

People and Watersheds: The Case of the Totem Fish of the North Pacific

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Abstract—Emergent processes dominate modern social orders as well as natural ones. Research in the 1920s concluded that complexity and importance of local knowledge made it impossible to centrally plan complex economies. Subsequent experience in the Soviet Union and elsewhere confirmed these arguments. Further, organizations charged with performing tasks they could not accomplish redefined their tasks in terms that were good for them. The same pattern of organizational impossibility and redefining of tasks appears in studies of salmon hatcheries and salmon farms: attempts to impose centralized control on complex natural orders. The conclusion is that the argument against central economic planning is a special case of the impossibility of successfully substituting deliberate control for complex emergent phenomena, including ecosystems.

Modernity requires different institutions to successfully engage with wild nature. Institutions of care rooted in civil society such as watershed restoration groups and democratic trusts are most able to adapt the complex needs of human societies and natural orders in ways that preserve the well-being of both. In the absence of well-developed institutions of this sort, modernity is unsustainable.

Human Relations With the Natural World

Ecosystems and many social orders, such as the market, are complex, adaptive systems. In nature and society alike, these patterns intermingle and overlap, each becoming visible when a human question focuses on it. Questions such as, “What distinguishes the world of salmon or Douglas fir from the rest of life on earth?” or “What distinguishes market phenomena or science from the rest of society?” separate these systems out from the larger whole within which they exist. But in the absence of such questions, they blend together into natural and social worlds of incredible complexity, but possessing sufficient order that their denizens can navigate within them reasonably successfully.

These emergent systems constitute discovery and coordination processes integrating breathtaking degrees of complexity. In so doing they appear to make “mistakes” because, like all processes of discovery, more avenues will be explored than turn out fruitful. This leads some observers

to think they can be overridden by those possessing expert knowledge and exercising purposive control to “improve” these “anarchic” or “wild” processes.

This belief is a mistake. Such orders can not be improved by attempts at substituting deliberate control, at least by players who are themselves within the system, because spontaneous ordering processes coordinated by systemically generated feedback are able to deal with far more complexity and uncertainty than any centrally coordinated system could manage. This argument was first developed by Ludwig von Mises and F. A. Hayek, who applied it against proposals for central economic planning (Hayek 1948; Mises 1951). However, theirs is in fact a very important case of the broader principle that complex adaptive systems are not amenable to centralized control. It is equally true of ecosystems (Pimm 1991).

The failure of fish hatcheries (Lichatowich 1999; Montgomery 2003) and salmon farms illustrate that the same kinds of problems that plagued Soviet central planners also plagued these other efforts at centralized control. Further, in all these instances the organizations established to pursue tasks they were not competent to do then redefined the tasks in terms that were good for the organization, regardless of the impact of its self-serving actions on the original task. The failure was therefore two fold: the task could not be done well, and the organizations charged with performing the task then redefined it in terms of serving the organization’s interests, often leading the job to be done even worse. This finding means that if we as a society are to exist indefinitely with the world of nature, we must learn to live with its processes rather than seek to override them.

There is another dimension to the problem. While both social and natural emergent orders have the same abstract characteristics, their specific details are disturbingly at odds with one another. That is, the feedback processes that coordinate the social world are not harmonious with those that bring order to the natural world. Markets and democratic politics are irretrievably wedded to time cycles based on individual calculations as they manifest either through the rate of interest or the electoral cycle. As such, they can change with the speed of thought, or at least the speed of thought as it is transmitted throughout a system via these feedback processes. In their own terms this is not a disadvantage, for they exist to serve individuals.

Ecosystems however, are geared to far more complex and often very long run cycles. Each species receives and passes on feedback by biological transmission from one generation to the next. Sometimes this process is very rapid, as with bacteria. In other cases it is slow, such as with redwoods, elephants, and rock fish. In nearly all cases, it is slower than analogous processes in society.

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So long as the impact of human societies on natural orders was relatively small, this lack of harmony between human and natural emergent processes was not usually a problem. Traditional societies further embedded their interaction with the natural world in a moral, spiritual, and ritual framework that often served to harmonize them even more, by subordinating human instrumental goals to an ethical framework able to give human action a longer term orientation than would otherwise have been the case.

Both of these buffering circumstances no longer apply. First, the Enlightenment dealt a powerful blow to earlier ways of conceiving our relationship with the natural world in non-instrumental terms. The ethical restraints of the past were weakened, and at a social and spiritual level, little has yet evolved to take its place.

Second, the rise of social emergent processes enormously increased the human impact on the natural world. They facilitated the rise of increasingly powerful social networks able to adapt with the speed of thought rather than generational change, and these networks transformed the character of human life, in a great many ways for the better. At the same time they further weakened ethical and customary constraints on how social power was exercised over the natural world.

But while the power of human impact in the short run has grown enormously, it has not come close to undermining the definitive long-term power of the natural over the social world. Many modern people often treat nature as simply a collection of resources for their benefit. In addition, even when individuals themselves do not believe this to be true, their participation within the social emergent orders of the market and democratic politics leads to additional unintended strengthening of impersonal processes that act as if they do. Put bluntly, the relation of social emergent processes to natural ones is ultimately unsustainable if those relationships continue to be defined primarily in terms of markets and politics. Science by itself is incapable of serving as an adequate guide here because scientific knowledge must be utilized by institutions, and the institutions needing to use it are expressions of either the market or the political order. The most tragic example of this truth is the fate of New Orleans, for the problems the city faced and the ways government and market alike contributed to them, were well known to science years ago (Fischetti 2001).

Consider the case of salmon, where people consistently say they value the preservation of these fish, while at the same time economic and political institutions supposedly responsive to people's desires, continue pushing salmon towards extinction. Despite this widespread desire for their preservation, salmon populations continue to decline. Clearly the relevant institutions have a bias of their own, a bias often able to override the values of the people who act within their framework. We are dealing with institutional failure. It would not be the first time such a problem arose.

While people have all but universally desired economic prosperity, many societies long enforced institutions and practices that kept most of their members in poverty. Since the decline of hunting and gathering societies and their egalitarian circumstances thousands of years ago, it is modernity's unique achievement that the poor have become a minority group rather than the overwhelming numbers

of any society. Similarly, from at least the time of Jesus and the Buddha, most people have long said they preferred peace to war, but it appears that only with the rise of liberal democracies that an institution developed that does not war on others of its own kind. There has never been a war between two representative democracies (Rummel 1997). Like contemporary material prosperity, this record of peace is institutionally rooted. People have not so much changed as the institutions within which they act economically and politically have changed.

The same point can prove true for human relations with the natural world. The modern world's dominant institutions were never developed with any intention of preserving sustainable human relationships with nature. They arose for different purposes, and on balance serve them well. If they also contributed to long-term sustainability with nature, that was a side effect not a criteria for success for actions within these systems. The market rewarded successful exchanges of goods and services. Democracies rewarded successful appeals for votes where simplified appeals covered very complex areas of choice and value. We have seen how, in both systems, the natural world and maintaining its well-being almost always takes second place.

Yet we must remember that in their own terms, these institutions were successful. They are well worth preserving for their own sake. If markets are abolished or seriously undermined, poverty will return to many now free of it. If democracies are abolished or seriously undermined, incidents of war will grow.

Certainly many reforms can and need to take place within existing institutions to improve the interface between human societies and nature. Perhaps most important is pushing the industrial economy towards abandoning the concept of waste, internalizing all outputs that do not contribute to natural well-being, ceasing to treat the natural world as a garbage can for dumping what we can no longer handle (Hawken and others 1999; McDonough and Braungart 2002). If approached wisely, this goal is quite feasible. But, however laudable and useful by itself, this goal is insufficient.

However, there is still the lack of fit between social and natural time horizons. Time horizons reflecting individual willingness to put off present benefits for more in the future are necessary to the functioning of social emergent orders, however poorly adapted they are to the natural world. For example, the rate of interest reflects people's willingness to put off present consumption for future benefits, and so performs a central role in the market order. Democracies focus on the electoral cycle, with politicians risking their careers if they take very different time horizons into consideration. The solution cannot be found within the market or democracy, or even science.

There is also little to no room for genuine care to guide either large organizations or the impersonal emergent processes that both sustain and challenge them. Yet it takes institutions of care to make the complex decisions and judgments required to harmonize the powerful forces released by modernity with the slower manifesting but ultimately even more powerful forces of the natural world (Leopold 1966). This point is demonstrated by the Menominee Indian reservation in Wisconsin, where the tribe manages a profitable lumber operation while maintaining its forest in near old

growth condition (Davis 2000). The tribe certainly seeks to make money, but its members' cultural and religious values require them to subordinate it to the long-term well-being of the forest itself. The need for ethics is therefore built into the requirements for ecologically sustainable human societies.

Institutional Ethics and Restraint

The great challenge lies in developing institutions sensitive to the full depth of human values, rather than the abstracted simplifications of those values as served in politics, the market, and even science. These institutions need to be able to handle far more ambiguous and complex feedback than is coordinated by either market or democratic political systems. In particular, they need to be able to address values abstracted away by systems of political and economic feedback. This requires them to be able to act at a more concrete level of human experience, and therefore on a smaller scale than either impersonal market institutions or large-scale democratic government.

Such institutions need to be ethical in Aldo Leopold's and F. A. Hayek's sense: ethics as a restraint on action (Hayek 1973; Leopold 1966). It is significant that a major theorist of social emergent order and another of ecological order should agree that in the absence of ethical relationships, neither order can survive the temptations of intervention for short-term gains.

In markets the only unavoidable ethic in this regard is free and equal contract. But over the long haul it lacks the requisite sensitivity to address ecological issues in other than market terms. In democratic politics, the only unavoidable ethic is the rule of free and equal voting. It suffers from similar problems. These ethical limitations on actions are genuine, important, but they are also highly circumscribed. Compared to individual action, they are ethically shallow. As a consequence they cannot sustain ethical relations with natural processes.

Large instrumental organizations attuned to these systems are even less restrained. They abide by the rules when the rules are reliably enforced. But they basically weigh actions based on what is good or bad for the organization and its goals. Ethics in this sense is replaced by the requirement to be a good member of the team. Hayek developed this argument in his critique of collectivism, but it is in fact a critique of organizational logic in general (Hayek 1944).

When institutions oriented towards the relatively short run have enormous power to override natural processes that operate on a longer time horizon, but the latter ultimately support the social institutions, the ethic we need is one of restraint not just within the systems of rules generating the social orders, we need restraint in their impact upon the natural orders. Neither democracy nor markets have proven very adept at this task.

The location for institutions of care must be elsewhere. That "elsewhere" is what political and other social scientists call civil society, that realm of voluntary cooperation that gets so much of the work done in daily life, and offers a framework for productive and meaningful freedom for all individuals (Cornuelle 1993; Putnam 2000; Tocqueville 1961).

Such institutions must be responsive to both the market and representative democracy, but must not be dominated by the systemic biases of either. Their task is to harmonize the boundaries between the human and natural orders, rather than attending simply to the human order.

Studies of watershed restoration groups, such as those recounted in work by House and Zuckerman help demonstrate that the intricate networks of cooperation we find in civil society are better able to address the complex interweaving of ecological and social knowledge, especially local knowledge, than can the one-sided traditional political and market institutions (House 1999; Zuckerman 2001). They may in fact prove essential to maintaining the ecological health necessary for the maintenance of the modern world.

The ethical depth that makes civil society so difficult to study compared to markets and politics is crucial in integrating these powerful but ethically simpler institutions with the natural world. We have described ecosystems, markets, science, and representative democracy as all emergent orders. So also is civil society considered as a network of relationships separate from the market order and democracy. In fact, civil society is the most central emergent order arising from the institutions of liberal modernity. It is the order that integrates the impersonal and abstract emergent institutions of the market and democracy with the more concrete relationships that constitute the full richness of human life. But because it is comparatively invisible due to the lesser clarity of its feedback, it has also been the least appreciated.

Integrating Community and Ecological Care

Compared to the market and prices or democracy and votes or even science and agreement about the status of theories, feedback in civil society is ambiguous, its patterns harder to depict, the values it serves more complex. Yet this is also its strength. For civil society is the sole encompassing order able truly to defend individuals from the impersonal commands of the market order, the corruption of power and interest that characterizes so much in government, and the flattening of values associated with fixation on only the scientific image of truth. Civil society is deeply human.

These institutions of community and ecological care empower people at two levels. First, they enable people effectively to care about their home places, as well as other natural values of importance to them, hopefully from national forests to small urban streams. But these institutions also empower people politically, for to be effective they need to influence, even if only defensively, the market and traditional liberal democratic institutions. The market order and democratic government march to different beats, beats often inimical to the values institutions of care and the people who comprise them support. In the absence of real power these values will be swept aside, as was done by salmon farms and their political allies to the inhabitants of Echo Bay in British Columbia (Hume and others 2004), and to efforts to restore salmon on a stream draining valleys running through Maxxam's woods (Zuckerman 2001).

Institutions of care, therefore, need to be integrated into both their local and their national communities. But they can only accomplish this reliably when they do it themselves.

Perhaps this is why the politicians and corporations have done so much to extirpate salmon and the rest of wild nature. For many of us, the natural world challenges their claims to define the character of reality. It offers an alternative, one not able to be reduced to relations of power and money. But politicians and corporations can only claim our loyalty on the basis of their power and wealth. This is a loyalty of the pocketbook and perhaps the ego, but not often of the heart. Nature speaks to our hearts. For many of us she speaks very loudly.

Exploring institutional forms rooted in civil society offers perhaps the best means for bridging individual sensitivity to nature with the impersonal processes of the modern world. There are many promising possibilities. Land trusts have proven effective, and suggest an approach that could be applied to national forest reform. Democratic trusts have been tried successfully in England, and suggest a far more responsive institutional context for overseeing complex ecosystems of substantial size, such as our national forests. It is difficult to imagine them doing worse than current practices by government and corporation alike.

Community based watershed groups that focus on anything from restoring small urban streams in Tacoma, Washington, to entire western rivers such as the Mattole and Carmel Rivers in California, and the Walla Walla in Washington, offer another model. These groups are as varied in their character as any natural system, bringing together local knowledge about a particular beloved place with local personalities and talents available in an area, to serve the needs of the place. They are maintained by people not as a career but in many cases at least, as a calling. As such, these are inevitably ethically deeper institutions than traditional economic or political bodies.

Not only are these groups often able to successfully restore the conditions for viable salmon populations in their respective watersheds, they mutually encourage one another. There is every reason to believe that as these groups grow and prosper they will reach out to one another for mutual support and inspiration, and in so doing begin to provide a countervailing force to the lobbyists and bribes of industry, the venality of politicians, and the arrogance of bureaucracies, to ensure that good laws on the books are enforced, and flawed laws replaced by better ones. For the failure of harmonizing the human with the salmon world has not been for lack of laws, it has been for lack of political will and integrity to see they are enforced.

In short, local watershed groups, democratic forest trusts, and similar organizations can serve as crucial linkages binding the human world to greater attentiveness to the needs of the natural world, and also binding the systemically independent worlds of markets and democratic politics to the ecological values most of us share as residents of this beautiful land.

Of Science and Values

These considerations bring us to a deeper level of analysis, one I hope strengthens a venerable criticism of industrial modernity, while simultaneously acknowledging and praising modernity's considerable strengths. Modernity's conception of what constitutes a decent human life is incomplete, its

conception of the possibilities of human power, inflated. No one will feel satisfied as a parent if their child grows up to be only a satisfied consumer — the main common role available for modern people. What is left out of the modern mindset is important, probably crucial, for our own long-term survival and flourishing. This criticism is an old one, made by genuine conservatives and the Romantics alike. But its salience has been weakened by the failure of both to really embrace the strengths of modernity. The critics' view has often been as selective as those they criticize.

If the above argument is valid, modernity as either the domination of decisions by the ideal of technical expertise, or subordinating natural emergent processes to the impersonal power of social emergent processes, is not sustainable. But it also carries within itself the promise of its own salvation. Modernity must be leavened by the human heart because limited only to itself, it is heartless. Confronted with the hideous breakdown of politicized Christianity into religious war, Enlightenment thinkers sought to find impersonal standards and laws to enable us to live peaceably with one another. In seeking to find reliable knowledge for all places and times, the Enlightenment necessarily abstracted away from the concrete and particular. The fruits of this project have been the great achievements of modern science, human rights, and unequalled economic prosperity, embedded within its most unique signature institutions: science, democracy, and the market. But a price was paid for forgetting what has been lost in focusing only on the abstractions making these achievements possible.

Abstracted away from the concrete and local, modernity is collectivist in its core because only power and process count, with individuals valued only to the degree they serve either or both. Awhile back, a person told me that well, it just might be that salmon have to go extinct in the name of progress. They are incompatible with the modern world. But we have seen that they are compatible with the wishes of modern people, and that appropriate institutions can preserve them, at the cost of limiting the scope of the modern idols of Power and Profit.

Like the Communists, single-minded modernizers value the present only as a means to reaching the future. They have little difficulty sacrificing it on the altar of their fantasies. Ironically, this point holds as much for economic "individualism" as for ideals of organizational control of society. In both cases, concrete individuals derive their value solely from their capacity to serve what is beyond them: the organization or the market order; in either case, "the future." Because the valued individual is only the abstract individual, this pseudo individualism has little regard for real individuals. Both modernity's libertarian as well as progressive guises deny the value of the concrete, unless it is in harmony with their vision of the future.

The abstract principles empowering modern institutions do not negate the importance of the concrete and the local. In any given instance these abstractions manifest within a particular time and place and through particular people. It is in the balancing and harmonizing of the abstract principles underlying modernity's achievements with the concrete experiences of living upon this Earth that modernity's accomplishments will be preserved, enabling our civilization to endure, rather than flaring brightly, only to die away like an ember that has consumed all its fuel.

The framework developed here integrates our understanding of modern emergent institutions with their interaction with the world of nature. I believe this argument is an important correction of the current vogue for reducing all complex social relations to economic categories, as well as critiquing the previous vogue for technocratic planning by government agencies guided by experts. For even now, this alternative technocratic Enlightenment dream is far from dead.

Toward an Ethical Relationship With Nature

If these considerations are well grounded, a powerful argument follows that the long-term well-being of human life requires us to respect the long-term well-being of non-human life, and that we can only reliably accomplish this when we genuinely care for and value that life. Nothing less can stay the hand of our power and ability to rationalize away the future to serve the desires of today.

Perhaps we verbalize this care through the insights of "deep ecology" or see the material world as reflecting God's creation, of which we are the "keepers." Perhaps we do so through the feelings of peace and well-being we find when we immerse ourselves in nature, or are enraptured by a sunset or the sight of intrepid fish braving the risks of thousand mile migrations to reproduce and die. How each of us gets to this place of insight is deeply personal. But in the absence of such insights we will inevitably undermine the conditions for our long-term well-being.

As Leopold (1966) observed in *A Sand County Almanac*, what most fundamentally distinguishes us from the natural world is our capacity to care for forms of life of no utility to ourselves. Ironically perhaps, it is this capacity that may be crucial to the future flourishing of human beings on this beautiful planet. For without this fundamental difference, we are extraordinarily ill equipped to survive at the level of technical impact we currently wield. We are too powerful given the short range of our narrowly self-interested vision. We need a check, and the check must be to some extent internal.

Only human care can provide such a check, and the dominant institutions of modernity, despite their many strengths, all work to render individual care a minor factor in the world. Yet for us to do well over the long run, it must become a major factor. And to do that, we need to develop institutions linked to the human heart, not the market, not politics, not even to science, although to work well they must be in harmony with all these.

It is perhaps an irony, or a paradox, that what most appears to separate us from the rest of nature, is also what can most connect us. For we are paradoxical beings. We are individuals and we are parts of wholes larger than ourselves. We would not be who we are, were we only one or the other. Rather like photons of light in physics, we exhibit either quality, depending on the questions we ask. Given that we are both, we are more than either or the two together, for we are also a kind of unity that brings effortlessly together what logic and reason cannot bridge. And what makes that unity possible is the capacity of the human heart to attend to the needs and demands and excesses of both.

That is why we need, desperately need, institutions of care to offset the institutions of wealth and power. For only such institutions can turn our recognition of these truths into the power to defend what we value against forces that are not so much malevolent as they are blind. They give us the power to defend, the power to preserve, and the power to rehabilitate and restore.

Thus, the environmental movement, people motivated by the insight that we need to share this planet with the other beings that also find it home, far from being anti-human, is vital to humanity's future. Even with its errors, exaggerations, and failings, it is an example of humanity at its best: demonstrating our capacity to care for and value beings for what they are, not just their ability to serve us.

To take watershed groups as an example, if salmon are to be preserved all the region needs defending. And it is only logical that the local networks arising in towns and neighborhoods and rural areas will come to see that they share certain things in common that are at risk from those motivated primarily by power and money. They will see that uniting together is the only way to stop those who would sacrifice their lives on the altars of Mammon and Power, even if working independently, each focused on a particular place, is the best way to preserve their loves.

In this Internet age, there is little reason for networking to stop within the confines of a city. Should these efforts succeed, civil society will prove as vigorous, creative, and powerful as a check to men of money and power as it ever was. And what it can do for the totem fish of the North Pacific it can potentially do everywhere. Because the motivation to care, and to care effectively, is deeply human, it is also able potentially to finally make the modern world at home on this Earth, that we may share this awesome place with the magnificent, fascinating, and beautiful life forms that, like us, make it home.

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