

## THE CRISIS IN OCEAN GOVERNANCE: Conceptual Confusion, Spurious Economics, Political Indifference<sup>1</sup>

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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 interest 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.<sup>2</sup> 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.<sup>3</sup> 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 IRQS – on yet another conceptual confusion that IRQS bestow private property rights on those who hold IRQS. 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.<sup>4</sup> 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.<sup>5</sup> 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 ITQs 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 ITQS 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 ITQS – 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 ITQS 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 is 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).

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