equity* over allocative efficiency, and *atmospheric conditions* ahead of financial earnings, status, profit and other rewards of a consumptive or tangible nature. These are issues economists tend to scorn and deride as ‘fuzzy,’ vague and (nonquantifiably) unscientific, contrasted with the exactitude that economists seek in their rigorous statements of mathematical logic. And yet, dismissing alternative fields simply because they employ unfamiliar outlooks seems even *less scientific* than trying to understand what they offer. So here is one economist’s summary of what these scientists say.

In *Sharing the Fish*, subsequent to a short discussion of “kinship sectors” as distinct from the “capitalist sector,”⁴⁹⁹ one finds a ten-page outline of fundamental ‘social science’ issues,⁵⁰⁰ the only defect of which is its failure to have any weight in the recommendations! This review begins by defining “community ... [as] awareness of shared interests and concerns,”⁵⁰¹ where: “The effect of change on a community” depends on how its “common interests ... are affected.”⁵⁰² With regard to “social, economic, and cultural characteristics of U.S. fisheries,” they are very diverse and vary over geographical regions. Community itself is important – and too often neglected – in the debate over ITQs:

*Communities can serve as important participants in fisheries management in situations in which institutional arrangements are developed by resource users and others to manage the resources.*⁵⁰³ *The public debate about access rights in fisheries management has focused primarily on exclusive individual harvest privileges such as IFQs, neglecting alternative harvest regimes, including those that build upon human communities and involve contractual “co-management” relationships between fishing communities (...) and government. The concepts of “human ecology”⁵⁰⁴ and “embeddedness”⁵⁰⁵ emphasize unavoidable interactions among culture, ecosystems, and the economy, and the methodological flaws of the theories representing economics and public choice as merely the summation of individual actions. ... These authors argue for more attention to the search for alternatives ... in particular ... public participation ... community-based ... and ... co-management [schemes].⁵⁰⁶ IFQs and other fishery management tools have profound effects on human communities and can be designed, through participatory processes, to meet the needs and concerns of these*

⁴⁹⁹ Cf. *Sharing the Fish*, pp. 34-35, as quoted in part over note 476 on page 2 above.

⁵⁰⁰ Cf. *ibid.*, pp. 181-91.

⁵⁰¹ *Ibid.*, p. 181, with reference to C. L. Dyer and J. R. McGoodwin, eds., *Folk Management in the World’s Fisheries: Lessons for Modern Fisheries Management* (Niwot, CO: University Press of Colorado, 1994).

⁵⁰² *Ibid.*

⁵⁰³ Reference here is made to: B. McCay and J. Acheson, eds., *The Question of the Commons: The Culture and Ecology of Communal Resources* (Tucson: University of Arizona Press, 1987); E. Ostrom, *Governing the Commons* (Cambridge, U.K.: Cambridge University Press, 1990); and A. Rieser, “Property Rights and Ecosystem Management in U.S. Fisheries: Contracting for the Commons?” (*Ecology Law Quarterly*, 24:4, 1997), pp. 813-32.

⁵⁰⁴ Reference to G. Pálsson, *Coastal Economies, Cultural Accounts: Human Ecology and Icelandic Discourse* (New York: Manchester University Press, 1991).

⁵⁰⁵ Reference to M. Granovetter, “Economic Action and Social Structure: The Problem of Embeddedness” (*American Journal of Sociology*, 91, 1985), pp. 481-510; and B. J. McCay and S. Jentoft, “Market or Community Failure? Critical Perspectives on Common Property Research” (*Human Organization*, 57(1), 1998), pp. 21-29.

⁵⁰⁶ Reference to L. Felt, B. Neis, and B. McCay, “Co-Management,” in J. G. Boreman, B. S. Nakashima, H. W. Powles, J. A. Wilson, and R. L. Kendall, eds., *Northwest Atlantic Groundfish: Perspectives on a Fishery Collapse* (Bethesda, MD: American Fisheries Society, 1997), pp. 185-94.

communities.⁵⁰⁷ That is, they can be designed to reinforce community structures and to formalize common property regimes. The tendency for IFQ programs is to create a new community of interest, the holders of IFQs, whose interests and goals can diverge sharply from the rest of the community. Consequently, attempts to link IFQs with larger community values and interests must take great care to design IFQ programs that will in fact reinforce desired community structures and formalize common property regimes.⁵⁰⁸

Furthermore, the individualistic claims of ITQ plans suppose a *false alternative* of ‘command’ and ‘property’ systems of management. This supposition devalues and dismisses solutions already in place to ‘open access’ fisheries problems in traditional local communities, of which there are many that work:

...these two approaches ... ignore the hundreds of ... fishing communities that organized themselves and have effectively managed their access to and use of fish stocks on which they were heavily dependent (...).⁵⁰⁹ These community-based governing arrangements are not anomalies. Rather, they represent a viable alternative to central government and market-based approaches to addressing biologic, economic and social problems related to fishing.⁵¹⁰

After a detailed outline of the common features and characteristics of successful community management processes and their rules of enforcement, their “advantages over central government management and market-based management” systems are reviewed as well, in terms of fairness, community maintenance and the costs of compliance.⁵¹¹ *Sharing the Fish* also indicates how specific characteristics of fisheries and the fishing communities shall affect management options and their likely effects.⁵¹²

A “consensus” seems to have formed around the need for *participation* by all those “most directly affected by natural resource management,” due to their relevant knowledge and the effect on them of decisions, although the boundaries on inclusion vs. exclusion are not well-defined.⁵¹³ The *structure* of the decisionmaking process is also important, especially in the perception of fairness, the range of participation, and the alignment of expectations to (ethical) norms.⁵¹⁴ Management plans set up on these lines shall have fewer enforcement costs, since they are better at self-policing. This section ends with a question of special importance, since so many of the NRC panel’s recommendations assign decisions to regional councils:

Are regional councils the best forum for making the decision to adopt an IFQ program for a particular fishery? Testimony to the committee reflected the concern that at any given time,

⁵⁰⁷ Reference to B. J. McCay, R. Apostle, and C. F. Creed, “Individual Transferable Quotas, Co-Management, and Community: Reflections from Nova Scotia” (*Fisheries*, 23:4, 1998), pp. 20-23.

⁵⁰⁸ *Sharing the Fish*, pp. 182-83..

⁵⁰⁹ Reference to, e.g., NRC, *Proceedings of the Conference on Common Property Resource Management* (Washington, DC: National Academy Press, 1986); McCay and Acheson, *Op. Cit.* (note 503 above); F. Berkes, ed., *Common Property Resources: Ecology and Community-Based Sustainable Development* (London: Belhaven, 1989); F. Martin, *Common Pool Resources and Collective Action: A Bibliography* (Bloomington: Indiana University, Workshop in Political Theory and Policy Analysis, 1989); and D. Bromley, ed., *Making the Commons Work: Theory, Practice and Policy* (San Francisco: Institute for Contemporary Studies, 1992).

⁵¹⁰ *Sharing the Fish*, pp. 183-84.

⁵¹¹ *Ibid.*, pp. 184-85.

⁵¹² *Ibid.*, p. 186.

⁵¹³ *Ibid.*, p. 188.

⁵¹⁴ *Ibid.*, p. 189.

*a council may include neither adequate voting representation of all ... that would be affected by the design choices in an IFQ program nor the broader public interest. The council appointment process is a political one ... and politics can skew the voting membership in favor of a more powerful sector of the commercial or recreational fishery. To some extent, however, the participatory nature of the council process can moderate unequal voting representation on a specific council.*⁵¹⁵

Yet, having recognized this problem and declared the need for and importance of full participation of those affected by these decisions, where in the recommendations might one find these sorts of concerns reflected in the ITQ plan as proposed? To look for kinship, participatory involvement, or a proposal for regional councils to be more balanced in their representation would be in vain: *none* of these ‘social’ issues show up in the NRC recommendations.

Some other papers not discussed or cited in *Sharing the Fish* add further insight to the case for community-based co-management systems. For example, Bonnie J. McCay identifies ITQs as an acceleration of ocean *enclosures*, started with the division of coastal waters into 200-mile EEZs and, now, “further privatization, to the level of firms and individuals” through ITQs. She also expresses concern that privatization displaces co-management and diverse community-based options by posing a false dichotomy of ‘market’ vs. ‘government’ fisheries management:

*ITQs and co-management are based on very different theoretical perspectives. ITQs come from neo-classical economic theory; co-management reflects a call for more democratic decision-making and a more anthropological theory that recognizes the embeddedness of economic activity and questions the innate wisdom of market-based regulatory forces. ITQs derive from an analysis of ‘the commons’ as a simplistic, open-access situation where the only sources of regulation are either external, wise and scientifically informed government, or the market. Arguments for co-management are fueled in part by a recognition of ‘the commons’ as highly variable social institutions, some of which have prevented overexploitation and excessive investments of labour or capital. ...*⁵¹⁶

Other forms of co-management, mixing private and social elements, may become preempted by ITQ systems, such as that proposed by Townsend and Pooley that “introduces a dramatically different management regime that would create ownership rights in a private management corporation for the current limited-entry permit holders.”⁵¹⁷

Parzival Copes also includes an overview of local community-based co-management systems of fishery management at the end of his 1997 Address to the World Forum of Fish Harvesters and Fishworkers, speaking of “coastal community networks on both the East and West coast [of Canada],” a similar “National Association of Small Boat Owners” in Iceland, and a growing array of fisheries co-management systems⁵¹⁸ “in quite different contexts, across a spectrum ranging from *inclusive* to *exclusive* representation.” Among those specifically mentioned in this regard are

⁵¹⁵ *Ibid.*, p. 190.

⁵¹⁶ Bonnie J. McCay, “Social and Ecological Implications of ITQs: An Overview” (*Ocean and Coastal Management*, 28, 1995), pp. 3-22. Although this particular paper was not cited in *Sharing the Fish*, many other of McCay’s writings were.

⁵¹⁷ Ralph E. Townsend and Samuel G. Pooley, “Corporate Management of the Northwestern Hawaiian Islands Lobster Fishery” (*Ocean and Coastal Management*, 28:1-3, 1995), pp. 63-83.

⁵¹⁸ Copes cites E. Pinkerton, *Co-operative Management of Local Fisheries: New Directions for Improved Management and Community Development* (Vancouver: University of British Columbia Press, 1989) as his source in this connection.

regimes of “customary marine tenure” including a “territorial use right in fisheries” (TURF); community development quota (CDQ) programs such as successfully used in Alaska, and other untried options yet to be developed.⁵¹⁹ The claim that ‘small-boat fisheries are inefficient’ – the mantra chanted by ITQ advocates – simply has not been proven, if fully-internalized long-term costs are accounted along with their local employment advantages and their generalized social benefit to local fishing communities.

So why are community interests so ill-served by an ITQ plan? In part, the emphasis on *economic efficiency* over equity and ecology is to blame, in the priorities of the panel, which is attributed to its selective focus on ‘neoclassical’ over ‘systems’ approaches *in economics* at the expense of other, more encompassing social scientific concerns. People like Daniel Pauly, not cited in *Sharing the Fish*, take a larger view of ITQs as a ‘paradigm shift’ to a novel ‘meme.’⁵²⁰ Pauly argues that...

*... fisheries management ... will have to return in many cases to ancient modes of allocating fisheries resources to local communities, rooted in physical places. The trend is going somewhere else, toward privatization of fisheries resources through Individual Transferable Quotas (ITQs) ... and there are also attempts to privatize the research scientists and the detailed assessment work that these instruments require.*⁵²¹ *However, this trend will crest when it is realized that, while eminently compatible with the acquisitive mood of our times, self interested exploitation schemes do not resolve, any more than the open-access schemes they might replace, the basic discrepancy between human and natural time-scales.*⁵²²

Another writer on this subject, Anthony Davis – also not cited in *Sharing the Fish* – after noting the “panacea status” of ITQs for some people, turns to “what a social research perspective has to offer to the understanding of fishing and fisheries management including ITQs.”⁵²³

To most social scientists, human communities and settings embody and are defined by social structures, forms of social and economic organization, social differentiatedness and diversities, and patterns of interactions that are elemental to even the most preliminary descriptions and analyses. ... [An] elemental concern [is] with the relation between social organization and issues such as social justice and distributional equity.

... From a social research perspective, management concern for phenomena such as marine ecology, biomasses, sustainable yield, resource biology, fishing effort and capacity are of little interest other than being means through which the goals of equity and social justice can be pursued. The relevance and meaning of management begins and ends with its impact

⁵¹⁹ Copes, *Op. Cit.* (note 18 on page 2 above), pp. 14-16.

⁵²⁰ Cf. Daniel Pauly, “ITQ: The Assumption Behind the Meme” (Points of View, *Reviews in Fish Biology and Fisheries*, 6, 1996), pp. 109-12. The “Abstract” of this paper remarks that ITQs...

...could be described by Thomas Kuhn’s concept of a ‘paradigm shift’ had it not been so overused as to end up drained of meaning. ITQs ... invite in any case a different, evolutionary kind of metaphor, ... one of Richard Dawkins’ ‘memes,’ an idea competing with other ideas for our attention and space in our brains. ...

In this regard, also cf. Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 2nd ed. (Chicago: University of Chicago Press, 1970) and Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976), esp. ch. 11, pp. 201-15.

⁵²¹ Here Pauly refers to John H. Annala, “New Zealand’s ITQ System: Have the First Eight Years Been a Success or a Failure?” (*Reviews in Fish Biology and Fisheries*, 6, 1996), pp. 43-62.

⁵²² Daniel Pauly, “Putting Fisheries Management Back in Places” (Points of View, *Reviews in Fish Biology and Fisheries*, 7, 1997), pp. 125-27.

⁵²³ Davis, *Op. Cit.* (note 460 on page 2 above), p. 97.

*upon the human condition. ... On many, if not all of the aforementioned concerns, ITQs come up short in both practice and principle.*⁵²⁴

Davis then reviews and challenges “several assumptions regarding human economic behavior” underlying the ITQ approach, and calls attention to an important distinction between the accumulation motives of “industrial fishing” and the notion of “livelihood harvesting,” and the vast scale, social, and motivational gulf between them. On this ground, Davis states an important defect of ITQs, shifting the tables a bit on ITQ advocates’ standard contentions:

The economic rationality of industrial fishing is resource extraction for the purpose of wealth accumulation as expressed in measures such as returns on investment, share values and dividends. Livelihood fisheries in contrast are organized around the goals of satisfying social and economic requirements of life within family and community settings. Much evidence shows that the industrial accumulation fishery has behaved in the manner predicted by the theory of common property while the livelihood sector is shown as much more likely to express a more co-operative orientation by means of local access and participation rules. The former fishery contains the highest levels of capital investment and corporate concentration while the latter contains the most people and the great majority of fishing communities.

*Yet the ITQ approach assumes that, for all intents and purposes, harvesters and their fishing practices are essentially one and the same in behavior, fishing practices, investment decisions and sorry outcomes. Many social science research findings contradict these assumptions and raise fundamental and critical challenges to the economic analyses, management systems and policy initiatives that arise from them.*⁵²⁵

Davis asks the question why, “if the evidence indicates that the industrial accumulation sector is most expressive of rapacious ecologically damaging harvesting behaviour, is it not reasonable that management initiatives ... should focus on curtailing this sector rather than thumping the livelihood sector...?” Davis states that “descriptions of ITQ policy formulation and distributions ... do little else but supply further evidence in support of this conclusion” by tracing “social disruptions and labor displacements,” consolidation of economic power and ecologically wasteful behavior to ITQ systems.⁵²⁶

*These developments are interpreted by many social researchers as significant transgressions of social justice and equity within democratic society. Management systems such as ITQs treat a public resource as alienable and to be provided virtually free of charge for the exclusive benefit of a specific interest group... Even the supposed premise of fostering an ecologically sustainable fishery is compromised by investing control over the resource in the hands of the very fishing sector most closely associated with overfishing.*⁵²⁷

These social and ethical issues are (curiously) acknowledged, discussed, and then ignored by the NRC panel, as if that were all one must do in an analytical ‘literature review.’ If *Sharing the Fish* only involved an ‘academic game’ of intellectual entertainment, this sort of facile evasion might be

⁵²⁴ *Ibid.*, p. 99.

⁵²⁵ *Ibid.*, p. 101.

⁵²⁶ *Ibid.*, p. 103.

⁵²⁷ *Ibid.*, p. 105. Also cf. two other papers by Davis: “Social Research and Alternative Approaches to Fisheries Management: An Introductory Comment” and, with Connor Bailey, “Common in Custom, Uncommon in Advantage: Common Property, Local Elites, and Alternative Approaches to Fisheries Management,” (*Society and Natural Resources*, 9, 1996), pp. 233-35 and 251-65, respectively.

acceptable or – at least – understandable. When “national policy” is at stake, along with the vital livelihoods of fishing communities surely affected by an adoption of ITQs, sidestepping issues of such importance surely is irresponsible, unless such questions are really addressed and dismissed on rational grounds. Simply *accepting* – and then ignoring – them makes a mockery of the review in its scientific credibility, opening questions about its sincerity. Any analysis should do more than nod to other realistic conceptions, and *deal with them* or, at the least, afford them proper and due attention.

Narrow views – selectively tuned to issues specified as significant at the expense of everything else seen as epiphenomena – ought to be open to other approaches in their ramifications as well, or they also run a risk of being *blinded* to what they exclude thereby, which may indeed be important. This is why an openminded discussion of *framing questions and tradeoffs* is so vital in making decisions on “national policy” issues. Single outlooks should be tested against diverse analytical frameworks, so to reduce the unavoidable risk of focal exclusion due to a use of *any* theoretical lens selecting ‘given’ essentials (so restricting attention to only a subset of other related concerns).

Such implies an *epistemological* case for openmindedness, and the chief failure of *Sharing the Fish* in its study of ITQs. ‘Systems’ and ‘social’ approaches should have been given priority over ‘neoclassical’ economics in the analysis, since they are far more relevant to the situation addressed. The fact that they were not even duly considered is fatal to the findings of the NRC panel, and its recommendations for ITQs.

However, *reality* ought to get ‘the last word’ in *theoretical* arguments over ‘framing’ questions and problems, since every analytical issue is subject to error, interpretation and judgments of ‘fitness’ in any actual application or implementation. Thus shall we offer another – albeit too brief and incomplete – examination of the *experience* with ITQs where they have been tried, with the same precautions stated in *Sharing the Fish*, that: “...The committee was unable to analyze the full set of costs and benefits of any U.S. IFQ program because of the unavailability of the necessary information.”⁵²⁸ The implication is that their review of ITQs in Canada, New Zealand and Iceland are fully informed and objective, in contrast to the more recent experiments with ITQs in the United States. So that is where we turn next, to the *evidence* on ITQs.

F. Does *Sharing the Fish* Offer a Full and Objective Analysis of ITQ Experience?

Sharing the Fish – in the body of its report – provides support for recommending ITQs as “national policy” to the Department of Commerce and the U.S. Congress. In the case of Iceland, however, *Appendix G* offers substantive validation of the full array of concerns stated above. In New Zealand, the ITQ program has been more successful – with fewer problems – at least according to what is reported in the NRC study. Yet this may not be the whole story, or ‘the last word’ on New Zealand’s ITQ system and its real impact on fisheries stocks and their exploitation. As said above, the U.S. experience is so limited and unresearched, that there is less to say about its still-incipient tradeoffs and outcomes.

Support for a ‘systems’ interpretation, over a ‘neoclassical’ view, of ITQs shall nevertheless emerge from any objective analysis of ITQ experience. We start with what is already known about the U.S. ITQ programs in Alaska and along the Mid-Atlantic Coast. Then we proceed to examine the programs in Canada, New Zealand and Iceland, after which we summarize our findings and state conclusions.

⁵²⁸ *Sharing the Fish*, p. 8; the point is also restated on the first page, p. 366, of *Appendix H* therein.

The discussion of U.S. and foreign experience with ITQs shall focus on the issues outlined above (from mostly a theoretical aspect), but now *the facts* shall be examined with regard to these concerns. In this manner, a test can be done of various analytical frameworks with their differing interpretations of likely effects. Each of these situations shall be addressed in the following way: (a) a brief history of the program; followed by discussions of (b) conservation and stewardship issues, (c) the ‘private property rights’ situation, (d) economic and community effects, ending with (e) a statement of general conclusions. Here, the issue of how the experience with ITQs is reported in *Sharing the Fish* shall also be addressed with regard to each situation.

1. *The U.S. ITQ Experience: The Alaska Sablefish and Halibut Fisheries*

(a) *A Brief History of the Alaska ITQ Fisheries Management Program*

According to *Sharing the Fish*,⁵²⁹ the first development of this fishery followed the transcontinental railroads in the late 1880s. In 1923, a Halibut Treaty between the United States and Canada established the International Pacific Halibut Commission (IPHC) to oversee the resource. Under the 1976 M-S Act, the North Pacific Fishery Management Council (NPFMC) was established to manage the U.S. fisheries in that area. Access to each country’s waters by the other’s commercial fishermen was closed in 1978.

Both Pacific halibut and sablefish are considered long-lived demersal species in decline:

*The problems and issues that led to consideration of an IFQ program were allocation conflicts, gear conflicts, ghost fishing due to lost gear, bycatch loss in other fisheries, discard mortality, excess harvesting capacity, product quality as reflected in low real prices, safety, economic stability in the fishery and communities, and the development of a rural, coastal, community-based, small-boat fishery. The most striking evidence of some of these problems was the extremely short annual season for halibut, which averaged two to three days per year from 1980 to 1994 in the management areas responsible for the majority of catches.*⁵³⁰

The explicit objectives of the ITQ program were to limit access and thereby the ‘race for fish’ and overcapacity in the industry. ITQs were seen as *solving the problem*, and not just ‘treating its symptoms’ by use of more traditional measures.

ITQs were offered by region based on actual landings of fish during the latter half of the 1980s, with limits on both accumulation and transferability. TACs are set by the IPHC for halibut and by the NPFMC for sablefish, with monitoring and enforcement duties assumed by the NMFS and administered through its Alaska Restricted Access Management (RAM) Division, for which a cost recovery program is currently under development. The ITQ program was started in 1995; its outcomes, as described in *Sharing the Fish*, are as follows.

(b) *Conservation and Stewardship Issues and the Precautionary Approach*

The waste that preceded the introduction of ITQs in Alaska waters – at least with regard to halibut – has been estimated at over 1400 metric tons in 1994 alone. ITQs are uncertainly credited with reducing this waste in 1995 to less than 300 metric tons, or an 80 percent decrease, if true:

⁵²⁹ Much of the following information was drawn from *Sharing the Fish*, pp. 70-77 and 298-317 (in *Appendix G*).

⁵³⁰ *Sharing the Fish*, pp. 71-72. It is also worth noting that “the development of a rural, coastal, community-based, small-boat fishery” is identified as a “problem” by the NRC panel...!

*The IPHC estimates that halibut fishing mortality from lost and abandoned gear decreased from 554.1 metric tons in 1994 to 125.9 metric tons in 1995. The discard of halibut bycatch is estimated to have dropped from 860 metric tons in 1994 to 150 metric tons in 1995. However, there is considerable uncertainty surrounding these estimates.*⁵³¹

Yet there was no apparent change in sablefish bycatch levels, although TACs have not been exceeded as often with “no evidence of significant underreporting of catches” for either of these two species, but one fisherman was successfully convicted of falsifying data and exceeding his quota share. The estimated biomass of both species has been declining, and a precautionary approach should dictate TACs set below “the allowable biological catch (ABC),” especially for sablefish, as a “buffer ... based on the stock status and the quality of information available” for a particular fishery.⁵³²

Anecdotal evidence of highgrading is dismissed in *Sharing the Fish* as “statistically” insignificant if it occurs, undocumented and probably “not widespread.”⁵³³ There is also anecdotal evidence of fishermen “bypassing traditional processors and marketing directly to wholesalers and retailers” but this has not been carefully documented in terms of fresh vs. frozen product and its availability. Although the season has been extended from 5 to 245 days in length, there is no way to estimate “how costs and revenues have been affected” by this change, although the elimination of ‘derby fishing’ is a major advance.. Indeed, “due to lack of studies and data it is not possible to quantify the net economic impact of the IFQ programs.”⁵³⁴ *Sharing the Fish* also acknowledges that the Community Development Quota (CDQ) program also ought to place more emphasis on “environmental stewardship” than “strictly financial evaluations of success.”⁵³⁵ The ITQ program also only applies to longline and pot gear fisheries in Alaska and federal waters, but not to sablefish in state waters or to any trawl fisheries.⁵³⁶

What *Sharing the Fish* ignores, in its single passing mention of the limitation in an Appendix, is that trawler bycatch and discard rates shall far exceed those of any other vessel class or industry method.

*In 1994, 47 factory trawlers ... discarded, dead and dying, a record high of more than 580 million pounds of groundfish, salmon, herring, crab and other species.*⁵³⁷ *This was more than three times the combined bycatch (170 million pounds) of the more than 2000 other boats that fished groundfish that year. In addition to bycatch, as much as 70% (by weight) of the target catch is discharged overboard as offal, or processing waste.*⁵³⁸

This level of bycatch also affects the halibut TAC, pound-for-pound, without compensation to the chief victims of this waste. As Stump and Batker explain:

⁵³¹ *Ibid.*, pp. 74-75.

⁵³² *Ibid.*, Appendix G, p. 302.

⁵³³ *Ibid.*, p. 75.

⁵³⁴ *Ibid.*

⁵³⁵ *Ibid.*, p. 127.

⁵³⁶ *Ibid.*, Appendix G, p. 308.

⁵³⁷ According to a 1995 report from the Alaska Fish and Game Department, as reported by Stump and Batker in *Sinking Fast* (cf. note 29 on page 2 above for reference), p. 28.

⁵³⁸ L. E. Queirolo et al., “Bycatch, Utilization, and Discards in the Commercial Groundfish Fisheries of the Gulf of Alaska, Eastern Bering Sea and Alaskan Islands” (Washington, DC: NOAA, NMFS, November 1995), as reported in Stump and Batker, *Op. Cit.* (cf. note 537 above), p. 28.

In the Bering Sea, factory trawlers caught 60% of the total harvest and accounted for 80% of total discards. Discarded species included 188.5 million pounds of pollock [the target species] which were too small or otherwise commercially undesirable, and prohibited species such as halibut (8 million pounds). For every pound of halibut dumped by a factory trawler [at least when recorded, one must surmise], one pound is deducted from the total allowable catch for commercial halibut fishermen. Halibut fishermen lose catch and income as a result, yet the owners of the factory fleet pay no compensation to halibut fishermen. The International Pacific Halibut Commission (IPHC) has recommended a 10% per year reduction in bycatch as a way to reduce mortality of declining stocks, but the NPFMC is considered unlikely to approve such a goal if it entails lowering groundfish quotas. ...⁵³⁹

Indeed, as said already, it may be the *politics* of fisheries management that determines the ineffectiveness of an IFQ system (at least, in nontransferable INQ forms). In a recent summary judgment decision against the NMFS in Alaska, the court ruled that the management measures supported by the NMFS were “arbitrary and capricious” due to a failure to explain, justify or even “articulate a rational connection between the facts found and the choices made regarding the ‘reasonable and prudent alternatives’ (RPAs)” suggested by the NMFS.⁵⁴⁰

Furthermore, research has been done more recently in a survey of Alaska halibut fishermen by Gunnar Knapp of the Institute of Social and Economic Research at the University of Alaska Anchorage, on resource conservation effects, safety and discards in this fishery. However, the findings seem biased by “respondents’ overall attitudes towards IFQ management” in terms of their own *financial improvement*; thus the results should be accepted with caution due to this slant.

The abject failure of previous systems of fishery management – as the *benchmark* against which ITQs are judged in this study – also should not be forgotten.⁵⁴¹ In any event, the findings are of interest to our review. In terms of “conservation effects”:

The majority of halibut fishermen believe that IFQ management is better for conservation of the halibut resource than the earlier open-access system. More than half ... answered “better” ... About one-quarter responded “about the same,” while about 10% answered “worse.”

[Because] ... responses ... were ... biased in part by respondents’ overall attitudes towards IFQ management. ... it is difficult to draw definitive conclusions ... about fishermen’s actual perceptions of effects on resource conservation. ...

The most frequently cited reason offered as to why IFQ management is “better” for conservation was a reduction in gear loss. Other reasons included better control by managers, spreading out of fishing over a greater area and a longer season, and better treatment of fish. The most frequently cited reason offered as to why IFQ management is “worse” for conservation was highgrading.⁵⁴²

On “unreported discards,” where responses show the same bias with regard to the financial outcome for the respondent due to the ITQ program, “the survey results suggest that unreported

⁵³⁹ Footnote citation omitted in Stump and Batker, *Op. Cit.* (cf. note 537 above), pp. 28-29.

⁵⁴⁰ Court Order, U.S. District Court, Western District of Washington at Seattle, in *Greenpeace et al. v. NMFS et al.*, 8 July 1999, pp. 26, 29.

⁵⁴¹ Cf., for example, the source cited in note 558 on page 2 below on this point.

⁵⁴² Gunnar Knapp, “Effects of IFQ Management on Resource Conservation: Survey Responses of Alaska Halibut Fishermen” (Anchorage: University of Alaska, Institute of Social and Economic Research, May 1999), “Summary.”

discards are neither insignificant nor a large-scale problem under IFQ management of the Alaska halibut fishery.” The comments reported in this study indicate trawler bycatch and discards are far more significant than whatever is done by long-lining vessels, although many others attest to the prevalence of highgrading as a motive for unreported discards in the long-lining fleet as well, though people tend not to admit it.⁵⁴³ On “safety” issues, mostly due to longer seasons and therewith more choice about *when* to fish, “the great majority of halibut fishermen believe IFQs have made fishing for halibut safer.”⁵⁴⁴

More recently, the Marine Fish Conservation Network – in a harsh critique of the fisheries management process called “Missing the Boat” – reported that “nearly three years after its passage, the bright promise of the SFA (Sustainable Fisheries Act) is in danger of being lost” because of the NMFS’s failure fully to implement its specific provisions. For example:

*On overfishing, the ... [NPFMC] did not use one of the two necessary criteria for determining whether groundfish stocks are overfished. The essential fish habitat (EFH) amendments for all five [of its improved overfishing and essential habitat plans] stopped short of adequately analyzing threats to EFH and identifying ways to protect habitat, especially habitat areas of particular concern. ... [Furthermore,] The North Pacific Council approved amendments to its groundfish plans that accomplished only half of the overfishing objectives of the SFA. While the amendments improved the plans’ overfishing definitions by insuring that MSY was treated as a limit, not a target, they failed to include minimum stock size thresholds as criteria for determining the status of the groundfish stocks of the Bering Sea and the Gulf of Alaska. ... As a result, the council treated the requirement for minimum stock size thresholds as simply a discretionary option of the National Standard Guidelines, not a requirement.*⁵⁴⁵

Without a proper research and management effort by the NMFS, either directly through oversight or by its regional councils, no effective control of fisheries – under ITQs or traditional means – can be expected. The process should be de-politicized and NMFS relocated into the Department of the Interior, as Carl Safina suggests.⁵⁴⁶

(c) *The ‘Private Property Rights’ Situation*

Sharing the Fish indicates that “the quota share market has been active” for Alaska ITQs, and has “led to some consolidation,” with a rapid decline in small quota holders. “There is anecdotal evidence that fishermen have reduced crew size and that quota shareholders are crewing for each other.”⁵⁴⁷ But there is so little data on these shifts, or from prior regimes, such impressions are very hard to test or rely on with any confidence.

Quota shares were ‘gifted’ on the basis of an average catch from a vessel’s five best years between 1984-90 for halibut and 1985-90 for sablefish. Interestingly: “The council’s decision to

⁵⁴³ Gunnar Knapp, “Unreported Discards Under IFQ Management: Survey Responses of Alaska Halibut Fishermen,” *Loc. Cit.* (cf. note 542 above), “Summary” and pp. 6-12 for reported comments. On trawler bycatch and discards, also cf. the text accompanying notes 538 and 539 above, starting on page 2.

⁵⁴⁴ Gunnar Knapp, “Safety Under IFQ Management: Survey Responses of Alaska Halibut Fishermen,” *Loc. Cit.* (cf. note 542 above), “Summary.”

⁵⁴⁵ Marine Fish Conservation Network, “Missing the Boat: An Evaluation of Fishery Management Council Response to the Sustainable Fisheries Act” (Washington, DC: MFCN, January 1999). It should be noted that setting a TAC on the basis of MSY is *not* in any way a “precautionary” approach to fisheries management.

⁵⁴⁶ Cf. note 28 on page 2 above.

⁵⁴⁷ *Sharing the Fish*, p. 76.

allocate [quota shares] QS to 5,484 halibut fishermen and 1,094 sablefish fishermen represented 141% and 155% increases, respectively, over the maximum number of participants in any single qualifying year (3,833 for halibut and 706 for sablefish).⁵⁴⁸ Despite some limits on transferability and accumulation,⁵⁴⁹ QS transfers have led to an overall increase in size of vessels owning quotas through “some consolidation” of shares.⁵⁵⁰

What *Sharing the Fish* does not discuss is that several banks and lending institutions in Alaska do accept halibut and sablefish ITQs as collateral, but not at their full value (which is also hard to establish due to the lack of a central lien registry system). Among those banks are the National Bank of Alaska and the Alaska Commercial Fisheries and Agriculture Bank in western Alaska. Another concern that has been discussed – given the substantial capital value required for ITQ access to the Alaskan sablefish and halibut fisheries, which can range up to \$500 million or more – has been the potential success of a ‘takings’ claim in response to any attempt at ITQ revocation or even to conservation restrictions.

*Ultimately, only Congress, as interpreted by the courts, can determine whether ITQ quota shares (or the opportunity to fish in an open-access fishery) convey a right in perpetuity to the owner. However, the chances of a successful takings claim based on revocation of an ITQ are remote, since the Federal Government explicitly reserves the right to revoke ITQs or terminate the program.*⁵⁵¹

But the ITQ system in these two Alaskan fisheries is so new, there has not yet been time for legal moves to establish property rights. So not much more can be said on this subject with regard to ITQ claims, at least to date and thus far.

(d) Economic and Community Effects

Small-scale fishing industry efforts have been squeezed by this system, and consolidation has occurred (which *Sharing the Fish* interprets as a benign increase in efficiency). Regional/local effects are largely unknown, due in part to an absence of fishing information from periods prior to ITQs. Some dissatisfaction is reported with the fairness of the initial allocation of quotas and their community impact, along with the competition between recreational and commercial fisheries.

As reported in *Sharing the Fish*, Alaska’s Community Development Quota (CDQ) program (started in 1992) helps to protect the native fisheries from being squeezed into unemployment by ITQ accumulation. “The goal of CDQs is to ensure that coastal communities receive a share of fishery benefits,”⁵⁵² with a requirement that the proceeds of the program “be used to enhance fishery-based economic activities.”⁵⁵³ There has been some dissatisfaction with this CDQ program, in terms of both its communication with the local communities as well as its exclusion of certain parties to the advantage of others. *Sharing the Fish* discounts such concerns: “This conflict is inevitable, given that the CDQ program ... specifically defines those to be included and cannot help

⁵⁴⁸ *Ibid.*, p. 309.

⁵⁴⁹ *Ibid.*, p. 310.

⁵⁵⁰ *Ibid.*, p. 315.

⁵⁵¹ Eugene H. Buck, “Individual Transferable Quotas in Fishery Management” (Washington: Congressional Research Service Report, updated September 25, 1995).

⁵⁵² *Sharing the Fish*, p. 124.

⁵⁵³ *Ibid.*, p. 125.

but exclude others.”⁵⁵⁴ The NRC panel also acknowledges that its “CRIFQ did not have an opportunity to discuss the findings and recommendations of the [NRC’s] CDQ report.”⁵⁵⁵

There seems to be some controversy over community effects of the Alaska ITQ program. An interesting exchange on “Fishfolk” between Robert Mikol and Phil Smith of NMFS shows strong contentions on both sides of the question. Mikol reports his personal experience that the ITQ program in Alaska “has put many (very many) people out of work. The effects went beyond fishermen and their families and into the communities.” Smith responds that these effects have “not been demonstrated by empirical research,” and also denies the “conservation problems” (specifically highgrading) indicated by Mikol.⁵⁵⁶ Ben-Yami has also reported on information supporting the view that communities have been adversely affected by ITQs in Alaska, although its causes have been contested.⁵⁵⁷

(e) *General Conclusions and Inferences from Alaska’s ITQ Program*

Any evaluation of the Alaskan ITQ program is hampered both by informational limits and its short four-year duration (ITQs started in 1995). Furthermore, the previous situation appears to have been so out of control that comparisons of ITQs with the past tell little about the present, if not ‘condemning it with faint praise’! The purported merits of ITQ systems should be tested through a comparison with *the best available options*, such as properly-structured community-based limited entry systems and not against the mistakes of the past.⁵⁵⁸ To any full-time fisherman, for example, it is hard to imagine anything worse than a 2-3 day season (of fishing derbies regardless of weather), and Knapp’s survey responses certainly seem to support that impression.

There has been a reduction in gear loss – due to the end of fishing derbies – but highgrading and discards seem to continue (although the survey is hard to interpret, as some may not admit the truth except about ‘other’ participants). So we hesitate to infer too much from Alaska’s experience, since so little is known and not enough time has passed to perform a full and proper evaluation of ITQs there. The Mid-Atlantic ITQ plan has existed a few years longer, so has some additional lessons.

2. *The U.S. Atlantic Coastal SCOQ, Wreckfish and Spiny Lobster Fisheries*

(a) *A Brief History of the U.S. Atlantic Coastal ITQ Systems*

*The Mid-Atlantic SCOQ Fisheries.*⁵⁵⁹ The Mid-Atlantic surf clam and ocean quahog (SCOQ) fisheries were the first to be managed under the M-S Act with an ITQ program, which was started in 1990. Before that, traditional regulations – size limits, annual and quarterly quotas and time restrictions – were used, and a ‘race for fish’ and other problems led to depletion of stocks. As early as 1980, a trend toward the concentration of market power in the processing sector led to the dominance of a few large vertically-integrated firms over this resource. A 1977 moratorium on new

⁵⁵⁴ *Ibid.*, p. 126.

⁵⁵⁵ *Ibid.*, p. 127.

⁵⁵⁶ From Dave Crestin, “Fishfolk” (an internet fisheries discussion site, 19 March 1997).

⁵⁵⁷ Menakem Ben-Yami, “Fishfolk” (29 September 1997); also cf. his column called “ITQ: Whose Side Are You On?” (*World Fishing*, January 1998).

⁵⁵⁸ Cf. Parzival Copes, “Alternatives in Fisheries Management” in J. Boncoeur and J-P Boude, eds., *Proceedings of the Ninth Annual Conference of the European Association of Fisheries Economists* (Keynote address presented at Quimper, France, in April 1997, published by the Center of Law and Economics of the Sea, University of Western Brittany, in Brest and the Fisheries Science Laboratory of the National Advanced School of Agronomy of Rennes), pp. 10-35.

⁵⁵⁹ *Sharing the Fish*, pp. 60-66.

entrants to the fishery – which was considered successful – ended with the 1990 inception of the ITQ plan.

The ITQ system has two components: *quota shares* based on percentage of TACs; and *allocation permits* with cage tags, each of which are restricted. A minimum ITQ share of 5 cage tags was set; there is no maximum limit. The initial allocation was ‘gifted’ through an array of complex formulae based on historic catches and costs, and each year the Mid-Atlantic Fisheries Management Council (MAFMC) recommends specific TACs for each of these species, purportedly at ‘sustainable’ levels over 10 years for surf clams and 30 years for ocean quahogs.

Sharing the Fish reports that TACs have not been exceeded since 1990; the number of vessels and jobs in both fisheries has declined dramatically as a result of the ITQ program. The NRC panel also reports an increase in economic efficiency as a result of declining capacity, with exiting quota share recipients leasing to larger firms. No research was done on community impacts, according to *Sharing the Fish*, and though improved safety was a goal of the ITQ system, ocean clamming continues to be an extremely hazardous occupation. Enforcement of the ITQ system has been a problem because of record keeping and other issues.

*South Atlantic Wreckfish Fishery.*⁵⁶⁰ The South Atlantic wreckfish fishery shifted to an ITQ management plan in 1992 from more traditional limits. Little is known about the biology of this offshore species; the ITQ system was introduced to control a rapid rise in the catch between 1987 and 1991 from 14.5 to 200 tons by 2 rising to 80 vessels! ITQ initial endowments were restricted to those who landed more than 2.5 tons of wreckfish in 1989 or 1990, and based in part on landings between 1987 and 1990, with no single owner receiving more than a 10 percent share of the rights. No parallel limit exists on accumulation of ITQ shares. Due to low market prices for wreckfish, TACs have been underharvested⁵⁶¹ and the number of ITQ shareholders has fallen in this fishery, along with vessel activity. The impact on fishing communities – says *Sharing the Fish* – “is difficult to discern.”⁵⁶²

Florida Spiny Lobster Fishery. The Florida spiny lobster fishery – a trap fishery in the Florida Keys – suffered from population increases sufficiently that ITQs were introduced to control the harvest in 1992. By 1996, the number of traps had declined to about half of their original level, though the catch has not been reduced. The recreational lobster fishermen have exited the industry, and the cost of individual trap certificates has sharply risen from \$.50-10.00 to about \$50-70, in response to trap reductions, significantly raising the cost of entry into this fishery. Enforcement is seen as inadequate.

(b) *Conservation and Stewardship Issues and the Precautionary Approach*

The non-fugitive features of both the SCOQ and lobster fisheries seem more amenable to ITQ management than for wreckfish and other fugitive species. SCOQ grow slowly, with long supply horizons in the TAC-setting process. The population dynamics of these species are not well understood, with a few large year classes supporting overall stocks. The original fisheries

⁵⁶⁰ *Ibid.*, pp. 66-70.

⁵⁶¹ *Sharing the Fish*, p. 110, has no explanation for this mysterious shortfall, leading to speculation that data fouling or ‘contrived scarcity’ may be at play here as well: “In the wreckfish IFQ program, the TAC has been so substantially underfished that some other factor must be operating. For example, wreckfish fishermen may be maximizing their profit by limiting the supply of wreckfish sold to certain amounts or certain times of the year.”

⁵⁶² *Ibid.*, p. 69.

management plan (FMP) was seen as inflexible and there were allegations of rampant cheating. Overcapitalization and excess capacity were a motive for ITQs, although concern over market power abuse by vertically-integrated processors was also expressed throughout the planning process. Annual TACs, in theory, aim to meld conservationist with economic concerns, such that biological and short-term market demands are met.

“TACs have not been exceeded during the ITQ period,” according to *Sharing the Fish*, and are based on optimum yield (OY), with minimum size restrictions suspended for this species, since populations are still large-sized overall (and these are also more eagerly sought, due to higher profitability).⁵⁶³ *Sharing the Fish* credits ITQs with ending the ‘race for fish,’ though “little is known about bycatch” or the impact of dredging on clam populations or other species.⁵⁶⁴ Fewer vessels and trips catching more fish are interpreted as increased economic efficiency in this sector, due to ITQs. Smaller participants either have sold or leased their ITQ shares to active vessels or firms in this process.

The SCOQ ITQ program has been plagued by enforcement problems, since officials were few with poor implementation of information procedures or monitoring goals. Current concerns are focused on the security of the ITQ program, lack of adequate stock assessments and market supply and demand data, enforcement of fishery rules, and concentration of economic control over the industry by a few firms. As a result, the impact of ITQs on conservation and stewardship cannot be clearly established at the present time. Indeed, as *Sharing the Fish* reports at the very end of its study: “The SCOQ and wreckfish IFQ programs collect very few of the data necessary for a thorough analysis of net economic benefits and costs.”⁵⁶⁵

Curiously, and unmentioned in *Sharing the Fish*, in 1992 a study was done of the SCOQ industry by a group of NMFS employees under the supervision of Regional Director Richard Roe. All notes and drafts prepared during this study were subsequently ordered destroyed, on February 27, 1992, at the time that the Final Report of the SCOQ Review Committee was completed.⁵⁶⁶ According to a letter written to “Mr. Rolland A. Schmitt, Assistant Administrator for Fisheries, NOAA” by James D. O’Malley, Executive Director of the East Coast Fisheries Federation, Inc. on June 6, 1994:

Among the concerns raised in the notes and reports were the possibilities of price-fixing, collusion, suppression of supply, concentration and monopolistic control of the industry, disguised ownership of quotas, foreign ownership of the resource, inadequate enforcement and resource protection, the loss of hundreds of jobs, and that the remaining jobs for crewmembers paid substantially less than their previous wages.

⁵⁶³ *Ibid.*, Appendix G, p. 291.

⁵⁶⁴ *Ibid.*, p. 292. But cf. Elmer Keen, “Re: Benefits from Ecosystem Management – A Summary” (Fishfolk, 21 April 1999), who suggests the complexity of the issue, and Peter Auster and Richard Langton, “The Effects of Fishing on Fish Habitat” (*American Fisheries Society Symposium*, 22, 1999), pp. 150-87, who find that fishing gear reduces habitat complexity, changes benthic community structure, and affects ecosystem processes. Others, of course, claim that dredging can improve productivity by stirring the bottom. Gösta H. Lovgren, a traditional surf clam fisherman with a history reaching back to the 1930s in New Jersey waters, says that when the dredge comes up, that “there is a LOT more than clams in it.” Cf. Lovgren, “The History of the Surf Clam Industry in New Jersey: Point Pleasant Beach” (Internet: <http://www.swedesdock.com/natfish.sht>, last revised on October 8, 1996).

⁵⁶⁵ *Ibid.*, Appendix H, p. 408.

⁵⁶⁶ Memorandum from “Ed. Macleod@FMO@FNER” dated “Thursday, February 27, 1992, 10:09:33 EST” indicating that “Dick Roe and Jon Rittgers ... have requested me to contact you to destroy any copies of previous drafts that may be in your computers or on hard copy as the copy that they accept as being final should be the only reference document...”

Furthermore, grave concerns regarding vessel safety were voiced to the Committee, alleging that vessels and lives had been placed in jeopardy as a direct result of the ITQ policy implemented in 1990.

These concerns were not made public. Instead, the members of the Committee were ordered to destroy all their research, notes and memoranda, and draft and final copies of their reports.

We will probably never learn the entire truth of the investigators' discoveries; like all final reports, the Surf Clam document is considerably muted, even sanitized. But it is important that the destruction of the notes and research become a matter of record. The very fact that the destruction was ordered is eloquent testimony that privatization has pitfalls dangerous and embarrassing enough to provoke that improper action.

I hope that all those who have an interest in the fisheries will realize that things went so far wrong that disclosure had to be prevented at all costs; and that a mindless, headlong rush into privatization is imprudent at best.⁵⁶⁷

Sharing the Fish notes in passing that: "After ITQs were implemented, a few buyer-processors gained dominance, and the processing sector has begun to move to southern New England." The point seems understated. McCay indicates that: "There were 135 licensed surf clam and ocean quahog boats in 1989; by 1992 only 73 were fishing, and by 1994 the number of active vessels had dropped to fewer than 50. ... Not surprisingly, employment ... fell by an estimated 1/3..."⁵⁶⁸ Buck put it even more strongly:

In the [SCOQ] ITQ program, large companies control a substantial portion of the quota shares.⁵⁶⁹ Borden, a major food company, had attained control of 40 percent of the quahog and 25 to 30 percent of the surf clam shares in 1990.⁵⁷⁰ Currently, National Westminster Bank of New Jersey and KPMG, an accounting firm, are the largest holders of ITQs in the [SCOQ] fishery.⁵⁷¹ Thus substantial consolidation was already in progress when the ITQ program was implemented for this fishery. However, control can [also] be exerted in open-access fisheries where a relatively few processors may determine the price offered to fishermen.⁵⁷²

Driven by shareholders and accountants, large international corporations in control of our ocean resources will not likely be administered or managed to protect, much less to 'maximize,' ecological or community values. And concentration of ownership has only increased under ITQs. "By 1995, nine firms owned 82 percent of the ITQ for surf clams, and ten firms owned about half of the ITQ

⁵⁶⁷ Letter, as described, by James D. O'Malley, East Coast Fisheries Federation, P. O. Box 649, Narragansett, RI 02882. Also cf. note 26 on page 2 above for a similar example of power abuse at the Department of the Interior. ("Trust no one?")

⁵⁶⁸ Bonnie J. McCay, "ITQs in Two Fisheries: A Brief Sketch" (Monterey, CA: International Conference on Ecosystem Management and Sustainable Marine Fisheries, February 1996).

⁵⁶⁹ Even prior to ITQs, this fishery was controlled by a handful of vertically integrated processors along with a few independents, some of which had very large fleets. Although vessel consolidation has occurred, the pattern of control is not markedly different from what it was before the ITQ program, except that almost all the original owner-operated boats are no longer fishing. A few new entrants have entered this fishery. [note from original]

⁵⁷⁰ Borden sold all its quota shares in this fishery in 1994. [note from original]

⁵⁷¹ Most of these shares are held as escrow or in lieu of collateral, and do not necessarily mean control is exercised by these entities. [note from original]

⁵⁷² Buck, *Op. Cit.* (note 551 on page 2 above).

for ocean quahogs.”⁵⁷³ But *Sharing the Fish* would call this ‘efficient’ (a beneficial exploitation of these firms’ ‘scale economies’). So let us examine one person’s story of how this power game works.

Gösta H. Lovgren outlines the history of the fishery as the canning and processing companies simply moved in and took it over: “...Canning companies ... didn’t put together fleets, but found it cheaper to put up their own shucking houses and buy whole clams from independent boats and/or surplus meat from each other.” They had a clever means to work down price to keep boats dependent:

Speaking of price control, let me tell you some of the ruses the companies used to keep control. I’ve used the term “bushel,” but that’s not really what the companies were talking about. A U.S. bushel is 1½ cubic feet and a U.S. bushel of clams weighs around 60 pounds (depending on the size of the clams). And that’s what the boats were getting paid for when they came to Point Pleasant in 1955. It didn’t take long ... one way is to drop the boat price per bushel. Another was to make the bushel bigger (they just neglected to tell the bureau of weights and measures). The way that was done was to increase the size of the funnel the deck hands used to pick the clams into. ... Pretty soon the funnels were getting bigger (“A mistake at the funnel factory, boys, just don’t fill them as full, it’ll work out the same.”) ... The next week, “Yield is down, boys, gotta fill those funnels up more.” The next week, “Jesus, boys, somebody out there is sending small bags, we’re gonna have to cut you 20-30 bags a boat.” Pretty soon the 60 lb. bushels got up to a pretty standard 90+ pounds. ...⁵⁷⁴

The point of all this – if still unclear – is that *market power abuse* is not ‘efficient,’ nor does it lead to ‘equity.’ (It also violates antitrust laws, in spirit if not in fact.) The institutionalists see this sort of concern as central to economics. Only in ‘neoclassical’ theory is it blithely ignored.

(c) *The ‘Private Property Rights’ Situation*

Beyond a mention of concern over what the ITQ moratorium means in terms of future rights and the “security” of ownership, there is no real discussion of ‘private property’ issues with respect to any of these Atlantic coast fisheries in *Sharing the Fish*. Share prices are not reported under the SCOQ ITQ plan, and wreckfish shares have not been actively traded or fished due to low market prices. No independent brokerage firms have appeared to serve this market. There is so little known about the ownership and the transfer of ITQ rights in these Atlantic coast fisheries, little more can be said on this subject, according to *Sharing the Fish*.⁵⁷⁵

However, Gifford tells a story about the initial ‘gifting’ of shares for SCOQ ITQs that is not told in *Sharing the Fish*. The initial endowments of quotas were based on total actual catches as reported for previous years, in which those who exceeded the legal limits were richly rewarded with greater shares. This practice showered the most dishonest boat owners with a windfall gain worth millions of dollars at the expense of taxpayers, honest participants, and the compensation to crews. Two individuals – now criminals serving time for smuggling drugs in their vessels – had earlier been convicted for repeated fisheries violations. Yet, through their ownership shares – based in part on these violations – they enjoyed dominant roles in both the surf clam fishery (with between 30 and 40

⁵⁷³ McCay, *Op. Cit.* (note 568 above).

⁵⁷⁴ Lovgren, *Op. Cit.* (note 564 on page 2 above).

⁵⁷⁵ *Sharing the Fish*, pp. 368 and 408.

percent of the total ITQ allocation) and the ocean quahog fishery (controlling 12 to 20 percent of the resource), as of late 1996. As Gifford describes it:

... With almost zero public debate, the federal government essentially privatized the surf-clam industry in 1990. At the stroke of a pen, the government made millionaires of [Barney] Truex and [Dick] Myers, and a few other big-time clam fishermen, by granting them private-property rights to what had been a public resource. ... And their asset keeps gaining value. The right to catch a bushel of clams sold for \$17 in 1991; recent bids of \$50 and more have found no takers. That means Myers' 500,000-bushel surf-clam allocation is worth close to \$25 million. Truex owns about 269,000 bushels of surf-clam allocation, worth roughly \$13 million. Every time a clam strip is fried, or a can of chowder opened, chances are that Myers and Truex profit, thanks to the blind beneficence of the National Marine Fisheries Service (NMFS).

As if that weren't troubling enough, it turns out that Myers and Truex were engaged in another, even more lucrative business than clams. Through a combination of incompetence and bad timing, the federal government bestowed this tremendous bonanza on two convicted drug smugglers. ...⁵⁷⁶

One is inevitably reminded of an argument already made about a socio-economic "Gresham's Law"⁵⁷⁷ of ethics, and the larger community impact of so rewarding *illegality*. If the 'race for fish' emanates from a *breakdown* in 'social' process, this sort of largesse only exacerbates the problem. Management systems supporting 'community' offer a better chance of success in a 'systems' setting.

(d) *Economic and Community Effects*

As *Sharing the Fish* acknowledges: "The SCOQ experience ... has led to greater attention to problems of excessive accumulation and concentration in industries under IFQs..."⁵⁷⁸ The concentration of market power is high in the SCOQ fishery; four vertically-integrated concerns share almost 60 percent of clam processing capacity, with three of those firms also enjoying consistent control over quahog capacity. As a result of ITQ ownership, permits to non-owning captains and crews have fallen due to this system along with their status and bargaining power.⁵⁷⁹ ITQs were promoted initially as a means to enhance safety, although the evidence shows no support for these effects.⁵⁸⁰ Indeed, the increase of financial pressure on captains and crews to earn an acceptable living in this sector may have led to *more risk-taking* and not less. The accident records show no improvement: the fishery is inherently dangerous.⁵⁸¹ However, there is more to this story than meets the eye in *Sharing the Fish*.

A tragic series of incidents over "a three-week period at the dawn of 1999" took eleven lives and four ocean clam vessels off the Atlantic coast. As a U.S. Coast Guard "Fishing Vessel Casualty

⁵⁷⁶ Bill Gifford, "A Shucking Fame" (*Philadelphia Magazine*, January 1997), p. 43. According to an earlier article by Gifford titled "Something Fishy in Washington" (*Harper's Magazine*, June 1996), p. 55, Myers' 1992 conviction was not just for a few joints in possession: he was caught "for smuggling 90,000 pounds of marijuana aboard his clam boat, the *Mary Jane*." And rumors abound that both he and Truex had been smuggling for a while, although the two have insisted that theirs were (separate) one-time deals...

⁵⁷⁷ Cf. note 410 on page 2 above.

⁵⁷⁸ *Sharing the Fish*, p. 33.

⁵⁷⁹ *Ibid.*, Appendix G, pp. 294-95.

⁵⁸⁰ *Ibid.*, p. 296.

⁵⁸¹ *Ibid.*, p. 286.

Task Force Report” put it, in March 1999: “This quick succession of casualties in one fishery, in a small geographic area, shocked the regional fishing community.” Among other concerns, the Coast Guard Task Force Report declared that: “Despite long-standing recognition of the serious hazards of commercial fishing, a long succession of proposed laws were not enacted. Federal safety initiatives have been dampened by tradeoffs with other programs, overriding policies, and legal limits.”⁵⁸²

In a Greenpeace statement expressing regret for this terrible loss, Niaz Dorry, head of the organization’s U.S. Oceans Campaign, drew an important connection to the incentives embedded in ITQs:

While Greenpeace generally supports several of the conclusions presented in the Task Force Report, we note the absence of one important historical point: at least three of the vessels involved in this year’s tragic incidents were under a management plan known as Individual Transferable Quotas (ITQs). Proponents of ITQs have touted this scheme as a way to promote safety of life at sea claiming that market forces will allow fishing vessels to spread their fishing activities throughout the year and avoid inclement weather. Although the Task Force does not name ITQs specifically, the report clearly lists (aside from skippers) larger market forces, quotas, owners, operating company managers, policy makers, and insurance companies – the very entities which comprise the ITQ management structure and are supposed to be the “stewards” – as playing a critical role in these losses.

*In 1995, a Greenpeace report challenged the assumption which links ITQs with greater safety, revealing how ITQs put the control of fishing in the hands of those who are far removed from the water, increasing the risks to the oceans and to those who fish.*⁵⁸³

*Greenpeace has advocated a de-industrialization of the fishing industry and the prevention of any further privatization plans through ITQs. Greenpeace generally agrees with many of the Task Force’s recommendations that underscore the need for proper safety equipment, training, and overall better standards. In addition, Greenpeace encourages Congress to reject the recommendation by the National Academy of Sciences to lift the current moratorium on ITQs.*⁵⁸⁴

A rousing discussion began on “Fishfolk” in response to this event about the safety aspects and incentives of ITQs. One Alaska ITQ owner and fisherman noted that:

*ITQs are not inherently safe [and] they have not cured the human race of greed. Were they expected to? ...Greenpeace is correct that fishermen will be safer when the vessel operator makes the decision to fish or not. ... “Sharecropper” fishing will not promote safety. ... How can any management system prevent people from taking on so much debt, whether on too big a boat or a fancy house on the hill, that they won’t sacrifice safety for a buck?*⁵⁸⁵

Ben-Yami quoted a former Coast Guard officer who had posted the comment that “there have been few boardings of surf clam vessels at sea... in part because ... an ITQ fishery ... is viewed as having few fisheries management reasons to do [so].”⁵⁸⁶ There followed a lengthy discussion of the

⁵⁸² Captain James D. Spitzer, “Fishing Vessel Casualty Task Force Report” (United States Coast Guard, March 1999).

⁵⁸³ Greenpeace, “The Big Business Takeover of U.S. Fisheries: Privatization of the Oceans Through Individual Transferable Quotas” (Washington, DC: Greenpeace, April 1995).

⁵⁸⁴ Niaz Dorry, Greenpeace U.S. Oceans Campaign, “Greenpeace Statement on the U.S. Coast Guard Fishing Vessel Casualty Task Force Report” (Washington, DC: Greenpeace, released April 6, 1999).

⁵⁸⁵ Joe Macinko, “Fishfolk” (14 April 1999).

⁵⁸⁶ Menakhem Ben-Yami, 28 January 1999).

incentive for *overloading boats* under an ITQ system. Mike Travis, of the NOAA, quoted “an acquaintance” saying that most vessels in ITQ systems are run by hired captains (as distinct from owner-operators), and they “are not as knowledgeable in certain ways as the previous owner-operators.” Consequently,

*...if a hired captain refuses to go fishing, say because of bad weather, the owner/plant can and likely will find someone else who will go out. If this is so, might there be a relationship between the management system, changes in the industry structure, and changes in the level of safety?*⁵⁸⁷

Nils E. Stolpe posted an article from that day’s *Philadelphia Inquirer* entitled “Danger is a Way of Life Clammers Know Well,” which quoted Bruce Belousofsky, president of Blanke Marine Services, whose work involves conducting “stability tests” of clam boats: “Some boat captains do overload their clam boats.” When boats become “top heavy, they fall over,” he said. But Belousofsky added that the Coast Guard does not really enforce the stability limits imposed on a boat, and insurance companies, competing for premiums from boat owners, do not press safety issues either.⁵⁸⁸ Ben-Yami had the last word, that: “Promoters of the ITQ regime should ... refrain from using the safety argument.”⁵⁸⁹

Dyer and Griffiths, in a study of the fisheries in this area, also remarked on the safety issue near the end of their paper, noting that:

*5. Safety Issues. Many of the new regulations encourage unsafe behavior in the fisheries. ... Crew reductions, of course, result in more work aboard vessels per crew member and the neglect of certain activities associated with safety. Increased competition and conflicts between vessels and between fishers from other ports, due to the perceptions that fishers are having to divide up an ever shrinking pie, have decreased the extent to which fishers help one another out of trouble on the open seas.*⁵⁹⁰

So one might conclude, once again, that competitive financial pressures – both in general and as exacerbated by an ITQ system – may yield effects and incentives that do not enhance, but rather *compromise* safety. The ‘tragedy of the commons’ has not been erased, but only has shifted to a more general loss of cooperation and kinship on the high seas.

But safety issues are not the only – or even a primary – impact of ITQs on human well-being. Consolidation of financial and economic control has put traditional fishing communities out upon an ebbing tide of fortune, thus deprived of their rights of access by a system of money and trade. But: “Little research has been done” on ITQs’ impact on local communities, although the concentration of fishing activity “can have a major impact on some communities” in this sector, especially as “processing ... has become dominated by a few large firms since ITQs began.” Initial ITQ endowments strongly favored vertically-integrated processing companies, since they were “gifted” ITQ shares, unlike the specialized processors who had to buy or bargain for rights.⁵⁹¹ Some discussion of antitrust law in *Sharing the Fish* with respect to this fishery indicates that the

⁵⁸⁷ Mike Travis, NOAA, “Fishfolk” (2 February 1999).

⁵⁸⁸ Nils E. Stolpe, “Fishfolk” (25 January 1999).

⁵⁸⁹ Menakhem Ben-Yami, “Fishfolk” (16 April 1999).

⁵⁹⁰ Chris Dyer and David Griffiths, “An Appraisal of the Social and Cultural Aspects of the Multispecies Groundfish Fishery in the New England and Mid-Atlantic Regions (Aguirre International under contract for NOAA/NMFS, 1996).

⁵⁹¹ *Sharing the Fish*, Appendix G, p. 296.

consolidation falls just short of federal standards, such that ITQ ownership limits should be imposed – and are recommended – by the NRC panel.⁵⁹²

Sharing the Fish suggests, without developing or expanding the point, that prior to ITQs: “There was a strong spirit of ‘co-management,’”⁵⁹³ and high job satisfaction where SCOQ crews “received higher incomes” than those in other fisheries.⁵⁹⁴ But ITQs have changed all that, despite that:

No research has been done on the relationships between changes in the clam fisheries and the fortunes of either the processing firms or their employees (but see Griffith, 1997),⁵⁹⁵ much less on how such changes affect the communities in which the firms are located or the employees live. Similarly, no research has focused on the community aspects of the harvesting sector of the clam fisheries. ...⁵⁹⁶

Sharing the Fish attests to the claim that there is no research on the community impact of ITQs for the Atlantic coastal fisheries. And Gifford tells us that ITQs were sprung on the public by “a stroke of the pen” with “almost zero public debate” or attention to their effects. One has to wonder why.

Perhaps some parties had something to gain, or maybe something to hide... The windfalls – worth millions – seized from the public treasury of our common resources seem more rewarding by far than even ... smuggling drugs! But what of the costs, to communities, to the fisheries, and to the ‘public interest’? Does this not justify *investigation*? Fortunately – and again – on this point, *Sharing the Fish* is wrong. The Dyer and Griffiths study, performed under contract to NOAA/NMFS, is well-informed and trenchant as to both the commanding importance (along with the widespread destruction) of culture and communities stemming from fisheries problems due to resource mismanagement.

Their focus is not just on ITQs; they examine the overall impact of fisheries management failures on the Multispecies Groundfish Fishery (MGF) for the Atlantic coast. Their insight is subtle and deep, into the questions we should be asking and the answers that are implied. This is neither the place nor the moment to revel in what amounts to a sensitive, value-related discussion about dramatic cultural losses. A few quotes must suffice, from their opening comments and thoughts:

Dimensions of the Problem. New England and Mid-Atlantic fishing communities ... are experiencing severe social and economic uncertainty – both real and perceived – from recent regulatory changes and legal challenges to their way of life. ...

What gears to use, which species to target, where to fish, and how to pioneer new and maintain old markets for their catch no longer depend primarily on fishers’ ethnobiological understandings of fish and ecological cycles nor their economic calculations. Now fishers modify their interactions with the marine environment based not only on the availability and robustness of fish stocks but on their understandings and evaluations of the political process

⁵⁹² *Ibid.*, pp. 209-10.

⁵⁹³ *Sharing the Fish*, p. 285, cites in this regard D. D. Turgeon, “Fishery Regulation: Its Use under the Magnuson Act and Reagonomics” (*Marine Policy*, 9, 1985), pp. 126-33.

⁵⁹⁴ Cited in this regard in *ibid.* is a study by J. B. Gatewood and B. J. McCay on “Job Satisfaction and the Culture of Fishing: A Comparison of Six New Jersey Fisheries” (*MAST/Maritime Anthropological Studies*, 1:2, 1988), pp. 103-28.

⁵⁹⁵ The reference here is to D. Griffith, “New Immigrants in an Old Industry: Blue Crab Processing in Pamlico County, North Carolina” in D. Stull, M. Broadway and D. Griffith, eds., *Any Way You Cut It: Meat Processing and Small-Town America* (Lawrence, KS: University Press of Kansas, 1997), pp. 153-86.

⁵⁹⁶ *Sharing the Fish*, p. 285.

(including its legitimacy), state and federal enforcement capabilities, and past experiences with federal and state interventions in their fishing styles. What they perceive was once a largely solitary existence, dependent on seasonally variable, daily interactions with the sea has become a legal tangle that forces them ... into uneasy organizations and coalitions that engage the state in seemingly ever more hostile discourse.

*This crisis of uncertainty and anticipation ... constitutes a complex of social, cultural, and ecological problems facing commercial fishing as an industry and as a way of life that is central to the identities of coastal families, neighborhoods, and communities. ...*⁵⁹⁷

Dyer and Griffiths go on to discuss how “families that depend on fishing and the seafood industry along the eastern seaboard ... are economically, socially and psychologically stressed because of declining fish stocks” and other related concerns. They look at the impact on job opportunities and labor relations in alternative fishery occupations, with a precise sensitivity into the heart of the ITQ problem:

Under these systems, direct producers become little more than caretakers of ponds, herds, flocks, or fields, hired or contracted for specific tasks, and have little stake themselves in the fish, plants and animals they tend. Similar contract fishing arrangements would likely emerge under the large food companies, with more and more vessels staffed by hired captains and crew with less long-term, enduring interest in the health of the resource than independent, owner-operator fishers who hope to leave the resource and their fishing operations to their children. Fishers we interviewed for this study, particularly those fishing from small- to medium-sized vessels (...), fear that Individual Transferable Quotas (ITQs) will speed this process...

Also, fishers typically see independence as a key defining feature of their identity... They are used to “share” rather than “wage payment” systems ...

Wives and children of fishers interviewed during this study ... expressed some trepidation over the prospect of the fishers staying at home for long periods of time. ...

These considerations become important as we consider ... the dependence of fishers, their families, and the wider communities in which they live on the MGF. ... The loss of stores of human, social, and cultural capital that currently cement those directly involved in groundfishing with those less and less directly involved – from ice suppliers to insurance executives – will constitute a reduction in social and economic diversity that is no less a threat to the well-being of these communities than the loss of biological diversity is to the marine ecosystem. ...

Again, if the systems archetype of the ‘tragedy of the commons’ stems – as Senge implies⁵⁹⁸ – from a breakdown of social ties and one’s ‘sense of engagement’ with a resource, then *ITQs and competition exacerbate the problem* by undermining community ties. Shortening individual planning horizons through economic control and relations of dependence – as Argyris said⁵⁹⁹ – does not foster responsibility, but *disengagement* and a loss of social cohesion. This is a process of systems failure, and the *cause* of the ‘race for fish’ – as a breakdown of organizational function – not the ‘solution’ thereto!

(e) *General Conclusions and Inferences from the U.S. Atlantic Coast ITQ Programs*

⁵⁹⁷ Dyer and Griffiths, *Op. Cit.* (note 590 on page 2 above).

⁵⁹⁸ Cf. *Sections III.C.6(d-e)* above for a discussion of this point.

⁵⁹⁹ Cf. *Section III.C.7(b)* above for more on this issue.

It is hard to draw any ‘general conclusions’ from fisheries so unexamined, though it is strikingly evident that ITQs in the Mid-Atlantic coastal region have fostered trends toward the centralization of market power into the hands of a few well-connected concerns, at the cost of specialized processors and non-owning captains and crews of vessels still fishing the resource. Spiny lobster fishing for recreational purposes suffered as well, with its sundry participants no longer active (visibly) in the fishery. All local communities seem to be damaged by ITQs, and the harm is worst to those that are weak and unable to cope with the changes, to the advantage of vertically-linked, distantly centralized, strongly-controlling corporate industry interests.

Though the impact has not been carefully analyzed – save by Dyer and Griffiths, to a compelling conclusion – it can be seen and observed in the data on concentration and the growth of vertical linkages throughout the ITQ fisheries. Safety effects show little if any improvement due to ITQs, although they were touted and duly expected to result from the plan. The evident escalation of financial pressures on captains and crews to fish enough for restoration of their radically-undermined income potential is suggested as a reason for the absence of safety benefits, as well as for the widespread discontent within the small-boat fishing community for this system of ITQ fisheries management.⁶⁰⁰

3. The Canadian Maritime Scotia-Fundy Groundfish ITQ Program

(a) *A Brief History of the Canadian Maritime Groundfish ITQ Program*

Curiously, little is said about the Canadian ITQ program in *Sharing the Fish*, except in a shaded box about “the Scotia-Fundy Small Dragger Fleet,” which offers some information. Naming this ITQ management plan as supporting a case for aggressive *monitoring* of enforcement priorities and the value of *cooperation* among government and fishing industry members, *Sharing the Fish* goes on to identify at least a few details of fisheries – cod, haddock, pollock and flounder – regulated through ITQs. ITQs were first introduced by the Canadian Department of Fisheries and Oceans (DFO) as a management tool in 1991, with an allocation of species-specific TACs on the basis of vessel size, gear type and management area. The aim of the ITQ plan was to reduce overcapacity and regain control of the ‘race for fish,’ against strong opposition by “uncooperative, independent” dragnets, after a midyear closure of fishing alerted DFO that more extreme measures were needed.⁶⁰¹

The system was designed to protect *both* the owner-operator and traditional fishing communities, through restrictions on ITQ ownership to active fishermen by imposing maximum limits on transfers and shares. Strict monitoring of all landings of fish was fully funded by industry as of 1993, and as a result, “there was consensus that landings data collection had improved, although problems with at-sea discards, highgrading, and misreporting remained.”⁶⁰² Evaluating this system is difficult due to “drastic declines in TACs because of badly depleted groundfish stocks,” where: “Both ITQs and re-

⁶⁰⁰ So well-reported by Dyer and Griffiths (*ibid.*).

⁶⁰¹ *Sharing the Fish*, p. 136.

⁶⁰² *Ibid.*, p. 137, with reference to J. R. Angel, D. L. Burke, R. N. O’Boyle, F. G. Peacock, M. Sinclair, and K. C. T. Zwanenburg, *Report of the Workshop on Scotia-Fundy Groundfish Management from 1977 to 1993* (Ottawa: Canadian Technical Report of Fisheries and Aquatic Sciences, Minister of Public Works and Government Services Canada, Catalog No. Fs 97-6/1979E, 1994).

source declines have resulted in concentration of landings to fewer vessels, ports, and fish buyers.”⁶⁰³

Sharing the Fish also offers some brief discussion of an individual vessel quota (IVQ) program for Pacific groundfish in the Canadian West, established in 1990 for sablefish, 1991 for longlining halibut, and in 1996 for groundfish trawling, coupled with other restrictive measures. The aim was to reduce capacity and to improve economic efficiency, “and the programs resulted in major reductions in the size of the fleets and the numbers of crew members.”⁶⁰⁴ The IVQ programs had the effect of extending the season and fish landings to more ports than before, with greater availability of fresh product to consumers as well as higher returns to license holders. TAC overruns also were reduced in all three fisheries, according to *Sharing the Fish*.⁶⁰⁵

(b) *Conservation and Stewardship Issues and the Precautionary Approach*

Sharing the Fish says that the primary lesson of “the Canadian experiments” with ITQs, “starting with Bay of Fundy herring, showed the critical importance of investing in monitoring and enforcement, as well as the potential for industry involvement in ‘co-management’ and cost sharing.”⁶⁰⁶ Indeed, they indicate that: “In Nova Scotia, ITQ holders cooperated with government officials to develop improved conservation measures for their fishery; however, official and anecdotal reports of highgrading and data fouling continued (McCay et al., 1998).” These conservation improvement efforts apparently included the “adoption of gear changes and closed areas to protect undersized and spawning fish” from being harvested.⁶⁰⁷ As noted above, despite the improvements in data collection, however, discards, highgrading and misreporting of catches have continued under the ITQ plan, despite the increased supervision of fishing activity by enforcement authorities and industry members.

Somehow, one does not get from the presentation in *Sharing the Fish* any sense at all of the drama unfolding in the Canadian Maritime fisheries over the past several years. A total collapse of groundfish stocks in eastern Canada, as Neher reports, “confounded experts who said the stock was undepletable based on 500 years of successful exploitation.”⁶⁰⁸ Harkening back to the “faith” that *Sharing the Fish* asks us to have in the notion that “privatization will foster ecological sensibility,”⁶⁰⁹ Neher addresses himself to this point:

But no qualified observer has reported that the quota regime engendered an elevated respect for the fish resource by vessel skippers or by their corporate masters. Reports of high grading by species and by size suggest instead that quotas did not do this. The supposition is compelling that skippers and managers had the expertise and day-to-day contact with the resource

⁶⁰³ *Ibid.*, citing L. Burke, C. Annand, R. Barbara, L. Brander, M.A.-Etter, D. Lieu, R. O’Boyle, and G. Peacock, “The Scotia-Fundy Inshore Dragger Fleet ITQ Program: Background, Implementation and Results to Date” (International Council for the Exploration of the Sea, C.M. 1994/T:35, 1994) and R. O’Boyle, C. Annand, and L. Brander, “Individual Quotas in the Scotian Shelf Groundfishery off Nova Scotia, Canada” in K. Gimbel, ed., *Living Access to Marine Fisheries: Keeping the Focus on Conservation* (Washington, DC: Center for Marine Conservation and World Wildlife Fund U.S., 1994).

⁶⁰⁴ *Ibid.*, p. 122.

⁶⁰⁵ *Ibid.*, p. 123.

⁶⁰⁶ *Ibid.*, p. 32.

⁶⁰⁷ *Ibid.*, p. 106, with reference to McCay and Jentoft, *Op. Cit.* (note 505 on page 2 above).

⁶⁰⁸ Neher, *Op. Cit.* (note 437 on page 2 above), p. 113. (Neher is a strong proponent of ITQs.)

⁶⁰⁹ *Sharing the Fish*, p. 35, as discussed in *Section IV.B.3.* and at the beginning of *Section IV.D.* above.

*required to gather and process the information needed to detect stock declines, to report credibly to the minister and to forestall the stock collapse. But apparently they did not. ...*⁶¹⁰

Even the main designer of the ITQ program in eastern Canada has abandoned his “faith” in its conservation effects: “John Angel, architect of the ITQ system for the Scotia-Fundy dragger fleet, admitted at a panel discussion on fisheries management sponsored by St. Mary’s University on March 18, 1994, that the ITQs had been a ‘dramatic failure’ from a conservation perspective.”⁶¹¹ Furthermore: “Recently, a former DFO scientist who helped set up the New Zealand system wrote that in her view ITQs do not make quota holders opt for conservation.”⁶¹² Copes makes note of the fact that the...

*...spectacular collapse of Canada’s east coast cod and other groundfish stocks (which had never happened before) occurred after ten years of IQ/ITQ management. Iceland’s cod stocks have reached an historical low point after ten years of ITQ management. The large and profitable orange roughy stocks of New Zealand have been seriously depleted in an ITQ fishery.*⁶¹³

But doesn’t it say in *Sharing the Fish* that the scientific control over the TAC-setting process shall act to prevent this sort of depletion and stock collapse? So how could this happen in such important (even dominant) fisheries in all of the nations using ITQ systems? McAllister offers an answer:

*The trend towards corporate takeovers is quite clear in Canada; competition is lessening, and the gap between the well-off and low income earners is increasing. Sometimes the ‘efficiencies’ create costs elsewhere. ... Treating fisheries simply as how many fish units are produced under ITQ systems regulated by industry, not government, also can create or continue external costs [which] ... can include loss of species, ecosystems and ecosystem functions. Fisheries managed without regard to such impacts can impinge on other sectors... The transfer of fishery management to the private sector means disconnecting management from a democratic government, whose duty (assuredly not always fulfilled) is to achieve a socio-economic-environmental compromise between the costs and benefits of the various potential activities. Moreover, the transfer involves switching the ultimate decision making power from citizen voters and their elected representatives, to unelected stockholders. Governments have been criticized for spending too much on fisheries research; will the opposite happen under corporate ownership...? Scientists seem to have little freedom to express their views under either system of management.*⁶¹⁴

⁶¹⁰ Neher, *loc. cit.* (note 608 above).

⁶¹¹ As stated in Section 5.4 of the South West Nova Fixed Gear Association’s January 1995 Comprehensive Fisheries Management Report entitled “The Canadian Maritimes Fishery: Let’s Fix It!” addressed to “a horrendous mess.”

⁶¹² *Ibid.*, as also quoted below in full context: cf. quote referenced in note 653 on page 2 below.

⁶¹³ Parzival Copes, “Fishfolk” (21 May 1998); he then went on to detail the point a bit further in this way:

In Canada, in the early 1990s we had a collapse of our groundfish stocks. That was the first time in history that ever happened. It happened about 10 years after we introduced and gradually increased the use of ITQs in our fisheries on the East Coast. That happened in conjunction with the problem of discarding perfectly good fish. Is it a mere coincidence that we had this disaster with our fisheries precisely at the time when you could expect the impact of several years of ITQs to be felt in the fishery, particularly with the discarding problem we had? Iceland has had an ITQ system for over a decade. The most important stock in Iceland, cod, is at its lowest level ever. That again is after 10 years of ITQ impacts. ... It is rather striking that, in the countries which have used ITQs, major problems are being observed in the fisheries.

⁶¹⁴ Don McAllister, “Fishfolk” (27 July 1999).

So if the private sector gains too much influence over the public domain, as shown by the conservation effects of ITQ management systems, science shall be corrupted – “knowledge is power” – and the system breaks down. The TAC-setting process is only as good as the motives supporting its stance. If the research is driven by an incentive for exploitation, then the whole process slips out of control.

(c) *The ‘Private Property Rights’ Situation*

No information is offered in *Sharing the Fish* on the ‘property rights’ situation of ITQs in Canada, on either the east or west coasts. But other fisheries analysts and DFO officials have focused on the ‘property rights’ status of Canadian ITQs. McCay addressed the general issue in 1996, with reference to the U.S. and Canada programs, in the following way:

*...Unlike the example of a farming system based on private property rights to land, in the marine fisheries case the government retains the right to determine an overall quota and other aspects of the fishery that affect sustainable use of the fish stocks. To that extent, ITQs may be defined as quasi-private property. They represent property in rights of access to and withdrawal from common pool and public resources, not in the resources themselves.*⁶¹⁵

The Canadian Senate Committee on Fisheries (CSC) in June 1993 issued a report on “The Atlantic Commercial Inshore Fishery: Conclusion and Recommendations” saying, in part, that:

*In essence, quota licenses provide fishermen or enterprises with a “quasi-property right” to a certain quantity of fish, that is to say a percentage of Total Allowable Catch that they are permitted to harvest annually – a sort of swimming inventory. The system thus “privatizes,” to some extent, the so-called “common property” fishery and thus represents a major departure from the traditional fisheries management approach of seeing the resource as a common good. In all the presentations made to the Committee, perhaps no other matter was discussed more frequently, with a range of very mixed views being presented.*⁶¹⁶

More recently, on November 26, 1998, the Minister of Fisheries and Oceans, the Honourable David Anderson, took a more assertive position on defining ITQ ‘rights’:

*[ITQ] programs do not confer property rights to either the fishery or the fish. They are conditions of a license that provide the fishermen with access to a specified quantity of fish. They are an extension of the limited entry licensing system... They do not create private rights.*⁶¹⁷

As in other ITQ fisheries, administrators say that ITQs are *not* property rights, while theorists maintain that they *must be* to work. Meanwhile, the public and ITQ owners see and treat them as *owned*, with the courts, tax authorities, banks and insurers slowly following suit. A recent Supreme Court decision in Iceland paints the question in bold relief, with respect to the potential ‘legal status’ of ITQs.

In a new paper on this ruling, Copes says that the Supreme Courts of both Iceland and Canada “have affirmed the continuing common property status of fish stocks as public resources ‘belonging to all the people’ whether or not they are managed through an ITQ system.” Copes also denies the

⁶¹⁵ Cf. McCay, *Op. Cit.* (note 568 on page 2 above).

⁶¹⁶ Canadian Senate Committee on Fisheries (CSC) Report, “The Atlantic Commercial Inshore Fishery: Conclusion and Recommendations” (Senate Committee on Fisheries, June 1993).

⁶¹⁷ “Statement” found at: <http://www.parl.gc.ca/36/1/parlbus/commbus/senate/com-e/fish-e/rep-e/rep03dec98part2-e.htm>

twin assertions of ITQ advocates, first, that ITQs are “privatization” and, second, that they are “efficient”, calling both these propositions “fundamentally invalid.” The reasons for this conclusion are relevant to any proper understanding of ITQs’ spread of effects.

First, declares Copes, “ITQs are no more than access rights that allow the taking of certain amounts of fish from a common pool under regulated conditions.” Indeed: “They actually tend to reduce true privatization of the fishery insofar as they reduce the number and proportion of private operators and thereby limit the extent of private decision making in the fishery.” And trading an owner-operated fishery system for one that takes decisions away from private vessels also undermines *efficiency*: “It has been widely observed that the economic performance of the individual fishing vessels run by owner-operators substantially exceeds that of similar vessels ... run by hired skippers.” Copes also opines that there may also be a legal basis against ITQs in Canada for denying aboriginal people rights of access to their traditional resource base in fisheries, citing some recent cases pointing in that direction..⁶¹⁸

(d) *Economic and Community Effects*

As noted above, ‘co-management’ has been a key to the design and implementation of the Scotia-Fundy ITQ program for groundfish. In the context of initial resistance to ITQs, community fishing quotas (CFQs) were introduced to protect traditional local fishing communities from being closed out by consolidation of ITQ ownership rights. “‘Community management boards’ were formed in 1996” for this purpose, as a ‘co-management’ effort and a format for stakeholder participation.⁶¹⁹ Other design features in the ITQ program protecting community rights included – as already mentioned – *active fishing* provisions for ITQ ownership as well as some limits on shares and transfers. Sadly...

*Despite rules against processor ownership of quota and vessels, major processors quickly gained indirect control by financing quota and vessel acquisition. Rules against permanent transfer were quickly removed, enabling a faster pace of consolidation than originally intended. ITQ landings have also shifted within the region, benefiting some communities at the expense of others. The design features intended to help maintain the owner-operated, community-oriented nature of the fishery have not been able to prevail against market-based incentives for accumulation and concentration.*⁶²⁰

McCay addressed and documented the industries’ structural shift of power in a comparison of the U.S. and Canadian ITQ systems, from a situation in which “the Canadian fleet was primarily an owner-operator one” to a working arrangement of ‘vessels for hire’ to (or owned by) distant corporate interests. The process of fishery consolidation was surprisingly quick, although more so in the United States than for Canada’s ITQ program:

Within a short time after ITQs were introduced, both fisheries saw a rapid decline in vessels and labor engaged in harvesting, as ITQ holders tried to maximize the profitability of their ventures... The Canadian decline was less but significant: 325 licensed vessels were involved in the “IQ” scheme at the outset [in 1991]; by 1994 there were 213 active licenses. Not surprisingly, employment in both fisheries fell by an estimated 1/3... Concentration of ownership also increased in both systems, even though the Canadian one was designed with

⁶¹⁸ Parzival Copes, paper on recent Icelandic Supreme Court decision (title unavailable), 1999.

⁶¹⁹ *Sharing the Fish*, pp. 128-29.

⁶²⁰ *Ibid.*, pp. 136-37, referring to McCay and Jentoft, *Op. Cit.* (note 505 on page 2 above).

*caps on holdings and other measures intended to maintain a broadly based, owner-operated fishery... ..Effective control over ITQs has come to be dominated by relatively few firms. In these...ways... ITQs have sharpened social disparities within the fisheries and coastal communities. ... [and] have also resulted in major geographic changes in community fish-plant access to fish stocks.*⁶²¹

The South West Nova Fixed Gear Association and the Coastal Communities Network (with its superbly informative on-line newsletter) in eastern Canada have been a source of very intelligent discussion about the impact of ITQs on traditional fishing communities in the Maritime Provinces. All of this information upholds and documents the view that “local is better” for ecological health and community viability. As such, it debunks a view altogether unquestioned in *Sharing the Fish*: that larger firms and vessels are ‘more efficient’ because they are bigger. The evidence shows otherwise. As David Bergeron expressed the point:

*The only reason “the economies of scale and the productivity that...large organizations bring” may seem to be more beneficial is that their externalized costs are not measured in current analysis. If the full impact of such large-scale capacity in the fisheries were actually measured, I contend that we would definitively conclude that small is better biologically because it is more flexible in terms of ecosystem impacts and it is also far more beneficial to the generation of social capital which saves taxpayers money with fewer remedial services. Presently, big companies can produce products that seem less expensive because they are not held economically responsible for their externalized costs – in effect taxpayers subsidize these operations. So, there isn’t a free lunch after all no matter what the factory trawler companies want us to believe.*⁶²²

Indeed, even in 1993, it seemed the Canadian Senate Committee on Fisheries (CSC) was moving toward this sort of conclusion. They cited both the evidence and the United Nations standards as important justifications for a community-based approach to fisheries on a more regional basis to protect both the local economies and the marine ecology:

The Atlantic fishery continues to present a disturbing paradox. ... The evidence suggests that policies more responsive to the broader needs of the inshore sector would go much further toward promoting the economic and social well-being of the region’s communities and families whose livelihoods for generations have depended on fishing. Such policies would also promote better the overall health and integrity of the marine ecosystem. The inshore sector generally does not accept the proposition that the depletion of groundfish stocks is unrelated to certain offshore activities and to certain fishing technologies and practices. There would appear to be a sufficient body of evidence to support the inshore sector’s position. ...

The Committee recommends that the short-term and long-term social, economic and biological effects of quota licences, such as Enterprise Allocations and Individual Transferable Quotas, be more thoroughly studied by the Department of Fisheries and Oceans ...

During the Committee’s deliberations, the Department of Fisheries and Oceans was criticized for seizing on quota licences as the panacea for the problems of licensing policy. Those who opposed such licences did so because of the way they were introduced, and because they believed the system to be flawed by its irreversibility and exclusivity. They

⁶²¹ McCay, *Op. Cit.* (note 568 on page 2 above).

⁶²² David Bergeron, “Fishfolk” (23 October 1997).

charged that the boat quota system gives quota licence-holders preferential access to the resource and that inshore fishermen are thereby gradually being forced out of the industry. The representative of an inshore association stated that Enterprise Allocations were an enormous gain for vertically-integrated offshore companies because they had enabled the offshore [companies] to pay fishermen low prices for their raw product (landings), "frequently one-third the competitive inshore market price." Indeed, the evidence suggests that a major drawback to quota licences would be their potential for high-grading.

It was also brought to our attention that the United Nations Convention on the Law of the Sea calls for the conservation and management of fishery resources to take the economic needs of coastal communities into consideration. In recognizing the link between local fishing communities and the stewardship of adjacent fishery resources, the UN Code of Conduct for Responsible Fisheries (Section 6.18) calls for states to protect the rights of indigenous and local fishing communities. As a signatory to this convention and other UN agreements, the federal government has a duty to safeguard the interests of its small-boat fishing fleets. In small-scale fisheries where individual owner/operators predominate, community-based approaches, in which the rules and regulations of fisheries management are set locally, may be more suitable alternatives to private quotas. Property rights-based approaches ignore the possibility that communities might already have well-established (traditional) social processes for allocating access to a fishery.⁶²³

Anthony Davis strongly reinforces this last point, in a 1991 study addressed to the broader issue of structural implications of an ideological and cultural shift in the fisheries from a *kinship* to an individualistic *competitive* frame. His analysis shows a "new ethos" stressing "the rationality of competitive utilitarian individualism." Much like Dyer and Griffiths, his analysis is inclusive, farreaching and truly encompassing in its scope. Because of its pertinence to the issue at hand, this paper is quoted at length. The abstract introduces the problem:

This essay contends that the Atlantic Canadian small boat fishery is being systematically dehumanized as the socio-economic and organisational conditions in which fishers work become ruled by capitalist-industrial formal institutions and their rationalities. More specifically, small boat fishers ... are driven from deeply rooted attachments ... to sharp-edged, self-interested utilitarian rationalities...

While always thoroughly integrated in the capitalist industrial market and class systems at the level of exchange, small boat fishers mainly engaged in fishing for their livelihoods rather than to accumulate capital. ...Socio-economic distinctions between small boat fishers within harbours arose situationally rather than substantively, expressing differences in factors such as work motivation, luck and risk taking. Rarely would such distinctions be derived from circumstances that violated the livelihood interests of others. Moreover, their sense of collective interest and collective destiny construed the small boat fishers' approach to and organisation of fishing. It also influenced within-harbour fisher relations as well as the broader fishing communities' social dynamics.

The last twenty years in particular have seen considerable pressure brought to bear on these localised practices and norms. ...

Inherent in the new ethos was the rationality of competitive utilitarian individualism, the presumption that business enterprises are necessarily locked in competition with each other in

⁶²³ Cf. CSC, *Op. Cit.* (note 616 on page 2 above).

their pursuit of...economically valuable goods, the idea that success is measured by...wealth...

Davis then goes on to characterize the ITQ system in its 'professionalization' of fishing through its initial exclusion of "part-time, seasonal participants in specific fisheries such as lobster fishing... These developments further facilitate fundamental transformations in the world view, behaviour and social organization of small boat fishers...

Replacing the view that argued for the necessity to modernise through the adoption of new and better technologies was a biologically-grounded perspective that insisted the industry had too many fishermen pursuing too few fish. The solution for this problem was believed to reside in the development of a more refined, sophisticated and comprehensive management regime that would limit access to marine resources through mechanisms such as licenses and quotas ...

Now the thrust of government policy was to regulate ... by making participation ... contingent upon...annual ... licenses. ... Added to the capital cost for a boat and fishing equipment, this licence 'investment' assures that new entrants begin with a debt load that can only be serviced through high volume catches and heavy exploitative pressure on ocean resources and environments. Indeed, a fishing strategy solely expressing the individual needs and goals of the captain/owner, over all other concerns, must come to the fore in a set of circumstances shaped by debt servicing pressures. ... In short, government management and development policy assures that the self-interested harvester upon which the policy is predicated comes to dominate the socio-economic profile of the fishery, thereby creating fishers as pirates.⁶²⁴

Davis attributes such changes to fisheries management programs that first create and then nurture a sad dehumanization of friendship predicated on kinship, cooperation and a sense of community:

Government management programmes, particularly limited entry licensing ... are fundamentally altering the social topography of the fishing occupation. First and foremost in this process is the impact of government management programmes upon the social organisation of community- and familial-based fisheries.

In such fisheries key aspects of the decision-making processes are governed by an informal, locally-specific, system of rules worked out by the generations of fishers ... from particular harbours. ... In effect, the rules constitute a fisher-generated access and use management system. As with most management systems, this one constrains the expression of individualism by attaching conditions to participation. ...

[In the new system] The successful fishers are increasingly those adept at pursuing personal objectives through bureaucratic systems. An individualised point of reference is now taking precedence over the community basis of occupational solidarity. ...

...The competitive-individualistic rationality has become well-entrenched... Unlike their forebearers, these organisational forms and processes are fundamentally believed to be necessary to, not the antithesis of, present day prosperity, future success and the maintenance of independence. In all, this denotes a remarkable, though predictable, transition in small boat fisher rationality.

Conclusions. Social science has long recognised the process and transformational consequences of industrial, capitalist institutionalisation. Beginning with Weber, the incorporation

⁶²⁴ Anthony Davis, "Insidious Rationalities: The Institutionalisation of Small Boat Fishing and the Rise of the Rapacious Fisher" (*MAST/Maritime Anthropological Studies*, 4:1, 1991), pp. 13-31.

of the human into an organisational matrix dominated by the formal institutions of industrial capitalism has been recognised as providing a mixed blessing for the human condition. On the one hand, this institutional form unlocks individual potentials from subjective and local fetters ... On the other hand, industrial capitalist institutions dehumanise people by subjecting them to the rationalities of objectified economic calculation. The worth of humans becomes reduced to elements such as formal credentials, consumption patterns, income, and mobility within a market-referenced economic rationality. At the same time, industrial institutions are bureaucratic and autocratic. They compel compliance and conformity to institutional objectives rather than to the intimacies of family, familiars, kin and community. In so doing, bureaucratic institutions dehumanise livelihoods and human relations.⁶²⁵

It is hard to imagine a more apt description of the reason for the extensive discussion and analysis of alternative frames of reference offered in *Section III* above. Fundamental and irreversible changes are afoot that will likely rend the social fabric – if not the very souls – of fishing communities if ITQs are accepted. The issues are important, having to do with the way we understand and perceive the social process: as a ‘way to make money’ *for ourselves* or as a ‘way to live’ in the world we create afresh with every step we take, *either together or apart*, discovering ‘concerts’ or ‘conflicts’ of interest.

The only issue about which we lack choice is *that we choose*, at every moment of every day. In an interdependent ‘systems’ environment, every act will matter, *as shall we* in all we do. Our survival and the quality – or the continuance – of our lives hang in the balance of *how we decide*.

(e) General Conclusions and Inferences from Canada’s Maritime ITQ Program

So one might well conclude that ITQs have not been the least bit successful in the Scotia-Fundy region, if conservation and stewardship practice as well as local fishing communities are considered of value. The ongoing evidence of fish waste through discards, highgrading and data fouling – in spite of the emphasis on enforcement, participation and co-management in the design and implementation of this ITQ system, along with the rapid consolidation of ITQ ownership by processors and other large-scale industry interests using capital limitations as a means of financial control – are a warning we should heed. The impact of ITQs on Canadian fisheries simply has not stopped the overharvest of fish, nor protected the resource or the culture of local fishing communities. Indeed, the rosy aura ascribed to ITQs in *Sharing the Fish* is not upheld by *any* ITQ evidence, save perhaps in New Zealand to which we turn next.

4. *The New Zealand ITQ Program*

(a) A Brief History of the New Zealand ITQ Program

In New Zealand, a 1983 Fisheries Act introduced fisheries management plans (FMPs) which recognized economic and conservation goals. Then, in 1986, the government amended the Act to allow for ITQs in both the inshore and deepwater fisheries. Although the decision was made with little data on fisheries stocks, it was widely believed that a short-term decrease in TACs would improve both the fishing and its economic potential. ITQs were justified as a means to reduce overcapacity, simplify fisheries management processes, and improve economic performance along with the recreational fisheries. The explicit goals of the ITQ program included: to rebuild fish stocks; limit the catch; efficiency; equity; secure and flexible access; integrate inshore and deepwater

⁶²⁵ *Ibid.*

fisheries; develop a regional management framework; restructure harvesting operations; and to enhance recreational fishing.

Between 1983 and 1985, many options were considered before choosing ITQs, which were passed on October 1, 1986. Within a year, the Quota Management System (QMS) included 30 species or groups with a total of 179 different fishstocks. Initial endowments were 'gifted' *in perpetuity* on the basis of recent catches, subject to some maximum and minimum holdings. Save for restrictions, shares are freely transferable, and cheating on quotas is treated very seriously as commercial fraud. Quota busting, highgrading and discards have been a problem, but are illegal and actively discouraged through monitoring and co-management efforts. A major weakness of the New Zealand ITQ program is a lack of data gathering on less-than-dominant commercial species and of any serious scientific assessment of the system itself, in either its *social* or *ecological* impact.

In 1992, a massive and complex settlement was reached between the New Zealand government and the Maori tribes, to settle their claims arising from the 1840 Treaty of Waitangi. This left the Maori people the single largest participant in the New Zealand fisheries, with almost 40 percent of the rights. However, it also increased the security of the remaining fishery rights, by settling all existing claims and bringing the Maori into compliance with the QMS.

According to *Sharing the Fish*, biological stocks have improved with ITQs, in part due to New Zealand's "completely open and transparent TAC-setting process."⁶²⁶ *Sharing the Fish* also asserts that most of the ITQ goals have been met. "In 1996, a new Fisheries Act was passed by the New Zealand Parliament," defining the following issues more clearly: *environmental principles* (stocks must be maintained, interspecies effects must be considered in fisheries management, and diversity must be protected), *consultation and conflict resolution procedures* as well as those for *adding new species* to the QMS, and for its *simplification* through annual catch entitlements (ACEs).

(b) *Conservation and Stewardship Issues and the Precautionary Approach*

The aim of the ITQ system under the QMS in New Zealand was to stop biological overfishing as well as overcapitalization. The stock assessment and TAC-setting process is described in *Sharing the Fish* as "completely open and transparent,"⁶²⁷ based on data collected by the Ministry of Fisheries and analyzed by Fishery Assessment Working Groups reporting to the Minister of Fisheries who has "final authority to decide on TAC changes,"⁶²⁸ subject to legislative mandates that: "TACs cannot be changed unless it can be demonstrated by the stock assessment process that the stock is moving toward a size that will support the MSY, even when other data suggest that the TAC is at an inappropriate level."⁶²⁹ In 1992, Sissenwine and Mace studied the QMS to find that: "To date, the track record of ITQ management with respect to conservation is not good."⁶³⁰ However, in 1997, Annala and Sullivan ended their analysis on a more positive note about the QMS.⁶³¹ For fisheries on which insufficient data exist to estimate stocks, setting of TACs is

⁶²⁶ *Sharing the Fish*, p. 92.

⁶²⁷ *Ibid.*, p. 359.

⁶²⁸ *Ibid.*, p. 360.

⁶²⁹ *Ibid.*, pp. 358-59.

⁶³⁰ Sissenwine and Mace, *Op. Cit.* (note 407 on page 2 above), as quoted in *ibid.*, p. 359.

⁶³¹ J. H. Annala and K. J. Sullivan, *Report from the Fishery Assessment Plenary, May 1997: Stock Assessments and Yield Estimates* (Wellington, NZ: Ministry of Fisheries, 1997) as reported in *ibid.* It should be noted that John H. Annala is manager of science policy for the New Zealand Ministry of Fisheries and a member of the NRC Panel that authored *Sharing the Fish*, and thus is likely the individual most responsible for the overwhelmingly positive flavor of the glowing

achieved through an “adaptive management process” started in 1991-92. This system is one of controlled experimental change with annual monitoring of catch levels over five-year periods.

A notable feature of the New Zealand QMS is that virtually all of the data collection and enforcement of fishery regulations is done by means of a land-based paper trail, with little at-sea monitoring. Cross-checking of *Catch Landing Logs* with monthly *Quota Management Reports* from ITQ shareholders and *Licensed Fish Receivers Returns* from purchasers combines with *Catch and Effort Returns*, the results of an offshore *Observer Programme* along with a *Vessel Monitoring System* of where fishing is done. There are numerous other provisions in the QMS to allow quota overruns and other adjustments to deal with bycatch problems, especially in multispecies fisheries. Despite this flood of paper reports and provisions that make the system complex, costly, and difficult to manage, there is a curious lack of quantitative self-assessment of this program. As *Sharing the Fish* remarks: “There is not much in the way of objective, quantitative information available, but there is a great deal in the way of perceptions.”⁶³²

“Offenses against the ITQ program are treated ... as commercial fraud” with significant fines and other deterrents. However, in spite of all this, “quota busting is known to occur in some fisheries,” but cannot be estimated with any accuracy. Discarding and highgrading also exist, but are “difficult to prove.” Especially in multispecies fisheries, “bycatch problems have been experienced,” but the QMS is designed to allow purchase or leasing of quota to cover overruns, borrowing from or carrying over up to 10 percent of one’s quota to the following year, or paying a fee for quota overruns directly to the Crown. Quota overruns were quite high in 1987-88, but they appear to have fallen since then.⁶³³ As *Sharing the Fish* reports: “In New Zealand ... the primary resource-related problem identified with IFQ management is the high rate of discarding. ... both ... of bycatch for which fishermen do not possess quota (...) and highgrading to ensure that only the highest-priced portion of the catch is landed and counted against quota.” Also, especially in multispecies fisheries, “excessive bycatch has proven to be a difficulty in certain New Zealand fisheries.”⁶³⁴

What is striking about this system is how little scientific information appears to be gathered about overall fisheries stocks. The bulk of the research budget is spent on the most important commercial species. The administrative complexity of the QMS reporting system is not a substitute for independent research and analysis. *Sharing the Fish* remarks that: “In a few fisheries in New Zealand, quota holders have formed companies that directly fund research to determine biomass and sustainable yields, to conduct fisheries enhancement projects, and to promote voluntary TAC reductions to enhance conservation of the resource.”⁶³⁵ But there is no indication in *Sharing the Fish* of very much scientific research effort by the New Zealand government in the TAC-setting process. As Annala and Sullivan’s study in 1997 showed: “Of the ... 149 [actually fished] Fishstocks, ... the status of ... 95 (63.8%) Fishstocks relative to B_{MSY} [maximum sustainable yield biomass] was not known.”⁶³⁶

evaluation of ITQ performance in New Zealand throughout *Sharing the Fish*, but particularly in *Appendix G*.

⁶³² *Sharing the Fish*, p. 354. (Such is the world we inhabit, of “perception” not tied to fact or research...)

⁶³³ One is left to wonder whether this is because they don’t exist, or only because the fishermen have gotten ‘smarter’ in their ‘data-fouling’ skills... Since there are so few direct inspections or monitoring of inshore vessels, little evidence is being gathered aside from what is reported as an objective test of those data.

⁶³⁴ *Sharing the Fish*, pp. 107-8.

⁶³⁵ *Ibid.*, p. 106.

⁶³⁶ *Ibid.*, p. 359.

One gets the impression from *Sharing the Fish* that the New Zealand QMS is very complex – with a few problems (as always) of quota busting, highgrading, discards and data fouling – but that, despite the lack of fisheries research, ‘all is well’ in New Zealand: in sum, that *the QMS ‘works.’* Nevertheless, one starts to wonder, when other reports suggest that things may not be as ‘perfect in paradise’ as they appear in *Sharing the Fish*. One New Zealand observer of the fisheries scene has expressed the opinion that *Sharing the Fish* “glosses over important aspects” of the ITQ system...

The account of ITQs in New Zealand presented in Appendix G (pp. 342-65) is a reasonable summary of the history and structure of the system. It is very much an administrator’s and fishing industry perspective. From a conservationist and small community perspective it is biased. Indeed Hannesson in reviewing an earlier but similar account (Annala, 1996)⁶³⁷ ... expressed surprise because of the lack of hard facts to demonstrate the success or otherwise of the New Zealand system...⁶³⁸

In the same review, Hannesson also remarked on the *practical effects* of this informational lack on decision priorities in the TAC and TACC (“total allowable commercial catch”) setting process:

...For most of the stocks there is not sufficient biological information to set the total allowable catch. It would thus appear that economics has taken precedence over biology as a premise for management to the extent that [TACs] are set despite insufficient biological information...⁶³⁹

Indeed, against the view of proponents that New Zealand’s QMS is an administratively efficient model of ‘leading-edge fishery management,’ it is apparently difficult to find public data to allow a fully objective assessment of this system. Despite the claims of “open and transparent” information, Duncan noted that internet-sourced catch, fleet and product data is easier to find for “diverse countries such as Bangladesh, Taiwan and Malaysia” than for New Zealand. “Even the publication of an overview with some basic statistical data, the once annual Fishing Industry Economic Review by the then Fishing Industry Board, now Seafood Industry Council (SEAFic), seems to have been suspended.”⁶⁴⁰

In the absence of real information, as Hannesson suggests, science has no stand to counter “perceptions”⁶⁴¹ that it would supplant. Feldman nicely describes the problem in a 1996 paper:

In order to try and combat the financial power of the fishing industry, the Ministry of Fisheries has established a well-ordered consultation process. ... The idea is to exchange ideas on how the various species should be managed that year and hopefully come to a consensus. When the process is complete the minister finally makes a decision on the next year’s quotas.

The fishing companies can afford to hire their own lobbyists and scientists. Because of all the difficulties in assessing the populations of fish in the sea these “hired guns” are able to argue endlessly with government scientists about their research results, putting tremendous pressure on them. The government scientists are no different from anybody else; they don’t like being ... hassled about every conclusion they come to. ...Often... the net result of the

⁶³⁷ The reference is to Annala, *Op. Cit.* (note 521 on page 2 above).

⁶³⁸ Personal communication from Leith Duncan at <mile@ihug.co.nz> dated 13 September 1999, p. 2.

⁶³⁹ Rognvaldur Hannesson, “On ITQs: An Essay...” (*Reviews in Fish Biology and Fisheries*, 6, 1996), pp. 91-96.

⁶⁴⁰ Duncan, *loc. cit.* (note 638 above), p. 3.

⁶⁴¹ Cf. note 632 on page 2 above.

process is an unbalanced “scientific” conclusion that makes the fishery look better off than it is.

*The consultative process is also corrupted by the financial power of the industry. Their representatives pack the meetings; it’s not unusual for there to be a 5:1, or even 10:1, ratio of commercial representatives to those from the other sectors. The industry lobbyists are paid well and are making money while they prepare and sit through those meetings. Everyone else is losing money through having to take time off work. [Expenses] add to the burden.*⁶⁴²

It doesn’t just stop there. If industry pressures are insufficient to raise the TACCs to their satisfaction, there are always the courts, which are used to reverse or delay decisions. As Duncan put it:

The NRC Report (p. 359) claims that the process for setting the TACC is transparent. What it does not note is the considerable professional scientific, legal and lobbying expertise that industry can bring to bear, often behind closed doors when compared with that of other stakeholders. This strong political influence backed by the ability and willingness to litigate has overridden scientific recommendations to reduce TACCs to sustainable levels.

This is exemplified by two prime species, orange roughy and snapper. ... There have been major court cases in which the industry has attempted to keep the TACC for each species high.

In 1989 orange roughy on the Challenger Plateau (ORH 7) was declared collapsed when the biomass was estimated to be 20% of the unfished stock size compared with 29% estimated as MSY. For the 1993-94 season to allow orange roughy on the Chatham Rise (ORH 3B) only a 50/50 chance of rebuilding, the annual stock assessment Plenary recommended a range from low risk to high risk TACCs of 3,400 to 5,900 tonnes yet the TACC was left at 14,000 tonnes. Greenpeace challenged the Minister of Fisheries with a judicial review; the industry leapt to his defence and although the quota did come down in the years before the case came to court it was still 7,200 tonnes when biomass estimates range between 10 and 16% of the unfished state. It should have been declared collapsed by any reasonable definition... As a result of the court case it was quite clear that ... extensive industry lobbying...had been anything but transparent.

ITQs were first introduced soon after New Zealand companies first moved into the deep water. Then the size of orange roughy and hoki spawning aggregations were bonanzas beyond imagination. Since then the fishery has been managed by this system of property rights. It has not ensured that the stocks are conserved. ... Even the data show clear serial depletion. ... Despite repeated concerns the belief that the fishery was “in the fishing down phase” has been used to justify the TACCs set. For example, in the last two seasons one small orange roughy fishery has been closed voluntarily less than 10 years after these grounds were first exploited...

Unlike for orange roughy, for snapper (SNA1), the northeast coast of North Island, the Minister of Fisheries heeded the scientific estimates that snapper biomass in the Hauraki Gulf was 50% of that required to produce MSY, the legal yield, and proposed reducing the TACC 40% to allow rebuilding. The Federation of Commercial Fishermen ... took him to court. ... For the two years involved quota remained unchanged. Although the case was lost initially, it

⁶⁴² Mark Feldman, “High Risk, Short Sight: What’s Wrong With Our Fisheries?” (*Forest and Bird*, November 1996). Feldman is also the Fisheries Stock Assessment Representative for the New Zealand Recreational Fishing Council.

was won on appeal. Biomass estimates were revised, quota cuts reduced considerably, and the timescale for rebuilding lengthened.

These two species are by no means the only examples. Indeed, one analyst noted that industry pressure ratchets up TACCs. Of the 36 stocks discussed in the 1997 Stock Assessment Plenary, “the industry wanted catch limits increased in 5 for which limits were proposed to be unchanged; they resisted proposals for reductions in 11, advocated a lesser cut than proposed for 2 and wanted an increase for 3 which the Ministry proposed to hold or increase. For 15 of the stocks the industry accepted no change. In no case did they propose a cut when one was not already suggested.” (Wallace, 1998)⁶⁴³

Feldman also reports on the above incidents in less detail. He also notes attempts by industry interests to *suppress evidence and discussion* about discards and other wasteful practices:

*The fishing industry has had no hesitation about using the courts to achieve its goals. When studies by the Ministry of Fisheries revealed the degree of fish waste from trawlers, the industry tried to block the release of the data by going to court. When studies revealed how many baby snapper the trawlers and longlines killed, the industry again used litigation to try to block the release of the information. ...*⁶⁴⁴

A brief pilot study of the impact of ITQs in Northland found that the “informal economy” in the fishery was significant. On a similar theme, an official investigation was conducted into evasion of QMS rules in the Bay of Plenty. This study ultimately reported on “‘Operation Buster’ at Tauranga, where officials estimated that 80% of the fish on the domestic market came from the black market” of unreported catch.⁶⁴⁵ So all may not be so ‘perfect in paradise’ as one would deem from *Sharing the Fish...*

(c) *The ‘Private Property Rights’ Situation*

To own ITQ rights in New Zealand, private shareholders must be residents and companies need to be at least 40 percent domestically owned. When ITQs were initially issued, there was a buyback of fixed quota entitlements that “exceeded the TACs for many inshore species.” Compensation by the government of \$NZ45 million was needed to repurchase “15,800 out of 21,500 metric tons in catch reductions sought.”⁶⁴⁶ Furthermore, ITQs were first defined on a “fixed tonnage” basis, and then changed to a “proportional” basis on October 1, 1990, after a lot of negotiation and a subsequent five-year period of government compensation to ITQ owners.

In addition, an effort was made to shift “all of the avoidable costs of managing, researching, and enforcing commercial fisheries” to the industry⁶⁴⁷ – against strong resistance – at an attributable level of costs of “about 5% of the landed value of the catch in cost recovery charges.”⁶⁴⁸ In New Zealand the bulk of the ITQ trading is done privately or by a few quota brokers; “a national fish

⁶⁴³ Duncan, *loc. cit.* (note 638 above), citing Catherine Wallace, “Tradeable Quota in Practice: Decision Making, Institutions and Outcomes: The New Zealand Experience over 11 Years” in Arne Eide and Terje Vassdal, eds., *Proceedings of the Ninth Biennial Conference of the International Institute of Fisheries Economics and Trade*, Tromso, 1998.

⁶⁴⁴ Feldman, *Op. Cit.* (note 642 above).

⁶⁴⁵ Leith Duncan, personal communication, 14 October 1999.

⁶⁴⁶ *Sharing the Fish*, p. 348.

⁶⁴⁷ *Ibid.*, pp. 355-56.

⁶⁴⁸ *Ibid.*, p. 163.

quota exchange” was started in early 1987 by the New Zealand Fishing Industry Board, but “ceased operation after a few years because of the low volume of trades.”⁶⁴⁹

As ITQ rights were initially granted in perpetuity with ‘property’ status, there has been no evident issue with regard to ‘public trust’ doctrines in the New Zealand case. One last thing can be said: the *security* of the ‘property rights’ embodied in ITQs is claimed to be the source of stewardship practice and conservation incentives. One might have reason to question this claim on the basis of what was reported above, although none of that information appears in *Sharing the Fish*. We wonder why.

(d) *Economic and Community Effects*

In *Appendix G* of *Sharing the Fish*, a rosy picture is painted of the economic and social outcomes of New Zealand’s ITQ program, with the most *critical* comments in the main text of the NRC study.⁶⁵⁰ According to this source, ITQs in New Zealand have led to: a secure access to the resource; market-oriented production changes benefiting consumers; a reduction of fleet overcapitalization; greater freedom, flexibility and responsibility for industry members; improved industry efficiency, competitiveness and profitability: although it is also admitted that there are very few data to warrant these claims. It does seem that the ‘race for fish’ has been eased by ITQs, although even that is hard to assess.

Astonishingly, given what we know of the Icelandic case (to follow), and the very consistent pattern of problems with consolidation of ITQ shares everywhere else they exist, along with their devastating effect on local fishing communities, *Sharing the Fish* has only one thing to say on the ‘economic and community effects’ of New Zealand’s ITQ program, which is, essentially: “I don’t know.”⁶⁵¹ What follows is the sum total of *Sharing the Fish*’s contribution to our understanding of this subject:

Economic and Social Outcomes for Fishery-Dependent Communities. *New Zealand has few communities that are largely dependent on fishing. The economic and social outcomes of the ITQ program for these communities have not been analyzed.*⁶⁵²

Period.

Fortunately, we are not completely without information on this subject, despite its absence in *Sharing the Fish*. First, the consolidation of fisheries under ITQs is just as high as everywhere else. As reported by the South West Nova Fixed Gear Association’s Report on the Canadian Maritimes Fishery, all is not as *Sharing the Fish* implies in New Zealand fisheries. Here is what they have to say:

The ‘Real’ New Zealand. *In recent years, the Department (DFO of Canada) likes to refer to the New Zealand model as a success story of privatization. Evidently, they don’t read their own studies. In “Enforcement Under the New Zealand Fisheries Quota Management System” prepared for DFO by Meltzer Research and Consulting in May 1991, we find:*

⁶⁴⁹ *Ibid.*, p. 349.

⁶⁵⁰ This is the opposite pattern from every other case study in *Sharing the Fish*, which raises a question about the probable primary author’s spin on *Appendix G* in this study. Annala is science policy manager for NZ’s Ministry of Fisheries...

⁶⁵¹ Which opens a question of whether anyone there has bothered to ask!

⁶⁵² *Sharing the Fish*, p. 363.

Despite the ITQ system's emphasis on property rights and the interest of each quota holder to respect their personal allocation of the TAC, it appears that New Zealand fishers' behavior has not been modified by the new management regime. Fishers still try to 'beat the system' in various ways (...keep in mind that almost all the fishers referred to work for large companies).

The consultant further reports on the same page the failure of modifications in the ITQ system to combat dumping and overfishing. ...

Meltzer points out the extensive concentration that has taken place in the industry on page thirteen. "The New Zealand commercial fishery has been consolidated under QMS [ITQs] with five major quota holders in the inshore and three major participants in the deepwater fishery." She continues: "It is estimated that 80 percent of the New Zealand quota is held by 10 percent of the quota holders with 20 significant quota holders in total. These major quota holders are fully integrated companies – they fish, land the catch, process and sell the product."

Meltzer blames the consolidation within the industry and government ineptitude for posing "fundamental problems for quota monitoring compliance."

Recently, a former DFO scientist who helped set up the New Zealand system wrote that in her view ITQs do not make quota holders opt for conservation. This reinforces a conclusion on page twelve of the Report by Angel et al. that although Individual Quotas may relieve some pressure to discard, nonetheless "the incentive under quota management to highgrade smaller, low-value fish or to discard catches of restricted species remains." ...⁶⁵³

Additional and more recent information on this subject is found in a New Zealand fishing industry source already noted above that "seems to have been suspended."⁶⁵⁴ Peacey's study reveals, as of the end of 1995, the top 30 companies (many themselves grouped in consortia), owned 91% of the total quota (72.5% of inshore and 97.1% of deepwater quota), of which the top 3 controlled 56.7% of total New Zealand fishing quota.⁶⁵⁵ Also, according to Duncan: "A spokesman for owner-operators claimed publicly that in the last three years their numbers have declined by 25 percent."⁶⁵⁶

Curiously, *Sharing the Fish* also claims that no studies have been conducted of the impact on local communities of the New Zealand ITQ program.⁶⁵⁷ Curiously, because there are several studies of Northland fishing communities, specifically on ITQs' actual or potential effects, done between 1985 and 1994. Two studies by Fairgray were performed for the Ministry of Fisheries, to establish a benchmark for ITQ planning. Here is a general overview of findings on New Zealand ITQs' impact on local fishing communities.

Northland is evidently the only region for which an attempt was made to determine the potential impact of ITQs on local communities in advance of their ratification.⁶⁵⁸ Northland has always been

⁶⁵³ SWNFGA, *Op. Cit.* (note 611 on page 2 above), Section 5.4.

⁶⁵⁴ Cf. text over note 640 on page 2 above.

⁶⁵⁵ Jonathan Peacey, "The New Zealand Seafood Industry Economic Review, 1994-1996" (Wellington, NZ: The New Zealand Fishing Industry Board, 1996), as interpreted by Leith Duncan, *loc. cit.* (note 638 on page 2 above), p. 3.

⁶⁵⁶ *Ibid.*

⁶⁵⁷ See the statement from *Sharing the Fish* quoted on page 2 above over note 652.

⁶⁵⁸ Cf. J. D. M. Fairgray, "Individual Transferable Quota Implications Study: First Report, Northland Fishing Communities, 1984" (McDermott Associates, prepared for MAF Fisheries Management, 1985) and "Individual Transferable Quota Implications Study: Second Report, Northland Fishing Communities, 1985" (McDermott Associates, prepared for FMD, MAFFish Wellington, September 1986).

economically dependent on fisheries, and “is one of the most economically depressed regions of New Zealand...”⁶⁵⁹ Interestingly, a subsequent 1993 study by Parker and Hufflett for the New Zealand Fishing Industry Board – aimed to show how the seafood industry benefits the region – did not make comparisons with the earlier Fairgray studies.⁶⁶⁰ Although the analyses differ, “there appears to have been a major decline in direct employment” between 1985 and 1993 in the Northland area. In addition, a survey by Hawkey in 1994 of the same region found that when the QMS was established, *political, economic and social factors* had displaced and overridden its *conservation goals*,⁶⁶¹ just as Davis said about Canada and ITQs in general.⁶⁶²

What has happened in the Northland region has been “nothing short of an economic disaster”⁶⁶³ for the small local fishing communities of owner-operated vessels in the inshore fleet, with increased unemployment, loss of fishing rights and vessels, and the relocation of many people into more urbanized areas to find jobs. Those who had once supported the ITQ plan, by 1995, were expressing a sense of

... “betrayal, apathy and disgust.” *Small fishermen were still under a lot of pressure to sell their quota to the larger companies. ... Crew wages were low. The net effect had been a transfer of profits from the local company to company shareholders. ... Fishermen believed that under market forces conservation seemed impossible and leasing quota increased the incentive to highgrade. ... The poor state of the fisheries, the complexity of the system with quota balancing, bycatch tradeoffs, deemed values, resource rentals and subsequent moves to user-pays mean that far from increasing incentives to fish sustainably or for the benefit of their communities, fishermen regard the system primarily as extra taxes. ... The fishermen see the QMS as a source of revenue for the government that reduces their incomes and economic viability. ... They also claim independent fishermen were being forced out because they were “tired of being treated like criminals” as well as by economic attrition. ... Clearly, then, the ITQ system has not saved the prime coastal species for which it was introduced, nor has it realised the hopes of those who pushed hardest for restructuring. ...*⁶⁶⁴

So once again, despite the absence of comment thereon in *Sharing the Fish*, we find economic collapse in local fishing communities stemming from ITQ programs’ devastating effect on those least able to handle or react to the stress. The conservation and stewardship claims in *Sharing the Fish* about ITQs also are rather illusory, if such anecdotal and cultural evidence is to be believed.

(e) *General Conclusions and Inferences from New Zealand’s ITQ Program*

The reportage in *Sharing the Fish* on the New Zealand fisheries quota management system (QMS) is strikingly optimistic and positive, almost without any indication of problems beyond a few

⁶⁵⁹ Duncan, *loc. cit.* (note 638 on page 2 above), p. 7.

⁶⁶⁰ Graham Parker and James Hufflett, “the Northland Seafood Industry: Its Importance and Place in the Region” (New Zealand Fishing Industry Board, Economics Section, June 1993).

⁶⁶¹ David Hawkey, “Property Rights, ITQs and the Slice of the Fish Pie: An Appraisal of Fishery Culture and Conflict in the Northland Region” (University of Auckland, Department of Economics, unpublished research essay, 1994).

⁶⁶² Cf. the discussion and quotes over note 624 in the latter portion of *Section IV.F.3(d)* ending on page 2 above.

⁶⁶³ Duncan, *loc. cit.* (note 659 above).

⁶⁶⁴ *Ibid.*, pp. 7-8. These impressions are reported by Leith Duncan from a tour he took in 1995, which he described thus: *A two week trip through Northland in 1995, to obtain local perceptions of the impacts of the ITQ system on the fisheries and communities found major concern over the loss of jobs, a thriving ‘informal economy’ and commercial fishermen fearful of compliance ‘stings’ even more reticent than usual with strangers. There was a feeling of general depression in relation to fisheries. ...*

passing mentions of unconfirmed reports of quota busting, overfishing TACs, discards of bycatch and highgrading issues. In addition, the few critical comments are mostly found in the text, but then glossed over in *Appendix G* (which is so much the opposite of every other case presented in *Sharing the Fish*, that one is left to wonder if this says more on the author than on his subject). The lack of any attention at all to the most sensitive issue – consolidation of ITQ ownership and the resulting effect on communities – suggests strongly either unconcern, complacency or denial.

The other reports imply – as in Alaska – that those who ‘win’ with this system are happy, yet those who ‘lose’ are not (an understandable pattern). But, nevertheless, this sugar-coated depiction of ITQs in New Zealand – especially once compared to the situation described below in Iceland – either reflects a very successful process of fisheries management with a lot of ‘losers’ who dislike being confronted with their inadequacy, or a system blind to its problems. A central theme throughout the discussion of the QMS in *Sharing the Fish* is the *absence of data* on the ITQ system or *research* about its ongoing impact on conservation or fishing communities. So other than this speculation, in the full context of what was set forth above, nothing more need be said. The Iceland case should answer the question; the story of ITQs there, in a place so wholly dependent on fisheries, can only be called dramatic.

5. The Iceland ITQ Program

(a) *A Brief History of Iceland’s ITQ Program*

The waters surrounding Iceland are highly productive, and the Icelandic economy is dependent on fishing. For example, in 1996, 73 percent of its exported goods were fishery products. Starting in 1970, Iceland backed an aggressive vessel construction program leading to overcapacity in just a few years. By 1977, attempts were made to limit the fleet, that proved totally ineffective; by 1982, other ideas were being proposed to regain control over the ‘race for fish’ and the overcapacity problem.

Two primary aims led to Iceland’s ITQ program: *conservation needs* and desire for *economic efficiency*. Traditional limits and other management tools were seen to fail, and – according to *Sharing the Fish* – there was also “a general demand for extending the boundaries of the free market and the role of private property in Iceland.”⁶⁶⁵ The view was that ITQs shall lead to efficiency, conservation, better management, and resolve other fisheries problems as well. Vessel quotas were introduced for herring in 1976 and made transferable three years later; for capelin, the equivalent changes were made in 1980 and 1986, respectively. ITQs were introduced for cod in 1983, with a licensing system to limit capacity. In 1990, a fisheries law was passed to extend the ITQ program to all species of fish.

In the 1990 ITQ program – originally passed as “a temporary emergency measure” – quotas were based on percentage of TACs, and they were “gifted” in proportion to catches over the prior three years before each program began. Initially shares were tied to vessels and not tradable or divisible, but these provisions soon were relaxed in favor of full transferability and with few restrictions on leasing. As a result, trading in quotas has become “brisk,” says *Sharing the Fish*.⁶⁶⁶

A stronger monitoring and enforcement process has been needed in Iceland, though illegal catches still are only modestly penalized. There have been some (temporary) ITQ forfeitures for

⁶⁶⁵ *Sharing the Fish*, p. 81.

⁶⁶⁶ *Ibid.*, p. 83.

more serious fishery violations, and there is also anecdotal evidence of highgrading and discarding fish not covered by quota. Part of Iceland's enforcement problem may rise from a widespread discontent with the ITQ program, as reported in *Sharing the Fish*.⁶⁶⁷ As sagely noted therein: "Regardless of how well any fishery management plan is designed, noncompliance can prevent the attainment of its economic, social and biologic objectives."⁶⁶⁸

(b) *Conservation and Stewardship Issues and the Precautionary Approach*

Under ITQs in Iceland, herring stocks have recovered due to very conservative TACs, although: "Whether or not ITQs have contributed to this recovery is difficult to determine."⁶⁶⁹ The cod stocks have collapsed, due to the government's short horizons in keeping TACs too high: "The government has consistently exceeded the recommendations of the Marine Research Institute because of the importance of the cod stock for Iceland's economy and an unwillingness to accept large short-term losses to achieve longer-term gains." The caving in to economic concerns in the private sector – in its shortsighted urge to overexploit our resources – has overruled the scientific counsel from marine science experts, such that – as *Sharing the Fish* opines – "it would seem that the Icelandic government has been unduly careless in its trade-offs between the present and the future."⁶⁷⁰

Sharing the Fish does not blame ITQs for the continued decline in cod and other fisheries stocks, attributing overfishing beyond TAC levels to the exemption of vessels under 6 GRT. But to the extent that ITQs have led to a concentration of economic power and thereby increased the influence of fishing industry interests on government policy – all of which seems to be the case – excessive TACs shall not be unrelated to the ITQ program. In any event, Icelandic ITQs have failed in two other ways: fleet capacity has not declined and neither has highgrading, discards and other wastage of fish.

One of the primary aims of ITQs is reduction of fleet capacity, yet the buyback of vessels in Iceland was started again in 1994, which "indicates that expectations that the ITQ program and the market approach to management would eliminate or reduce overcapacity have not been fulfilled."⁶⁷¹ The problem is understated by looking only at the decline in *numbers* of vessels, as their size and total GRT have increased due to the buyout of smaller participants by larger concerns. As *Sharing the Fish* puts it, "while the giants have grown in number through the years, they have been accumulating quota to a disproportionate degree."⁶⁷²

A "trend toward fishing in distant waters" by Icelandic vessels has been "encouraged by ITQs," due to a closure of access and the leasing away of ITQ rights by these overseas ships. The *exportation of overcapacity* out of Iceland to other countries simply "creates classic common-pool problems internationally. Vessel owners are racing for fish on disputed fishing grounds, inviting conflicts with foreign governments,"⁶⁷³ at least if foreign authorities have the strength to control or resist these incursions. Some of the problems spawned by ITQs show up in third-world countries, where regulations are absent or ineffectively enforced in their fisheries.

⁶⁶⁷ Especially cf. *ibid.*, pp. 340-42.

⁶⁶⁸ *Ibid.*, p. 175, as quoted in note 409 on page 2 above.

⁶⁶⁹ *Ibid.*, p. 329.

⁶⁷⁰ *Ibid.*

⁶⁷¹ *Ibid.*, pp. 85 and 332.

⁶⁷² *Ibid.*, p. 333.

⁶⁷³ *Ibid.*, p. 332.

Another essential selling point of an ITQ management program is its stewardship and conservation incentives over fisheries stocks, which *Sharing the Fish* admits must be taken on “faith” in neoclassical theory.⁶⁷⁴ In Iceland, this “faith” has not been confirmed as anything but illusion:

...Discarding small and immature fish during fishing operations and highgrading the catch seem, however, to continue to be serious problems in the Icelandic fishery and these problems may have escalated with ITQs. Since quotas are fixed and excessive catch is a violation of the law and subject to prosecution, a quota shareholder tends to land only the portion of the catch that generates the highest income.

It is not uncommon for vessels that have finished their cod ITQs to accidentally catch a few tons of cod while fishing haddock or another demersal species. If they land the cod, they must acquire an equivalent amount of cod ITQs to cover their catch to prevent loss of their fishing licenses. The price of ITQs leased for this purpose tends to fluctuate considerably in relation to supply and demand. According to many fishermen, this results in considerable amounts of dead fish being thrown back into the sea, especially toward the end of the fishing year when ITQs are scarce and the lease price is inordinately high. ITQs may, therefore, contribute to the waste of living resources, resulting in the erosion of ecological responsibility. It is difficult to estimate the scale of such practices, but it may be noted that the Icelandic Parliament expressed grave concerns and passed strict laws on the “treatment” of fishing catches in June 1996.⁶⁷⁵

This statement – from *Appendix G* – directly contradicts “the political ... faith ... that privatization will foster ecological sensibility” in the main text that discusses the justification of ITQs.⁶⁷⁶ It resonates with an often-repeated theme in *Sharing the Fish*, that the concentration of economic control into the hands of only a few ITQ owners shall be ‘efficient,’ despite the increase in market – and therewith *political* – power over resource exploitation. The claim is not proven nor warranted, only asserted in *Sharing the Fish*, in statements such as the following on Iceland’s ITQ management system:

*...[The] concentration of quotas in large firms is probably an inevitable consequence of increasing the efficiency of the industry. There are most likely economies of both scale and scope in fishing and fish processing, and the fact that the quotas have been bought and sold freely in an open market indicates that they have gravitated to the most cost-effective firms.*⁶⁷⁷
...

The problem is that the mere acquisition of ITQs says *nothing at all* about *why* they are being purchased, as a means *to what end!* The world is not just *economic*; it is suffused with political power, rights to closure of access, and economic control over irreversible loss and consequential effects. Such are essential distinctions between ‘neoclassical’ and ‘institutional’ lenses in their selective focal attention to what is important ‘out there.’ And even neoclassical theory opposes centralized economic control and market power – especially in its abuse of political influence over

⁶⁷⁴ *Ibid.*, p. 35, as discussed at the start of *Section IV.D.* and quoted with notes 439 and 440 on page 2 above; also cf. note 419 on page 2 as well.

⁶⁷⁵ *Ibid.*, *Appendix G*, pp. 329-30.

⁶⁷⁶ *Ibid.*, p. 35; also cf. note 674 above.

⁶⁷⁷ *Ibid.*, p. 335, as also discussed in *Section IV.D.3.* above and quoted over note 445 on page 2 above. One can perhaps connect to the point by substituting the word “irresponsible” for “cost-effective” in the closing line of this statement.

regulatory arrangements (the “capture theory” addressed above)⁶⁷⁸ as a threat to ‘efficiency’ and ‘equity’ in economic society.

Yet *Sharing the Fish* assumes – without any justification for the connection – that the accumulation of ITQ shares shall *indicate the ‘efficiency’* of this shift of power and control over ocean resources. In the presence of evidence for (and concern over) *resource waste directly attributable to ITQs*, such “faith ... that privatization will foster ecological sensibility” is simply and wholly unwarranted. Economic incentives strongly encouraging inefficiencies and destruction of fish are redolent throughout the ITQ conception, if focused upon through any other than the ‘rose-tinted’ glasses of orthodox science and ‘neoclassical’ economics. So what we have found is a clear example of how *our analytical frame* biases how we see and interpret the facts surrounding our understanding into *amenable images* shoring up preestablished designs and the identities standing upon them.

But what you never see in *Sharing the Fish* is any direct connection drawn between ITQs and the stewardship problems of fisheries. Earlier, Copes was quoted as tying the pattern of fisheries stock collapses to ITQs’ incentives for overfishing and wastage of fish. The rapid declines in all three cases occurred in long-established programs of ITQ fishery management.⁶⁷⁹ So we conclude that *claims of conservation and stewardship practice stemming from ITQs are false*. And much evidence and theory has been cited to show why this must be so. *Distancing cause from local effects* shall lead to a loss of accountability and externalization of cost. Adding financial pressure to the mix slams the point home: fishers will take whatever they can, highgrade when needed, discard as well, and do what they must to make ends meet. The safety losses show further evidence of financial stress. So even in *Sharing the Fish*, ITQs’ failure is clearly exposed in their report on Iceland’s system.

Hannibalsson offers some insight to stock collapses. First, the Icelandic Ministry of Fisheries simply ignored the advice of scientists on the TACs it set. “As it turned out, the Ministry’s regulations exceeded the scientific advice considerably and the actual catch, in turn, exceeded the limits set by the Ministry.” But that was not all. The ITQ plan is also at fault: the ‘perception’ does not match the facts. As Hannibalsson explains:

*There is no doubt about the fact that by initiating the quota system, authorities hoped to protect the fish stocks, and in particular the cod. The result, however, has turned out to be the opposite. According to the [Marine Research Institute], the cod stock has been on a steady decline in the past years, and unless the fishing fleet is drastically reduced, there may be a 50% chance of a Newfoundland-like collapse of the Icelandic cod stock within the next three years. The fleet is larger than ever, measured in tonnage, engine power – and foreign debt. It has to be operated at maximum effort in order to be able to meet financial obligations. This is in drastic contradiction to the advice of the scientists: the TAC of cod is now 150 thousand tonnes, yet the fleet is equipped to catch about 400 thousand tonnes of cod – and still keeps growing!*⁶⁸⁰

⁶⁷⁸ Cf. Sections III.B.10. and III.B.11. above for an extensive review of this problem.

⁶⁷⁹ Cf. note 613 on page 2 above.

⁶⁸⁰ Ólafur Hannibalsson, “The Dark Side of the Quota System”, originally published as “Kvotesystemets Skyggesider” (*Nord Revy*, Journal of NordREFO, and independent Research Institute under the auspices of the Nordic Council of Ministers, 4/5, 1995), reprinted by The North Atlantic Islands Programme Internet, ITQs 10/11/97.

Hannibalsson also points to the wanton destruction of benthic habitat by the use of trawlers for fishing:

Biological Impact. An increasing proportion of the fishing is conducted on large vessels using a trawl. The biological impact of this harvesting method has always been debated. It is commonly perceived as a destructive instrument, which plows across the bottom of the sea eroding plants and benthic life, leveling the ground and destroying the shelter for the young – in short, transforming the bottom of the sea into a lifeless desert. Little scientific knowledge, however, is as yet available on the effect of the trawl as a harvesting gear. ...

[Furthermore] ... The increasing number of factory trawlers may be related to the fact that they have an opportunity to bend the fisheries management rules. It has been pointed out that compared to land-based factories, the factories at sea render a much higher yield from their catch than would be expected. This raises questions as to the reliability of their catch figures and their treatment of the raw material with respect to discarding catch of inferior quality.

Vessel owners have vehemently denied accusations of this kind... An ever-increasing number of incidents have been reported where catches, particularly undersized fish, are being thrown overboard; cod is being discarded when the fisherman has used up his cod quota but still retains the right to fish other species; catches are landed but not reported, the tonnage and species composition of the catch are misreported, etc.

Authorities claim that misreporting of catch composition (passing one species for another) is highly unlikely because it requires the cooperation of so many links in the chain of sellers and buyers at home and abroad, if the operation is to be successful. Recently, however, several examples of quota misreporting have been disclosed. In one case, high-priced cod was passed off as saithe in the records... Another recent example concerns a trawler landing a given amount in Germany, and at the same time passing on unrecorded containers of fish to Britain. Thirdly, in spite of the fact that selling to foreigners the right to fish in Icelandic waters is prohibited by law, an intricate web of forgery and deception was disclosed, whereby a German firm had in fact bought the quota, and rented vessels to fish it and a factory to process the catch, according to the company's specifications. Those few recent examples should suffice as a reminder of human ingenuity when it comes to side-stepping regulations which do not have public support.

Hannibalsson asks a critical question about these sorts of practices, which are widespread to the extent that people feel they are not well-served by a system: *What sort of data are scientists using on which to base their estimates of fishery biomass stocks and TACs?*

Garbled Science. Considering that scientific advice is to a large extent based on records of landed catches, it seems obvious that the quality of the advice suffers severely if those figures are unreliable. This problem is by no means confined to Iceland, but is equally pressing in other countries which have introduced fishing quotas, systems that carry a built-in temptation to falsify records in order to maximize the yield from the precious and limited right to fish. Scientists now receive more figures than ever before, yet these figures are less reliable than ever. It has been suggested that, in the reports submitted to the Fisheries Council of the European Union, the only reliable figures were the page numbers.

Police State Authorities in Iceland have reacted to these misdemeanours in just the same way as authorities elsewhere: with an ever-expanding surveillance system... It is claimed that in Canada, where fishing quotas were introduced more than 10 years ago, administrators and

*surveillors now outnumber the fishermen. Even so, the fish stocks off Newfoundland collapsed dramatically, forcing tens of thousands of fishery workers into unemployment. ...*⁶⁸¹

The implications of all this should debunk any illusions about the “faith” that *Sharing the Fish* asks us to have in ITQs’ conservation effects on stewardship practice, favoring “ecological sensibility.” In truth, there is no support for this view, either in fact or theory. Unfortunately, unrealistic conceptions shall have a great deal of power over us, in the absence of full understanding of why *openmindedness* should be treated (always!) as axiomatic. Closed-system models do not apply to openly interdependent domains. Stewardship properties shall not arise from ITQs’ severing common ties, accountability and distant cause from local effect. Tightening feedback control loops suggests a different approach.

(c) *The ‘Private Property Rights’ Situation*

The ‘private property rights’ situation in Iceland has had time to evolve from ‘permits’ to what – according to *Sharing the Fish* – is “gradually acquiring the characteristics of full-blown private property, despite legal clauses to the contrary.”⁶⁸² Yet, as specified in the 1990s law, “ITQs remain ... the ‘public property of the nation’.”⁶⁸³ How are these statements, on the very same page, to be addressed? Perhaps the courts shall decide...

The evolution of ITQ ‘property rights’ away from ‘permits’ is slow, but just as surely inevitable. In Iceland this is occurring, despite the opposition of some, with the applause of ITQ advocates since *security and inviolability* are the secret to ITQs, at least on their own theoretical ground.⁶⁸⁴ The process – as described above⁶⁸⁵ – reflects how ‘common law’ works: a vested interest, once created, is next defended in court to emerge as a ‘right,’ so – by its legal protection – duly anchored in place. Such is almost a perfect description of what is occurring in Iceland.

The original ITQ plan for cod was sold to the public and Parliament as a one-year “temporary emergency measure” to restore lost stocks. Successively extended in 2-3 year increments, “in 1990 a program of quotas of indefinite duration” was enacted that “did not, therefore, constitute true private property rights.” The 1990s law applied ITQs to all vessels over 6 GRT and to all major fisheries for an undefined time, and “ITQs became fully divisible and independently transferable, making them more akin to permanent property rights.”⁶⁸⁶ Then the Icelandic courts started to redefine these ‘permits’ as *rights*, sequentially adding provisions and precedent to their initial legal identity as a ‘license’ to fish.

ITQ ‘rights’ were at first challenged in Parliament on their ‘legality’ under Iceland’s ‘public interest’ doctrine, but were accepted on the premise “that ITQs represented temporary privileges, not permanent private property.”⁶⁸⁷ Yet, as *Sharing the Fish* explains: “The issue of ownership ... is still contested.” Tax authorities insist “that ITQs are to be reported as ‘property’ on tax forms and that the selling of ITQs involved a form of ‘income.’ ... Owners of quotas may write them off for tax purposes over five years” and they are also “passed on as inheritance from one generation to

⁶⁸¹ *Ibid.*

⁶⁸² *Sharing the Fish*, Appendix G, p. 337, also stated in the main text on p. 86, but with the word “full-blown” omitted.

⁶⁸³ *Ibid.*

⁶⁸⁴ This subject is addressed in *Seciton IV.C.5.*, starting on page 2 above.

⁶⁸⁵ Cf. *Section IV.C.4.*

⁶⁸⁶ *Sharing the Fish*, p. 326.

⁶⁸⁷ *Ibid.*, p. 337.

another.” Recently, ITQ rights were ruled to be assets of an estate in divorce court, “which may be seen as one further step to the formal recognition of quota shares as private property.”⁶⁸⁸ In Iceland, the use of ITQ shares as collateral is still under debate, though *Sharing the Fish* supports such a use.⁶⁸⁹ So “if economic and legal practice recognize quotas as collateral, it will be a further step in the recognition of quotas as private property, undermining the significance and effect of the statement in the current law on public ownership.”⁶⁹⁰ So even *Sharing the Fish* acknowledges, if rather reluctantly, that ITQs are “acquiring the characteristics of private property,”⁶⁹¹ and that “the use rights of fish resources are becoming increasingly entrenched as private property while the resources themselves (i.e., the fish stocks) are proclaimed as being publicly owned. The implications of such a contradictory situation are unclear” at this time in Iceland. (This is less so in the United States, since Congress still has the option to reject this system of management before it spawns such intractable problems).

The *leasing* of ITQ shares has also played a role in their ‘proptertization,’ despite some minor restrictions on both their ownership and transferability.⁶⁹² “Trading of quotas appears to be brisk,”⁶⁹³ and though, initially, “ITQ leasing did not seem ... particularly common,” over time large-scale leasing has become more formalized into “long-term contracts between large ITQ holders and smaller operators, in which the former provide the latter with ITQs in return for the catch and a proportion of the proceeds” in an “arrangement usually referred to as ‘fishing for others’...”⁶⁹⁴ These relationships shall likely also become institutionalized, strengthening economic control of vested private ITQ owners over ‘common’ ocean resources at the expense of ‘public interests’ so abrogated thereby.

Hannibalsson characterized the conflict between the ‘public interest’ and ‘private property’ aspects of ITQs, with a connection to the ‘gifting’ of initial endowments:

Common Property of the Nation. The first paragraph of the quota laws explicitly states that the fishing grounds are the common property of the Icelandic people. Distributing the exclusive rights to fish, free of charge, to those who happened to be vessel owners at a particular time seems to be contrary to the spirit of this law. From the beginning it has been argued that the nation should reap some direct benefits from its natural resources, at least by charging a fee for the fishing rights. ... There seems to be a consensus of opinion ... that if the quota system is to turn into a permanent phenomenon, the term “common property of the

⁶⁸⁸ *Ibid.*, pp. 337-38.

⁶⁸⁹ *Ibid.*, p. 200: “Findings: IFQ programs will achieve greater benefits if the interests they create are stable enough to encourage long-term investments, to be useful as loan collateral, and to engender in quota holders a sense of long-term stake in the resource.”

⁶⁹⁰ *Ibid.*, p. 338.

⁶⁹¹ *Ibid.*, p. 86.

⁶⁹² *Ibid.*, p. 327. Vessels under 6 GRT are exempted from ITQ ownership, but are subject to catch and seasonal limits. Leasing of shares “cannot be repeated indefinitely” either: ITQ owners “must fish at least half of their quotas every second year” and “must have access to a vessel to which the quota shares are allocated,” though “legally tenuous” exceptions (of “absentee ownership”) are reported. Some other ‘pro forma’ restrictions seem ineffective, such as seeking consent from unions and government to lease quota out of an area.

⁶⁹³ *Ibid.*, pp. 83 and 328.

⁶⁹⁴ *Ibid.*, p. 336.

nation” would be rendered meaningless unless the nation receives some direct benefits from that ownership.⁶⁹⁵

Hannibalsson elaborates some additional issues and problems from a ‘proPERTIZATION’ of fishing access, suggesting another ramification of an ITQ scheme with regard to its safety effects:

*Property or Not? The original quota, still retained by the first receiver, is tax exempt. However, permanent quotas acquired through purchase are taxable, and quotas acquired by inheritance are also subject to tax. Such quotas are depreciated annually and written off in five years’ time. Banks and financial institutions have taken the quota as their main security when granting loans. The age and condition of the ship cease to be of any importance; what matters is the fishing quota attached to the ship. The value of the ship now depends on the value of its quota. A government bill revising the general rules on mortgages, proposed in Parliament last year, ran into strong opposition and failed to pass since it explicitly made this practice legal. The general feeling is that no one should be allowed to put up as collateral something which does not properly belong to him.*⁶⁹⁶

Excerpts from a “Fishfolk” posting by Eythorsson on the Iceland Supreme Court decision, with some explanation of its meaning, offer additional insight. Wilson began it by calling attention to a paper by Gisli Palsson on this ruling, “which raised fundamental questions about the constitutionality of the ITQ system in use in Iceland. The result was much scrambling by managers, the industry, and the politicians.” Campbell of DFO-Canada queried about the specific case issue, that “the decision did not specifically question the constitutionality of the use of an ITQ system in Iceland, but, rather, ... of how the initial allocation of shares was handled. Is this not the case?” Eythorsson attempted to clarify this:

...The juridical principles behind the Supreme Court decision of December 3, 1998, as I understand them, are Art. 65 in the Icelandic constitution (based on international conventions on human rights), which claims equal rights for all citizens, and Art. 75, about freedom to choose employment. According to this article, the freedom to choose employment can be restricted only for reasons of public interest. According to the Supreme Court, restrictions upon fishing effort in order to prevent resource depletion are clearly of public interest. The Supreme Court also agrees that the allocation of fishing quotas to operative vessels according to catch history (in 1984) was a reasonable reaction to the resource situation at the time. Later, this allocation was made permanent. The Supreme Court does not agree that the act of transforming the catch quotas (allocated in 1984) into permanent rights and thus giving great, permanent privileges to the owners of operative vessels in 1984, can be justified by any public interest. This is also supported by referring to Art. 1 in the 1990 fisheries management law, which makes clear that the fish resources within the EEZ are public property, and that quota shares allocated under the law will not constitute private ownership to, or irreversible allocation of, fishing rights.

*So, what is seen as unconstitutional is the principle of allocating permanent rights to harvest publicly owned resources, not the “initial allocation” as such.*⁶⁹⁷

⁶⁹⁵ Hannibalsson, *Op. Cit.* (note 680 on page 2 above).

⁶⁹⁶ *Ibid.*

⁶⁹⁷ Einar Eythorsson “Fishfolk” re: Iceland Supreme Court Ruling on ITQs, Friday, 21 May 1999, 11:28:46 METDST. The paper by Gisli Palsson referred to was “the lead article” of the *Common Property Resource Digest* (Issue #48, 1999).

This decision in Iceland makes sense, and does suggest the conflict between ‘permanent rights’ to exclude access to a ‘public common resource,’ and ‘traditional freedoms’ to which we are habituated culturally and economically, among them the ‘right to fish.’ But joined with all our rights are responsibilities of importance, so our systems shall not break down. This is part of the ethics of a ‘race for fish’ mentality, and the ‘tragedy of the commons’ as a ‘systems archetype,’ ‘problem of interdependence,’ etc. The fabric of cooperation is only strong if everyone operates under similar rules and trust.

The ‘free gifting’ of ITQs as a ‘permanent right’ or ‘grant in perpetuity’ – without any ‘use fee’ or ‘value payment’ for the resource – splits us into warring factions of rivalry and hostility, instead of bringing us all together to work out the problem. *Ethically*, it is hard to imagine how ‘gifting’ a *permanent* ‘property right’ to *exclusive* access of ‘common’ resources’ is *not* a betrayal of ‘public trust,’ through an enormous giveaway of the full economic value of future returns from ‘publicly owned’ treasures into the private corporate sector, at the expense of ‘efficiency,’ ‘equity’ and traditional fishing communities! So why are we buying a fanciful theory in ‘neoclassical’ economics of fertile – but false – selfish gain? *Broken promises* have emerged in Iceland as a theme in all the unrest over ITQs’ power and distribution effects at the expense of fishing communities and their cultures.

(d) *Economic and Community Effects*

There is a pattern in *Sharing the Fish*, of seemingly always siding with ITQs in the presentation and explanation of fishery evidence. A good example appears in the discussion of ITQs’ impact on the fates of herring and cod. An apparent ‘efficiency’ increase in herring is credited to the ITQ program’s role in restoring stocks, although a continuing crisis in cod resources is tied to high profits and prices for shares, all in less than one page...⁶⁹⁸

The role of the TAC-setting process in these two outcomes is nowhere related to the contribution of ITQs to consolidation of *power* and *influence* over regulatory decisions, although *Sharing the Fish* admits that “catches ... surpassed this [excessive] TAC [for cod] by about 12% annually between 1984 and 1996 ... because of fisheries exempted from the quota program, such as fishing by vessels less than 6 GRT and the hook-and-line fishery in winter.” They also add that: “Discards at sea of bycatch and small and immature fish may also be reducing populations of cod and other species.”⁶⁹⁹ But there is no recognition or acknowledgement of a *relation* between the economic control and political power that is afforded by ITQs, and any undue influence over the TAC-setting process itself. Instead, “the Icelandic government” takes the blame for ignoring the resource scientists at the “Marine Research Institute,” as if TACs were set in a vacuum (as ‘neoclassical’ theory often describes ‘optimal’ acts of choice).⁷⁰⁰

Prospects are good in the herring fishery because stocks have recovered, due to TACs and ITQs. Profits and productivity are high in cod due to rising prices for ITQs and the fish, tied to “increasing scarcity of cod.”⁷⁰¹ The common line appears to be that whatever the status of fisheries stocks, ‘business is good’ under ITQs, just like ‘consolidation’ of ITQ shares is seen as ‘efficient’: “concentration of quotas in large firms is probably an inevitable consequence of increasing the

⁶⁹⁸ *Sharing the Fish*, pp. 84-85.

⁶⁹⁹ *Ibid.*, p. 85.

⁷⁰⁰ *Ibid.*, p. 329, as quoted more fully in the beginning of *Section IV.F.5(b)* above.

⁷⁰¹ *Ibid.*, p. 85.

efficiency of the industry.”⁷⁰² Yet the size – in GRT – of the Icelandic fleet since 1990 has actually risen and not declined, though another explanatory excuse is offered that “some of the increase in capacity may be due to increased distant water fishing, which requires large vessels suitable for long trips,” and not to ITQs.⁷⁰³

But there is no getting around the obvious truth that ITQs are responsible for rapidly rising concentration of ITQ shares “in the hands of fewer vessel owners and companies. Many Icelanders are wary of the rapid concentration of ITQs in the hands of large vertically integrated companies.”⁷⁰⁴ *Sharing the Fish* reports “a steady decrease in total number of quota holders, with a gradual increase in the number of firms holding more than 1% of the quota each.”⁷⁰⁵ This trend has led the Icelandic Parliament to impose ITQ ownership limits of 10 percent on cod and haddock and 20 percent on all other species.⁷⁰⁶ So the impact of ITQs on concentration is not denied: instead, it is deemed ‘efficient’!

The *social and safety effects* of ITQs are a strong concern in Iceland. First, the much-touted ‘safety effects’ of ITQs have not materialized there, any more clearly than elsewhere, under this management system. Mortality among active fishermen “has not changed appreciably during the ITQ period.”⁷⁰⁷ Indeed: “Data provided from the National Insurance Institute show that the frequency of accidents at sea (including non-quota fisheries in international waters) increased from the onset of the ITQ program to 1994...” The only two explanations of this suggested in *Sharing the Fish* are winter fishing for cod (unchanged) and “pressure under the quota program for absentee owners to disregard crew safety.”⁷⁰⁸

The concentration of ITQ ownership into the hands of vertically-integrated concerns has spread its effects across society as a whole, both geographically and between the ‘elite’ and the ‘working crowd’ of active fishing captains and crews, now beholden to ITQ owners for access. *Sharing the Fish* reports a regional shift of fishing activity under ITQ systems away from the smallest villages into the cities and towns, selectively isolating weak communities stranded without the means to cope, while enriching stronger areas at their expense. As *Sharing the Fish* explains, “McCay et al. (1995)⁷⁰⁹ demonstrate a clear geographical shift in quota holdings for the SCOQ ITQ program,” as well as in Canada and Alaska, of the sort described. “In Iceland, the main accumulators of quota are the companies in the larger towns in the northern part of the country. Small communities, with less than 500 inhabitants, have lost a much greater share of their quotas than larger communities.”⁷¹⁰

This effect is especially strong when TACs are reduced to restore a fishery, but: “Whatever the reason for movement of quota out of communities, it affects the entire community, causing employment problems and eroding the tax base of some municipalities.”⁷¹¹ Small communities suffer the worst effects of this displacement: “...Often there are no alternative jobs,” and whole families working small vessels suddenly are unemployed and – with their real estate values trashed –

⁷⁰² *Ibid.*, p. 335, as discussin in *Section IV.D.3.* above.

⁷⁰³ *Ibid.*, p. 101.

⁷⁰⁴ *Ibid.*, p. 102.

⁷⁰⁵ *Ibid.*, p. 85.

⁷⁰⁶ *Ibid.*, p. 102.

⁷⁰⁷ *Ibid.*, p. 86.

⁷⁰⁸ *Ibid.*, p. 340.

⁷⁰⁹ McCay et al., *Op. Cit.* (note 471 on page 2 above).

⁷¹⁰ *Sharing the Fish*, p. 170.

⁷¹¹ *Ibid.*, p. 86.

they cannot sell out and move elsewhere without a terrible loss.⁷¹² Such shall often destroy the very soul of a local community, with an irreversible loss of vitality and – on occasion – recovery options.

Is that what we want from an ITQ system? Must we endorse such inequity in the name of *false* ‘economic efficiency’? A negative answer in this regard is the only acceptable one, and this is just what Iceland’s Supreme Court declared, as already noted above: that the initial endowment of ITQs – in its restriction of access to an elite group based on their fishing activity during some period is an *unconstitutional violation* of anti-discrimination statutes and their ‘right to work’ laws. So has a ‘public interest’ doctrine been reasserted against ITQs, in which this provision of the 1990 fisheries law was struck down? The Court ruled that this Article (5 38/1990) is not constitutional because it “prevents the majority of the public from enjoying the right to work, and the relative share in the common property represented by the fish stocks, to which they are entitled.” And so the Supreme Court of Iceland has overruled a key part of any ITQ plan: the restriction of fishing ‘rights of access’ to only a few at the cost of the many. The results, as *Sharing the Fish* avers, “will, no doubt, be far-reaching.”⁷¹³

One of the reasons that Icelanders are so dissatisfied with ITQs is what this program has done to traditional local fishing communities. Even where there were restrictions against transfers among communities, still they were left high and dry – as it were – by what amounts to a corporate takeover of fishery access rights. As Bogason described the effect:

*ITQs have decimated the inshore fleet in Iceland. In 1991, before the introduction of ITQs, there were 1043 small boats fishing. ...Large corporations bought up 700 of those boats and transferred the quotas to large trawlers. The result has been high unemployment and uncertainty in communities accustomed to almost zero unemployment. ...The increase in unemployment and the decreasing number of jobs in the Icelandic fishery are directly related. ... In 1984 there were 60,000 people employed by the fishery. Today there are 2000 fewer people employed. From 1988 to 1996 the unemployment rate increased from about 1% to 5%... Iceland is a nation that relies heavily on the fishery. There is not that much else for workers to do in Iceland... So when the fishery can no longer provide employment, other employment options are few and far between.*⁷¹⁴

The problem of being excluded from access is only exacerbated by changes for those still fishing, under an ITQ management system. Eythorsson offered a picture of the plight of the ‘tenant fisherman’:

In Iceland, fish quotas have been partly transferable since 1984 and freely transferable since 1991. Here, the assumption that an ITQ-regime will lead to an immediate reduction of catch capacity and discourage investment in the fisheries seems questionable, as the ITQ-regime ... represent[s] an input of “new” capital into the fisheries. As a result of quota leasing arrangements, tenancy relations have developed between parts of the coastal fleet and companies with large quota holdings. Crew wages have in these cases dropped, a situation that has provoked [3] strikes among fishermen. The demand for quotas is influenced by unemployment and lack of alternative sources of income for fishermen. Municipalities are in a number of cases

⁷¹² *Ibid.*, p. 339.

⁷¹³ *Ibid.*, p. 339.

⁷¹⁴ Bogason, as quoted in “Exploring the Alternatives to Individual Transferable Quotas” in the (Eastern Canadian Maritimes) Coastal Community Network Newsletter, Volume 2, Issue 5.

significant participants in the quota market, as there are strong ties between companies and municipalities. A redistribution of wealth and income is taking place as a result of the system.⁷¹⁵

Lest one dismiss this as just a ‘transitional phase,’ Surette confirms that this situation is very unusual in a fishing country like Iceland, especially in traditional local communities whose whole livelihood has – for over a thousand years – been based on the ocean’s bounty:

*In Iceland, some communities have been shut out entirely from their traditional access to the fishery – no one there has a license to fish. For the first time even people from fishing communities that have been stable for a thousand years are showing up on welfare in Reykjavik. This is not the result of a fishery collapse. It is the result of a management scheme put into place as the stocks recovered, one that makes the fishery “modern” and “efficient” – that is, that centralizes it in the hands of a few.*⁷¹⁶

So once again, what we see in Iceland on the ‘economic and community effects’ of ITQ management systems is a disruption of the very fabric of traditional fishing communities and their cultures. The difference in Iceland from elsewhere is that these fiercely independent, rugged people are in rebellion against this seizure of their right to fish, and to live from their coastal fishing activities. Self-sufficiency has no worth to corporate trawler-processing companies, seeking to reap an ever quicker return from marine ecologies suffering from their rapacious short-sighted depletion of fisheries stocks.

(e) *General Conclusions and Inferences from Iceland’s ITQ Program*

As *Sharing the Fish* explains, summarizing events in Iceland that have followed their ITQ plan: “Evidently, then, the Icelandic fishing industry is undergoing an extensive restructuring process, in which large vertically integrated companies have strengthened their position while smaller operators are being marginalized or forced out of business.”⁷¹⁷ *Sharing the Fish* sees this as ‘efficient,’ through its own neoclassical lens: “To some extent, regional concentration of quota shares is unavoidable, a healthy sign of increased economic efficiency. The social costs, however, may outweigh the gains in economic efficiency.”⁷¹⁸ Yet this separation of ‘equity’ and ‘efficiency,’ and the elevation of the latter over the former (“*Efficiency uber alles!*”) – with a neglect of ecological over economic concerns as well – is straight from mainstream economic ‘closed-system’ models of how the world works. Systems approaches shall look quite differently at the effects of an ITQ plan, in a larger inclusive frame.

In this view, widespread discontent in Iceland with ITQs stems from expectation not being met on ITQs’ aim. Many oppose privatization, and non-owning captains and crews feel disenfranchised by ITQs. The ensuing consolidation of economic control and market power into the hands of few, without any user fees or initial payment for the right to exclusive access, sits poorly in Iceland,

⁷¹⁵ E. Eythorsson, “Theory and Practice of ITQs in Iceland: Privatization of Common Fishing Rights” (*Marine Policy*, 20:3, 1996), pp. 269-81.

⁷¹⁶ Ralph Surette, “The ITQ Debate Continues: Community Management vs. ITQs, A North Atlantic Fishery Divided” (source, date, and page reference unavailable).

⁷¹⁷ *Sharing the Fish*, p. 337.

⁷¹⁸ *Ibid.*, p. 170.

especially with ITQs' subservient, dependent 'tenure' relations, and their radiating costs singling out the communities *least able to cope* with the loss of their rights.⁷¹⁹

Sharing the Fish even details some of these problems in *Appendix G*. Privatization of fishing rights is seen as a threat to Iceland's national sovereignty and identity as an island dependent on and devoted to fishing above all else. The initial allocation of quota has made some millionaires, while leaving many more others out in the cold without any access to their traditional livelihood of fishing. The 'gifting' of rights – without any user fees or initial payment – to an exclusive fishery access simply is unacceptable there. The people of Iceland don't like concentration of wealth and power, nor the profit-driven exchange of fishing rights, and "there is much concern with the emergence of ... dependency associated with fishing for others" and over returning to what is seen, essentially, as a feudal system of fisheries management through ITQs.⁷²⁰

The fishermen went on strike against this system in January 1994, again in May 1995 and once more in February 1997.⁷²¹ The summary in *Sharing the Fish* of how ITQs are perceived in Iceland today yields a revealing glance at why we see so many objections to this system of fisheries management. It also offers a woeful look at how ITQs have failed to deliver on promises, *and* how they were sold deceptively at their very inception:

*In summary, many Icelanders seem to have a sense of having been cheated by the designers of fisheries policy, drawing attention to the failures of the democratic political process. The critical decision on ITQs in 1983 was implemented without sufficient public political debate. ... Originally, the ITQ program was presented as a short-term "experiment." Given, however, the relative irreversibility of social transformations of this kind, the ITQ program was hardly the innocent experiment that policymakers tended to speak of. Moreover, the program was presented as a fairly limited and technical exercise. There were no serious indications or warnings of the large-scale structural transformations that later took place. In fact, some of the proponents of the program indicate that a pure market-based program was introduced in moderate doses to avoid public rejection at an early stage.*⁷²²

One unerringly ends with thoughts of 'institutional systems' arguments sketched in *Section III* – on values, social integrity, process, abuses of power, rights definition, and all the critiques of orthodox science in economics – over our ends and means in their unrelentingly-interdependent duality of causal loops. Systems approaches, as Senge warns, suggest that things seldom move as expected, even if viewed through appropriate theory, which 'neoclassical' lenses are *not*. The unrest and dissatisfaction of Icelanders with this shameful episode is – in no way at all – a surprise. Systems approaches shall lead us in altogether a different direction.

But let us first award Hannibalsson "the last word" in this section:

In the end... this is a question of politics. Tremendous vested interests are at stake in ...quotas. The owners include wealthy, well-connected, and influential individuals in Icelandic society who have every reason to fight tooth and nail to protect their newly-found treasure. The Minister of Fisheries claims that the new system has now settled nicely into place,

⁷¹⁹ *Ibid.*, pp. 86-87.

⁷²⁰ *Ibid.*, pp. 340-41.

⁷²¹ *Ibid.*, pp. 341-42.

⁷²² *Ibid.*, p. 342.

*silencing the voices of opposition. To the contrary, the longer it is observed in action, the more prominent becomes [its] dark side. The struggle is just beginning.*⁷²³

6. General Conclusions about ITQs to be Drawn from U.S. and Foreign Experience

So we have now examined the evidence on ITQs in five systems, in the United States and Canada, New Zealand and Iceland. What can be said to summarize and interpret this information on the way to reaching conclusions about the question guiding this section? Does *Sharing the Fish* indeed and truly offer a full and objective analysis of ITQ experience?

Sadly – and disturbingly – the answer has to be: “No.” The environmental, social and economic claims for ITQs – that they promote conservation, meet precautionary requirements, protect the ‘public interest,’ encourage stewardship practice, support traditional fishing communities – simply cannot be shown, as demonstrated by the evidence offered in the NRC’s study (save perhaps in New Zealand, for reasons suggested above).⁷²⁴ Fisheries management through ITQs so clearly has failed to work, and to live up to *any* of its (admittedly overblown) initial promises, that a quite different question is raised about the study itself. Framing issues aside – to be addressed in *Section V* – fisheries simply do not behave in the manner assumed in *Sharing the Fish*.

Social and cultural systems – so deeply imprinted into habit, tradition, custom, behavior, religion and belief – are not just ‘economically’ driven. And even their *economics* shall not be those simplistically captured (and caricatured) in ‘neoclassical’ theory, from any angle or aspect. The wanton destruction of vital community-based co-management systems of fishing ‘commonly-owned resources’ all over the world is being systematically and aggressively savaged by an economic conception that serves to screen a quite different intent. The short-term, myopic ‘conquest-deception-corruption-control-overharvest-depletion-collapse-closure-blame-and-denial’ cycle of fisheries management – in the service of venal, selfish, shortsighted acquisitive values – must stop. It threatens social stability, ecological health and our resource base all over the planet.

Politics shall be either the problem *or the solution* to whether regaining control over the ‘race for fish’ shall be achieved through ethical oversight, trust and *cooperation*. Make no mistake: *competition* causes the ‘race for fish,’ in its separation, narrowing, commercialization and fragmentation of fishing communities and the integrity of their relationship patterns and practice. So irresponsibly undermining cultural linkages shortens planning horizons – severing action from impact, devaluing ethical action, and attenuating control loops of feedback – consequently yields a threat to ecological function in both the biological and social spheres. Systems approaches show how. Will we heed their alert to what we are doing in time? *That* is the issue.

No one can answer that question *in theory*; it must be addressed through *actions* on a personal level of value in an honest search for right, trust and truth throughout our own deeds. So much of the crisis in fisheries stems from outright denial about the role of financial interest, economic gain and power abuse – at the expense of our understanding of fact through observation, data gathering and scientific analysis – that there is no other way to put it. If we do not wean ourselves from greed and dishonesty and take an ethical path, then our ecological systems,

⁷²³ Hannibalsson, *Op. Cit.* (note 680 on page 2 above).

⁷²⁴ Cf. note 650 on page 2 above.

cultural options, civility and the integrity of our social organizations shall be lost to the wind. The storm is on the horizon, night is coming; our time grows short.

The justification of fisheries management through ITQs stands and depends on notions of value and economic causality in such ill repute to raise suspicions about their rationale and true motivation. The fact they also entail lucrative financial transfers of wealth out of the public sector into obviously – and demonstrably – irresponsible hands in a giveaway of virtually unprecedented degree and extent (worth millions of dollars to individuals, and many more billions in potential revenues under a ‘green tax’ scheme placed out of reach by an ITQ plan) is simply fuel on our kindling questions. *Surveying the outcomes of ITQs* in every place they’ve been tried transforms suspicion and doubt to a conflagration of opposition to this sort of scheme. There is simply *no realistic ground* for any of the alleged advantages of an ITQ system.

First, the “faith” in ITQs’ *conservation incentive* for ‘stewardship practice’ – standing upon ‘neoclassical’ theory and the ‘efficiency’ of an acquisitive frenzy of self-seeking gain – is simply unwarranted and *destructive* in any ecosystem milieu. Settings of this sort demand theory emphasizing *complementarity* – ‘concerts of value’ – within norms of *cooperation*, not substitution and competition. Indeed, a competitive frame – ‘privatizing’ interrelationships – shall lead directly to organizational failure and systems collapse. The evidence shows this so clearly, if examined through a conceptual lens appropriate to this application, no doubt is left at all about ITQs’ *ecological* impact. The ‘race’ to overexploit our resources shall not be abated by ITQs.

Second, do ITQs protect the ‘*public interest*’? No, they do not. They only work – according to their economic conception – if they are ‘permanent property rights,’ securely inalienable in the ownership and control over resources so conveyed. There are two reasons in this regard that they won’t perform as expected. They *cannot* become ‘private property’ in the face of the ‘public trust’ doctrine. But also, even if they did, there is no way to establish control of fugitive fisheries in the open, unbounded ‘turbulent field domain’ of an ecological system. Privatization of ‘common land’ is *not* this situation: what we have here is ‘*dynamic complexity*,’ and the need for a systems view recommending *cooperation*.

Third, the *economic and community impact* of ITQs shows a consolidation of economic control and market power, at the cost of equity yielding adverse spreading cultural and traditional losses as well. Indeed, the case for ‘efficiency’ in ITQs is simply not to be found, though unquestioned in *Sharing the Fish*. Again, let us speak clearly on this: even neoclassical theory yields such a conclusion. *Market power is not efficient*. ITQs serve – above all else – as a means of consolidating economic control over trade, to open avenues for its suppression through what the institutionalists shall call a ‘contrivance’ of scarcity. Yes, ‘sole owners’ – in placid environments – shall conserve our resources, in their intertemporal use, more effectively than in a rivalrous system. Monopolies shall restrain trade, which may be *good* for conservation. This is decidedly *not* what we are observing in ocean ecologies savagely overexploited through ITQ ‘ownership.’ ‘Privatization’ has led to consolidation of access, seizing control *away* from those with the strongest incentive for conservation and stewardship practice: traditional local fishing communities.

So why would the NRC panel ever recommend this system of fisheries management, if it is really and truly as harmful as we say? Although this failure will be addressed in *Section V*

below, it does bear on the issues in *Section IV.F.* in the following way. *Why* did the NRC panel fail to offer a full and objective analysis of ITQ experience? That is a challenging question to answer.

The answer has two parts, each of which is addressed in more breadth and depth in *Section V.* The first has to do with the fact that the NRC panel looked at ITQs through only a single lens (which, unfortunately, was precisely *the wrong one*). Yes, *Sharing the Fish* gives an obligatory (and too perfunctory) nod on occasion to other views – such as socio-cultural outlooks – but the *recommendations* show no enduring allegiance to anything other than neoclassical economics.

Single approaches selectively emphasize certain things as significant, at the expense of *everything else*, all of which is simply ignored. This ‘selective focus’ is also ‘restrictively blind’ to anything that is omitted as ‘unimportant.’ We cannot avoid the imbroglio: every outlook carries its specialized box of relevant tools. Single-minded approaches shall lock us into ‘prisons of our own design.’ This is why openness must be (epistemologically) *axiomatic*. Only by looking with multiple lenses might we find the best ‘fit’ to a problem. This is the failure of *Sharing the Fish*.

They also employed the *least appropriate* theory for the problem at hand, which calls for a *systems approach*. In the presence of *independent* units or agents, *substitution* applies,⁷²⁵ and the optimal organizational form in that setting is *competition*. But ‘turbulent field domains,’ systems showing ‘dynamic complexity,’ are realms of *complementarity* and call for *cooperation*. ‘Neo-classical’ theory yields *precisely* the wrong conclusions in the presence of *positive feedback*. *Competition cannot but fail in complementary applications*, such as in openly unbounded, evolving complex ecologies. Save for New Zealand, where ‘everything works’ – according to *Sharing the Fish*, anyway – enough information is there to warrant a finding against ITQs.

The problem of ‘market failure’ – à la Heller and Starrett on ‘externalities’ – is, instead, a *failure of theory*, as shown by Krupp.⁷²⁶ The fatal error of *Sharing the Fish* is in their analytical lens: the flaw they blame on the market – to be ‘fixed’ by ITQs – is not ‘out there,’ but lies in the glass they used to ‘frame’ and deal with the problem. The mote they ascribe to ‘market failure’ is really a beam in ‘neoclassical theory’ applied in this context, that demands a systems approach.

Sharing the Fish did the job. It defined the problem, outlined the issue, reviewed the literature, argued the facts, studied the options, and decided on their recommendations. “So what’s the beef?” But that’s the wrong question. The right one is: “*Where’s* the beef?”

The world turns on what – and how! – we decide on these ‘framing’ questions. *Sharing the Fish* goofed: They made a serious error, which was completely invisible to them. They examined a ‘systems’ problem by applying a framework guaranteed to fail in that domain – without ever asking *or even questioning* the ‘fit’ of their theory to fact through assumptions. So – in spite of a (mostly) accurate compilation of information about ITQs – *Sharing the Fish* did not then take that information into *either* a “full” or any “objective” analysis of ITQs. A ‘systems’ approach would have looked at totally different dimensions of fact, mostly unattended in *Sharing the Fish*, and told an opposite tale “...from the other side of the glass” (said Alice).

⁷²⁵ Cf. the text accompanying note 109 on page 2 above.

⁷²⁶ As addressed in the introduction to *Section II.B.* above.

So *Sharing the Fish* studied the leaves, felt the bark, admired the roots, surveyed the shape of the branches, described the trees, and finally saw the light in the sky, and Saw that it was Good.

But they totally overlooked the Forest.

G. *Do the Claims of Sharing the Fish Meet the M-S Act National Standards?*

One way to sum up this section is to cut to the chase by asking the most basic question of all: Do the claims of *Sharing the Fish* about individual transferable quotas (ITQs) satisfy the National Standards of the Magnuson-Stevens (M-S) Act? The mandate to the National Research Council (NRC) in the 1996 Sustainable Fisheries Act (SFA) involved a number of very specific criteria that their recommendations should meet, including analyses of the following: transferability; foreign control; duration of programs; permit authorization and fees; mechanisms to promote “diversity and to minimize adverse social and economic impacts on fishing communities”; monitoring and enforcement issues; ITQ threshold criteria; fair and equitable initial allocations with owner-on-board requirements and the facilitation of “new entry”; “potential social and economic costs and benefits to the nation”; quota value created; and “other matters as the National Academy of Sciences [NAS] deems appropriate.”⁷²⁷ The report shall also analyze ITQ programs in the United States with reference to “any information about individual fishing quota programs in other countries that may be useful.”⁷²⁸ These analyses were in substance provided by the report.

The M-S Act also includes ten National Standards, stipulating that: “Any fishery management plan prepared ... pursuant to this title shall be consistent with the following national standards for fishery conservation and management.” These National Standards are reported by *Sharing the Fish* in *Appendix D*;⁷²⁹ they also were summarized at the beginning of this report in *Section I.A.*⁷³⁰ As a summary of the extensive discussion in *Sections IV.A. through IV.F.*, it is appropriate at this juncture to review the National Standards to which “any fishery management plan” must conform, to see if ITQs – as viewed from a ‘systems’ vantage (in contrast to that in ‘neoclassical’ theory) – are consistent with these stipulations.

Sharing the Fish presents their recommendations for ITQs as consistent with these National Standards. *Scaring the Fish* has argued that the choice of vantage by the NRC panel has skewed their understanding, research and assessment of ITQs sufficiently to reopen the question, due to the need for a ‘systems’ analysis of the issue. Without developing a full ‘systems analysis’ of ITQs – which is not the goal, and lies beyond the scope, of this critique in *Scaring the Fish* – it seems fitting at least to review these stipulations with respect to whether they are really fulfilled by the ITQ plan as proposed.

To state our conclusions up front: a ‘systems’ analysis – which is the proper way of ‘framing’ the ITQ issue – reveals that ITQs shall not only violate *some* of these standards. Instead, the ITQ plan – as proposed in *Sharing the Fish* – *fails to satisfy any of the M-S Act’s National Standards*. At the very least, there is insufficient evidence – theoretical or empirical, as discussed and documented above and in *Sharing the Fish* – to justify any claim that an ITQ management plan

⁷²⁷ *Sharing the Fish*, pp. 243-44.

⁷²⁸ *Ibid.*, pp. 244-45.

⁷²⁹ *Ibid.*, pp. 258-59.

⁷³⁰ Cf. pages 2-2 above, with particular reference to note 13.

either will (or could) meet these specifications. If so, the moratorium on ITQs should be extended to a permanent ban on any ITQ system, most especially with regard to fugitive fisheries.

1. *National Standard (1): The Prevention of Overfishing*

National Standard (1) reads as follows: “Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.” *Sharing the Fish* argues that *National Standard (1)* is satisfied by an ITQ management plan. Overfishing will stop, because of the TAC-setting process if all else fails, but also because the ‘owners’ of the fishery will look out for its best interests as a means of *maximizing the value* in their ITQs.

Scaring the Fish says *National Standard (1)* is not fulfilled by any ITQ fisheries management program. First, the consolidation of economic power has led to corruption of TACs, shifting them up against scientific advice through political pressure on the management system. This corruption of science has occurred in every ITQ program. It stems from a continued urge – *exacerbated* by consolidation of power into the hands of vertically-integrated control – to ‘clear-cut’ the oceans at the expense of future resources and ecosystem health.

Second, the *reason* industry interests still have an urge to deplete the resource is just the same as for the destruction of a slow-growth forest: to liquidate the asset, freeing up funds for higher returns elsewhere. The difference of forests from ocean resources *strengthens* this incentive: Not only is the ‘investment’ yield from conservation attenuated by a *lack of control* over fish in their fugitive state, but – unless shares for a species are totally held by a “sole owner” – a partial ownership dulls the motive further for restoration or protecting the ocean’s bounty of fish. The incentive for overfishing is *intensified by ITQs*, and not reduced as claimed.

Third, the exploitation incentive for overharvesting fish is far more dangerous for our continued survival than tearing away our trees. Happily, forests can be regrown from seed – with enough time. But live fish in adequate numbers are needed to regrow a fishery (and only if its niche is still open, and not already occupied by other invading species after its stock collapse). Ecological system breakdown is subject to fewer remedies than the wanton destruction of forests, so a ‘precautionary approach’ is strongly advised in fisheries management. The use of ITQ management systems – since they strengthen both the incentive and the means for rapacious behavior – is not consistent with the control of overfishing called for in *National Standard (1)*.

Furthermore, the use of “optimum yield” (OY) demands a *more conservative* fisheries management policy than to harvest at “maximum sustainable yield” (MSY), despite Safina’s statement that OY “can be used to justify virtually any catch level...”⁷³¹ (with the qualification that *anything* can be used to “justify” anything in the absence of rational and responsible standards of fisheries management). All three of the other criteria that distinguish “optimum” from “maximum sustainable” yields – economic, social and ecological factors – shall lead to *lower* harvest thresholds than their absence.⁷³²

Fourth and last, the evidence shall not support the contention in *Sharing the Fish* that *National Standard (1)* is met by an ITQ management system. Everywhere ITQs have been tried, the overharvest continues both through excessive TACs, ‘quota busting,’ ‘highgrading’ and

⁷³¹ As discussed at length in note 13.

⁷³² *Ibid.*

‘discards’ in an inexcusable and irresponsible waste of fisheries stocks. The reason we do not know enough about the reality of this shameful activity is because of ‘data fouling’ of fishing reports. Remember Hannibalsson’s remark, that: “It has been suggested that, in the reports submitted to the Fisheries Council of the European Union, the only reliable figures were the page numbers.”⁷³³

The contention in *Sharing the Fish* that *National Standard (1)* is met by an ITQ system has no basis, either in fact, theory, evidence or any other grounds save for unrealistic conception, wishful thinking and outright denial. The wonderful world of neoclassical economics – standing on “faith” in an outmoded epistemology and unjustified independence and rationality arguments – simply does not apply in this setting. An ‘institutional systems’ approach shall lead to more realistic conclusions about an ITQ plan.

2. *National Standard (2): A Reliance on the “Best Science Available”*

National Standard (2) requires that: “Conservation and management measures shall be based on the best scientific information available.” *Sharing the Fish* was written by and resulted from a two-year study under the National Academy of Sciences (NAS) by its suborganization, the National Research Council (NRC), with the work performed by a panel selected by the NRC’s Ocean Studies Board (OSB) composed of very prominent and knowledgeable fisheries experts. In draft version, the final report was then examined by an independent review panel established by the NRC for this task, and also by two NOAA Advisory Panels selected by the National Marine Fisheries Service (NMFS). Presumably all approved the general thrust of the NRC findings and conclusions in *Sharing the Fish*.

Scaring the Fish would challenge and reject the claim that *Sharing the Fish* – in regard to its recommendation of an ITQ management plan – is “based on the best scientific information available” *for this setting*. Indeed, the NRC panel never really came to grips with the problem, because it used a framework that cannot be applied to ‘systems.’ One is reminded of Richard Nelson’s review of another example of this, so perfectly applicable to *Sharing the Fish*, it ‘fits like a glove’:

Almost all of the authors appeal to old style textbook microeconomic theory as a basis for their arguments. Yet that theory often has no real grip on, or is inconsistent with, the various phenomena upon which the policy debate is focused. A major weakness of the volume is that the authors and discussants alike seem strikingly unaware of this difficulty. Recent theoretical work, which has attempted to deal with some of the issues, is ignored.

...

*...The book reflects the weakness and schizophrenia of [its] theoretical structure... [which] is so weak that it does not provide sharp guidance on the facts to be gathered. ... In such a situation, theoretical preconceptions dominate the discussion. ... Underlying the analysis ... is a textbook theory that is static and too simple institutionally to grip the subject matter. ...The theoretical problem here is never even posed. ... [‘Neoclassical economics’] is a field that is in deep intellectual trouble. The source of the trouble is that old textbook theory that we all know so well.*⁷³⁴

⁷³³ As quoted more fully over note 681 on page 2 above.

⁷³⁴ Nelson, *Op. Cit.*, as quoted – in a slightly different context – above in note 454 on page 2 above.

First, as Nelson says, “the theoretical problem here is never even posed.” The real issue – in terms of both the ‘race for fish’ and the more generalized ‘tragedy of the commons’ – is what Senge calls a ‘systems theory archetype’ of a competitive frenzy of acquisition *where cooperation is needed*. The arms race is Senge’s example, and its lesson is still unlearned.⁷³⁵ The ‘systems’ analysis of ITQs suggested here has not been conducted, though we have no doubt about the outcome of any such study, which would advise against the adoption of an ITQ management system for any fugitive fishery in or outside the United States.

Second, the facts – as presented in *Sharing the Fish* – are incredibly twisted *even within neo-classical theory* in order to justify ITQs. “Sole owner” ‘sort of monopoly’ arguments seem to justify an ‘efficient’ conservation incentive for “ecological sensibility,” with almost no mention – except to wave off the problem – of market power abuse arising from consolidation effects of any ITQ plan. Market power is *inefficient*, even in “textbook theory.” Concentration of economic and political power is not only *inefficient*; it will lead to *inequity* as well in a skewed distribution of wealth, income, political rights and social control over resources. Such can be seen – without any doubt – in the facts reported in *Sharing the Fish*. But there, the economic concentration of market power is seen as ‘*efficient*’ *capacity utilization* taking advantage of scale economies, in the face of overwhelming documentation of its *abuse* to seize social control of fisheries at the expense of fishing communities and ecological health.

One of the most serious and astounding oversights in the analysis as presented in *Sharing the Fish* – on the basis of “a textbook theory that is static and too simple institutionally to grip the subject matter” – is the total absence of *any analytical treatment or real discussion at all* of intertemporal tradeoffs and choices, beyond a few comments (mostly in the context of existing ITQ systems!) about the effects of short-sighted decisions. Nowhere to be found – in the index, text or appendices – is any mention of whether internal rates of return (IRORs) from ITQ ownership ever could possibly offset or counterbalance those in any financial market, despite that this is the *critical center* upholding the “faith” that *Sharing the Fish* urges upon us that “privatization will foster ecological sensibility.” A simple example – as shown in *Section IV.A.1.* – debunks this claim. ‘Privatization’ will lead to a total ‘liquidation’ of fisheries since they cannot compete with the yield of financial returns from any other investment in a market economy.

The *only* impediment to the urge to overharvest and deplete the fishery into commercial extinction (and then ‘pass it off’ as healthy to some innocent ITQ buyer) is the continued integrity of the scientific TAC-setting process. So we already know the answer to that: *in every ITQ management system* – as well as in most other ‘public commons’ situations *save in locally managed community-based ‘common-property’ fisheries over many thousands of years*⁷³⁶ – the TAC-setting process is being corrupted by undue economic and political pressure,⁷³⁷ *overruling fisheries science* in favor of short-term exploitation and the rapid depletion of fisheries stocks.

The evidence simply cannot be denied. The argument is unassailable. The institutionalists see it. The systems theory explains it. Only in neoclassical economics shall the problem be invisible: it is *assumed away* at the outset into the ‘box’ of *ceteris paribus* and thus ignored.

⁷³⁵ Lamentably, as seen in the excerpt from my essay quoted at the end of *Section III.C.8(e)* above.

⁷³⁶ ...that are being undermined and destroyed by ITQ management systems and irresponsible international fleets in their ‘race for fish’ mentality...

⁷³⁷ ...rising from concentration of ownership and financial interest...

The grave failure revealed by *Sharing the Fish* is not of ‘markets’ or even of ‘competition’ rightly perceived: it is a *failure of theory*, and of ‘academic’ closed-system models stemming from positivism (more than just outmoded, this scheme of thought *does not apply* in any holistically interdependent domain), and especially of a framework of argument torn from its proper realm (if any such may exist) termed ‘neoclassical economics.’ *Sharing the Fish* not only neglected “the best scientific information available”; there is no evidence that they even considered it in their analysis!

3. National Standard (3): Ecosystem-Based Fisheries Management

National Standard (3) stipulates that: “To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.” *Sharing the Fish* discusses multispecies management problems, such as seen in New Zealand fisheries, and the need for some sort of flexibility in the quota management system to reduce the waste of fish through highgrading, discards, etc., but there is no real discussion of full “ecosystem-based fisheries management” practices save to dismiss them as beyond the grasp of fisheries science, at least at the current time. No attention is paid at all to any ‘systems’ analysis of fisheries management problems.

Scaring the Fish has argued, especially in *Section IV.A.3.* above, that the *species-specific* characteristics of any ITQ management process shall lock the system into an irreversible orientation to regional ‘fishstocks’ *separating* (instead of joining) components into an ecosystem model emanating from (and therefore reinforcing) a holistic conception of the ocean’s ecology. Furthermore, the *dynamic complexity* of a truly ecosystem-based fisheries management plan would be more vulnerable to scientific corruption than a simplistic classification of fisheries into ‘independent’ (thus separate) boxes of fisheries stocks. The primary aim and intent of the ‘other’ NRC analysis, *Sustaining Marine Fisheries*, is a discussion and a proposal for ecosystem-based fisheries management processes (which includes some discussion of issues sidestepped by *Sharing the Fish*, such as time horizons and discount rates). As this document states at the end of its very first paragraph in the Preface to its study: “...Ecosystems ... must be considered in a holistic view.”⁷³⁸ One is left to wonder if this was said as an indirect response to the fatal error of *Sharing the Fish* in neglecting a ‘systems’ approach.

So we contend that ITQs – as a method of fisheries management – take us off in the wrong direction, *away* from more holistic conceptions. Such shall not advance – and will likely impede – trends of fisheries management that are ever more urgently needed to save our ocean resources, as *Sustaining Marine Fisheries* says so clearly throughout its ‘other’ report on the problems of fisheries management due to a species-specific approach. The nature of ‘food webs’ and the intricate interdependence of forage activity ought to become an integral aspect of fisheries management science. The fact that ‘single species’ analyses, seen as ‘sufficient’ to set TACs ‘as if’ they were independent of other fisheries, simply is not the way to understand the workings of an open ocean ecology. As Churchman nicely expressed the problem: “...The ... intellectual

⁷³⁸ *Sustaining Marine Fisheries*, p. xiii.

battle ... is between those who wish to see and design the world in pieces⁷³⁹ and those who wish to see and design it as a whole.”⁷⁴⁰

As *Sustaining Marine Fisheries* understands, and *Sharing the Fish* does not, a ‘systems’ approach is needed to think about – *to resolve* – fisheries problems. From a ‘systems’ approach – at least as interpreted here and above in *Scaring the Fish* – an ITQ management plan is a change in the wrong direction, toward *disintegration and fragmentation* of fisheries, and their *economic control and exploitation*. That is – simply and clearly expressed – the wrong way to go. ITQ fisheries management plans shall therefore act *against* the mandate in *National Standard (3)* for a more comprehensive approach.

4. *National Standard (4): An Equal and Fair Treatment to All*

National Standard (4) requires that:

Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

Sharing the Fish assigns the choice of initial endowments to regional councils, but recommends that other allocation criteria be considered than merely ‘gifting’ ITQs to vessel owners on the basis of historical catch records over some period. This is how *Sharing the Fish* would justify its compliance with subpart (A) of *National Standard (4)*. The scientific integrity of the TAC-setting process along with enforcement efforts satisfy (B). For (C), *Sharing the Fish* argues for a maximum proportional limit to ITQ ownership by any party, as a constraint on “excessive” *accumulation* of fishery access rights. So all three bases are covered, at least according to *Sharing the Fish*.

Scaring the Fish has characterized the ‘gifting’ of initial endowments as a ‘raid’ on the ‘public pantry’ by private corporate interests, with the effect of freely awarding control of fisheries access to a special elite, to the disservice and at the expense of fishing cultures and traditional local communities, stewardship practice, sensible ecosystem management, tight feedback control loops, science, and the conservation and protection of ocean resources for all (especially for the unborn). ITQs, from this perspective, violate *National Standard (4)* by their discrimination against, and unfair treatment of: future generations, younger industry entrants, non-owning captains and crews, and all consumers of fishery products, by yielding exclusive economic control of fishery access rights to ITQ owners and no one else. Something very special is lost when free access to opportunity is closed to all individuals save for some elite group. Powerful interests stand to gain a windfall of valuable assets out of the public commons *for nothing* under an ITQ scheme.

⁷³⁹ And that is the way we are headed, to a world of fragmentation and conflict, directly as a result of this sort of ‘academic’ conception...

⁷⁴⁰ Churchman, *Op. Cit.* (note 207 on page 2), p. 71, as quoted over note 215 on page 2 above at the beginning of *Section III.C.3*.

But this seizure of fisheries stands on an incorrect diagnosis of the problem as one of ‘free access,’ so ITQs ‘solve’ that ‘tragedy’ by enclosing the ‘public commons’ at a cost to all but a few wealthy corporate ITQ owners. Systems approaches see the issue, rather, as *a competitive failure* – of value, ethics, standards, etc. – that is ‘solved’ through *cooperation* on a *local* level, with access still left ‘open to all’ but only under restricted conditions (set by local fishing communities). *Sharing the Fish* has misspecified the dilemma, asked the wrong questions, answered them to its satisfaction in narrowly undemocratic ways, and thus ‘solved’ the problem by recommending even more *poison* as a new cure! Privatization and competition are the *source* of the ‘race for fish’ – shortsighted, myopic competitive frenzies of fishing down the resource to depletion before rivals do – and *not* the solution thereto.

ITQs shall not be “fair and equitable to all” but rather restrict the access to fisheries for an elite and privileged few, in violation of subpart (A). They do not promote “conservation” – quite the opposite, as we have shown – so they also in no way meet the requirements of subpart (B). As for maximum ownership limits, *Sharing the Fish* itself has plenty of evidence showing that these restrictions are regularly circumvented, ignored, evaded, unenforced *and unenforceable* in any way, so subpart (C) is also unfulfilled by *Sharing the Fish* in its proposal of ITQs as a national fisheries management policy.

5. National Standard (5): ‘Economic Efficiency’ as an Important Management Goal

National Standard (5) requires that: “Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.” *Sharing the Fish* – on a basis of ‘neoclassical’ economic analysis – sees ITQ ownership (private property) yielding a sense of accountability and responsibility over resources (stewardship practice) as a matter of “faith” in the ‘social’ benefits of acquisitive values and a market process based on *profit-seeking gain*. Adam Smith’s ‘invisible hand’ will lead us all to an optimum allocation of economic resources to maximum ‘public good.’ The march of international capitalism is spreading globally and systematically over the world, imposing a ‘rational’ system of economic control over resource extraction and trade, flying its slogan on a flag of “*Efficiency uber alles!*” So will all be right and bright again in our fisheries management system – with regard to ‘*efficiency*’ attributes – if we only adopt ITQs.

Scaring the Fish shall challenge this view on nearly every assumption. Noted already above is an utterly and completely unjustified tie of ‘efficiency’ and ‘consolidation’ of economic control under any ITQ program. *Market power is not only inefficient*, even in textbook constructions, *but also an invitation to abuse political influence* in the service of private advantage at the expense of the public good. The corruption of the TAC-setting process – so clearly ‘enabled’ by an ITQ fisheries management plan – is simply one example of far more generalized threats to democratic control encouraged by this approach.

The problem of interdependence or ‘externalities’ simply is sidestepped and danced around in *Sharing the Fish*, as almost always the case in neoclassical economics (since it dodges ‘systems’ synergies and the ‘institutional’ issues by using ‘*ceteris paribus*’ as a box set up to contain or remove from attention discomfiting ‘context’ and ‘data’). *Externalization of cost* is not the same thing as *efficient reduction of inputs* in economic analysis! *Sharing the Fish* makes no

distinction at all between these phenomena, arguing that a consolidation of ITQ ownership – buying up the resource – is unambiguous evidence of enhanced efficiency outcomes:

...Some concentration of quota holdings is inevitable and desirable. ...Concentration of quotas in large firms is probably an inevitable consequence of increasing the efficiency of the industry. ...The fact that the quotas have been bought and sold freely in an open market indicates that they have gravitated to the most cost-effective firms.⁷⁴¹

Such a remark cannot be taken seriously in any other framework than ‘neoclassical’ economics in its most naïve form: the *interdependence* of vital activity, and *externalization of cost*, and the *abuse of market power* as a means to ‘contrived scarcity’ through restraint of trade *all* are relevant to the ITQ case, with their dangers exacerbated thereby. Yet *Sharing the Fish* blithely asserts that “concentration ... is ... desirable” and – by the way – also “efficient,” and – lest we forget – that purchasing power (achieved, presumably, by any means) suggests that companies so well-endowed are clearly “the most cost-effective...” George Orwell could not have done better.

And do not forget the “sole owner” case for resource stewardship promulgated in *Sharing the Fish*, the ‘sort of monopoly’ argument discussed in *Sections IV.D.* and *IV.E.* above. Monopolization is ‘better’ (‘restraint of trade’ will leave more for the future) in a *conservation* context. But is it truly ‘efficient’? And, if so, where does *this* leave neoclassical welfare analysis? S. Y. Wu would answer the question thus, in agreement with Nelson above: “A new welfare criterion is needed for judging optimal resource allocation. ...The neoclassical welfare criteria are no longer adequate to guide policies in an economy with uncertainty.”⁷⁴²

An ITQ program, at the last, is nothing more than a *rationing system*; most economists see ‘rationing’ as an *inefficient* solution, if other ‘pricing alternatives’ can be devised to internalize ‘full-cost accounting’ into private decisions. *Sharing the Fish* does not entertain any of these sorts of options, save for a passing mention or two just to establish that they did their work. Quotas are what they want, leaving us wondering exactly why... Is Munkirs’ analysis right?⁷⁴³ That’s a disturbing conclusion.

So any assertion that ITQs are *efficient* – or lead to ‘efficient’ outcomes – simply is based on illusion. Neoclassical theory is based on illusion and denial of fundamental economic concerns: *Sharing the Fish* is just another example of the *failure of theory* in academic contexts, stubbornly “hanging on” to its status, stolidly keeping control of its turf, in a “refusal of consciousness,”⁷⁴⁴ psychologically either unable or unwilling to “let go” and “move on” to “new ways of seeing things.”⁷⁴⁵ So ITQs shall not satisfy – in any sense or regard – the provisions in *National Standard (5)* of the Magnuson-Stevens Act.

6. National Standard (6): The Need for Adaptive Flexibility in Fisheries Management

National Standard (6) stipulates that: “Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.” *Sharing the Fish* sees ITQ management programs as a relaxation of far more

⁷⁴¹ *Sharing the Fish*, p. 335.

⁷⁴² Wu, as quoted at greater length in note 441 on page 2 above, in *Section IV.D.1.*

⁷⁴³ Cf. *Sections III.B.10.* and *III.B.11.* above.

⁷⁴⁴ Cf. Schumacher, as quoted in note 430 on page 2 above, at the end of *Section IV.C.2.*

⁷⁴⁵ Cf. the text accompanying note 349 on page 2 in *Section III.C.7(d)* above.

restrictive fishing conditions set in the past as a means of fending off the effects of overcapacity, overfishing, and the ‘race for fish.’ Against the abject failures of fisheries management in the past, the ITQ plan is supported as an (albeit imperfect) solution to many of the rigidities suffered by all previous systems of fishery management. Thus *Sharing the Fish* presents ITQs as satisfying *National Standard (6)* of the M-S Act.

Scaring the Fish has cited the reasons *Sharing the Fish* is wrong on this point. First, Copes has noted that TACs cannot be changed during a season without a violation of *National Standard (4)* above, as any adjustment discriminates between those who opt to fish early and those fishing late in a season.⁷⁴⁶ Another reason that ITQs shall lack adaptive flexibility is that they are effectively *irreversible* in their effects. An evident transformation of ITQ ownership into “full-blown property rights” is occurring in Iceland, Canada and the United States. In New Zealand, they were initially granted “in perpetuity” anyway, and the government therefore has had to compensate owners for management changes, at taxpayers’ expense, for shares originally ‘gifted’ away.

Any evolution toward defensible ‘property rights’ shall not only abrogate the ‘public trust’ doctrine in U.S. common law – and discriminate to favor initial owners over everyone else, as Iceland’s Supreme Court declared – but also will lead to potential paralysis of fishery management options. ITQ owners are encouraged to litigate to protect the value of quota from environmental harm by anyone else; such shall likely yield a progression of cases suing authorities in the fisheries management system for any action taken that can be construed – truly or falsely – as a threat to ‘resource conservation’ (in the name of the ‘public interest’). Even a losing argument – taken to court – can be used to forestall and delay any unwelcome implementation of fisheries management dicta, as some cases in New Zealand have shown.

In general, every ITQ system in place has led to rapid consolidation of economic control and political influence over the management system being employed, due to “regulatory capture” (as discussed in *Sections III.B.10.* and *III.B.11.* above). “Flexibility” in the hands of industry interests shall lead to rapid depletion of fisheries stocks, which is *not the same thing* as ‘adaptive’ fisheries management in the name of science and ecological health. For these and many other reasons, ITQs shall not satisfy *National Standard (6)* in meeting a need for adaptive flexibility of fisheries management systems.

7. *National Standard (7): Cost Minimization*

National Standard (7) demands that: “Conservation and management measures shall, where practicable, minimize cost and avoid unnecessary duplication.” *Sharing the Fish* admits that ITQ programs shall be costly – in their administration, data collection, research and enforcement requirements – but *justifies* the expense as a means to efficient fisheries management and for restoration of fisheries stocks. So they would argue that *National Standard (7)* is also fulfilled by an ITQ management plan.

Scaring the Fish, on the other hand, argues that ITQs shall not work at all as described in *Sharing the Fish*. They will *not be efficient* and will likely *yield further depletion* of fisheries stocks through a *consolidation of economic control and political influence* (over the science behind, and the implementation of, fisheries management efforts) for myopic gain *at the expense*

⁷⁴⁶ Cf. note 406 on page 2 in *Section IV.A.3.* above.

of fisheries stocks. So ITQs should not be adopted. The added expense and administrative complexity is not justified, and *National Standard (7)* accordingly cannot be met by an ITQ plan.

8. *National Standard (8): The Protection of Traditional Fishing Communities*

National Standard (8) requires that:

Conservation and management measures shall, consistent with conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts in such communities. [Added in 1996]

Sharing the Fish appears to believe that *fishing industry participation* in regional fisheries management councils (and in the implementation, monitoring and enforcement of management plans) is satisfactory as a ‘community-based co-management’ system. Furthermore, regional limitations on the transfer of ITQ ownership plus community development quotas (CDQs) as seen in Alaska and Canada – joined to overall maximum share restrictions – should be sufficient to protect traditional fishing communities from any adverse effects of ITQ plans. *Sharing the Fish* would thereby argue that the ITQ scheme (as proposed) meets the requirements of *National Standard (8)* of the M-S Act. Furthermore, even if the social ‘inequities’ of the proposal offset the ‘efficiency’ gains somewhat, the net effects of an ITQ plan still lead to an overall benefit to the ‘national interest.’

Scaring the Fish has cited adequate information from both *Sharing the Fish* and other sources showing that *every existing ITQ management system* has led to devastation of fishing communities and traditional cultures based and dependent on fishing, as a consequence of consolidation of ITQ ownership into the hands of vertically-integrated monopolistic corporate hands. None of these restrictions or regulations have been effective in preventing a radical transformation and restructuring of social relations, economic control and political power away from local fishing communities into the hands of faceless seafood megabusinesses. *Sharing the Fish* supports such ‘inequities’ by asserting – without any justification – that the consolidation of markets stemming from ITQs is symptomatic of their ‘efficiency’ in the reduction of overcapacity.

Scaring the Fish shall reject this claim, as even ‘neoclassical’ theory alerts us to the dangers of economic consolidation of markets, not only as *inefficient* but also abusive in its *political influence* over regulatory efforts by public authorities to reassert *democratic control*. Furthermore, the putative virtues of ITQs in reducing capacity appear to be an illusion: the numbers of vessels shall fall, because small owner-operated community-based participants are replaced by company ships and tenant fishers-for-hire (at lower wages and greater financial pressure to over-exploit the resource). *Fishing capacity* (however measured, in GRT or engine power) really often continues to rise under ITQ systems.

Consequently, an ITQ management plan – through its centralization of economic control, and its commercialization and destruction of kinship-based systems of fishing – is socially harmful to local community-based fishing activity. An overwhelming amount of evidence shows support to the view that ITQ plans *are not beneficial* to local fishing communities, small boat owners, or locally co-managed fisheries *of any kind*. Therefore, ITQs shall not only fail to meet, but directly contravene, *National Standard (8)* of the M-S Act.

9. National Standard (9): The Minimization of Bycatch

National Standard (9) demands that: “Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. [Added in 1996]” *Sharing the Fish* places heavy reliance on a “faith” that “privatization will foster ecological sensibility,” although they also recommend the use of individual bycatch quotas (IBQs) for reduction of waste. Thus *Sharing the Fish* presents ITQs as satisfying *National Standard (9)* of the M-S Act.

Scaring the Fish has shown that there is no basis for any “faith” at all in either the efficiency attributes (which are unquestioned in *Sharing the Fish*) or the alleged stewardship properties of an ITQ system. Indeed, theory and evidence shall admit to an opposite outcome: owner-operated vessels tied to local communities that depend on fishing activity are much more averse to wasting fish because any threat to the fishery will impact their livelihood directly. Company-owned trawlers and factory ships, in contrast, have a notorious record of “pulse” fishing, in a ‘hit-and-run’ sequential destruction of fisheries stocks in which – as each collapses – they simply move on to the next. This is the sort of behavior *Sharing the Fish* would deem ‘efficient,’ due to the NRC panel’s consistent confusion of *cost externalization* with the (efficient) *reduction of variable input* (for given levels of output).

Theory and evidence – both as reported in *Sharing the Fish* and elsewhere – reveal no reason or data on which to found a case for reduction of bycatch, discards and high-grading of fish in any ITQ system. Indeed, if financial pressures are raised – due to a clearly documented erosion of wages to captains and crews ‘for hire’ on company vessels – ITQs shall strengthen the incentive for such wasteful behavior. An associated breakdown of cooperation and kinship ties in fishing communities shall only exacerbate the incentive for ethical breaches. As a result, we conclude that ITQ fisheries systems shall lead to an *increase* (and not a decrease) in the wastage of fish through highgrading, bycatch and discard mortality. On these grounds, *Scaring the Fish* shall contend that ITQ fisheries management does not meet the requirements specified in *National Standard (9)* for reduction or minimization of fishery bycatch and discard problems.

10. National Standard (10): The Safety of Ocean Fishing

National Standard (10) requires that: “Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. [Added in 1996]” *Sharing the Fish* argues safety ought to improve from ITQs, by ending ‘derby fishing’ caused by *seasonal limits* on fishing activity and, therewith, the incentive for having to fish regardless of weather conditions. So the NRC panel claims that ITQs shall also comply with *National Standard (10)*, although they do acknowledge that safety apparently has not improved under ITQ management (though they assign this outcome to other indeterminate factors).

Scaring the Fish shall challenge this view. As ITQ management plans increase the financial pressure on non-owning captains and crews ‘fishing for others’ to harvest more fish when prices are high, there are at least two reasons safety ought to erode under ITQ systems: the *overloading* of vessels, such as apparently happened in the SCOQ fishery early in 1999; and the *reduction* and therefore increased *exhaustion* of working crews out on the water. If captains-for-hire are also less attentive to the condition of vessels, since they are not responsible for them – and those who are will not be aboard to experience, suffer, resolve or learn of safety issues and problems – this is another reason that safety could decline due to ITQs.

Furthermore, there is no evidence for any safety improvements under existing ITQ systems. Since theory offers more reasons for safety *erosion* than its enhancement – and since we cannot use the abject failure of ‘fishing derbies’ as a *benchmark* of fisheries management plan assessment – the claim that ITQs shall likely advance safety on the water is simply without foundation. The shift in power relations, the alienation of control, the increase of financial pressures on non-owning captains and crews, and what Copes describes as the *decrease* in ‘privatization’ of fishing activity due to ITQs,⁷⁴⁷ suggest quite the opposite. The ITQ fisheries management program proposed by the NRC panel in *Sharing the Fish* will *not* meet the safety standards stipulated in *National Standard (10)* of the M-S Act.

11. *Do the Claims of Sharing the Fish Meet the M-S Act National Standards?*

Sharing the Fish shall argue an ITQ plan – as proposed by the NRC panel – meets and fulfills the ten National Standards in the M-S Act. Theory and evidence shows it will not, or at least that there is no basis or justification for believing it does, on *even a single one* of these standards.

So what went wrong with this study? How could these experts have failed so badly at the task they were asked to perform? (Or is it that *Scaring the Fish* has simply misconstrued their intent and result?)

There is no way to ‘see’ outside the systems of thought that we use. *Sharing the Fish* went wrong in choosing a *neoclassical economic conceptual framework of argument* to analyze what is undeniably and decidedly a ‘systems’ problem. As a result, they failed to ‘see’ or identify the issue addressed in a manner amenable to its solution. The lens through which they conducted their research distorted their understanding enough to cut them off from any proper resolution of the fisheries crisis before us. Indeed, the answer recommended in *Sharing the Fish* shall not only fail to improve fisheries overexploitation, it will – without any doubt – exacerbate the problem.

A proper review of ITQs – from a systems perspective, “based on the best scientific information available” to us – simply has not been done. This is sad, tragic, crazy, incredible and unbelievable, given the effort, time, money and other resources *Sharing the Fish* undoubtedly spent to complete this study. One thinks of the Hubble mirror (reflectively), and the recent Mars lander crash, as other examples of a very general epistemological lesson: that you cannot see what you are not seeing until you suddenly ‘see’ it. This is a classic ‘gestalt theory’ moment: The light goes on; Archimedes shouts “Eureka!”, and so the world changes, into a new reconfiguration. Nothing has actually altered ‘out there,’ though *we* are never the same. Senge put it quite well:

As shown in Ch. 5 [of his book], it is extremely awkward in normal verbal language to describe circular feedback processes. ... If all we have is linear language, then we think in linear ways, and we perceive the world linearly – that is as a chain of events. It is impossible for us to grasp the scope of the consequences, but we know they are sweeping.

However, if we begin to master a systemic language, all this starts to change. The subconscious is subtly retrained to structure data in circles instead of straight lines. We find that we “see” feedback processes and systems archetypes everywhere. A new framework for thinking becomes embedded. A switch is thrown... We begin to dream in the new lan-

⁷⁴⁷ Cf. the discussion in the last two paragraphs of *Section IV.F.3©*, over note 618 on page 2 above.

guage, or think spontaneously in its terms and constructs. When this happens with systems thinking, we become, as one manager puts it, “looped for life.”

As organizational theorist Charles Kiefer puts it, “When this switch is thrown subconsciously, you become a systems thinker ever thereafter. Reality is automatically seen systematically as well as linearly (there are still lots of problems for which a linear perspective is perfectly adequate). Alternatives that are impossible to see linearly are surfaced by the subconscious as proposed solutions. Solutions that were outside our ‘feasible set’ become part of our feasible set. ‘Systemic’ becomes a way of thinking (almost a way of being) and not just a problem solving methodology.”⁷⁴⁸

So what is the lesson in this? That is the task of *Section V*, a statement of general conclusions.

⁷⁴⁸ Senge, *Op. Cit.* (note 239 on page 2 above), p. 366; no specific reference is given for the quotation from “my longtime colleague Charlie Kiefer [who] suggest[ed] the ideas developed in this chapter [20],” as noted in *ibid.*, p. 408.

V. General Conclusions

One of the dangers of history – and in education as well, especially in the school of ‘hard knocks’ that we all attend – is learning the ‘wrong lessons’ from (what we like to call ‘learning experiences,’ if we survive them intact, instead of admitting them as...) disasters. So what we need to ask at this point is: *What is the lesson of this?* *Scaring the Fish* has said that *Sharing the Fish* – simply and baldly – *erred* in taking a ‘neoclassical’ (linear) view of a (circular) ‘systems’ problem, and failed to deal with it properly due to an improper ‘framing’ decision.

The question, at this point, is: *Why?* Our first answer involves *openness*. Single outlooks suffer a risk arising from the fact the ‘selective focus’ of any and every view is also *implacably blind*. We cannot ‘see’ what lies outside the sphere of any particular theory. That is why *openness* and the use of *multiple lenses* should and must be *axiomatic* in science. Such is not well understood.

The second answer reveals why “the academic world of Western twentieth century society is [such] a fearsome enemy of the systems approach,” as Churchman put it.⁷⁴⁹ Systems approaches are more acceptable now than twenty years ago when Churchman wrote that opinion, but they are nevertheless still resisted in economics and other realms of academic discourse. The fact that the NRC gathered the finest experts they could recruit to undertake a complex study and make a recommendation to Congress on how best to solve fisheries problems – and yet this panel still committed an elementary (and embarrassing) error of theory selection – gives more than adequate testament for the continued resistance to ‘systems’ analysis, even by prominent fisheries experts.

Why? An answer posed in *Scaring the Fish* has to do with the use of competitive frames in complementary settings: *Such a system must fail*, just like *collusion* with ‘negative feedback.’ The reason is this: where we find ‘concerts of interest’ – such as suffuse *all learning environments* – *separation* deprives us of ‘feedback loops’ that *augment our output* when we act together! This is why complementarity argues for *cooperation* as the optimal organizational form for *organizational learning environments*. Such a conclusion is strongly implied by any ‘systems’ analysis, once it is ‘seen’ in its simple elegance.

So what is implied directly is that *competition* in such a setting cannot but *decrease output* through a *fragmentation of effort* depriving us of the motivating effect of others’ support and encouragement. Turf battles and other pathologies so well described by organizational theorists and management psychotherapists – see *Section III.C.7.* on this – are endemic in academics. What is not understood is *why*: *These are symptoms of ill health*⁷⁵⁰ and *dysfunction* in organizational settings. Some wise soul once said – thank you, Mr. McGregor, for this profound thought – “Fish discover water last.”⁷⁵¹

⁷⁴⁹ Churchman, *Op. Cit.* (note 213 on page 2 above), p. 146, as quoted more fully in note 240 on page 2 above.

⁷⁵⁰ Cf., e.g., the statement by McGregor as quoted in the text over note 329 on page 2 above.

⁷⁵¹ *Ibid.* (note 244 on page 2 above), p. 317.

We don't see it until we 'see' it, despite that "these symptoms quite truly surround us."⁷⁵² The fatal error in *Sharing the Fish* is an equally fatal error in 'neoclassical' economics: it does not fit to the urgent problems we face in modern society. A 'systems' approach is needed.

The problem is our *resistance to change*. The answer lies in our *need to adapt*. We must start to grow up, breaking with ways that hold us back.⁷⁵³ Our planetary life-sustaining ecologies need our support. The alternatives are unthinkable.

Weaning ourselves from our rapacious habits shall not be easy, although it promises great rewards. Systems – incorrectly designed – tear themselves apart, and squander energies into resolving conflict (instead of enjoying growth and development, or – at least – more productive value in service to human need). The 'tragedy of the commons' is not a specialized problem of fisheries. Instead, the 'arms race for fish' is symptomatic of an ethical absence spreading across society in a rending crisis of awesome portents.

Its ecological consequences may already be irreversible. We must do what we can. No one is going to solve any problem by keeping one's head in the sand. If we do, by the time we sense the arrival, our options are gone. This is the notion of *planning horizons*, and why we need to extend them. To do so, *we must learn*.

To learn, we must first decide to *welcome difference* instead of fearing it. *Those unlike us* are not a threat or a challenge to our identity: *they are a chance to learn*, to step beyond the confines of our experience into another's world. This is sharing, cooperation, love, whatever you wish to call it: it offers salvation and hope.

"What does all this psychobabble have to do with ITQs?"

"Well you might ask. Everything."

Environmental losses, and the 'tragedy of the commons' systems archetype, are *ethical issues*. The notion of 'conscience' is simply another way of expressing our need for a better *internalization of externalities* before we set them in motion. The 'arms race for fish' would not occur in a social arena encouraging planning horizons, larger perspective, vision, trust and truth. The failure of competition in modern society is a failure of *ethics and conscience* above all else.

"So what must we learn? Where do we start?"

"Start with your own bathroom mirror, and work your way out from there..."

"You mean, as Pogo said: 'We have met the enemy, and he is us?'"

"Exactly! You need to ask yourself whether you are the person you want to be. Do you respect what you do, in every moment of every day? If you don't, then you must change... Or not ... as you would."

"I'm not sure about this. Why not just go on as I am? And, by the way, who the hell are you to say?"

"Only a person, just like you. But we all need to understand that the only matter on which we have no choice is the cold fact of choice itself. Our only control is ourselves, who we are and what we become... How we serve... That is what matters the most."

The issues of organizational and environmental integrity emanate from an *engagement* of people with the purposes of their lives. Our lives. *Sharing the Fish* did the job, from a detached,

⁷⁵² Jennings, *Op. Cit.* (note 370 on page 2 above).

⁷⁵³ Cf. *Section III.C.7(b)* above, *passim*.

“objective” analytical (linear) perspective. It never came to grips with the *problem*, seen from a systems perspective, but the NRC panel cannot be faulted for not doing their work. They completed the task assigned. They *thought* they addressed and resolved the problem. So did the NRC, the NAS, and maybe Congress too.

The hard truth – they used ‘the wrong model,’ so failed to touch the real issue – is simply one person’s opinion, voiced to those who will listen. And, perhaps, ‘see.’

We need to adopt a ‘systems’ approach. We need to start getting “loopy.” If we do, we’ll get through the crises we’ll have to meet in the next fifty years – crises of our own making – arising from how we conduct our affairs.

Sharing the Fish didn’t *mean* to employ an inappropriate theory. The polishers of the Hubble mirror, the data entry for the Mars lander, the managers of the last “Challenger” flight, they didn’t do it *on purpose*. The end of life on earth as we know it, won’t be intentional either.

But nothing can be undone, although with the Hubble we put in a ‘fix.’ And it worked!

‘Pointing fingers’ and finding ‘a fall guy’ won’t deal with the problem. At some point, *intent* doesn’t matter. We’ll be left with *effects*. So let us examine the *cause*.

The cause is *competition*, which has made us *afraid of failure*.

A fear of failure – in educational settings – is *fear of learning*. Learning calls for risk, and *an invitation to err*. The unfamiliar is seen as a threat; we need to turn that around. *The unfamiliar represents a wonderful chance to learn*.

We must learn to love learning, as a means to *cooperation*.

The organizational learning argument traces the source of the problem. The ‘prime directive’ of every organization is *self-preservation*, at least according to Selznick and others.

“Organizational-structural homologies” spread across systems theory, as all the world is *inter-dependent*. They draw a systemic connection between: personal learning, corporate structure, human psychology and *the conduct of research* in disciplines set to that end.

There is a lot to learn. We have a task to address.

We must learn to embrace our world as a whole, and to know we are stuck here *together*.

We must learn that – first of all – *learning* is something we do to make our lives *better*.

We must learn that *competition* in teaching and learning environments, in academic research, in educational life, in numerous organizational settings – simply – *is destined to fail*.

With competition in complementary settings, *output and growth are reduced*, to threaten all we hold dear. The symptoms quite truly surround us. “Fish discover water last.”

We must – this shall be hardest of all – *learn* the unyielding ecological-ethical laws of *cooperation*, and the unsettling truth that our rivalry *offers support to and rewards* anti-social behavior.

It all can be seen through *trust*, which Arrow would call a ‘social good.’⁷⁵⁴ Cooperation demands that we work *together in trust*, all pulling our weight and *sharing the joy* of the struggle.

⁷⁵⁴ Arrow, *Op. Cit.* (note 189 on page 2 above), pp. 22-23, framed the notion thus:

But every individual in a group possesses veto power over the trust in the Whole. This means *any one predator* rules out chances for ‘trusting communities.’ This is the ‘tragedy of the commons’ and of *Sharing the Fish*. Competition is not the solution to *a competitive failure*.

And ITQs may stem from motivations different from those they espouse...

“So why should we do all this? Why should we listen to you?”

“I am just a voice, in a world torn up by complexity, in all its screeching cacophony.”

“I have no time to figure out this so-unfamiliar realm! I must feed my family, tend to my riches, or rigid dreams. So I do not need to hear it, over the racket we all endure.”

“No, you don’t. None of us do. But the choice is surely important, and a “refusal of consciousness” still has effect. The decision not to think only means that we will not understand when it comes, and will not work to prevent it.”

The market is out of control, and taking our life-support down with it. The failure is one of understanding and the refusal to think. Psychologists call it *denial*; others see it as *self-preservation*. Regardless, it is *consequential*.

Everything is, in an irreversibly interdependent domain.

So organizations *change and adapt*, or organizations die. We must learn that *learning itself* has been – and remains – our tool of survival. “Homo sap.” we call ourselves, and quite properly so. With *learning* comes cooperation. *Cooperation* asks for trust (as does specialization). And *trust* demands strict ethical laws, with the bigger embrace the better.

Openmindedness also will be an axiomatic condition of learning. If so, then disciplinary boundaries set defensively against challenge are a confession of failure, in the educational realm.

Why should this surprise us? Competition is destined to fail, especially in this setting. And how could it be otherwise? “The emperor has no clothes.”

And it’s getting cold, toward the winter of our Millennial Age. Come spring, we must choose to do better. The party is over, we’ve eaten the seed corn, the dream was fun, and now...

Now we must wake.

“Blink a few times, and it may get warmer.”

...In a strictly technical and objective sense, the price system does not always work. You simply cannot price certain things. A classical example ... is the pollution of water or air. ... A similar difficulty in enforcing the price system is found in the case of road use. ...

I am not interested here so much in these specific examples as to show that something like this occurs in more subtle contexts. Consider what is thought of as a higher or more elusive value than pollution or roads: trust among people. Now trust has a very important pragmatic value, if nothing else. Trust is an important lubricant of a social system. It is extremely efficient; it saves a lot of trouble to have a fair degree of reliance on other people’s word. Unfortunately this is not a commodity which can be bought very easily. If you have to buy it, you already have some doubts about what you’ve bought. Trust and similar values, loyalty or truth-telling, are examples of what the economist would call “externalities.” They are goods, they are commodities; they have real, practical, economic value; they increase the efficiency of the system, enable you to produce more goods or more of whatever values you hold in high esteem. But they are not commodities for which trade on the open market is technically possible or even meaningful.

It follows from these remarks that, from the point of view of efficiency as well as from the point of view of distributive justice, something more than the market is called for. ...

We must face our mistakes, and that of Adam Smith, according to Lux.⁷⁵⁵ And that of Hicks, according to many.⁷⁵⁶ And that of Hirshleifer, according to me.⁷⁵⁷

If we do not – if we say we cannot and believe it enough not to – *change*, then Nature, as ever, will have the last word. She will do so, anyway, in her own determinate way, in which we shall count very little.

Like the dinosaurs, and all the species we've killed, the answer is stark and simple.

If we do not change: *we will die.*⁷⁵⁸

⁷⁵⁵ Cf. note 44 on page 2 and note 426 on page 2, above.

⁷⁵⁶ Cf. notes 52 on page 2, 92 on page 2, and 371 on page 2 above.

⁷⁵⁷ Cf. Jennings, "'The Hicksian Getaway' and 'The Hirshleifer Rescue': Fifty Years of Debate on Increasing Returns from Clapham to Kaldor" (uncompleted draft paper, presented to the Kress Society, Harvard University, November 1991); the issue is also discussed at some length in my Ph.D. dissertation and its spreading implications are reviewed in my other two (unpublished) papers in note 456 on page 2 above.

⁷⁵⁸ Cf. note 36 on page 2 above.