

Orr's Laws

This journal recently undertook an extensive external review to assess its fitness as a medium of scientific communication. As part of the exercise, readers were allowed to comment on this column—of which I have written 47 since 1989. Responses ranged from those such as “I subscribe to *Conservation Biology* solely for David Orr’s essays,” “his column is the first part I eagerly flip to,” and “keep Orr as long as you can” to one saying “folks such as David Orr are such hypocritical, unpatriotic blows as to make me sick . . . He and [h]is Saab-driving, white zinfandel sipping bunch of pseudo-intellectual know-it-all, sanctimonious culls . . .” and so forth. Actually, I drive a Ford Ranger pickup and prefer a fine merlot.

Be that as it may, I thought this a good time to reflect on what I’ve learned about the preservation of biological diversity over that span of time. This learning process has taken into account comments from readers and editors alike, along with what I hope is a process of thoughtful maturing, not merely aging. That effort resulted in a list of five. There is nothing significant about the number five. Moses and his tutor arrived at an even ten, some still think that is too few, and alas, even that list is more honored than operational. Buddha offered four, but of course he had no proper theological training. An upstart rabbi, portrayed in a recent movie, reduced that to two. The film maker apparently intended one. I, neither so extensive nor so concise, but similarly given to making lists, pared it back to five.

I put this before you fearful that some will regard the results as paltry enough to encourage me to take

up bowling or a career in the manual arts. But assuming that a good offense is the best defense, I state these as “Orr’s Laws,” thereby risking the possibility of being considered even more of a sanctimonious know-it-all but otherwise impressing the gullible and I hope entertaining the rest of you. So what have the past years brought forth relative to the mission of this journal? By rights I ought to claim no originality, but I will, and Orr’s Laws are these.

Law 1. We pay for the conservation of biological diversity, climate stability, and environmental quality whether we get it or not. In an age much devoted to the theology of free markets, the conventional wisdom holds that we cannot afford conservation, resource efficiency, and environmental protection. Based on incomplete and even selective accounting, that view is almost always wrong. Honest accounting requires that we keep the boundaries of consideration as wide as possible over the long term and deduct the collateral benefits that come from doing things right. Ignoring the costs of wars fought for cheap oil, of climate change, of air pollution, and of sprawl, my Ford Ranger is cheap enough. By the same logic, the Toyota Prius I ordered 6 months ago is more expensive.

But price and cost should not be confused. We—or someone, eventually—will pay for sustainability whether we get it or not. Economists operating strictly within the boundaries of the neoclassical paradigm cannot account for the true costs of impaired security, health, beauty, and spiritual comfort. But it is the height of folly to believe we can dismantle forests, pollute everything,

squander resources, erode soils, destroy biological diversity, remodel the biogeochemical cycles of the earth, and create ugliness—human and ecological—without paying. The truth is that sooner or later, the full costs will have to be paid one way or another. The problem, however, is that the costs of environmental dereliction, as often noted, are diffuse and can be deferred to some other persons or to some later time. But this does not mean that they disappear—the upshot is that much of our apparent prosperity is phony and so too are the intellectual and ideological justifications for it. For conservation biologists there is no higher priority than to improve our understanding of economics.

Corollary 1. Selfishness is not equivalent to self-interest. In aiming toward ecologically solvent economics, it is worthwhile to confront errors masquerading as realism. There is none more pernicious than the conventional belief that selfishness and self-interest are one and the same. Assuming that to be so, it is easy to conflate self-aggrandizement and selfishness as different manifestations of the same drive, thereby explaining everything and nothing about human behavior. Doing so, however, confuses fundamentally different things, making us more cynical and giving license to our lesser ecological and social instincts. Although we are unavoidably self-interested because we are self-aware, we can choose to transcend selfishness. This leads to the often-noted irony that increasingly the most self-interested thing we can do is to be more giving, caring, and altruistic, which requires expanding our sense of inclusiveness. Albert Einstein put it in these words:

A human being is part of a whole, called by us the universe, a part limited in time and space. He experiences himself, his thoughts and feelings, as something separated from the rest—a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circles of compassion to embrace all living creatures and the whole of nature in its beauty.

Corollary 2. Maximizing efficiency—measured as output for a given level of input—creates disorder; that is, inefficiency at higher levels. Although the reasons for this are complex, they have a great deal to do with our tendency to confuse means with ends. As a result efficiency often becomes an end in itself, and the original purposes (prosperity, security, benevolence, and reputation, for example) are forgotten. The assembly line was efficient for the manufacturing firm, but its larger effects on workers, communities, and ecologies were often destructive, and the problems for which mass production was thought to be a solution have been compounded many times over. Neighborliness is certainly an inefficient use of time on any given day, but not when considered over months and years. For engineers freeways are efficient (up to a point) at moving people, but they destroy communities, promote pollution, lead to congestion, change foreign policies, and eliminate better alternatives, including planning that decreases the need for mobility. Wal-Mart is an efficient marketing enterprise, but it eliminates its small competitors and many things that make for good communities. And, of course, nuclear weapons are wonderfully efficient as well. The higher level efficiency of inefficiency, then, underscores the need to reorient economic life toward the ends, not the means, the whole, not just the parts, and the long term over the short term.

Law 2. Problems of ecology are first and foremost political problems having to do with who gets what, when, and how. As much as some might wish it otherwise, environmental protection, climate stability, and conservation of biological diversity are unavoidably political. When first advanced in this journal (March 1991), the idea met with serious resistance by some preferring to separate the purity of truth seeking from the sordidness of politics. Sadly, the years since have confirmed that the two are inseparable.

The environment is ultimately a mirror that reflects the collective decisions we make about energy, forests, land, water, and resources. Environmentalists are often regarded as “liberal,” and the rest are thought to be “conservative.” This left-right perspective, too, is phony and obscures a great deal more than it reveals. The real political divisions are not between liberals and conservatives but between the current generation and its children and theirs. One can arrive at a decent regard for sustainability, ecological health, and the prospects of humankind as a true conservative or as a consistent liberal—these are not opposing positions, but different sides of a coin. Disguised as a kind of superpatriotism, much that passes for conservative these days is merely reckless and blatant demagoguery in service to corporate interests. For their part, liberals have yet to reckon with the problem of how to limit human appetites without infringing on freedom, which will require a higher definition of both. And neither has yet developed any plausible and decent view of a workable and sustainable global political order. Since I began writing this column, our politics have gone from bad to worse.

In 1989 communism was coming undone and the world seemed poised on the brink of a more promising time. In the years since, that promise has been squandered. The reasons have much to do with the hold of corporate management and militarization on the conduct of the pub-

lic business, most importantly in the United States. This cannot be unrelated to other factors, such as the world-leading position of the United States in greenhouse gas emissions, debt accumulation, toxic substance production, gun ownership, violent crime, television watching, numbers of people in jail (6.9 million as reported in the *San Francisco Chronicle*, 16 July 2004), and obesity. Not only is the United States the least energy efficient of the “developed nations,” we are also among the least socially progressive. Beyond our shores many now regard the United States as a rogue nation that poses a greater threat to world peace than stateless terrorists. Whatever one’s opinion about that unflattering poll data, the fact is that we will conserve little biological diversity with the U.S. government spending more than the next 21 nations combined on its military while refusing to come to grips with its energy gluttony. And time to avoid any of several possible catastrophes is running out.

The only conclusion to be drawn is that those of us concerned about conserving biological diversity and promoting environmental health must become effectively political. This will require that we participate in a thorough rebuilding of the political system, recalibrating conservatism and liberalism alike to the inescapable realities of ecology.

Law 3. Humans are more ignorant than they are smart and most seem to prefer it that way. T. S. Eliot (1971) put it this way:

Human kind
Cannot bear very much reality.

Since the publication of the *Global 2000 Report* in 1980, a veritable mountain of scientific evidence has accumulated on human impacts on ecosystems and the biosphere, and hence on our tenure on Earth. Contributors to this journal and many others have amassed an irrefutable case that biological diversity and

environmental health are in sharp decline and, to a lesser extent, what ought to be done as remedy. But our collective sleepwalk toward the edge of irreversible tragedy continues, suggesting that we are not so much rational creatures as we are creatures capable of rationalizing.

The reality is that we are coming to the end of a brief interlude in human history powered by ancient sunlight. Had we been a truly wise lot, we would have burned little of this endowment and probably not have industrialized in the manner and to the degree that we did. Willed or otherwise, we did both out of ignorance. It is not insignificant that in these past 15 years the consolidation of media means more homogenization of news and information along an increasingly narrow bandwidth. We in the United States are the most media-saturated people in the world and arguably among the least well informed. Hence, we are the most adept at rationalizing in the face of evidence to the contrary.

In a larger perspective, Wes Jackson (the Land Institute) and Bill Vitek (Clarkson University) recently convened a small conference around the theme of "An Ignorance Based Worldview," aiming to lay the groundwork for a more accurate paradigm than that given us by apostles of smartness (the likes of Bacon, Galileo, and Descartes). In contrast to those believing ignorance to be a solvable problem, conferees agreed that there is a lot we cannot know and perhaps some that we should not know and that this admission requires a dramatically different worldview than that on which the industrial world was fashioned. But how, with the rapid growth of science, could we be irredeemably ignorant? One answer is that ignorance is built into the way science itself works. As knowledge grows, so too does the interface between the known and the unknown. In other words, science is not a zero-sum game by which ignorance retreats with every new increment of knowledge.

In short, we are ignorant because of the vastness of what is to be known relative to our intellectual and perceptual capacities. We are ignorant because we individually and collectively forget things that we once knew. We are ignorant because every human intervention and action changes the world we aim to understand. We are ignorant because of our own limited intelligence and inability to make sense of it all. We are ignorant because we cannot know in advance the unintended effects of our actions in complex systems. We are ignorant even about the proper ends to which knowledge might be put. And not in the least, we are ignorant, as Eliot noted, because we choose to be.

For conservation biologists, the upshot is that we should never assume our work is finished when we have duly reported the research findings. Our science will merely gather dust until it becomes dust unless it is incorporated into a larger and more accurate story of who and what we are relative to the mysteries of life, time, and space. That story of the human journey must be so compelling as to displace once and for all the myth that humans can be the lords and masters of creation.

Corollary 1. Knowing is always accompanied by paradox, irony, and unintended consequences. And that, too, is ironic.

Corollary 2. The amount of credulity in human societies remains constant over time but can only be seen in hindsight. I was tempted to render this into a law, rather like the first law of thermodynamics (Both assume constancy in systems otherwise closed except to solar radiation and an occasional ray of divine insight.), but I chickened out. It is one thing to be accused of being a Saab-driving, white-zinfandel sipper, but another entirely to be accused of hubris. Accordingly, I will render the fact that humans, in all ages and times, are inclined to be as unskeptical and gullible as those living in any other merely as a corol-

lary to the law of ignorance. The causes of our gullibility, however, do change. People of previous ages read chicken entrails, relied on shamans, and consulted oracles. We, on the other hand, use computer models, believe experts, and exhibit a touching faith in technology to fix virtually everything. But who among us really understands how computers or models work, the limits of expertise and its underlying theories, or the ironic ways in which technology "bites back"? Not one in ten thousand! Has gullibility declined as science has grown more powerful? No, if anything it is growing, because science and technology are increasingly esoteric and specialized and thus removed from daily experience. People who understand less of either will believe almost anything. Gullibility feeds on mental laziness and is enforced by ostracism, social pressures for conformity, and the mechanics of groupthink that penalizes deviance.

Law 4. Humans are inescapably spiritual beings, but only intermittently religious. Philosopher Erasmus Kohak once noted, "Humans can bear an incredible degree of meaningful deprivation but only very little meaningless affluence" (Kohak 1984:170). In the former condition most of us tend to grow and mature. In the latter, we become undone. This is not a case for deliberately incurring misery that multiplies with little assistance, but rather to underscore our inevitable spiritual nature that is like water bubbling upward from an artesian spring. Our only choice is whether that energy is directed to authentic purposes or not.

What does this have to do with the science of conservation biology? One answer is that of psychologist Abraham Maslow (1966:139), who noted that science could be used

as a tool in the service of a distorted, narrowed, humorless, de-eroticized, de-emotionalized, desacralized and desanctified *Weltanschauung*. This desacralization can be used as a defense

against being flooded by emotion, especially the emotions of humility, reverence, mystery, wonder, and awe.

And so our data and research results may be true enough, but may lack any resonance in the public mind and the human spirit. For conservationists this means that the case we make for preserving biotic systems must tap some deeper motivation than narrow self-interest. It must appeal to that early childhood fascination with living things and particular places that is often desiccated by formalized learning and professionalization. Dry recitation of facts, data, and logic, however important for other purposes, will not in the end cause most of us to conserve much.

Law 5. Stupidity is randomly distributed up and down the socioeconomic-educational ladder. In my lifetime I have known as many brilliant people without much formal learning as I have those with Ph.D. degrees. And there are likely as many thorough-going, fully degreed fools as there are degree-free fools. As an “educator” this is an admission of some gravity, leading me to believe that the gift of intelligence and intellectual clarity can be focused and sharpened a bit but can neither be taught nor conjured. The numerous examples of the undereducated or those who were outright failures in the academic sense include Albert Einstein, Winston Churchill, and Frank Lloyd Wright. One should not conclude, however, that formal schooling is useless but rather that its effectiveness, for all of the puffery that adorns college catalogues and

educational magazines, is less than advertised. And there are those—as lawyer John Berry once noted—who have been “educated beyond their comprehension,” people made more errant by the belief that their ignorance has been erased by mere possession of facts, theories, and the sheer weight of learnedness.

For those engaged in the effort to conserve biological diversity the point is that we will have to enlist the ideas, efforts, and enthusiasm of millions of people who live, work, and think in close proximity to natural systems but who lack formal education. Such people are often tacitly dismissed because of an unspoken elitism attending the upper reaches of the learned scientific world—and elitism undercuts the larger effort to conserve natural systems. We are likely to find useful observation, workable ideas, and clearheadedness all along the socioeconomic-educational spectrum, but not necessarily concentrated at the upper end.

Corollary. The intelligence of any organization or bureaucracy is always less than the sum total of its managers. We understand human stupidity and dysfunction because we encounter it at a scale commensurate with our own. Faced with large-scale organizations—whether corporations, governments, or colleges and universities—we tend to equate scale, prestige, and power with perspicacity and infallibility. Nothing could be further from the truth. The intelligence of large-scale organization (if that is not altogether oxymoronic) is limited by the obligation to earn a profit, enlarge its do-

main, preserve entitlements, or maintain a suitable stockpile of prestige. Accordingly, the effort to conserve biological diversity should not become overly dependent on large-scale organizations and thereby suffer because of their pathologies. The alternative model, rather like ecosystems, favors working through networks of relatively small, agile, and highly effective organizations close to the problem.

Conclusion

Of course these are not my laws at all but a brief distillation drawn from the work of a remarkable worldwide group of scholars, activists, and practitioners working against long odds over several decades to redirect the course of a civilization bent on destruction. If there is one other law I am tempted to add but lack the words to do so, it would have to do with the possibility that our prospects can never exceed the horizon of our hopes. And that gives us every reason to keep hope alive.

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