

THE CRISIS IN OCEAN GOVERNANCE: Conceptual Confusion, Spurious Economics, Political Indifference¹

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Abstract The crisis in ocean governance arises because of the comprehensive failure of nations to offer coherent management of extractive activities in their new Exclusive Economic Zone. Fisheries policy in particular has been rendered ineffective because of conceptual confusion over the nature of the property regimes in the EEZ. Fisheries economists, initially influenced by a false diagnosis of Hardin's alleged 'Tragedy of the Commons', have strangely shown no interesting in understanding the nature of property regimes in the EEZ. This lack of curiosity then contaminates economic models of the fishery problem and further serves to undermine the tendentious policy prescriptions from economists. The free gifting of the wealth in ocean fisheries to the industrial sector via ITQs further compounds the policy incoherence. Nations must reassert their ownership by resisting ITQ programs and having the fishing industry submit royalty bids for access to fixed-term leases over shares of the annual TAC.

Introduction

The fourth MARE 'People and the Sea' conference focused on the theme of 'who owns the coast'. More specifically, it devoted considerable attention to marine protected areas (MPAS) – their internal governance, their potential in broader ocean governance issues, and whose interests are served by their creation and possible expansion around the world. In my comments in this paper I shall situate the idea and the establishment of MPAS in the long and troubled history of human interaction with marine habitats in general, and ocean habitats in particular. My main title refers to the crisis in ocean governance. I also refer to conceptual confusion, spurious economics, and political indifference. Strong words perhaps, but then the oceans seem to be in serious trouble – whether we ponder near-shore artisanal fisheries in the smaller latitudes, or fix our attention on industrial fisheries in the Atlantic and elsewhere.

Indeed, I suggest that the worldwide commitment to MPAS is the quite predictable response to the shared realization that ocean governance as we have known it since most nations adopted Exclusive Economic Zones (EEZ) has generally failed to provide coherent and sustainable management of most fish stocks – and of ocean ecosystems.

By the term 'ocean governance' I have in mind the collective definition (that is, purposeful action by the authoritative agents we call governments) of

realms of acceptable human behavior – in economics we call such realms choice sets – for individuals who can be counted on to be rather intent on pursuing their best advantage in their interactions with other humans as they interact with the ocean environment. These interactions – in both the human and natural dimension – constitute what Max Weber referred to as our ‘webs of significance.’ At the level of the individual nation-state (a particular EEZ), the governance that counts is legislated action – often ratified and enforced by judicial decree – whose sole purpose is to bring about new individual behaviors, and hence new outcomes, with respect to the oceans. Here, the critical need is for coherent rules – public policies – that are grounded on plausible concepts from the social sciences (Bromley, 2006a). So if ocean governance is in disarray, much of the blame must lie with the social sciences – but especially economics. Why does economics deserve the brunt of the blame? Because economists will often claim that ours is the ‘science of choice’ – and it will also be claimed that economics is a ‘policy science.’ While policy implications indeed flow from the other social scientists, economists stand apart in the assured insistence that we have the correct answers to most any policy problem.

Of course all the social sciences are pertinent here because ocean governance is not about fish and benthic organisms and hypoxia. Ocean governance is about influencing, indeed controlling, individuals whose behaviors hold serious implications for, *inter alia*, sustainable fish stocks, benthic organisms, and the oxygen content of the waters of the Gulf of Mexico.

At the previous MARE conference in 2005, Daniel Pauly offered an assessment of where things stand with respect to fish stocks and general ocean health (Pauly, 2006). He also discussed disciplinary roles in addressing those manifold problems. Since that time a widely cited study by Boris Worm et al. (2006) has reinforced the general perception that ocean governance has failed to offer coherent management, indeed protection, of ocean ecosystem services.

On the other side of this debate stand some fisheries biologists. For instance, Ray Hilborn claims that fisheries biologists and managers have it about right and that the alarmists (usually ecologists) are misguided (2007). He accuses ‘ecologists and ngos’ of being misled by the promise of mpas – an approach that he regards as ‘top-down’ government control. Hilborn claims that fisheries biologists have the right science to manage fish stocks, but that failures in fisheries management result from ‘...competing pressure for sustained employment and continuation of fishing communities, as well as poor governance (Hilborn, 2007, p. 296).’ Related claims are found in a second recent paper by Beddington, et al. (2007).

The increasingly sharp debate between ecologists and fisheries biologists cannot be resolved here.² At one level, as often happens, the two camps are not really engaged in the same discussion. Fisheries biologists insist that they have the models and data to manage fish stocks on a sustainable basis, and it is only political pressure and flawed management decisions that intervene. Ecologists worry about the veracity of the population dynamics of those models, but also seem highly critical of political interference with ‘good science.’ It seems that despite their mutual distrust, the common element here is the lack of political will

to make the difficult decisions concerning the extraction of biomass from the oceans. I shall stick by my title.

It would be a mistake to suggest that the current crisis in ocean governance is accidental – or that it arises from inattention. Rather, these problems in ocean management have emerged over a time period that coincides with the extension of exclusive economic zones (EEZs) throughout the world. Recall that until the mid-1970s, many nations were not terribly serious about fishing on a scale commensurate with that of the Soviet Union, Japan, Norway, Iceland, and a few others. However, once the idea struck that individual nations could actually control fisheries resources in this new zone of exclusive state ownership, many nations began to behave like gold miners in a rush to grab what could no longer be taken by foreigners. The political and economic pressure to exploit fishery resources was apparently irresistible – and some nations launched themselves on a trajectory to develop indigenous capacity for serious industrial-scale fishing. Indeed the pressure seems to have been building prior to the formal adoption of the extension of sovereignty. A U.S. Senator from the state of Washington, whose name still adorns our federal fisheries legislation, declared in 1968 that:

You have no time to form study committees. You have no time for biologically researching the animal...Your time must be devoted to determining how we can get out and catch fish. Every activity...whether by the federal or state governments, should be primarily programmed to that goal. Let us not study our resources to death, let us harvest them (Magnuson, 1968, p.8).

Were he alive today, Senator Magnuson would be pleased to see that we have certainly not studied ‘our resources to death.’ What he might think of us having practically ‘fished our resources to death’ is another matter.

Why have so many nations shown themselves unable to manage many fish stocks in a sustainable manner? As my title suggests, these reasons can be found in what I shall call: (1) conceptual confusion; (2) spurious advice from economists; and (3) political indifference.

Getting the Concepts Right

We must start with the central issue that has dominated ocean governance since Huigh de Groot became alarmed that a few nations might try to gain control of shipping lanes and restrict the advantageous commerce of his native land. Little wonder that he was fond of the idea that the oceans are the ‘common heritage of mankind.’ And so when economists began to pay attention to the oceans they started with a ‘property’ frame – the ‘commons’ – foremost in their mind. Had there been more care devoted to concepts at this early stage, perhaps much mischief would have been avoided. The oceans are not a ‘commons,’ they are an open access resource. The confusion between *res nullius* and *res communis* continues to this day – despite the very best efforts of a number of us to get this correctly sorted

out (Becker 1977; Bromley 1989, 1991, 2005; Christman, 1994; Macinko and Bromley, 2002, 2004; Macpherson, 1978). And so the early work in fisheries economics was plagued by conceptual confusion (Gordon, 1954; Scott 1955). Garrett Hardin's unfortunate allegory of the 'tragedy of the commons' did not help matters (1968).

Indeed, the U.N. Law of the Seas conventions were spurred by a concern from coastal nations that the open access nature of the oceans would lead to the plunder of contiguous assets (mainly minerals). Coastal fisheries also figured in such concerns. The Fishery Conservation Zone (FCZ) in the U.S. was established in 1976 – then to become (in 1983) the Exclusive Economic Zone. Other nations followed suit. Since that legal redefinition took hold, EEZ fisheries must be understood as state property regimes (Bromley, 1991). It is on the basis of this transformed legal regime – from open access (*res nullius*) to state property – that foreign fleets were then prevented from entering and extracting fisheries resources that now belonged to the citizenry of coastal states.

Despite this clear shift in ownership of fish in the water, it is curious that the fisheries literature still abounds with references to the odd notion that there are no property rights in the EEZ, that no one owns the fish until they have been captured and are safely on board some vessel, and that what is needed to save fisheries is 'private property.' We see calls for 'perfect property rights' and the assertion that the most perfect property rights are private (individual) rights (Arnason, 2006). In fairness, Arnason is not alone.³ A recent policy document from the National Marine Fisheries Service contains the curious claim that 'From an economic theory point of view, the major source of the overfishing problem is the lack of property rights (Anderson and Holliday, 2007, p. 9).' It is surprising to see that the federal agency explicitly charged with the sustainable management of fishery resources in America's exclusive economic zone can issue a publication asserting that overfishing is caused by 'property rights' problems. However, on second thought, after having spent millions of dollars annually to manage the nations fisheries – and not doing a very good job of it – perhaps we should not be surprised that the National Marine Fisheries Service would find it convenient to blame its somewhat indifferent record on the idea that there are no property rights in the EEZ.

If the EEZ were not under the exclusive dominion of the United States government it is difficult to understand under what authority the NMFS might exercise its stewardship and management responsibilities. The citizens of the United States are the owners of the wealth in the EEZ and it is precisely the job of the NMFS to manage fisheries resources therein on a sustainable basis. And since the fish in the EEZ already belong to the citizens of the U.S., it is surprising to see the NMFS complain that there are no property rights in the EEZ. This confusion then provides the motivation for others to advocate privatizing the oceans (Leal, 2002). Indeed, there is now a book entitled *The Privatization of the Oceans* (Hannesson, 2004).

This conceptual confusion over property rights, and the apparent urgency to create private property rights in the EEZ, then underwrites advocacy for ITQs on the mistaken notion that ITQs represent private property. We see that a flawed conceptual understanding of property relations then leads to a misdiagnosis of the

essential problem in the fishery. And from this misdiagnosis there is a spurious leap to the notion that the correct remedy is ITQS – on yet another conceptual confusion that ITQS bestow private property rights on those who hold ITQS. And from this string of conceptual muddles one more non sequitur emerges – that private owners cannot help themselves in being ideal stewards of what they own. This final leap of faith warrants further consideration. Those who believe that private property assures good stewardship are apparently innocent of the so-called ‘Dust Bowl’ during the 1930s in which top soil from private land in Kansas, Nebraska, and Oklahoma, under the alleged ‘optimal’ management of enlightened stewards, blew several thousand miles east – eventually landing in Washington, D.C. It was soon after this demonstration of the stewardship aspects of private property that the federal government was forced to adopt a number of measures to prevent just this outcome. Indeed, the Soil Conservation Service was created precisely to address this problem. Why, one might inquire, if private ownership of nature is socially optimal, must we have a government agency established to convince farmers to cease and desist destroying what they own? To this day, after more than half a century of concerted effort by federal and state agencies to persuade farmers to be nice to their land, loss of top soil from private land in the American Midwest seems to average ten to fifteen tons per hectare per year.

Meanwhile, on the other side of the country, the state of Washington was moved to pass the Forest Practice Act in 1945 to ‘keep the private forest lands of the state productive (Frost, 1954, p. 579).’ Isn’t it a bit odd that it takes an act of legislation to make sure that natural resources remain ‘productive?’ To these two examples – there are many others – the question naturally arises, if private ownership of natural resources is so assuredly conducive of good stewardship consistent with the public interest, why then do we see evidence to the contrary? And in terms of the formulation of public policy for the oceans, the more interesting question is why those with an ideological commitment to privatizing the oceans fail to acknowledge these counter examples?

It would be a mistake to regard these examples of failed stewardship by private owners as arising from isolated greed or indifference. Indeed, under reasonable assumptions as to interest rates, the time preference of the owner, and the rate of regeneration of the renewable resource, it can be in the best interest of all private owners to completely liquidate (destroy) a renewable natural resource (Clark, 1973; Page, 1977; Smith, 1969). The question worth asking, therefore, is why fisheries economists, who ought to be aware of this literature, have embraced the conceptual confusion about property rights and stewardship? There are other economic issues to be explored.

Getting the Economics Right

The above matter is important since, as we saw in the quote from Anderson and Holliday, it has become too easy to blame economic problems on the legal environment. However, there are equally good reasons to blame economic problems on a flawed economic environment. Specifically, if we are concerned about excessive

capital and labor being drawn into fishing, and if we have reason to believe that this excess fishing capacity (and perhaps fishing effort) is instrumental to persistent pressure on highly stochastic fish stocks, then it would seem to make sense to investigate the specific economic incentives that might offer insights into the relentless fishing pressure that threatens sustainable fish stocks. In other words, why not first look at the economic incentives that might explain the high level of capital and labor in the fishery? The long record of government subsidies to the construction of fishing vessels is well known. But there is another 'subsidy' at work that does not require the expenditure of public moneys to expand a nation's fishing fleet.

The incentive problem I have in mind here is that food production from the sea enjoys an artificial cost advantage over land-based food production. If one is interested in explaining 'excessive' capital and labor devoted to fishing, this is a reasonable place to look. For instance, those who fish do not need to buy their productive asset base (the ocean environment), they do not need to rent that asset base, nor must they pay property taxes on owned or rented productive assets. The obvious effect of this differential cost advantage is that too much capital will be devoted to fishing compared to the commitment of capital and labor to those sectors where the purchase or rental of productive assets is required. Agriculture is the obvious example. While the symptom of excessive capacity is much discussed, this outcome is usually blamed on various subsidies – or, as above, some alleged 'flaw' in property rights. The fundamental cost differential afforded by free access to the wealth of ocean fisheries is never noticed. Why has this matter never been explained to policy makers? Why have economists not been clear and forceful in urging that this perverse incentive structure be modified?

On the possibility that the nature and importance of this artificial inducement to fishing is difficult to grasp upon first hearing of it, let us shift our attention – momentarily – from industrial fisheries in the developed world to the small-scale artisanal fisheries in the developing world. Here, the implications are clear. Artisanal fisheries around the world are the last possible livelihood opportunity open to the poorest of the poor. Those who are too poor to own or rent land have only one alternative left – to beg, or to pursue fishing where all that is required is a meager boat and a minimal net. Artisanal fisheries provide subsistence livelihoods to those at the very poorest margin of the poorest countries in the world.

Returning to commercial fisheries in the northern latitudes, when a few economists suggested, many years ago, that those who bring fish to the dock should pay a fee on the value of each unit landed – think of it as a 'rental payment' (a royalty, actually) to the owner of the productive asset (the ocean) – the idea was immediately dismissed. What was the basis for this dismissal? It went approximately as follows – fishermen will never agree to pay a 'tax' on their landings. And from that moment forward, most of the economics literature has remained curiously silent on the subject of recovering the resource rents from the wealth in ocean fisheries. Despite this silence, there are good reasons to tax the extraction of fish from the oceans – the proper tax would represent the lost economic value in the future by the extraction of a fish today. Economists call this a 'user cost.'

The concept is clear – a fish taken from the ocean is not there to reproduce itself and so there is lost future production of fish from the extraction of fish today. The prevailing myth in fisheries is that we are harvesting ‘surplus’ production – and by being ‘surplus’ it is somehow redundant and will therefore not be missed (and hence should be ‘free’ for the taking). While this may or may not make sense from a strict fish biology perspective, it cannot be plausible in the broader context of ecosystem-based management of fish stocks. In this broader view there can be no such thing as ‘surplus’ production in the oceans – a fish removed is not there to reproduce, it is not there to eat other critters, it is not there to be eaten itself, and indeed it is not there to die and so contribute to the nutrient complex of the oceans. A fish taken from the water is most certainly not in ‘surplus’ – nor is it ‘free’ – for the ecosystem from which it has been removed.

The economically correct fee would reflect the lost value in the future by the extraction of a fish today. In light of the serious degradation of many fish stocks, it is now apparent that the aggressive extraction of fish over the past several decades has produced enormous social costs. Had there been a landing fee – a royalty – on fish over the past three decades, the realized net return per fish landed (ex vessel price received minus the royalty) would have been less than it was, and this would have brought about a reduction in total landings from what we have experienced.⁴ Notice that such a fee would, as well, have dampened the tendency to push up against harvesting limits and would thereby have made the regulator’s job easier. Moreover, the funds collected from such fees could have been used to support enhanced management protocols – as well as to provide financial assistance to small isolated fishing communities. Since fish are essentially free to those fishing there is a strong incentive to catch as many as possible. After all, the first law of economics suggests that those things that are free will be oversubscribed. Ironically, economists who apparently did not wish to be seen as hostile to the fishing industry (by recommending a landings fee) may, in the long run, have been its worst enemy. Had stocks not crashed under the artificial inducements to excessive fishing pressure, perhaps the current clamor for marine protected areas, and the outcry against bottom trawling, would not be at their current level.

If excessive capital and labor in a fishery is a problem in need of solving – to calm down derby fishing, to reduce pressure on vulnerable fish stocks – then economists should have been advocating some market-based protocol to deal with that pressure. Instead, the favorite instrument seems to have become the free gifting of the wealth of ocean fisheries to the industry based on relative historical participation. And of course, speculation that this wealth will be handed out for free in the near future has the quite predictable effect of further encouraging excessive fishing efforts (and racing) so that once the handout gets underway, those who have been the major source of excessive pressure and overfishing will be the big winners in the wealth handout. In addition to racing for fish, much effort is devoted to ‘racing for history.’ Then, having given it all away for free, those fortunate recipients can sell their share to others and ‘cash out’ in a big way. After a few years, managers and others can look in on such fisheries and express amazement that the small and medium vessels are no longer present, and the degree of

consolidation is 'alarming' (Bromley and Macinko, 2007). This is called, 'letting the market work.' It is not clear where one should look in the economics literature for ratification of the idea that the free gifting of the public's wealth to the private sector is an example of 'letting the market work.'

In contrast to this giveaway to the commercial sector, the only defensible means to allocate scarce opportunities to gain access to the public's fishery resource is to auction off shares of the total allowable catch to a prescribed number of vessels that would bring total harvest capacity approximately in line with annual TAC. This approach would also produce a revenue stream for the government through the royalty rate that would be established in the course of the auction. I have elsewhere described an auction for permits and will not repeat the full discussion here (Bromley, 2005; Bromley and Macinko, 2007). But a few general comments are in order.

Fishing permits must become fixed-term renewable catch-share leases good for a set period of time – say ten to fifteen years. The catch-share permits could then be renewed through a subsequent auction. The auction would assure managers that the catch-share permits would go to the fishing firms that reveal – through the auction – the greatest value for being allowed to make a living off of our fish. This is what markets are all about – who among all possible market participants is the most eager to acquire some good or service? That person is the one with the highest willingness to pay for that good or service. Those with flawed knowledge of economics may assume that big vessels will always be able to outbid small vessels. This fear confuses gross revenue with net revenue. It is also to assume something about a permit auction by reflecting on what Sotheby's does when it auctions off a newly found Rembrandt. In fact there are a number of auction protocols that make the approach quite suited to fisheries.⁵ Many countries auction off lots (or shares) of oil and minerals, and many also auction access to the airwaves. The state of Washington auctions off access to geoducks.

An auction of the 'TAC -share' permits could be set up to assure the survival of small and medium vessels in a fishery. That is, the TAC for certain species could be partitioned into sectors so that small vessel operators are competing with other small operators for access to an assured share of the TAC. If there is persistent fear that the big boats might 'win it all', partitions of the available TAC would address that fear.

An auction could also break the iron-grip of 'fishing history' as a basis for future access to certain fish stocks. Small communities might be allowed to submit bids for shares of the TAC and then write contracts with harvesters who would agree to meet certain conditions. Recall that it is often small communities that suffer when the fishing industry suffers (Copes and Charles, 2004). Existing holders of permits could be granted the right of first renewal when current permits approached the termination date. These permit holders could be made to bid again, but might have the right to meet the price of another bidder if they wished.

The point here is to make sure that IRQs are not handed out for free – only to become the monopolistic possession of the fishing fleet. Limited-term permits assure the management agency that there will always be some control over who

is fishing, there can be some control over economic concentration (consolidation) in the harvesting sector, and the periodic renewal of permits through an auction allows from some assurance that those who have a record of unacceptable by-catch or non-compliance with other rules will not be allowed to continue participating in the fishery.

As above, the auction of assigned catch shares of the TAC differs profoundly from the current practice of giving away enormous income streams into perpetuity to those who have a documented history in a particular fishery. The gifting of IRQs is consistent with the pleadings of the so-called 'property rights' groups who embrace the oxymoron of 'free market environmentalism' (Leal, 2002). These groups see privatizing the oceans as simply the logical extension of an earlier era in which 'homesteading' allowed European immigrants to dispossess and displace America's indigenous peoples. Leal's book is appropriately entitled 'Fencing the Fishery.'

It is not surprising that privatization of the oceans would be all the rage. When the Soviet Union collapsed in 1991 it seemed that the 'magic of the market' had finally triumphed over planners and bureaucrats. The Thatcher-Reagan theology reinforced the idea that governments should get out of the way and let individual self-interest guide all human interaction. Ms. Thatcher once announced there is no such thing as society – there is only the individual. And she then solemnly assured the rest of us that there is no alternative to the full and comprehensive spread of markets to all realms of human action. So it is to be expected that policy makers would be receptive to the standard prescriptions about IRQs – that privatizing the oceans was historically and ethically inevitable. This entire process is captured by its own double *entendre* – 'rationalization.' Privatizing the public wealth in ocean fisheries was 'rational.' In fact, much of this literature is simply an exercise in rationalizing the give away of the public's wealth to the fishing industry.

Let me be very clear that there is merit in assigning *dedicated catch shares* (permits allotting a vessel some specific share of the TAC) to those who participate in a fishery (Bromley and Macinko, 2007; Macinko and Bromley, 2002). That is precisely the basis of the auction discussed above. But of course the permits received in that auction would not be owned but would be held on lease. Every ten to fifteen years those permits would need to be re-auctioned. When IRQs are gifted to all with some plausible catch history, and then an after-market in quota shares gives rise to consolidation, regulators have lost the ability to address the inevitable expansion of fishing power – except to reduce the allowable harvest associated with each quota share. It is not long until we are right back where we are now – too much fishing power chasing too few fish.

A noteworthy advantage to the industry of a royalty auction for assigned catch shares is that no fishing firm would be required to make a prior financial commitment to acquire additional quota shares from those who wish to leave the fishery. This liberates fishing firms from the need to arrange for financing to acquire quota shares. Instead, the successful bidders simply proceed with the fishing season and the uniform royalty rate is deducted from their ex-vessel proceeds at the dock. If landings in a particular season are low, so too will be the royalty. In the extreme, no fish, no fee.

Getting the Politics Right

I now want to shift to the specific issue of governance. The politics of ocean governance concerns whose interests are served by the oceans, and which government entities shall be responsible for protecting those interests. I earlier raised the proposition that the growing interest in marine protected areas owes much of its vigor and public support to the perception that fisheries management agencies cannot generally be trusted with assuring the well being of our fish – and our ocean ecosystems. Most fisheries management agencies see their guiding purpose to be the complete extraction of all fish said to be authorized under the guidelines of ‘allowable biological catch.’ A fish left in the water is, to such agencies, a fish gone to waste.

Getting the ‘politics right’ requires that we pause and consider the continually evolving purposes of nature. For much of human history the abiding purpose of nature was to provision human survival. It cannot now be claimed, at least in the northern latitudes, that our survival depends upon food from the oceans. And therefore it cannot surprise us that the general population is coming to redefine the ‘purposes of the oceans.’ This may be surprising. It is surprising because it challenges what many of us are quite sure we ‘know’ – that the purpose of the oceans is to produce fish. But that historical role, while ‘normal’ to those of us who have grown up with it, is not necessarily the role that our grandchildren will regard as ‘normal.’

In a sense, ‘nature’ and our relations to it are always undergoing reconsideration. To early settlers, the purpose of the forest was to provide timber by which housing might be built. Today, in much of the developed world, house construction – if it involves wood – is something that involves far-off forests, while the nearby forested areas are set aside for recreation. The purpose of the proximate forest, ‘our forest,’ has been redefined. And so the various parts of our natural world become for us what we have made of them. And we will see them, and understand them, and use them, and manage them, and revere them, in ways that evolve as we figure out new ways to think about them. Human interaction with ecosystems, and human dependence on particular products of specific ecosystems, can only be understood in terms of the effects those ecosystems (or those products) have on us (Bromley, 2006a). We do not manage nature. We manage and redefine the effects that nature has on us, and we manage and redefine the effects we have on nature (Coates, 1998; Glackin, 1967).

Our mental images of nature change in the light of our current embeddedness in particular social and economic and cultural settings and circumstances. When those settings and circumstances change then we recreate what ‘nature’ means to us in keeping with the emergent futures we think we see before us. This recreation of nature is always undertaken in light of our imagined purposes of the future. The different ways in which we see nature cannot be distinguished from the ways in which we imagine the purposes of nature – that is, what nature is *for*. Indeed it is our vision of what nature is for that prefigures how we see and regard nature.

One of the curious aspects of global fisheries policy is just how difficult it has been to move the industry – and the politicians who control its fate – to alter their beliefs about the evolving purposes of the oceans. The easy answer is that everything can be explained by greed. I find this too facile. Methodologically, that which explains everything explains nothing. It is too easy to blame the public for being dumb, or to say that ‘powerful’ interests stand in the way of ‘rational’ action. We must move beyond these insulting and trivial notions to offer a more analytical approach. Indeed, I suggest that the current situation is precisely what ought to be expected when people are being asked to extricate themselves from Weber’s *webs of significance*. Reforming fisheries policy requires that we redefine our webs of significance. I have elaborated that general idea in writing about the history of the whaling industry (Bromley, 2006b).

Implications

Since the inception of the EEZ, the answer to the question who owns the coast is simple – we, the citizens, do. It is ours and there is growing impatience with the old politics and economics of ocean use. It can no longer be claimed that the primary purpose of the oceans is to produce fish. Nor can it be claimed that the purpose of the oceans is well served by privatizing the wealth in ocean fisheries. At the same time, this changing perception does not imply that the evolving purpose of the oceans demands that we lock them away in extensive preserves, sanctuaries, and reserves. The balance between these two extremes is now under discussion. The major impediment to this necessary reconsideration is that we still regard the ocean and ocean fisheries as part of the last great frontier (Bromley, 2005). Until we manage to purge ideas of the frontier from our collective minds, persistently flawed diagnoses of the ‘fishery problem’ will lead, *ipso facto*, to policy solutions that themselves are flawed and incoherent.

I opened with the claim that the press for marine protected areas is driven, for the most part, by the growing realization that ocean policy is too important to be dominated by commercial fishing. To be fair, there are some fisheries that are well managed and apparently on a sustainability trajectory that is well crafted and well administered. But in too many instances this is not the case.

I am in my fourth year as a member of the U.S. Federal Advisory Committee on Marine Protected Areas – and the first three of those years I served as the Chair of the group. This was a fascinating experience for me – navigating the political waters among ardent advocates for MPAS, representatives of the recreational and commercial fishing communities, members of various environmental groups, state officials, and a few scientists. I was one of only two social scientists on the Advisory Committee. We are not quite ‘tokens’ – but it is interesting how advisory committees of this sort, whose fundamental job is to address human claims on the natural environment, should be constituted such that there are only two scientists whose subject concerns how people interact with nature.

Despite the wide range of professional and personal commitment to various aspects of the marine habitat, our group managed to work out some very

contentious issues in a collegial fashion. We are still friends, and our working relations are marked by cordiality and mutual respect. But it is clear that each of us holds vastly different ideas concerning the legitimate purposes of the oceans.

There is a lesson from my experience on this Federal Advisory Committee. The lesson is that reasonable people, even in the face of sharply divergent visions for the oceans, can sit together and work out what seems better to do. As an adherent of the pragmatist philosopher John Dewey, it is a nice reminder that knowledge and belief are shared undertakings – all knowledge is social. And being also a serious student of the co-founder (along with Dewey) of pragmatism Charles Sanders Peirce, I share his insistence that we only decide to work hard at figuring something out when our settled habits of mind are confronted with surprise and doubt. He wrote that ‘...the action of thought is excited by the irritation of doubt, and ceases when belief is attained; so that the production of belief is the sole function of thought’ (Peirce 1957, p. 36). And if we do decide to sit down and try to work out what ought to be done, how do we know when it is time to stop deliberating and get started on a new direction? Again Peirce had an important insight.

‘The opinion which is fated to be ultimately agreed to by all who investigate, is what we mean by the truth, and the object represented in this opinion is the real. That is the way that I would explain reality’ (1934, p. 405).

To Peirce, truth is an idea about what now seems better to do with respect to a particular problematic situation.

It is fair to say that ocean policy is fraught with surprise and doubt. The surprise is of the following sort: how is it possible that after three decades of national sovereignty over most of the world’s fisheries, the vast majority of them are under serious threat of economic extinction? The surprise is compounded by the realization that a number of fisheries experts have been offering policy prescriptions for approximately five decades. Why has so little good come from it?

Some will be inclined to blame the politicians for failing to listen to our advice. This assertion presumes that our advice is (and has been) correct and would have solved the problem. In fact, our policy advice is (and has been) flawed. If the oceans are in bad shape, the fault is as much ours as it is theirs. Modernism has allowed all manner of personal convictions and individual predilections to be wrapped in the language and the luster of science so that they appear to be objective and rigorous scientific truths.

I want to close with an interesting duality that seems to have emerged during the fourth People and the Sea conference – and one that I hinted at earlier. The duality I have in mind entails our repeated concerns for artisanal fishers and the natural resources on which they depend, while we have paid scant attention to the larger political and economic environment within which those generally impoverished individuals and their families must struggle to survive.

Much of the pressure on natural resources in artisanal fisheries – and the harsh personal struggles taking place there – are the quite expected result of the complete absence of feasible livelihood prospects outside of fishing. Such fishing is merely a way of surviving at or beyond the frontier. Coherent economic develop-

ment policies at the national level would be a plausible means to improve these marginal livelihoods of the poorest of the poor – and to protect natural resources. Indeed, it is highly probable that improved economic prospects elsewhere in the economy would relieve serious pressure now bearing down on near-shore fish stocks in the smaller latitudes.

This brings me to my second and final observation. The international community of ‘environmental activists’ has a rather mixed reputation on their hands. Their advocacy to protect parts of nature – generally couched in the language of moral indignation – means that local livelihoods are often placed in serious jeopardy. Wonderful game parks on land, or marine reserves in the water, are moral assertions by authoritative economic and political agents suggesting that nature is more important than local people. Without some care, there can be an element of neo-colonialism in this matter.

The implication is that those of us who care about fisherfolk and the parts of the ocean on which they rely for their impecunious existence must now lift our analytical lens up and away from the ‘micro-environment’ and direct our attention, instead, to the larger political economy of poor nations. I remind my students that if we wish to understand why so many people are poor and utterly dependent on the margins of nature for their survival, we must first understand why others are not poor. In other words, what is it about individual nation-states that relegate certain people to the meanest survival? The poorest of the poor are, it must be understood, victims of processes that receive far too little analytical attention. Of course nature is important, but so too are they whose very survival depends on nature. The danger for them comes if they have the misfortune of depending overly much on those parts of nature that those of us in the developed world find morally compelling. We can make their life more difficult than it already is. As we continue in the process of re-defining the purposes of nature, let us make sure that all voices are heard – not just the voices of those of us who are rich, comfortable, and at a safe distance from the hard life out on the water.

Notes

- 1 This a revised version of a keynote address given at the conference: ‘People and the Sea IV: Who Owns the Coast?’ Amsterdam, July 5-7, 2007. I am indebted to Anthony Charles, a second and anonymous peer reviewer, and Derek Johnson for valuable comments on earlier drafts.
- 2 Charles (1992) offers important insights on these issues.
- 3 A recent paper calls attention to the sloppy use of legal concepts by economists (Cole and Grossman, 2002).
- 4 It is here that non-economists may express surprise. They will likely assume that a reduced net income per fish landed (after paying the royalty) would simply induce fishermen to fish more in order to ‘maintain their income level.’ This view is flawed because it fails to understand that those who fish must weigh the cost of another hour of fishing up against the net returns achievable from that extra hour of work. With the net price per pound of fish reduced by the royalty payment, and with marginal cost of that extra hour of fishing increasing, a royalty will result in *less* fishing effort, *not more*.
- 5 For excellent sources on auctions see: French and McCormick (1984), Klemperer (2002, 2004), Laffont, et al. (1995), Latacz-Lohmann and Van der Hamsvoort (1997), McAfee and McMillan (1987), McAfee and Daniel (1992), Maskin and Riley (2000), Milgrom (2004), Pesendorfer (2000), and Wilson (1979).

References

- Anderson, Lee G. and Mark C. Holliday (eds.)
2007 The Design and Use of Limited Access Privilege Programs, NOAA/NMFS, May.
- Arnason, Ragnar
2006 *Commercial Allocation Issues*. Paper presented at a conference 'Sharing the Fish 06,' Fremantle, Australia.
- Becker, Lawrence C.
1977 *Property Rights*. London: Routledge and Kegan Paul.
- Beddington, J.R., D.J. Agnew, and C.W. Clark.
2007 Current Problems in the Management of Marine Resources. *Science*, 316, 22 June, 2007, pp. 1713-16.
- Bromley, Daniel W.
2006b The Economics of Whaling. In: *Whales, Whaling, and Ocean Ecosystems*, ed. by James A. Estes, Douglas P. DeMaster, Daniel F. Doak, Terrie M. Williams, and Robert L. Brownell, Jr. Berkeley: University of California Press.
2006a *Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions*. Princeton: Princeton University Press.
2005 Purging the Frontier From Our Mind: Crafting a New Fisheries Policy. *Reviews in Fish Biology and Fisheries*, 15:217-29.
1991 *Environment and Economy: Property Rights and Public Policy*. Oxford: Blackwell.
1989 *Economic Interests and Institutions: The Conceptual Foundations of Public Policy*. Oxford: Basil Blackwell.
- Bromley, Daniel W. and Seth Macinko
2007 *Rethinking Fisheries Policy in Alaska: Options for the Future*, Report prepared for the Alaska Department of Fish and Game, Juneau, October 31.
- Charles, Anthony.
1992 Fishery Conflicts: A Unified Framework. *Marine Policy*, 16:379-93.
- Christman, John.
1994. *The Myth of Property*. Oxford: Oxford University Press.
- Clark, Colin W.
1973 Profit Maximization and the Extinction of Animal Species. *Journal of Political Economy*, 81:950-61.
- Coates, Peter
1998 *Nature: Western Attitudes Since Ancient Times*. Berkeley: University of California Press.
- Cole, Daniel and Peter Grossman
2002 The Meaning of Property Rights: Law vs. Economics. *Land Economics*, 78(3):317-30, August.
- Copes, Parzival and Anthony Charles
2004 Socioeconomics of Individual Transferable Quotas and Community-Based Fishery Management. *Agricultural and Resource Economics Review*, 33:171-81.
- French, Kenneth R. and R. E. McCormick.
1984 Sealed Bids, Sunk Costs, and the Process of Competition. *Journal of Business*, 57(4):417-441.
- Frost, S.L.
1954 The Dexter Case. *Journal of Forestry*, 52(8):579-82.
- Glackin, Clarence J.
1967 *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*. Berkeley: University of California Press.
- Gordon, H. Scott.
1954 The Economic Theory of a Common Property Resource: The Fishery. *Journal of Political Economy*, 62:124-42.

- Hannesson, Rognvaldur
 2004 *The Privatization of the Oceans*. Cambridge, MA.: MIT Press.
- Hardin, Garrett
 1968 The Tragedy of the Commons. *Science*, 162:1243-48.
- Hilborn, Ray
 2007 Moving to Sustainability by Learning From Successful Fisheries. *Ambio*, 36(4):296-303.
- Klemperer, Paul
 2004 *Auctions: Theory and Practice*, Princeton: Princeton University Press.
 2002 What Really Matters in Auction Design. *Journal of Economic Perspectives*. 16(1):169-189.
- Laffont, Jean-Jaques, Ossard, Herve, and Vuong, Quang
 1995 Econometrics of First-Price Auctions. *Econometrica*. 63(4):953-980.
- Latacz-Lohmann, Uwe and Carel Van der Hamsvoort
 1997 Auctioning Conservation Contracts: A Theoretical Analysis and an Application. *American Journal of Agricultural Economics*, 79(May):407-418.
- Leal, Donald R.
 2002 Fencing the Fishery: A Primer on Ending the Race for Fish. Bozeman, MT., Political Economy Research Center.
- McAfee, R. Preston and John McMillan
 1987 Auctions and Bidding. *Journal of Economic Literature*. 25(June):699-738.
- McAfee, R. Preston and Vincent Daniel
 1992 Updating the Reserve Price in Common-Value Auctions. *American Economic Review*, 82(2):512-518.
- Macinko, Seth and Daniel W. Bromley
 2004 Property and Fisheries for the Twenty-First Century: Seeking Coherence from Legal and Economic Doctrine. *Vermont Law Review*, 28(3):623-61.
 2002 *Who Owns America's Fisheries?* Washington, D.C.: Island Press.
- Macpherson, C.B.
 1978 *Property: Mainstream and Critical Positions*. Toronto: University of Toronto Press.
- Magnuson, W. G.
 1968 The Opportunity is Waiting...Make the Most of It. in *The Future of the Fishing Industry in the United States*, 7-8, Publications in Fisheries, vol. 4. Seattle: University of Washington Press.
- Maskin, Eric and John Riley
 2000 Asymmetric Auctions. *Review of Economic Studies*. 67:413-438.
- Milgrom, Paul
 2004 *Putting Auction Theory to Work*. Cambridge: Cambridge University Press.
- Page, Talbott
 1977 *Conservation and Economic Efficiency*. Baltimore: Johns Hopkins University Press.
- Pauly, Daniel.
 2006 Major Trends in Small-Scale Marine Fisheries, With Emphasis on Developing Countries and some Implications for the Social Sciences. *MAST*, 4(2):7-22.
- Peirce, Charles Sanders
 1934 *Collected Papers Vol 5*. Cambridge: Harvard University Press.
- Peirce, Charles Sanders. (ed. by Vincent Tomas).
 1957 *Essays in the Philosophy of Science* New York: The Liberal Arts Press.
- Pesendorfer, Martin
 2000 A Study of Collusion in First-Price Auctions. *Review of Economic Studies*. 67:381-411.
- Scott, Anthony,
 1955 The Fishery: The Objectives of Sole Ownership. *Journal of Political Economy*, 63:116-24, 1955.

- Smith, Vernon L.
1969 On Models of Commercial Fishing. *The Journal of Political Economy*, 77(2): 181-98.
- Wilson, Robert
1979 Auctions of Shares. *Quarterly Journal of Economics*. 93(4):675-689.
- Worm, Boris, E.B. Barbier, N. Beaumont, J.E. Duffy, Carl Folke, B.S. Halpern, J.B.C. Jackson, H.K. Lotze, F. Micheli, S.R. Palumbi, E. Sala, K.A. Selkoe, J.J. Stachowicz, and R. Watson.
2006 Impacts of Biodiversity Loss on Ocean Ecosystem Services. *Science*, 314, 3 November 2006, pp. 787-90.

COMMENTS ON DANIEL BROMLEY'S PAPER

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The question of who owns the oceans, and what we mean by ownership, is extremely important. Ours is an era in which public policy readily turns to market-based approaches premised on notions of private property. As Daniel Bromley's paper suggests, both our notions about ownership and common ways of implementing it in the oceans are faulty, and need to be seriously rethought if we are to address the combined social-environmental problems resulting from overfishing and associated ecosystem degradation.

Like Professor Bromley, I find compelling the evidence of problems in the world's oceans. I also very much agree that accepting that there are problems does not mean that we need to blindly adopt what has become the dominant solution, which is to enclose the oceans. As his paper points out, environmentalists, marine ecologists, and free-market pioneers have all converged on various forms of enclosure, especially individual transferable quotas and marine protected areas, as the solution to problems in fisheries. However, despite the claims of its multiple proponents, enclosure is neither inevitable nor necessary. My goal in this commentary, then, is to thank Professor Bromley for raising trenchant critiques of the status quo, and then to push his arguments further. We need to hear more about conceptual confusion regarding property, including implementation of property in the oceans. We need to hear more about spurious economic arguments for various forms of private property as solutions to problems in fisheries (and problems in other arenas as well). And we need to hear more about the inherently political character of our relationship to nature.

I find refreshing Professor Bromley's reminder that overfishing has not occurred in the absence of property rights – under regimes of *res nullius* – but rather in their presence. The coastal oceans, where most fishing occurs, are state property, and the resources of these areas belong to citizens. I, too, have been consistently perplexed at the strength and ubiquity of 'tragedy of the commons' explanations for problems in fisheries (and associated calls for private property as the solution). My research has explicitly challenged this formulation by showing how the trajectory of fisheries development in the US Pacific resulted not from common property or open access (as is commonly claimed), but from fisheries being state property and thus subject to state development efforts carried out in the name of national economic growth (for example Mansfield 2001a, 2001b).

Given that my findings were based on well-known historical events, I have been interested in the ubiquity of tragedy of the commons explanations that ignore the combined role of the state and economic models in encouraging unsustainable fishing. In his paper, Professor Bromley suggests that the ongoing assertion of a lack of property in fisheries – despite the reality of state property – results

from 'conceptual confusion'. I agree that such confusion exists, but I would argue that this blindness regarding varieties of property is not due to simple confusion but instead to political stance – and more specifically to the now-dominant political stance of neoliberalism, or 'free market' public policy. I do not mean to suggest that politics stands in the way of the truth, but rather that the same situation is interpreted differently given different political commitments. Those promoting a tragedy of the commons understanding of fisheries are, of course, very much aware that coastal oceans are state property. But for them, this is part of the problem because state property, until the advent of ITQs, has not been treated as 'property' as classically defined. That is, state property does not create the same kinds of individual incentives to labor, rewards for stewardship, and mechanisms for improvement as does private property (and it is these characteristics that make property serve as the basis for the 'free market'). As Professor Bromley puts it, the assumption is that 'private owners cannot help themselves in being ideal stewards of what they own'. Thus, proponents of a tragedy of the commons perspective may be ignoring well-established differences between common property and open access, but they are not ignoring the existence of state property. Instead they see state property at best as a step toward 'real' property rights, and at worst as a cover for open access (see Mansfield 2004).

In his paper, Professor Bromley responds to arguments about the necessity of property by pointing out the bad track record of private property in regards to sustainability. There are numerous examples of degradation of resources held as private property (and numerous examples of privatization leading to increased inequality) and there are clear economic incentives for this (the incentive problem is not 'solved' by private property). Another widespread response to these arguments is to concede the basic point regarding the problems of open access, but to argue that private property is not the only solution; instead common property, in which people act collectively to make decisions about resource use and allocation, also provides an effective mechanism for avoiding the tragedy of open access. While I absolutely agree that common property may be part of the solution, and not the problem, I am nevertheless skeptical of this response because it does not do enough to clear conceptual confusion regarding property (Mansfield 2001a, 2004). First, this response leaves intact assumptions about the negative effects of open access, thereby ignoring the social interactions that shape behavior *even in open access situations*. Second, this response leaves intact our everyday notions about private property and ownership – notions that a variety of legal scholars have tried to show are faulty (Rose 1994; Singer 2000; Underkuffler 2003). They show that even private property is not based on complete and individual control over the thing owned, but instead can only exist as the result of a system of interdependence; private property is not an absolute, but is a social decision about how to allocate resources. I have used these notions about the complexity of private property to show that the economic logic of property is neither as absolute nor obvious as it is made to seem, and that property rights in fisheries are much more complex than either proponents or opponents of privatization allow (see Introduction and Chapter 4 of Mansfield 2008).

I am sure Professor Bromley is aware of most of what I am saying about property – and indeed I originally learned some of this from his work (Bromley 1991, 1992). Yet the fisheries management alternative that he proposes – auctions for shares of total allowable catch – does not address the issues raised by these investigations into what property is, how it works, and the purposes to which it is put. Professor Bromley decries ITQs as an unfair give-away of a public resource and MPAS as a form of neocolonialism, and sees both of these as a form of dispossession in which poorer people lose access to resources (I agree with all of this!). Auctions, he claims, are very different in that they are time-limited leases rather than permanent gifts or enclosures. Yet, in my view, auctions share many characteristics with these other property-based approaches to fisheries management. Auctions enclose a resource for some (those who can afford to win a bid) and thus are a form of dispossession for the poorest among us. Auctions also make state property more like private property, in that they involve not only rights to use and exclude but also to transfer through markets with prices as the key mechanism for expressing multiple values and allocating resources. Or, to be more precise and avoid conceptual confusion, all these forms of fisheries management (auctions included) are enclosures that move us toward the *neoliberal model* of private property, which assumes absolute control, equality in the market, and clear incentives to action. But this is the very model that the work I cited above shows to be a fiction. To me auctions appear not as a real alternative to ITQs and MPAS, but as a kinder and gentler way to impose neoliberal forms of property and markets.

I agree, then, that there is conceptual confusion regarding property in the oceans, that ITQs are based on faulty economic logic, and that there is rampant political indifference regarding the social-environmental effects of fisheries management. But these are not limited to a lack of recognition of oceans as state property or the illogic of giving away the public's resource through permanent gifting of quota share. Instead, the conceptual confusion, faulty economic logic, and political indifference come from the fact that we insist that private property entails individual control, rather than collective interdependence and decision-making, and then we pretend that private property has an internal logic that commands people to act in ways that always lead to the greater good (while other forms of property always lead to problems). Ocean governance will have a greater chance at addressing problems in the oceans if it can move away from a model that sees property as given and then ascribes causality to property, and instead embrace a model that sees different forms of property as the outcome of human (and human-nature) interaction. This would allow us to focus on the precise interactions that cause problems, and thus search for more successful (that is ecologically sound and socially just) forms of fisheries management.

References

- Bromley, D.W.
1991 *Environment and Economy: Property Rights and Public Policy*. Oxford: Blackwell.
- Bromley, D.W. (ed.)
1992 *Making the Commons Work: Theory, Practice and Policy*. San Francisco: Institute for Contemporary Studies Press.
- Mansfield, B.
2004 Neoliberalism in the oceans: 'rationalization', property rights, and the commons question. *Geoforum* 35 (3):313-326.
- 2001b Thinking through scale: the role of state governance in globalizing North Pacific fisheries. *Environment and Planning A* 33:1807-1827, with Erratum 34 (1).
- 2001a Property regime or development policy? Explaining growth in the us Pacific groundfish fishery. *Professional Geographer* 53 (3):384-397.
- Mansfield, B. (ed.)
2008 *Privatization: Property and the Remaking of Nature-Society Relations*. Malden, MA: Blackwell.
- Rose, C.M.
1994 *Property and Persuasion: Essays on the History, Theory, and Rhetoric of Ownership*. Boulder: Westview Press.
- Singer, J.W.
2000 *Entitlement: The Paradoxes of Property*. New Haven: Yale University Press.
- Underkuffler, L.S.
2003 *The Idea of Property: Its Meaning and Power*. Oxford: Oxford University Press.

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It is difficult to comment in an arresting fashion on a contribution with which one fully agrees. Perhaps one way to go about this is explaining why, and also stressing that such agreement is rare in the field of fisheries research. The field, actually, is roiled in controversies, as befits an area of research whose objects – fisheries – are themselves in crisis, and are widely perceived as constituting a sunset industry.

Among fisheries economists and, I suspect, among senior bureaucrats in most fisheries or equivalent ministries of western countries, the notion – roundly criticized by Daniel Bromley – is prevalent that the crisis fisheries are in can be solved by giving fishing firms (coily called ‘fishermen’) fishing ‘rights’. This word – ‘rights’ – is not only used by economists, who I fear have not consulted legal scholars before they launched that canard, but also by fisheries biologists, who may not fully appreciate what it means. So here it is: the right to fish is a codeword for privatization of fishery resources, presently a public resource in most countries. Furthermore, in this view, private ownership is a *conditio sine qua non* for successfully managing fisheries, and by extension, any living natural resources. Finally, in this view, public ownership is not ‘real’ ownership, since it leads (or rather ‘can lead’) to conditions similar to those resulting from an absence of ownership.

Why do fishing ‘rights’, that is Individual Transferable Quotas (ITQ), the mantra of ‘fishing right’ advocates, have to be entities to be *given* away, to *individuals*, and in perpetuity to boot? It would be much more fair, and compatible with the public interest to implement, for example, fishing privileges being auctioned off annually, as suggested by Macinko and Bromley (2002).

In that work, and in Macinko and Bromley (2004), these authors exposed the unsavory assumptions of the arguments for fishing ‘rights’, and reduced them to their essence: they are a justification for a resource grab by the rich and mighty, and their allies in governments.

In fact, I am puzzled by the near consensus among fisheries economists in this matter. It is almost as if their entire guild were taken under contract by the fishing industry, akin to Swiss villages whose young men went, *en bloc*, to serve as mercenaries for a Renaissance prince. Where are the fisheries economists, who, conscious of their being paid by the public (most work at public universities), consider the public good and how this could be enhanced? Or do they really think, like Margaret Thatcher, that ‘there is no such thing as society’, only individuals, and that there is, therefore, no public good?

What would we think, for example, of economists, who when tasked with addressing, say, the smog and congestions problem in large cities (for example London, where an innovative scheme for charging motorists who want to drive into the city was implemented) were to suggest that only ‘driving rights’ can solve

the problem, that is by giving to five corporations, in perpetuity, ownership of the public road and the exclusive right to drive on them?

These are important questions, because they illustrate how a discourse, however absurd, can become dominant in an academic discipline, while at the same time un-tethering itself from its societal and ethical mooring. Indeed, the near hegemony of the privatization discourse is positively scary in view of the challenge which humanity now faces in the form of global warming, where the public good and the interests of a few large corporations, mainly in the energy sector, are on a collision course. Here again, we find professional economists either fence-sitting, or pontificating on the high costs dealing with the problem would impose on corporations. As if their primary job was to find ways to avoid cost to corporations, as opposed to avoiding a runaway climate warming, and the horrendous consequences this would have for humanity.

The conflict that Daniel Bromley identifies is thus one of many documenting that we have been, in the last decades, on perilous course where challenges with managing public goods such as health, education, the airwaves, rangelands or marine fisheries are left unresolved until the good in question can be privatized. These privatizations, often touted as increasing 'choices' or 'rights' (for example the choice to choose one's health care provider, or school, or the right to fish), increasingly goes along with increased wealth for a few, and reduced choice, and less rights for those who are not wealthy.

Universities and the open space they still provide for enhancing the public good are one big stumbling bloc to the wholesale takeover of the public discourse by corporations (they already own the mass media, and the results are plain to see). In view of this, one should hope that every scientific discipline, every scholar ask her- or himself whether they want to act as Trojan horses, and actively contribute to this gradual takeover of every aspect of our lives, and whether corporate logos should be pasted onto the few walls still not so adorned. And so we should ask, with Daniel Bromley, our fisheries economist colleagues why they push IRO, while they know, or ought to, that there are other, fairer ways of reducing fishing capacity, and no legal basis for what they claim is a 'right' to fisheries resources.

I can only wish that Daniel Bromley convinces many, because we do need to have more emphasis on a discourse that gives legitimacy to public concerns, in fisheries and everywhere else.

References

- Macinko, S. and Bromley D.W
2002 *Who Owns America's Fisheries?* Washington, D.C.: Island Press.
- Macinko, S. and Bromley D.W.
2004 Property and Fisheries for the Twenty-First Century: Seeking Coherence from Legal and Economic Doctrine. *Vermont Law Review*, 28(3):623-61.

**FROM SOUND ECONOMICS TO SOUND MANAGEMENT:
Practical Solutions to Small-Scale Fisheries Governance in the Developing World**

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Introduction

Daniel Bromley's spirited effort to debunk spurious assumptions about the economic drivers of the crisis in ocean governance is welcome, particularly his core argument that by undervaluing marine fisheries as a public asset governments have set incentives for gross overexploitation. His core policy prescription in support of an auction system to assign individual transferable quotas based on shares of total allowable catch merits careful attention in advanced economies where the scientific and administrative infrastructure makes such an approach feasible. New Zealand's successful reorganization of its scallop fishery is a case in point, notable because the revenue generated by the auction system is reinvested largely in research and management institutions aimed at protecting the long-term sustainability of the resource (Arbuckle and Drummond 2000).

Yet, particularly in his concluding remarks, Bromley makes clear that his sights are set much more broadly than the commercial fisheries of New Zealand, Norway, or Newfoundland. 'Of course nature is important, but so too are they whose very survival depends on nature,' Bromley writes. In this respect, attention must turn to small-scale fisheries of the developing world, which employ more than ninety percent of the total number of fishers globally (FAO 2007a). In this context, the underlying economic principles that Bromley expounds remain sound, but the policy prescription he derives is wholly impractical. Worse still, if applied indiscriminately, it could severely undermine the food and livelihood security role that small-scale fisheries play in so many developing countries.

In this commentary, we elaborate three unstated assumptions – factors that should be understood as preconditions for the application of an auction system based on shares of total allowable catch. These are: adequate scientific information on the fishery ecology; adequate administrative capacity; and sufficiently transparent governance mechanisms, with avenues of recourse to deter elite resource capture. Where these preconditions do not exist, which is the case in nearly all developing country small-scale fisheries, a much more varied range of management tools needs to be considered, built in response to locally-defined management goals. Protected areas, when conceived and managed as a means of

sustaining fisheries productivity and livelihoods, often *do* have an important role to play in this mix of management tools.

The Context of Developing Country, Small-Scale Fisheries

Bromley is correct in pointing out that policy responses to the failures of fisheries management need to fundamentally shift incentives that motivate individual actors, not merely appeal to the virtue of conservation. Indeed, the historical push to maximize extraction from off-shore, commercial fisheries that Bromley describes in the us certainly has been mirrored in many developing countries and in some instances continues to this day. But small-scale fishers, typically confined to near-shore coastal and inland waters, operate under a much more complex set of incentives that often have little to do with any explicit policy to maximize production, and much more to do with conditions of vulnerability and insecurity (Allison and Horemans 2006).

The first obstacle to applying an auction system allocating shares of total allowable catch in this context is inadequate scientific information on the biological and ecological characteristics of the fishery. Even in single-species commercial fisheries with reliable, long-term monitoring data available, getting agreement on the type of information required to calculate TAC values is the focus of considerable debate (Batstone and Sharp 2003). In practice, the science has tended to be overrun by commercial and political interests (Masood 1997; del Valle and Astorkiza 2007). Yet in developing country, small-scale fisheries, the biological information required is often missing, and the highly dynamic, multi-gear, multi-species nature of these fisheries make collecting such information impractical. Even if sufficient data were available, such fisheries are rarely profitable enough to afford the assessment costs (Hilborn et al. 2004).

Second, the administrative capacity required to introduce, monitor, and enforce catch-based quotas on individual small-scale fishing vessels is far beyond what most developing country governments can reasonably hope to provide. In many countries, the majority of small-scale vessels are not even registered; even where they are, landing sites are often very dispersed and easily avoided. With individual vessels bringing in a wide range of species in minor quantities, the complexity of administering quotas rises just as the marginal value of the effort dwindles.

Third, the assumption that an auction system will indeed result in lease values that reflect the economic value of the resource assumes a transparent mechanism for allocating access rights with safeguards to protect against corruption and elite resource capture. An illustrative case in this regard is Cambodia, a rare instance of a developing country where fishing access rights are allocated by auction on a substantial scale, in this case in inland waters. Cambodia's fishing lots are allocated not as a share of catch but rather as 'a geographically defined river location, stretch of river, river beach, or temporary flooded land,' for which concession holders are given exclusive access during a defined fishing season (Degen and Nao Thuok 2000; Touch and Todd 2003). As recently as 2000, the total area

of the fishing lots covered 8,500 square kilometers, including many of the most productive freshwater fishing grounds in the country. A major reform introduced the following year saw the overall coverage of fishing lots reduced by more than half, a shift motivated in large part by public mobilization against the perceived injustices of the lot system (Ratner 2006). Concerns focused on widespread and sometimes violent conflicts between lot operators and local communities, and, especially pertinent to the argument at hand, evidence that auctions were routinely rigged, functioning as a shadowy extension of a political patronage system that channeled public assets for private gain (Degen et al. 2000). The factors that facilitate such elite rent capture, including the marginalization of poor fishers from resource allocation decisions and the lack of an impartial judicial system to ensure legal recourse, are unfortunately common in many of the same countries where the rights of poor fishers are most at risk (FAO 2007b; ICSF 2007).

Solutions That Fit the Local Context

Appreciating such obstacles, however, should not dissuade us from seeking solutions to improve the management of small-scale fisheries. Just as Bromley calls for 'redefining the purpose of oceans', reinventing the business of small-scale fisheries management in the developing world requires that local stakeholders – with poor fisherfolk principally among them – define locally-specific goals of management based on locally-defined needs (Andrew et al. 2007). Typically, this means taking into account a host of priorities beyond economic efficiency, which include food security and nutritional well-being, the distribution of benefits from a fishery that accrue to different social and economic groups, and cultural values associated with the identity of people who have traditionally derived their livelihoods from fishing.

Thankfully, many other mechanisms to restrict overharvesting and provide incentives for sustainable management do exist, which in small-scale fisheries are also technically and administratively more feasible to implement than auctioning shares of total allowable catch. These include spatial, temporal, and gear restrictions, which can be monitored and enforced by local communities themselves, by state authorities, or by a combination of both – an increasingly common choice under fisheries co-management regimes (Arthur 2005).

In the context of such goal-setting, protected areas can make sense, not as a blunt tool of conservationists to reduce fishing effort, but as a means of sustaining the productivity of the fishery to support local livelihoods. By preserving habitats that provide fish refuges, ensure migration routes, or protect fish stocks at critical stages of their reproductive lifecycles, marine and freshwater protected areas alike can increase fishing yields and buffer against uncertainty (Bohnsack 1996; Mangel 2000; Hastings and Botsford 2003). Where locals believe there is a strong link between protection and fisheries productivity, demand for protected areas and willingness to invest in their enforcement can be quite remarkable (for example, Baird and Flaherty 2005).

Ultimately, defending the interests of those ‘whose very survival depends on nature’ requires much more than sustaining the productivity of the resource alone, though this is essential. And it requires more than getting our economic principles right and gathering the political will to implement change. Important too is a readiness to engage in open-eyed analysis of what livelihood goals people are trying to achieve, what range of uses the ecosystem can reasonably sustain, and what management tools can be practically applied to achieve a balance.

References

- Allison, E.H., B. Horemans
2006 Putting the Principles of the Sustainable Livelihoods Approach into Fisheries Policy and Practice. *Marine Policy* 30:757-766.
- Andrew, N.L., C. Béné, S.J. Hall, E.H. Allison, S. Heck, B.D. Ratner
2007 Diagnosis and Management of Small-scale Fisheries in Developing Countries. *Fish and Fisheries* 8:227-240.
- Arbuckle, M. and K. Drummond
2000. Evolution of Self-Governance by Individual Transferable Quota. In R. Shotton (ed.) *Use of Property Rights in Fisheries Management*. FAO Fisheries Technical paper 401/1. Food and Agricultural Organization. Rome.
- Arthur, R.I.
2005 *Developing, Implementing and Evaluating Policies to Support Fisheries Co-Management*. London: MRAG Ltd.
- Baird, I.G., M.S. Flaherty
2005 Mekong River Fish Conservation Zones in Southern Laos: Assessing Effectiveness Using Local Ecological Knowledge. *Environmental Management* 36(3):439-454.
- Batstone, C.J., B.M.H. Sharp
2003 Minimum Information Management Systems and ITQ Fisheries Management. *Journal of Environmental Economics and Management* 45:492-504.
- Bohnsack, J.A.
1996 Maintenance and Recovery of Reef Fishery Productivity. In: N.V.C. Polunin and C.M. Roberts (Eds.), *Reef Fisheries*. London: Chapman and Hall:283-313.
- Degen, P., Nao Thuok
2000 Historical, Cultural and Legal Perspectives on the Fishing Lot System in Cambodia. In: M. Ahmed and P. Hirsch (Eds.), *Common Property in the Mekong: Issues of Sustainability and Subsistence*. ICCLARM Studies and Reviews n° 26:49-60.
- Degen, P., F. Van Acker, N. Van Zalinge, Nao Thuok, and Ly Vuthy
2000 *Taken for Granted: Conflicts over Cambodia's Freshwater Fish Resources*. Conference Paper. International Association for the Study of Common Property Conference, Bloomington, Indiana. Available: <http://dlc.dlib.indiana.edu/archive/00000245/00/degenp041100.pdf>. Access date: May 27, 2008.
- Del Valle, I., K. Astorkiza
2007 Institutional Designs to Face the Dark Side of Total Allowable Catches. *ICES Journal of Marine Science* 64:851-857. Available: <http://icesjms.oxfordjournals.org/cgi/content/full/64/4/851>. Access date: May 27, 2008.

- FAO
2007b *Social Issues in Small-scale Fisheries. Twenty-seventh session of the Committee on Fisheries. Rome, Italy, 5-9 March 2007. Available: <ftp://ftp.fao.org/docrep/fao/meeting/011/j8992e.pdf>. Access date: May 27, 2008.*
- 2007a *The State of Fisheries and Aquaculture. Rome: United Nations Food and Agriculture Organization.*
- Hastings, A., L.W. Botsford
2003 *Comparing Designs of Marine Reserves for Fisheries and for Biodiversity. Ecological Applications 13(1) Supplement:65-70.*
- Hilborn, R., K. Stokes, J.-J. Maguire, T. Smith, L.W. Botsford, M. Mangel, J. Orensanz, A. Parma, J. Rice, J. Bell, K.L. Cochrane, S. Garcia, S.J. Hall, G.P. Kirkwood, K. Sainsbury, G. Stefansson, C. Walters
2004 *When Can Marine Reserves Improve Fisheries Management? Ocean & Coastal Management 47:197-205.*
- icsf (International Collective in Support of Fishworkers)
2007 *The Siem Reap Meet Proceedings: Asserting Rights, Defining Responsibilities: Perspectives from Small-scale Fishing Communities on Coastal and Fisheries Management in Asia. Accessible: http://icsf.net/icsf2006/uploads/publications/proceeding/pdf/english/issue_87/ALL.pdf. Access date: May 27, 2008.*
- Mangel, M.
2000 *Irreducible Uncertainties, Sustainable Fisheries and Marine Reserves. Evolutionary Ecology Research 2(4):547-57.*
- Masood, E.
1997 *Fisheries Science: All at Sea When It Comes to Politics? Nature 386:105-106.*
- Ratner, B.D.
2006 *Community Management by Decree? Lessons from Cambodia's Fisheries Reform. Society & Natural Resources 19(1):79-86.*
- Touch, S.T., Todd, B.H.
2003 *The Inland And Marine Fisheries Trade Of Cambodia. Phnom Penh, Oxfam America.*

COMMENTS ON DANIEL BROMLEY'S PAPER

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Bromley's paper is a courageous one as it advances a different opinion to that held by the vast majority of economists and managers working on fisheries nowadays. He argues against the idea that property rights implementation in fisheries is the solution of over-fishing. And he is right! By giving examples of State interventions designed to stop misuse of lands and forests in the United States he shows that it is not necessarily the case that because you own a piece of land or forest that you will make good use of it. We can perhaps go a step further by saying that even if you use properly the resources you own, your actions can impact badly on other users. Many current examples can offer testimony to this – fields of corn or wheat are contaminated by windborne pollen blown from fields growing genetically modified organisms or highly productive Caribbean sugarcane that kills the local coral reefs by pouring pesticides into the rivers. In the case of fisheries, scientists (both biologists and economists) and managers have 'shrunk' the sea by focusing upon the relationship of the fishermen to a single species – such as cod in the first half of the century – with the objective of maximizing catches of this species (without any concern to the impact upon other species). Anita Conti, in her book written in 1953, based on her numerous trips on board French vessels fishing on the Newfoundland banks, noticed that cod abundance was linked to sea temperatures and the presence of other species (as either prey or predators). She also highlighted the immense wastage that occurs within the cod fishery as the main part of the catch was thrown back into the sea because it was either under-size cod or non-target species (Conti, 1953). Her prescient comments were largely ignored resulting in the crises in cod fishing that are so well known. In the classic Canadian case, the government closed the cod fishery only in 1992 despite the fact that for many years previously, fishermen had failed to reach the TAC.

From Bromley's perspective (on fishery management) this can mean one of four things. First, that the TAC is not a cast-iron guarantee that there will be no over-fishing and stock collapse – as has been demonstrated in many cases in Europe and North America over the years. Second, and linked to the first point, there is great imprecision in the models deployed to define the state of fish stocks and the catch volume that can be taken out of the sea. The natural variability of fish stocks over time and space is always critical from one fishing season to the next, with generally bigger variations in pelagic than demersal abundance. It is therefore very difficult, if not impossible, to predict what will be available in the coming fishing season. The third point is that in reality fisheries are multi-species – even in so-called mono-specific fisheries. Fishermen net or trap not only targeted species, but also ensnare other species. While many licence and TAC systems allow fishermen to harvest a certain amount of such by-catch (which may actually

have a higher market price than targeted species), the widely observed tendency is for fishermen to under declare by-catches of high commercial value (and worse – to illegally target these species). To extend the consideration of this third point, one has to say that fishery economists ignore completely the natural variability of fish stocks, considering that fishery management is simply the management of fishermen – and not fish (which is the main cause of discord between them and biologists). Therefore, fishery management is reduced to the management of the production of natural resources in a predictable world with rational behaviour by fishermen. In that world, any fishery problem is due to an institutional failure that causes fishermen to not pursue the profit maximisation objective. To remedy this, fishery economists have promoted – for decades now – access control measures. Usually these start with licences, move to TACS and then follow on with quotas (collectively, then individually allocated, and now the latest version – individually transferable (ITQ)). ITQs, as noted by Bromley, are today the most advanced system in terms of their sophistication. ITQs determine not only the right to fish but, as Coase (1960) pointed out, a right to ‘do’ – which means (first) a right to undertake actions that impact upon the activities of others and (second) regulation of such economic activities that negatively affect other activities. In fishery terminology (and to extend Bromley’s criticisms), ITQ is the ‘perfect’ system. It excludes fishermen and it prevents new fishers from entering the fishery (unless they have the means to purchase part of the quota). It does nothing to combat the significant level of discards of species which may have commercial value (and be the target of other fishermen). From the terrestrial (or the management perspective), each step corresponds to an improvement of the system as things appear to be under greater control. The illusion of control is the fourth point to be highlighted. It is much more than the mis-choice of a system (ITQ versus ‘TAC auction’). Thanks to the centralisation of fishery management systems in most countries across the world, fishery managers have tried to apply Bentham’s panopticon¹ principle in order to control fisheries as they wish ... from their comfortable offices (Failler, 1998). Non-compliance by fishers skewers such illusions of control. In summary, the introduction (and reinforcement) of management measures that are not in symbiosis with the natural cycle and variability of fish resources lead to an increase of economic costs and ecological waste.

The introduction of a TAC auction system (as opposed to ITQs) that Bromley promotes is innovative and seems to be more appropriate in mature fisheries where the number of fishermen or companies is relatively settled, landing sites or ports are well controlled, scientific advice is readily available and interactions among marine species are low (as with the king crab or salmon fisheries in Alaska). In other situations, characterised by low state control capacities, high species interactions, poor scientific advice and multi-species catches the application of TAC auction systems seems to be less conceivable. In the context of a fishery auction, what will be fundamental is the revealing of the fishermen’s willingness to pay. If, as is usual, potential buyers (fishermen) have limited knowledge about the value of the asset or rights up for sale, it is invariably because the management institution has a limited knowledge of the value of catches. Vickrey (1961 and 1962) analyzed the properties of different kinds of auctions and attached particular importance to

the second-price auction or, as it is now often called, the Vickrey auction. In such an auction, TAC share can be auctioned off by sealed bidding, where the highest bidder gets to buy the item, but only pays the next highest price offered. This is an example of a mechanism which elicits an individual's true willingness to pay². The main difficulties with the application of the classic auction or the Vickrey auction system in a fishery however is that one assumes that the future will be more or less similar to what the past was and the present is. Climate change or variability, to name only one factor that can affect fish stocks and more broadly marine ecosystems, is changing the face of fisheries around the world. So, how can we bid for something that may not exist anymore in two years time? From the property rights perspective, Bromley argues that the main difference between IQS and the TAC auction is that the first system transfers ownership of resources from the State to fishermen while the second one gives the right to catch fish to fishermen (whilst the property is retained by the State). Is it such an improvement (and for whom)? As we mentioned earlier, property rights not only engender the right to catch fish but also the right to undertake activities at sea that do not interfere with other activities. In both systems, fishermen buy the right to go fishing for a certain amount of fish and therefore to affect (negatively) other (fishing) activities. More fundamentally, the TAC auction is not a flexible system that can allocate fishery resources – which is indeed what all fisheries need. Somehow, in this sense, Bromley follows classic fishery economists in seeking to allocate to particular fishermen a particular amount of fish at a given price. However, other models of management based on economic performance and social cohesion exist and work, such as the *Cofradias* in Spain, or their counterpart, the *Prudhomies* in South of France. Uncertainty, risk, ecosystem functioning (where fish has a function value), species and fleet interactions are fundamental aspects of a fishery and need to be addressed when devising strategies for fishery management. So, who owns the coasts? Of course citizens, as Bromley has pointed out – but maybe more simply the person who looks at the sea in and for itself. It is a priceless property with the horizon as its only limit!

Notes

- 1 The Panopticon is a type of prison building designed by English philosopher Jeremy Bentham in 1785. The concept of the design is to allow an observer to observe (-opticon) all (pan-) prisoners without the prisoners being able to tell whether they are being watched, thereby conveying what one architect has called the 'sentiment of an invisible omniscience.' Bentham himself described the Panopticon as 'a new mode of obtaining power of mind over mind, in a quantity hitherto without example.'
- 2 By bidding above his own willingness to pay, an individual runs the risk that someone else will bid likewise, and he is forced to buy the object at a loss. And vice-versa, if an individual bids below his own willingness to pay, he runs the risk of someone else buying the item at a lower price than the amount he himself is willing to pay. Therefore, in this kind of auction, it is in the individual's best interest to state a truthful bid (Dreze, 1996).

References

- Coase, R.
1960 The problem of social cost. *The Journal of Law and Economics*, 3:1-44.
- Conti Anita
1953 *Racleurs d'océans*. Ed. André Bronne, Paris.
- Drèze J. H.
1996 William S. Vickrey, biographical memoirs. National Academy of Sciences.
- Failler, P.
2000 The blue, black, and white faces of the Common Fishery Policy. In Hatcher and Robinson (eds), *Management institutions and governance systems in European Fisheries*, pp. 264-280.
- Vickrey
1962 Auctions and bidding games. In *Recent Advances in Game Theory*. Princeton University Conference, pp. 15-27.
- 1961 Counterspeculation, auctions, and competitive sealed tenders. *Journal of Finances*, 16:8-37.

REJOINDER:

The Crisis in Ocean Governance: Clarifications and Elaborations¹

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Abstract Comments on my original paper have exposed areas in need of clarification, and evinced resistance to the use of auctions in artisanal fisheries. Here I offer necessary elaborations to my earlier paper, paying particular attention to how fisheries economists, through their failure to be honest concerning the concept of 'rent', have managed to mislead policy makers concerning the core problem in fisheries. Programs to restrict entry in order to avoid 'rent dissipation' brought on by new entrants are in fact agendas to make sure that a restricted class of entrants – often gifted with perpetual ITQs – can fish and earn extra-normal (quasi-monopoly rents) and then, when tired of fishing, these fortunate recipients can sell their ill-gotten gifts for small (or large) fortunes to other aspiring individuals. This privatization of the oceans is advocated under the false banner of restoring dissipated rents. I also make clear that an auction system is not appropriate for artisanal fisheries in the smaller latitudes.

Preamble

The observations on my 'Crisis' paper are insightful, pertinent, and suggestive. I shall address Professors Mansfield and Failler together, respond to the points raised by Blake Ratner and Eric Baran, and close with some reflections on the brief comments of Daniel Pauly.

The Politics of Policy

Professor Mansfield raises several concerns about the prominent role of flawed concepts of property in the dominant fisheries-policy narrative. She wants to hear more about the conceptual confusion on property, about the spurious claims linking private property to solutions of problems in ocean governance, and about the inherently political character of our relationship to nature. More important, she is dissatisfied with my advocacy for auctions because she believes that auctions do not '...address the issues raised by these investigations into what property is, how it works, and the purposes to which it is put.' More to the point, she sees auctions as part of an effort to enclose particular fisheries for the benefit of some and the correlated dispossession of other. According to Professor Mansfield, '...auctions

appear not as a real alternative to ITQS and MPAS, but as a kinder and gentler way to impose neo-liberal forms of property and markets.'

Starting with the conceptual confusion, Professor Mansfield insists that the enduring confusion over concepts of property does not arise from laziness or theoretical innocence on the part of many contributors to the flawed policy canon. Rather, it springs from their blatant political agenda. I will suggest that a useful start on that issue is to separate the dominant narrative into its creators and those who find that particular narrative congenial to their personal ('political') agendas. In this regard, I readily acknowledge the political agenda of such groups as the Environmental Defense Fund (EDF) and the Property and Environment Research Center (PERC), but it is important to recognize that these players are mere opportunists selectively drawing on those aspects of particular literatures that serve to advance their political ends. For the most part I still wish to focus attention on those responsible for creating and advocating a flawed conceptualization of the fisheries problem.

I have been reluctant to attribute a 'political' agenda to my colleagues in economics because the vast majority of them have been trained (socialized also comes to mind) to believe that economics is politically neutral, scientifically objective, and – as economists are wont to say – 'positive not normative.' None of these beliefs is true, but that is a debate best left for internal disciplinary debate (Bromley, 1990, 2006a, 2008). But it is essential to point out here that received economic theory is individualistic in all of its epistemic commitments, and therefore it cannot be a surprise that policies to emanate from the application of economics to nature end up celebrating individualism all the way down. Economists have not sought to take our models to the natural world we study, but to force the natural world into our atomized heuristic algorithms and their derived 'truths' (Bromley, 2008). The major flaw of my discipline is that it is evolutionarily implicated in the entire modernist epistemology of logical positivism (Bromley, 1989, 1990). The political essence of contemporary economics is at one with the political *zeitgeist* of the age – and this continuity renders it impossible for economist to see, to understand, and to admit that their policy conclusions are 'political' or prescriptively tendentious. Since the reigning economic and political system celebrates what it is that economics holds to be true, economics cannot be 'political' except to the extent that it reflects the reigning vision of how to organize an economy. But of course this makes economics supremely political. Contemporary economics has been naturalized by the economic system it has wrought.

Turning to the eager consumers of our flawed models, these epistemologically naïve policy prescriptions are just what the organized political community wants in order to further its preferred political agenda. And so the *a priori* policy desires of the Environmental Defense Fund (and its politically affine organizations) are supported by the standard catechism. An eager consumer, quite incurious about the conceptual incoherence at the core of its desired policy advice, gets just what it wants. Then when the Environmental Defense Fund undertakes its concerted efforts to advance privatization of the oceans through ITQS it is doing so for its own political reasons – and it is using the fisheries economics literature

as an instrument of its own desires. On this tack fisheries economics is but an innocent producer of flawed but quite instrumental prescriptive 'truths.'

But it would be too kind to stop here. Most fisheries economists are guilty of more than conceptual innocence concerning the flaws in their own theories. And here I do not refer to their confusion about property concepts. That particular sin is simple intellectual arrogance in believing that there is no need to consult legal scholars to acquire passable working knowledge of the concept of property. Most fisheries economists simply make it up as they go along. When they wish for something to be called a 'right' they just call it that – never mind what the legal scholars might say. Where fisheries economists *are* willfully deceitful is in their propagation of confusion about the essential *economic* concept at the core of the standard bio-economic model – *rent*.

Most of us consider rent to be what we pay to a landlord. In economics, it is important to understand that there are several quite distinct 'rents.' The standard bio-economic model of fisheries laments the dissipation of rent in an open-access fishery. The ready prescription is that entry must be limited in order that fishing firms stop this wasteful dissipation of rent. And, by the convenient magic of the Schaefer-Gordon model, this perfect convergence will maximize rent in the fishery and lead to maximum sustained economic yield into the far-distant future. Dr. Pangloss lives.

But notice that the standard narrative fails to tell us whether or not fishing firms are actually paying the owner of the fish for the benefits received by firms harvesting our fish and then selling them on the market. Of course fisheries economists feel no need to raise this little detail because they apparently believe – after approximately three decades of state property under the EEZ – that no one owns the fish until those critters have been captured (Anderson and Holliday, 2007). And so from conceptual confusion about ownership there is a more serious conceptual confusion (and correlated linguistic trickery) about 'rent dissipation.' When devotees of the standard bio-economic model lament the dissipation of rent in an open-access fishery what they should be telling us is that all *extra-normal profit* has been correctly squeezed out of the fishery by virtue of entry of more firms. Terminology is everything. Extra-normal profit (also, unfortunately, often referred to as economic rent) is *that revenue to a firm that is in excess of what would be necessary to keep the firm engaged in its current activity*. The dissipation of this extra-normal return (excess profit, economic rent) is what most fisheries economists wish for us to lament. Notice that it must be lamented because doing so then justifies limiting entry so that this rent is no longer dissipated.

Inconveniently for this story line, the open-access fishery, after all of this *extra-normal profit* (this pure economic rent) has been squeezed out by new entrants, is precisely the economically optimum state that must exist in a competitive economy. Firms in a competitive economy earn gross revenue that is used to pay for the raw materials they need, to pay the workers they require, to pay the rent (there is that word again) on their facilities (or to service the debt if they own those necessary facilities), and requisite taxes. Then owners must pay themselves a market return for the time and mental effort they devote to the enterprise. In a competitive economy the payments made to all of those factors of production can-

not be greater than the market will bear. Workers must receive no more than the market wage, necessary raw materials must be bought at market prices, and owners cannot pay themselves above market returns or their total and average costs of doing business will be above market rates and their firm will not survive because it cannot compete in their particular industry. That is what it means to have (and to be in) a competitive (market) economy.

After all of the requisite payments have been made, if there is any surplus left that surplus represents *pure profit* – economic rent. But notice that the existence of this economic surplus is the very thing that will draw the attention of potential competitors and soon new entrants will compete away that extra-normal return. Once that surplus has been competed away, all firms in this competitive industry will earn *normal rates of return* – and nothing more. The term *profit* might be applied to that share taken by the owner – understood as the necessary payment for her time and mental effort. But this amount (this profit) can be no greater than what owners justifiably must earn. Anything in excess of that rate will be the attractant that entices new entrants who will, through their contribution to total supply on the market, cause prices to fall thereby leading to a gradual dissipation of the former extra-normal returns in the industry.

Fisheries economists have misled policy makers and fisheries managers in their failure to be honest about the above story. An open-access fishery is a fishery in competitive equilibrium – it is precisely what the market expects and demands. All of the heart-wrenching accounts of how poor fishermen are suffering in an open access-fishery because there is no rent are nothing but elaborate deceits. If fishermen are poor in an open-access fishery it is no different from a farmer in North Dakota who is poor because he is trying to subsist on 12 hectares of wheat. Nor is it different from an artisanal fisherman off the coast of Senegal. There is simply not enough underlying wealth in the resource base to yield an income above what is now available. Of course if entry to wheat farming could somehow be restricted, so that instead of millions of hectares being planted to wheat only a fortunate few were allowed to be the sole producers of wheat on a much-restricted area (rather like the infamous tobacco-allotment program), the supply of wheat would be dramatically reduced, and we would not be surprised if wheat fetched 3,000 u.s. dollar a bushel. Under that regime our North Dakota fellow on 12 hectares would no longer be poor.

In fisheries, the standard narrative has it that poor suffering fishers must be excluded so that they can escape the impoverished servitude of rent-dissipated fishing, and thereby be much happier as drivers of school buses, electricians, or school teachers. Apparently those who fish cannot be trusted with their own occupational choices. One would imagine that those folks already have the opportunity to drive school buses, to be electricians, or to teach school. One might therefore imagine that they prefer to fish.

As in my original paper, if the owner of the fish (us) would begin to receive an income for the capture and sale of what it is we own, net returns in the fishery would be reduced somewhat, and this would lead to less effort in all fisheries. In terms of the open-access model, the standard ‘total cost’ curve would rotate in a counter-clockwise direction (since costs are now higher), and the new equilibrium

would occur at a lower level of total effort than now being observed. This is what the standard story seeks to accomplish through mis-information – that they are merely seeking to restore dissipated ‘rent.’ What they wish to bring about by this deceit, though you could not tell it by a careful reading of the literature, is quasi-monopoly income for those who are not excluded. The standard story wishes for extra-normal incomes – incomes greater than competitive returns – in the fishery.

Professor Mansfield is therefore correct – the literature in fisheries economics is blatantly political. As I said, economists are immunized against recognition of this fact by virtue of the market economy in which all of us live and seek to understand. Economists can explain the system because it is a system of our own creation. The reality out on the ground is precisely the manifestation of our textbooks. And it is no accident. Economists like to imagine that our theories explain the world out there. It is easier than that. The world out there was created by a political process with the explicit purpose being to mimic our theories of it. Physicists must be jealous.

I now turn to comments from both Professors Mansfield and Failler concerning auctions. Professor Mansfield complains that an auction does nothing to address the underlying conceptual confusion about property, and that auctions merely support dispossession and a different form of privatization. I hope that the previous discussion goes most of the way to demonstrate precisely why those who benefit (I am reluctant to say ‘profit’) from access to a nation’s fisheries must begin to pay for that opportunity to make a living from our fish. The adoption of an auction system – with limited-term permits to a share of the annual TAC – would indeed address the incoherence in the standard flawed property story precisely because that literature has willfully misled those innocent of the many different ‘rents’ in economics. Auctions are one – and just one – way to make those who benefit from our fish pay for those fish. Those payments represent ‘resource rents’ to the owner. Just as the owner of agricultural land is paid rent by a tenant, the owner of the wealth of ocean fish must be paid for surrendering those fish to the private sector.

However, Professor Mansfield is concerned less about owners receiving their due via an auction than she is about any means whereby some individuals gain access to nature’s publicly held bounty while others do not. I too am concerned with that and I hope that the above account, in which I debunk the standard catechism that justifies excluding participants in order to enrich the remainder with extra-normal profits (pure economic rent), is responsive to her concerns. Whatever else RRQ fisheries may accomplish, they most assuredly enrich the very few to the exclusion of a large number of historic participants. But, as above, if commercial fishing firms were suddenly to pay for the fish they take (fish that we own) then I see no good reasons to prohibit anyone who wishes to fish to do so – subject to the overriding objective of protecting fish stocks from depletion. If individuals find themselves better off fishing than driving a school bus, so be it.

The reason why auctions make sense is that they disabuse the industry (and some of their political and academic allies) that they are somehow ‘owners’ of anything. When RRQs are handed out for free to those with a history in a particular fishery, it is easy for the lucky recipients to regard this as ‘just desserts.’ And

then, when those ITQs can be bought and sold into perpetuity it would be well to notice that the fishery has, in effect, been alienated (handed over to) the holders of ITQs. While a management agency may still control TAC, it shall control little else. In contrast, those who bid for and acquire multi-unit auctions – giving a large number of aspirants ample shares of a future TAC for a fixed period of time into the future – cannot be in doubt that they are lessees and not owners. And the bugaboo that only the rich can win auctions is impertinent. An auction mechanism (protocol) can be created (as I indicated in my paper) so that small vessel owners are competing in a multi-unit auction with other similar firms. There is not a single winner – there are many winners, each entitled to a proportionate share of a sector's TAC. The essential aspect of auctioning off catch shares on a regular basis is to drive home the point to everyone that those who fish hold a lease – not an ownership interest. And the limited duration of the acquired permits means that at some interval, say every ten years, there is a chance for new entrants. More profoundly, a system of rolling-horizon fixed-term permits would mean that some fraction of permits becomes available for acquisition *every* year.

Professor Failler claims that the TAC auction does not offer management flexibility that trumps that in an ITQ fishery. I will contest that claim below. For now, please also note that the auction results in a landings fees payable *if and only if* fish are caught. In an ITQ fishery aspiring fishers must first purchase quota shares – an act that inevitably brings bankers into the policy mix. Magnuson-Stevens and the courts can be abundantly clear that an ITQ is *not* an ownership interest in anything at all, and yet the bankers will be sure to insist that they lent money to someone to purchase ITQs on the assumption that they are 'like' a property right. This aspect has led a few economists to declare, approximately, 'If it walks like a duck it is a duck.' What such commentators apparently have in mind is that if a banker will loan money on it, it 'must' be a property right. The incurious are satisfied with this deep analytical exercise and never bother to read the Magnuson-Stevens Act or court cases in which the record is clear (Macinko and Bromley, 2004). Or, since they have a long history of making up whatever suits them about the concept of property and property rights, perhaps they now imagine that Congress and the various courts are equally confused and flexible about the terminology they employ.

The essential concern raised by Professor Mansfield is that all efforts to exclude people from fisheries are acts of coercive dispossession. Given what I have said above about making sure that owners receive payments for resources taken for the benefit of individuals (be they poor or otherwise), and assuring the absence of external effects on others (in this case the destruction of fish stocks), I agree with her that action by the state to prevent entry into *any* line of work is an act that demands good reasons. Prostitution, growing and selling of opium, and making 'moonshine' (illicit whiskey) for resale are but three examples where compelling reasons have been advanced and accepted by the body politic. Unfortunately, the fisheries economics literature would have a hard time justifying limiting entry – or the gifting of enormous income and wealth to the few – if it spoke honestly about its reasons. Preventing 'rent dissipation' sounds like an arcane though rather good idea to the innocent. Locking in quasi-monopoly income to a subset of an

existing industry would seem to require further justification. Possible rejoinders might resemble the following 'And why, exactly, does a subset of historic fishing firms deserve this extraordinary assurance of income above what market conditions would justify?' Another rejoinder might be: 'Please tell me again why the commercial fishing industry deserves to given, for free, perpetual access to the wealth of *our* fisheries?' Yet another possible curiosity might run as follows: 'Can you please tell me why the fortunate recipients of this gift from the taxpayers should then be allowed to sell their gift to others in the industry, virtually assuring that any subsequent policy initiative to introduce a fee (a royalty) on future landings would be resisted on the grounds that those now in the industry have 'already paid' for their fish?'

Professor Failler raises a concern about the practical feasibility of an auction. While Professor Mansfield worries about the equity aspects of this – a point I have addressed and will elaborate below for artisanal fisheries – Professor Failler worries that scientific uncertainty and the absence of reliable information will make it impossible for aspiring participants to know how much to bid. From this I fear that perhaps my earlier explanation of the auction was not clear. Please note that this is a 'bonus-bid' auction, and therefore those who bid know that they will not pay a single penny, even if they are a winner. And as I said above in response to Professor Mansfield, there can be many winners. Indeed there can be as many winners as the management agencies wishes for there to be. Note that what is acquired by a 'winner' in the TAC-share auction is the opportunity to put to sea in search of a particular species (or several species) and to bring to port some known share of the total TAC in the current season as well as over the life of the fixed-term permit. If there are 500 'winners' out of 520 bidders then those 500 winners acquire a permit entitling them to land and sell 1/500th of an agency-specified TAC each year over the life of the permit. Of course other allotments are possible, depending on local circumstances. The available TAC can be partitioned in various ways to offer small vessels entry prospects, and also to control consolidation by placing limits on shares of the TAC that could be held by individual firms.

Note that bidders are not being asked to conjure a bid based on their future profits since that is a number that will be impossible to compute. Rather, bidders are being asked to submit a bid based on the expected value of their gross landings. Since these individuals have been active in the fishery, and since they have prior knowledge of exactly how many others will share in the TAC, they are certainly in a reasonable position to estimate future landings, and to assign probable prices to those landings. It bears pointing out that virtually all contracts for retail space in malls/shopping centers is a combination of an annual fixed fee, plus a share of gross sales over the course of a year. Tenants do not necessarily bid for space in such complexes, but they certainly better have some sense of their willingness to hand over a small percentage of their unknown gross receipts to the owners of the complex. Is fishing more stochastic than owning a small shop in a retail mall? Existing turnover rates in shopping malls suggest that the risks might be somewhat similar.

The central point of the auction is to determine who among all aspiring fishers most highly values the opportunity to fish. Those individuals will express

a willingness to pay. If one is indifferent between fishing and driving a school bus we can expect a low bid. If one is dedicated to a life on the water we can expect a rather higher bid from such a person. An auction is simply one means to allocate access. We could always draw numbers from a dry purse seine. Having done that, we would still need some means to determine how much resource rent shall be paid to the owners by way of a royalty on the value of landings. Auctions avoid the arbitrariness of lotteries, and they yield – via the highest losing bid – a plausible way to arrive at a ‘fair’ payment to the owners of the fish that are to be caught and sold by those who harvested them. It is not important if there are only 300 aspiring fishers and a particular fishery can accommodate all of them. But we must find some means to arrive at a plausible price to be paid for the fish that are landed. If the political process can arrive at a number – say three percent of the ex vessel value of landings of all 300 fishing firms – then that is fine. It is getting started down this road that matters.

I do wish to question Professor Failler’s claim that the TAC auction with fixed-term harvesting permits is not a flexible system that can allocate fishery resources. I object because it is inherent in any TAC program that the management agency can, for reasons of depressed stocks, announce that next year the TAC will be just forty-five percent of what it was in the current year. There is direct control over harvest levels, and notice that under the TAC-share auction there can be no whining fishers and bankers claiming that ITQs were just bought at some enormous sacrifice – only now to be ‘de-valued.’ There is nothing in my auction to be devalued. Harvesters do not pay for fish until the fish are sold at the dock. No fish, no payment. If landings are reduced next year by thirty percent compared to this year, the amount owed to the management agency falls by the reduced ex vessel value of those reduced landings.

One more aspect of flexibility that is missing in the standard ITQ fishery is that each year the management agency could release new TAC-share permits to aspiring fishers. Some current permit holders may decide that they no longer wish to fish. In contrast to the ITQ model, these individuals are not free to sell those unwanted permits to others. Notice that under an ITQ scheme the management agency has indeed lost all management flexibility. In the auction fishery, unused permits go into a reversion pool to be issued at the discretion of the management agency. The agency could hold those permits back – thereby slightly increasing the share of TAC available to existing participants (given the exit of one or two participants). Or, the agency could let those retired permits out again in a new auction thereby preserving the share content of existing permits. Think of the TAC-share permit as ‘shares’ issued by a commercial company on a stock exchange. The more shares there are in circulation the lower the economic content of each one. So I disagree with Professor Failler concerning the flexibility of a TAC-share auction compared to the ITQ fishery. Indeed, ITQ fisheries are exemplars of the loss of management flexibility – let alone ability – for the agencies responsible for their management.

Indeed this brings me to Professor Failler’s wonderful Benthamite *pan-opticon*. As he says, fisheries managers now reassure us that they are ‘managing’ fisheries by handing them over to the industry, from which point forward there

will be no management required. After all, we have been assured that owners cannot help but be good stewards and, by extension, ideal managers. Bentham's prisoners could not tell if they were being watched – but of course they were known crooks. Once commercial fisheries have been handed over to the virtuous industry those various government buildings identified as concerned with fisheries management can happily remain empty – thereby saving taxpayers the burden of quite unnecessary salaries. As with the so-called 'Stealth Bomber' near the end of the Cold War, if the bomber was as 'stealthy' as claimed, there was obviously no need for the U.S. to build them. It was only necessary to tell the Soviets that several hundred of them were, at this very moment, aloft.

Professor Failler is also prescient in his criticisms of the standard bio-economic model of the fishery. Indeed the Beverton-Holt-Schaefer model that underpins the bio-economic model of fisheries confirms the observation of the German physicist Georg Lichtenberg: 'Delight at having understood a very abstract and obscure system leads most people to believe in the truth of what it demonstrates (G. C. Lichtenberg, 1789. Notebook J).' While fisheries biology has moved beyond the simplicity of the basic open-access model that is required reading in every beginning course in natural resource economics, it cannot be an accident that the simple comparison between an (overexploited) open-access fishery and an 'optimized' fishery under a sole owner leads directly to the conclusion that privatization is the only option. There is nothing quite as seductive as sophomore (blackboard) economics.

The single-species, surplus-production model stands as one of those beguiling heuristics that continues to inform all mental processes in fisheries policy. Professor Failler introduces the idea of 'the illusion of control' and I find this a fitting metaphor for the bizarre world of the standard model. Indeed this model is not confined to the rarified academic discourse of sophomore economics. Both Hilborn (2007) and Beddington, *et al.* (2007) offer it up as the essential teaching tool to advance their quite assured policy prescriptions concerning how to understand the fisheries 'problem' and therefore how to 'fix' that problem. Indeed Ray Hilborn finds the vertical axis so wonderfully versatile that it can be renamed 'benefits' – thereby inviting all manner of interested parties to find something charming about it. While economists are often criticized for our reductionist models, we have few constructs that can approach the multifarious fictions associated with this 'model' of fisheries management.

Let me now turn to the comments by Blake Ratner and Eric Baran. I am particularly pleased that two individuals so knowledgeable of the fishing scene in the smaller latitudes have had a chance to register their views. I shall start by expressing regret that I was not more explicit in my discussion of the TAC-share auction as an approach suited to commercial fisheries and not artisanal fisheries. The reasons for this exclusive application to commercial fisheries have been amply adduced by Ratner and Baran. I want to expand on several of their points, but first it seems worthwhile to discuss commercial fishing in those parts of the world of concern to Ratner and Baran.

In my original paper I made the observation that artisanal fisheries are the last and final refuge of those too poor – or encumbered by caste and creed – to

provision themselves and their families from the land. And that is precisely why I offered the observation, repeated here by Ratner and Baran, that 'Of course nature is important, but so too are they whose very survival depends on nature.' What I had in mind here, though it may have been a bit too subtle, is that some efforts by the global environmental community to dispossess artisanal fishers from their historic livelihoods must often be tempered by the very issues of justice that concern Professors Mansfield and Failler. If those dependent on low-income subsistence fishing are dispossessed in the interest of preserving charming habitats for eco-tourists from abroad then hard and inconvenient questions need to be asked.

Those familiar with artisanal fisheries are also aware that in certain parts of the world, and perhaps Latin America and Southeast Asia are the most extreme cases, artisanal fishers are caught between the above-mentioned dispossession and marginalization from the land, and an ever-more aggressive commercial sector that invades their limited habitats from the EEZ. To the extent that the commercial sector is making life even more difficult for marginalized artisanal fishers, forcing the commercial sector into a TAC-share auction regime would avoid all of the pitfalls of an ITQ fishery, and it could produce the resource rent (the royalty on landings) that could be used to mitigate the economic hardship already bearing down on the artisans. As indicated in my original paper, broader economic development initiatives could pay a double dividend. Such initiatives could provide enhanced livelihood alternatives for the offspring of current artisans, and this fact alone would – over time – provide plausible relief to the relentless fishing pressure evidenced in many artisanal regimes. For commercial fisheries in the wealthy countries, those who decide not to fish can always drive school buses, do electrical work, or teach school. In the agrarian world those options do not exist. One fishes or one starves.

Professor Mansfield will surely approve of the suggestion by Ratner and Baran that reinventing small-scale fisheries management in the developing world 'requires that local stakeholders – with poor fisherfolk principally among them – define locally-specific goals of management based on locally-defined needs.' While this is indeed an appealing vision, the ecological and economic spillovers from artisanal fishing cannot be wished away by the desire to ennoble local people struggling against all odds. Some activities of artisans – the use of dynamite, for example – hold implications beyond their confined impoverished world. But again, locals may be left with no alternative when the commercial sector harries them on the water, and the landlords evict them with alacrity. Ratner and Baran acknowledge that new sustainable institutional arrangements for artisanal fishers will require collaboration among the local community, government authorities, and other political and economic elites who can make life better for the poorest of the poor, while assuring the survival of compelling local ecosystems.

Ecology and Economy Again

In these few final comments I shall reflect on Daniel Pauly's brief observations. Pauly points to the core of the problem – a flawed conceptualization of how hu-

man systems (the economy and its imperatives) connect to the ecosystem. In my original paper I made brief reference to work on the economic history of commercial whaling as recapitulating a common evolutionary pathway in virtually all human engagements with nature. The general issue concerns the dynamic nexus between the gradual intensification of human interaction with – and extraction from – nature and the inevitable biological response to that activity. I talked of this as an instance of co-evolutionary adaptation in which biological processes undergo transformation in the face of extensive human exploitation (high-grading), and human processes (and associations) in turn undergo transformation in the face of biological feedback onto human communities that have been organized and structured around this very interaction. Much of the literature in this general area concerns the first phenomena – humans bringing about generally destructive effects on natural systems. The feedback from natural systems to human systems is much less explored. I insist that both aspects of this nexus must be understood if we are to gain a plausible understanding of why many natural resources are so often over-exploited. With that understanding in hand, we may gain insights into the ways in which human interaction with nature might be modified and mediated such that timely adjustment of exploitation trajectories is both possible and feasible.

That co-evolutionary model entails four phases: (1) emergence of the idea of a resource; (2) elaboration (reconstitution) of the use of that natural resource; (3) naturalization of that elaborated activity; and (4) apologetics concerning the naturalized and elaborated enterprises now dependent upon nature (Bromley, 2006b). With respect to the commercial fisheries, we see this evolutionary model in full flower. Small-scale (artisanal) fishing emerged to capture the benefits of a desirable constituent of nature. This natural bounty soon becomes *commoditized* by those who acquire it. Perhaps they can trade it for something else in short supply? As the focus on this constituent of nature intensifies the activity associated with its acquisition, consumption and disposition becomes elaborated and internalized. Following on the heels of this elaboration we find a process of naturalization. That is, whatever it is that the local groups are doing with this aspect of nature comes to be seen as right, correct, justified, and perhaps even noble and ennobling. And this leads to apologetics about those activities so construed.

It is in this co-evolutionary model that we find the political appeal of giving away ITQS and the fish they implicate to the industry. In a sense, the industry has come to imagine that it deserves this public gift by virtue of having navigated its way through the four stages of my co-evolutionary model – from small-scale harvesting to industrial elaboration to naturalization and finally apologetics. Now, by virtue of having become naturalized, the public must either pay the industry to reduce its dependence on a public resource, or give that resource away to the industry on the twin deceits that it now deserves this gift, and – by the way – it will henceforth be stewards of it.

In the light shed by the above co-evolutionary model there can remain no mystery why fisheries policy has arrived at this sorry state. The becoming industry was always one step ahead of the necessary managerial structures and processes that were responsible for its behavior. This emergence goes beyond the mere story

of 'regulatory capture' in economics. In that model the regulators and the industry remain distinct by virtue of their employment, while their originally distinct worldviews gradually merge into a shared vision of the ideal role of big business in a society that is itself industrial and capitalist all the way down.

In the fisheries realm the lines between industry and regulator are not nearly so well defined. Indeed, the situation of the National Marine Fisheries Service in the u.s. Department of Commerce offers a plausible hint as to the underlying political and economic message.² The purpose of the National Marine Fisheries Service is to put at the disposal of the commercial fishing sector the full services of the Federal government – research, data collection, monitoring, safety, detection and prosecution of foreign vessels in the EEZ, and of course the creation of the regional fisheries management councils to make sure that there are few 'surplus' fish left in the water, and that when it comes time to bargain over which interests shall get those fish, to make sure that there are 'no fish left on the table.' Indeed the North Pacific Fisheries Management Council, responsible for Alaska's fisheries, finds itself in a difficult spot. It has previously awarded rrgs for halibut (and sablefish) to the commercial sector, now to be confronted by the charter sector demanding more of nature's bounty. 'But wait, we have already given it away to the commercial sector.'

Like Daniel Pauly, I despair that we do not know how to extricate ourselves from this mess. And there I must stop.

Notes

- 1 I thank Seth Macinko for comments on an earlier draft.
- 2 I cannot speak about the governmental location of fisheries management agencies around the world.

References

- Anderson, Lee G. and Mark C. Holliday (eds.)
2007 The Design and Use of Limited Access Privilege Programs, NOAA/NMFS, May.
- Beddington, J.R., D.J. Agnew, and C.W. Clark.
2007 Current Problems in the Management of Marine Resources. *Science*, 316, 22 June, 2007, pp. 1713-16.
- Bromley, Daniel W.
2008 The Emergence and Evolution of Environmental and Natural Resource Economics. In: *Frontiers in Resource and Rural Economics*, ed. by Junjie Wu, Paul W. Barkley, and Bruce A. Weber. Washington, D.C.: RFF Press.
- 2006b The Economics of Whaling. In *Whales, Whaling, and Ocean Ecosystems*, ed. by James A. Estes, Douglas P. DeMaster, Daniel F. Doak, Terrie M. Williams, and Robert L. Brownell, Jr. Berkeley: University of California Press.
- 2006a *Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions*. Princeton: Princeton University Press.
- 1990 The Ideology of Efficiency: Searching for a Theory of Policy Analysis. *Journal of Environmental Economics and Management*, 19(1):86-107.

- 1989 *Economic Interests and Institutions: The Conceptual Foundations of Public Policy.*
Oxford: Blackwell.
- Bromley, Daniel W. and Seth Macinko.
2007 *Rethinking Fisheries Policy in Alaska: Options for the Future*, Report to the
Commissioner of Alaska Department of Fish and Game, Juneau.
- Hilborn, Ray.
2007 Moving to Sustainability by Learning From Successful Fisheries. *Ambio*,
36(4):296-303.
- Macinko, Seth and Daniel W. Bromley
2002 *Who Owns America's Fisheries?* Washington, D.C.: Island Press.
- Macinko, Seth and Daniel W. Bromley.
2004 Property and Fisheries for the Twenty-First Century: Seeking Coherence from
Legal and Economic Doctrine. *Vermont Law Review* 28:623-61.