

**After Backyard Environmentalism:
Toward a Performance-Based Regime of Environmental Regulation**

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From California habitats to Massachusetts toxics, the United States is in the midst of a fundamental reorientation of its environmental regulation, one that is as improbable as it is unremarked. Minimally, the new forms of regulation promise to improve the quality of our environment. At a maximum, they suggest a novel form of democracy that combines the virtues of localism and decentralization with the discipline of national coordination.

In substance and spirit, this new approach to regulation grows out of the tradition of backyard environmentalism. For two decades, residents of Woburn, Love Canal, and countless other communities across the country have organized to reclaim authority over their lived environment. These pioneers of citizen environmental activism typically fought to keep harmful activity out of their neighborhoods—hence the acronym NIMBY, for “Not In My Backyard.” In their struggles to protect themselves and their children from poisoned air, soil, and water, ordinary citizens have often been pitted against certified experts from corporations, government, and even big environmental organizations.

Recent developments in environmental regulation go beyond the first generation in two closely related ways. First, citizens now face the daunting task of determining what should occur in their backyards: what kinds of activity are productive yet acceptably sustainable? Second, determining what the tolerable activities are, given continuous change in the nature of risks and our understanding of how to respond to them, requires them to transform their traditionally antagonistic relationships with experts into partnerships for environmental protection, in the process fusing the broad experience of professional practitioners with the contextual intelligence that only citizens possess. If the lesson of the first generation of backyard environmentalism was that citizens living in threatened communities, near polluting firms, or drawing on contaminated watersheds will not be overrun by distant corporate and governmental bureaucracies, the lesson of the generation succeeding it is that citizens with their new allies can fundamentally reshape regulatory systems.

The new relationship is founded on an exchange between local units—groups of neighbors on the same tributary planning together to reduce the polluting runoff from their homes are farms; a team of workers and managers planning to reduce the use and leakage of toxics in their plant—and higher level authorities—a state department of the environment, a regional or national office of the Environmental Protection Agency (EPA), or field office of the Fish and Wildlife Service of the Department of the Interior (FWS). Within broad limits the local units set their own environmental performance targets and devise the means to achieve them. In return,

they provide detailed reports on actual performance and possible improvements to overarching public authorities. The resulting framework replaces central command regulation with a combination of local experimentation and centralized pooling of experience. In this new architecture—we will call it a rolling-rule regime—regulators use reports on proposals and outcomes to periodically reformulate minimum performance standards, desirable targets, and paths for moving from the former to the latter. In pursuing these targets as they see best, local actors provide the information necessary for regulators to revise their standards and goals, and receive information on the performance of others that guides further experimentation. Thus the new framework forces continuous improvements in both regulatory rules and environmental performance while heightening the accountability of the actors to each other and the larger public.

The rolling-rule regime should not be confused with voluntarism, if that term is understood to imply the abdication of public authority and responsibility to private actors, singly or in groups. Nor is it merely devolution of authority from the federal government to smaller units. For while the rolling-rule regime radically expands the bounds of local autonomy and demands deep participation by private as well as public actors as, it also requires accountability. Central authorities ensure that local units live up to their commitments by coordinating their activities, monitoring their performance, pooling their experiences, and enforcing feasible standards that emerge from their practice.. But unlike conventional, hierarchical forms, in which subordinate parts answer to the center's authoritative command, rolling-rule

regulation creates a collaborative and mutual accountability of center to parts, parts to center, parts to other parts, and all to the whole enterprise—and to the public generally.

This re-orientation is little noticed because of the sheer improbability of its success, given current assumptions about interest-group politics and failed public institutions.

Environmentalists are taken to be inveterate opponents of industrialists or real-estate developers, just as officials of federal, state, and local government are taken to be natural adversaries. How can all of these cooperate continuously, for the long term, under rapidly shifting conditions and even more rapidly evolving knowledge of the world?

We will argue that this emergent regulatory regime owes its success precisely to a counterintuitive but durable form of practical deliberation between and among environmentalists, developers, farmers, industrialists, and officials from distinct, perhaps competing, subdivisions of government—parties who are conventionally thought to be antagonists. In this problem-solving process, disciplined consideration of alternative policies leads protagonists to discover unanticipated solutions provisionally acceptable to all. Further deliberation leads to successive re-definitions of self-interest that permit robust collaborative exploration, including revision of institutional boundaries, procedures, and even ideas of what is feasible. In avoiding the notorious inflexibility of centralized command systems and the problems of information-gathering associated with market-based mechanisms, the rolling-rule regime achieves levels of cooperation and environmental performance beyond the reach of either. At the limit, the practical successes of this form of deliberation in solving problems suggest the possibility of a directly deliberative form of participatory democracy in environmental regulation—and elsewhere as well.

A New Architecture

We start where many of these reforms began: with the frustration of environmental activists, managers of regulated firms, ordinary citizens, and regulators with the shortcomings of centralized command regulation on one hand and at the impracticality of market-based correctives on the other.

Command and Market

The distinguishing feature of centralized regulation is its claim to a modest omniscience. Though regulators renounce the pretension to complete knowledge of a complex and changing world, they nonetheless attempt to determine enduring solutions to well-specified problems. The result of this combination of confidence and self-deprecation is regulation that, piece by piece, attempts too little and too much.

There is too little regulation in the world of centralized command because detailed regulation requires sharp boundaries between what is regulated, and what is not (otherwise, rule making would require plain old, immodest omniscience). But under complex and changing conditions, problems just outside the regulated zone will frequently turn out to be just as significant as those within it. For example, the Endangered Species Act (ESA) applies only to species nearing extinction. But it may be immeasurably harder to save a species once it is sufficiently imperiled to qualify than when it is merely in decline. Similarly, the Clean Water Act (CWA) regulates gross and concentrated emissions of a handful of pollutants by large and conspicuous polluters such as factories and waste treatment facilities. The more varied and diffuse effluents of households and farms, though less obvious and harder to measure, may cause greater damage overall, but remain essentially unregulated.

But where it does aim for more definitive solutions, centralized command often regulates too much. The best available solution at the moment of adoption may have long-term, unintended consequences that outweigh early gains. Or the very successes of the best current solution may hinder the search for better ones. Even when the parties to the original rule suspect that they have been overtaken by events, fear of re-opening discussions may prevent them from taking advantage of new opportunities. Those who broadly speaking favor regulation worry that confessing error opens the door to backsliding and jeopardizes their authoritative claims. Those who generally oppose regulation worry that new rules may expose them to even greater costs than the old. For example, some rules prescribe the use of specific “best” technologies to trap pollutants before they are introduced into the air or water—despite the possibility of

improvements in these technologies, or the possibility that others could prevent the production of pollutants in the first place.

The 1980s brought two kinds of market-simulation proposals that promised to correct these defects. One focused on trades among polluting units. The other, cost-benefit analysis, focused on methods for analyzing the trade-offs implicit in competing regulatory proposals. Both approaches recognize that effective centralized regulation requires more knowledge than it can summon, and therefore would leave crucial choices to decentralized actors. But neither approach delivered on its promises of orderly decentralization.

To see why, consider the first and most familiar of these two proposals: to create “tradable emissions permits” that allow firms to pollute specified quantities of specified substances. A central regulator identifies the regulated substance and establishes an overall cap on emissions based on the harm it causes and an estimate of reasonably attainable reductions. The regulator then assigns initial permit allotments to current polluters, creates trading rules and a compliance-monitoring regime, and lets the magic of the market do the rest. Polluters facing low costs of abatement will reduce their emissions and sell their excess permits at a profit to higher-cost abaters, who find it more economical to purchase permits than to make reductions themselves. As trades continue, the costs of abating a unit of pollution will stabilize around a market price. Thus every dollar spent to protect the environment from the regulated substance will ultimately buy as much protection as every other dollar, and society will achieve a goal of which the social planner can only dream: efficient allocation of the resources spent on pollution reduction.

Despite their modest claims to knowledge, market-simulating mechanisms ultimately share with centralized command regulation a demand for information they cannot satisfy. All markets—including those in pollution permits, water rights, and land—require extraordinary quantities and varieties of information. Among these are precise definitions and allocations of ownership rights, costs and other terms for their transfer, as well procedures for re-setting prices

or re-distributing rights when initial allocations prove too generous, or too niggardly. Ordinary markets work because most of this information is amassed from decentralized actors. In artificial markets, created from the center, the information must first be accumulated (or specified) by the regulator. Before issuing permits that create these commodities, regulators must know how much of the pollutant is being emitted in the aggregate and by individual sources, how much environmental harm results from various levels of emissions, and what reductions are feasible. Moreover, because markets depend on secure ownership rights, there are limits on post-hoc program corrections and thus excessive expectations of inhuman foresight from all-too-human regulators.

Nor is simple deregulation a viable alternative to centralized command or market simulation. The wave of environmentalism that produced the EPA and Clean Air and Water Acts has evolved into a robust popular movement that insists on public supervision of environmental hazards. Environmentalism, as a commitment to public stewardship of the biosphere, is now a securely established political fact. The only live debate is about the appropriate level of environmental protection, and how best to achieve it.

Novelty?

This abiding commitment to environmental protection has begun to weave bits of the old programs and a few innovations into a novel regulatory framework. This framework discounts the possibility of central, panoramic knowledge more steeply than either centralized command or market-simulating regulation, and it puts a higher premium on collaborative processes that allow central and local actors to learn from one another and from their actions in the world. It would use these surprises to revise the rules that frame collaboration, then seek further discoveries under guidance of the more capable frame, and so on. The philosophy of this architecture is pragmatist: while it rejects immutable principles, it keeps faith with the idea that we can always institutionalize better ways of learning from the inevitable surprises that experience offers us.

The new framework embraces local autonomy and broad accountability. Local actors—firms, local governments, local representatives of federal agencies, or representatives of all these acting together in composite entities—are given the responsibility, subject to general guidelines, to devise suitable measures within a broad policy area: say, the management of a watershed or habitat, or the reduction of toxics. Moreover, they devise measures by which they will assess their progress toward the goals they have set and mechanisms for correcting practice in light of actual performance.

In return for this autonomy, local actors agree to pool information on their performance, plans, and metrics—on how they are doing, how they plan to improve, and what standards they use to assess performance—typically by reporting them to a central monitor. The central monitor uses these data, in consultation with local actors, to determine minimally acceptable levels of performance, plausible targets for improvement, generally acceptable methods for assessing it, as well as acceptable and preferred methods of organizing participation in subsequent discussion of goals and measures. Interim standards and general measures become benchmarks. Referring to these, local units then re-assess their own performance. Local criticism and national scrutiny disciplines laggards. Local actors are accountable to each other, within any one locality, and to the nation as a whole. National institutions are exposed to the informed gaze of the collectivity of localities. The next round of experimentation takes account of the feedback from these results, and leads, through further comparisons, to revisions in the standards and measures, as well as national and local procedures. Because the emphasis throughout is on measurement, evaluation, and continuous improvement of performance, we will call this new architecture performance-based.

The performance-based framework emphasizes the continuing importance of local knowledge, and thus requires broader and deeper local participation in environmental regulation than earlier regimes contemplated. Indeed, it assumes that its predecessors failed in part because they ignored the knowledge diffused among the broader public. Its own success will therefore depend on organizing participation that systematically taps this information even as it places

additional demands and confers new powers on citizens. Already, as we will see, work teams within firms are beginning to engage in pollution-reduction efforts directly linked to the reorganization of production. Similarly, as a result of growing attention to non-point source pollution, small farms and households whose run-off influences conditions in local tributaries are being asked to engage in (and authorized to implement) the kind of self-assessment and pollution-reduction planning once presumed to be within the reach only of large firms.

But this broader participation must also be deeper than traditional forms. Voting, comment in public hearings, or advocacy in environmental movements—the familiar varieties of direct participation—are occasions for making citizens' voices count in public decision making. In a performance-based regime, the citizen is called on not merely to express an opinion—or demand a solution—but to help formulate and implement solutions. The idea is to exercise joint responsibility, not simply to defend group-interests. In this process, the new institutions may transform the identities of the users themselves. To underscore these transformative possibilities we will speak of deep use and deep users to distinguish participation and participants in the new regime from the old.

So the pragmatist architecture promises regulation that is more effective than current arrangements, and more democratic—which sounds too good to be true. To see just how much truth there is in this promise, let's consider how things work in practice.

Examples of Performance-Based Regulation

A diverse set of recent innovations in environmental regulation shows how crucial components of this architecture are feasible in a wide array of settings, even if none of these settings contains all the relevant elements. On one side this incompleteness is a vulnerability: each of these programs must eventually address its unanswered questions. On the other side, the fact that these experiments have been able to substitute novel components for the traditional ones in piecemeal fashion, displays the adaptability of the overall architecture. It is hard to imagine that these

programs could ever be built if each of its key components depended simultaneously upon the implementation of all the others.

For convenience we group the cases by policy area. Thus the Toxics Release Inventory (TRI), the Massachusetts Toxics Use Reduction Act of 1989 (TURA), and Responsible Care control industrial pollutants, while the Chesapeake Bay Program and HCPs aim to regulate watersheds and other ecosystems.

Information Matters

The Toxics Release Inventory (TRI) is a federal “right-to-know” measure that forces some 30,000 facilities to publicly report their releases of toxic chemicals. Enacted in response to the catastrophic 1984 explosion of a Union Carbide facility in Bhopal, India, its roots lie in a broad domestic movement against environmental hazards. That movement dates to the Love Canal scandal of 1978, when large amounts of toxic industrial chemicals were found to have been buried on a site where a local elementary school was later built. The resulting anger and activism connected the battle for information—what chemicals were present in what quantities, and what were the health risks—to defense of home, family, and neighborhood, and set the tone for a new style of local, lunch-pail environmentalism. Hundreds of communities organized to demand clean-ups of toxic waste disposal sites, and to receive information under the banner of the community’s “right-to-know.” That movement represented an extension of earlier efforts focused on the workplace, where activists had been seeking the “right-to-know” about job-related toxic exposures since the early 1970s. By the mid 1980s, locally-based movements had already won right-to-know laws in at least 30 states and 65 cities and counties. Popular participation created a political atmosphere in which Congress, faced with the fears crystallized by Bhopal, reacted swiftly, and with little regard for the niceties of conventional administration.

TRI requires only that private and government-run facilities meeting statutory size requirements report estimates of the amounts of some 650 chemicals transferred off-site, or routinely or accidentally released. Since passage of the Pollution Prevention Act of 1990,

facilities must also report transfers of listed chemicals within the plant and efforts at pollution reduction and recycling. The data are publicly available via print and the Internet in both raw form and as tables comparing amounts released by substance, facility, industry, and location. Though failure to file a required report may result in penalties, reporting inaccuracies does not. While the EPA does little to verify the accuracy of emissions reports, citizens may sue firms for failure to comply with TRI's disclosure provisions. Data they obtain can then be used to establish violations of other, substantive statutory obligations, or as a lever by which to apply public pressure for improvements.

From the standpoint of the traditional regulatory regime, TRI is environmental "regulation," in the minimal sense of formally requiring disclosure of a body of information from which environmental rules and standards, fixed or rolling, might eventually be fashioned or enforced. Its operation therefore constitutes a rough test, under admittedly favorable circumstances, of whether benchmarking in general—and benchmarking of "alarming" information in particular—can play the central role that we have attributed to it in synchronizing performance-improving efforts.

The effects of TRI strongly suggest that it can. First, the collection and publication of TRI data immediately disciplines polluting private actors. Public comparisons of polluters compiled by journalists or community activists from TRI data also lead to significant declines in the share value of publicly traded firms that show poorly. These reputational and financial market penalties give managers strong incentives to either reduce their toxics emissions or shade their reporting estimates to appear cleaner than they are.

As the EPA itself has noted, in making possible comparisons across regions and facilities, the release of information about toxics has allowed federal, state, and local governments to cooperate with the public and industry to "evaluate existing environmental programs, establish regulatory priorities, and track pollution control and waste reduction progress." In particular, states such as Massachusetts, Oregon, New Jersey, Washington, and Minnesota are using this collaborative redirection of regulatory activity to refine reports on the use of toxics and improve

the pooling of the resulting information. Of these more developed pooling programs, the most established, comprehensive, and influential was created by TURA, the Massachusetts toxics reduction act.

TURA both broadens and extends TRI. It broadens by requiring firms to report not only toxic releases, but also use or generation of toxics in any stage of production. TURA further requires that these reports be connected to biannual Toxics Use Reduction Plans. Sometimes these plans are formulated by managers or process engineers alone, but frequently they are produced by problem solving teams that include production workers as well. On the basis of such benchmarking surveys of possibilities, firms specify in the plan particular measures to be adopted, the schedule for implementing them, and two- and five-year reduction targets. Although TURA establishes the general goal of reducing use of toxics in Massachusetts by 50 percent by 1997, and penalizes “willful” violations of the reporting and planning requirements, the act sets no more specific performance standards nor does it penalize failure to act on reduction plans. Thus, rather than fix objectives and compel their attainment, TURA furthers the TRI strategy of using the obligation for self-monitoring to induce firms and citizens to acquire information that reveals problems and helps formulate their solution.

At the same time, TURA extends and helps formalize industry efforts at improved environmental performance both by creating a peer inspectorate to review the usage reduction plans and by providing technical consulting services. TURA requires that Plans be certified by toxics-use-reduction planners. Planner certification in turn requires individuals to complete various training programs and classes. The Act accordingly establishes a Toxics Use Reduction Institute (TURI) at the Lowell campus of the University of Massachusetts to develop the curricula and provide these courses, inform industry or the public of developments in this area, and conduct research necessary to these activities. It also establishes an Office of Technical Assistance to assist firms (particularly small, first-time filers) in meeting their TURA obligations, and to help coordinate the provision of relevant services by the public and private sectors. Taken together, plans, planners, TURI, and the Office of Technical Assistance create an inspection

system in which current conditions in individual firms or industrial segments can be compared with each other and with academic understanding of best practices, even as that understanding improves through exposure to innovative firms. Finally, TURA provides a high-level governance structure that periodically suggests modifications of the new state services and reporting requirements in the light of its evaluation of progress towards the Act's original reduction target.

This apparatus seems to work. From 1990 to 1995, the production-adjusted use of toxic chemicals fell by 20 percent in Massachusetts and the generation of toxic byproducts by 30 percent. Furthermore, the toxics use planning requirement has enabled firms to discover significant net benefits of pollution prevention and increase their support for the public institutions that facilitate this process. Nor were these benefits offset for the firms by the costs of preparing reports and plans; 86 percent of all respondents said they would continue to plan even absent legal requirements.

The Need for a Public Role

Responsible Care is a Chemical Manufacturers' Association (CMA) program to reduce pollution through disciplined error detection and elimination by its member firms. The program, which started in 1988, effectively accepts the key assumptions of rolling-rule regulation. This is a vast undertaking: the CMA's roughly 200 members account for about 95 percent of domestic production of basic chemicals, and the chemical sector as a whole accounts for half of the six billion pounds of toxics generated each year in the US. But the CMA attempts to implement these mechanisms solely through private parties, with no government coordination and no public use of the relevant data. The core of Responsible Care consists of six "disciplines" that oblige firms to link pollution prevention efforts to their production processes. The Program sets target dates for installing the new disciplines, advises member firms to monitor progress towards their goals, and helps document and disseminate best practices.

The results of Responsible Care are so far inconclusive; and the reason is close at hand in the configuration of the CMA. On the one side, as a trade association, the CMA depends on a

consensus of its members for the authority to act. On the other, the sincere implementation of Responsible Care requires it to act as regulatory authority that can sanction members who do not discipline themselves. Whenever these sanctions threatens members' separate interests to the point of menacing consensus, the CMA vacillates, and Responsible Care risks degenerating into a public-relations maneuver.

The new architecture we have outlined suggests that greater transparency and public accountability can resolve this overcome this stalemate. We find supportive evidence in the evolution of earlier, strikingly similar efforts at private regulation in the nuclear power generating industry housed in the Institute of Nuclear Power Operations (INPO). These efforts succeeded only when the system of self-monitoring was placed under the aegis of public institutions and authority.

Like Responsible Care, INPO grew out of a public relations crisis: it was formed in 1979, nine months after the Three Mile Island disaster. Like Responsible Care, INPO was designed as a private effort, and was financed by the utilities.

From the outset INPO's chief activities consisted of pooling the industry's operating experience, establishing benchmarks to distill the lessons there, and then evaluating individual power plants according to their ability to meet those benchmarks. Operating information is gathered initially through the Significant Event Evaluation Information Network. INPO officials sift event reports to distinguish harmless disruptions of operations from dangerous ones. They then circulate analyses of the causes of the dangerous disruptions and ways to prevent them in Significant Operating Experience Reports. Industry Operating Experience Reviews are then conducted periodically to assess the ability of particular plants to make effective use of the information provided by the reports.

This collection and dissemination of information to the immediate actors did not produce large, improvements in performance. By the mid-1980s, it became clear that the effectiveness of INPO as a new center for performance improvement through information pooling depended

crucially on its ability to divulge what it learned about the industry and individual firms to broader circles of participants. These would have to include high-level managers, boards of directors, and ultimately the Nuclear Regulatory Commission (NRC).

The broader diffusion began in late 1984, when INPO began to rank plants, and make the results available to the CEO of the utility operating the power plant, the utility's board of directors, and the responsible public service commissions and NRC. The NRC, in effect, retains the formal authority to promulgate regulations, but either adopts the standards in training, maintenance, and other matters elaborated by INPO, or simply acknowledges best practices defined by the institute without formalizing them. In addition to peer discipline and the authority derived from close cooperation with the NRC, INPO can suspend uncooperative member utilities. Thus, although there are no civil or criminal penalties for noncompliance with INPO standards, the institute found means to resolve the problems that now plague Responsible Care and thereby achieve notable safety improvements.¹

Diffuse Problems

The Chesapeake Bay Program, responsible for protecting and restoring the largest estuarine system in the US, is at once the most extensive, mature, institutionally complex, and successful of the ecosystem regimes emerging in the new regulatory framework. The Program grew up along side of the nascent EPA: while the Clean Water Act regulated point-source polluters such as factories and power plants, it did not regulate pollution—more threatening to the Bay—that derived from non-point sources such as farms, construction sites, lawns, landfills, septic tanks, and city streets. The Program's exemplary accomplishment has been to address this latter, more diffuse problem amidst radically changing ideas of the exact nature of the threat and how, ecologically and institutionally, to respond to it. Such is the attractive power of its example that

¹ The two measures are the number of "scrams," or rapid reactor shutdowns, and the number of safety system actuations. Both represent a gauge of the frequency of emergencies and are therefore inversely correlated with overall reactor safety. Between 1980 and 1990, the number of scrams per unit decreased by 80 percent, and the number of safety system actuations decreased by 60 percent between 1985 (the first year such measures were taken) and 1990.

the EPA is currently trying to model new programs on the Chesapeake experience, with the apparent intent of eventually reconfiguring regulation under the CWA itself.

The Chesapeake Bay Program emerged from a broad citizen movement, concerned with the degradation of a beautiful but fragile ecosystem that to this day evokes widespread pride and vigilance from residents, farmers, and businesspeople alike. In 1966—four years before Earth Day and six years before the passage of the CWA—these citizens formed the Chesapeake Bay Foundation as an advocacy organization to “Save the Bay.” At the behest of this group among others, congressional leaders funded a major six-year EPA study in 1973 to determine the status and causes of decline of the ecosystem. The report revealed a complex web of interrelated causes and alarming symptoms—such as declining fish and shellfish stocks—that spanned several states in the Bay region.

In response to this report and continuing investigations, a multi-state, inter-agency Chesapeake Bay Agreement was signed in 1983 “to improve and protect water quality and living resources in the Chesapeake Bay ecosystem.”² The agreement—whose signatories included US EPA, the governors of Maryland, Virginia, and Pennsylvania, and the mayor of the District of Columbia—established the core institutional framework for future cooperative efforts. It created an Executive Council and an implementation committee that would develop ecosystem restoration plans in conjunction with state and federal environmental agencies.

A second Chesapeake Bay Agreement, signed in 1987, marked the next evolutionary phase of the program. Much more concrete than previous efforts, this accord established a regime of biological monitoring as the bedrock of future management efforts. It identified the “productivity, diversity, and abundance” of the Bay’s living resources as “the best ultimate measures of the Chesapeake Bay’s condition,” and set ambitious performance targets, including reduction of nutrient loadings by 40 percent by the year 2000. When further studies revealed that loadings in various tributaries had differential impacts on water quality in the bay itself, parties

² The Chesapeake Bay Agreement of 1983, signed by the U.S. EPA, the governors of Maryland, Virginia, and Pennsylvania, and the mayor of the District of Columbia.

revised their system-wide goals and codified them in a 1992 commitment to develop tributary-specific nutrient reduction targets, strategies, and implementation tools. The 1992 amendments also established a specific, quantifiable biological monitoring regime, and Executive Council directives have added progressively more detailed commitments in such areas as a basin-wide toxic reduction strategy, habitat restoration, wetlands protection, and agricultural non-point source reduction.

All these arrangements and rearrangements are, however, the public face of deeper, less visible changes in the understanding of environmental regulation that have come to shape the strategic reflections of the program's leading protagonists. First, there is the realization that the more we learn about the ecology of the Bay, the more surprising new findings will be. The second and third cumulative changes in the program's self-understanding are procedural. One concerns governance. The various agreements and the entities that they establish constitute an institutional chassis for forming and re-forming governance mechanisms as changing conditions warrant. In practice, the Chesapeake Bay Program has employed a grab bag of regulatory techniques, legal instruments, and voluntary measures. Above all, it has experimented with legal forms. Many of its policies build concerted packages from disparate administrative and legislative measures in typically segregated arenas such as "land use," "air pollution," "water pollution," "public lands management," "fisheries management," and "wildlife conservation." More specifically, many actions of the Chesapeake Executive Council advancing such packets take the form of "directives." These are joint executive decrees of dubious legal pedigree and status. Yet they are regarded as, at a minimum, morally-binding commitments on the part of each executive to use all available powers and authorities to carry out the stated commitments.

These arrangements work well enough for adjusting program activities within broadly-agreed-upon boundaries. But more traditional forces come into play in larger re-definitions of purpose. In such moments, the very fluidity of the internal governance of the program becomes a liability, as external interlocutors seek, in vain, to determine the authoritative voice of an institutional ensemble that adjusts precisely by not having one.

The other change concerns citizen participation. Through the 1960s and early '70s, participation in the program meant conventional public education through publications, public meetings, hearings, and mass media. When it became clear that the level of monitoring required to manage the Bay and its tributaries was beyond the technical and financial capacity of government alone, emphasis shifted to more active, deeper forms of participation—essentially, teaching large numbers of volunteers to mimic the monitoring and reporting protocols developed by scientific experts, so as to produce a larger volume of reasonably reliable monitoring data. In the process, ordinary citizens would become quasi-experts by imitation. In the 1980s, the program explicitly equated participation with the emulation of expert knowledge.

The recent emergence of a “tributary strategy” emphasizing the need for stream-specific goals and implementation measures, marks the third re-conceptualization of citizens’ roles and their relationship experts. Continuing surprises to expert judgment have led, reasonably enough, to the conclusion that the required level of specificity in planning and implementation is now beyond the capacity of experts alone. Nor can the necessary measures be developed by the lay public simply by following precise routines or protocols defined by the experts. Instead, responsibility is devolved to semi-autonomous “tributary teams” comprising government officials, scientific experts, agricultural and industry representatives, and citizen volunteers. As a group they become experts with regard to their own tributaries, drawing on a unique mix of local knowledge, expert science (adapted to local needs), and basin-wide experience to become the authors and implementers of the tributary strategy. Because measures can be tailored to the local circumstances of each watershed part, the tributary teams are simultaneously more effective and equitable in the burdens they impose than uniform statewide measures. Together, these changes lend plausibility to the idea of broad, continuing, and deeply informed citizen participation in environmental affairs that, unlike the first wave of backyard environmentalism, constructs as much as it obstructs.

Putting the Pieces Together

Among the most dynamic and supple prototypes of the new regulatory architecture is the HCP, which ironically emerged out of one of the most rigid of all environmental laws: the Endangered Species Act. Section 9 of the act prohibits the “taking” of listed wildlife species. “Take” includes both direct injury and habitat modification that “kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding or sheltering.”³ In application, this simple language becomes a sweeping, inflexible rule with the potential to bar a broad range of land development and resource extraction activities wherever endangered species have been identified. Not surprisingly, landowners, industries, and communities complain that they are unfairly singled out under a harsh and arbitrary rule that provides dubious species protection benefits.

In 1982, Congress responded by authorizing the issuance of permits to “take” listed species if the taking is “incidental to, and not the purpose of” an otherwise lawful activity. To secure a permit, the applicant must produce an HCP, and demonstrate that the taking will not appreciably reduce the likelihood of the species’ survival and recovery. The FWS retains broad discretionary authority to add any terms and conditions it deems necessary to ensure species survival. By April 1999, 254 plans—regulating more than 11 million acres—had been approved and 200 more were in various stages of development.⁴

Bruce Babbitt, appointed Secretary of the Interior in 1993, and his staff favored the HCP process. They saw it as an opportunity to bring landowners and environmentalists together to hammer out conservation plans that might provide greater ecosystem protection than strict application of Section 9—without halting development and economic growth. To demonstrate the workability of this approach to the public, regulated communities, and even to their own field agents, Babbitt and his associates would have to intervene in local HCP processes to elaborate a real and attractive alternative to traditional ESA enforcement.

³ 50 C.F.R. 17.3. The Supreme Court has upheld this regulation as a valid interpretation of the statutory prohibition against “taking” of listed wildlife. See *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 115 S.Ct. 2407 (1995).

⁴ U.S. Fish and Wildlife Service, Division of Endangered Species. “Status of Habitat Conservation Plans” (April 23, 1999). An electronic version of this document can be obtained at <http://www.fws.gov/r9endspp/hcp/hcptable.pdf>.

Opportunities to do just this arose in San Diego and Orange Counties, where urban sprawl had already reduced much of the coastal sage scrub ecosystem to tract housing, shopping malls, and office parks. This, in turn, had shrunk and badly fragmented the habitat of native species like the California gnatcatcher, a songbird endemic to the southern California coastal region. Yet when the gnatcatcher was proposed for listing under the ESA, Section 9's prohibition against "taking" threatened to bring lucrative development in fast-growing San Diego and Orange Counties to an abrupt halt.

Compared to such listing, almost any alternative seemed reasonable to landowners, developers, and state and local government officials. The ESA allowed them to use the HCP process as a framework for negotiation. A California statute, the Natural Communities Conservation Planning Act, linked motive to framework by providing for a process (initially voluntary) that brought together landowners, state and local officials, conservationists, and other interested parties to develop integrated, regional-level ecosystem protection plans. They negotiated the first of a new generation of participatory and performance-based landscape-scale, multi-species HCPs in San Diego, Orange, and Riverside Counties.

Jointly formulated by developers, public officials, conservationists, and scientists, these plans require landowners to dedicate large tracts of land for exclusive use as habitat reserves for unlisted as well as listed species. They restrict development in buffer zones adjacent to the reserves to provide additional habitat benefits. Biological and environmental monitoring regimes, governance institutions, and funding mechanisms are put in place, and a range of "adaptive management" measures are specified, allowing adjustments to be made and contingency plans to kick in, based on the results of monitoring, new scientific information, and changes in conditions. In return, landowners are awarded "incidental take" permits that allow them to develop their remaining lands in accordance with the overall plan. The agreements are controversial among environmentalists,⁵ some of whom prefer strict application of Section 9, and among landowners

⁵ John Kostyack. "Habitat Conservation Planning: Time to Give Conservationists and Other Concerned Citizens a Seat at the Table," *Endangered Species UPDATE* School of Natural Resources and Environment. University of Michigan. Vol. 14, Nos. 7 & 8, July-August 1997: 51-55.

and developers, some of whom see the HCP process as legalized extortion. But many leading environmentalists, landowners, public officials, and scientists contend that, on the whole, these agreements produce more, better, and more sophisticated ecosystem management regimes than would emerge from even the strictest application of Section 9.

The inclusiveness and sophistication of these Southern California HCPs illuminate the promise of the new regulatory regime and offer a scalable example for the almost 500 plans that are in development or have already been approved. While many of these are quite limited in scope, others are far more ambitious in their measures and goals and innovative in their internal architecture. Increasingly, HCPs are formulated by diverse affected parties and move beyond basic land use planning approaches to embrace water quality and stream flow measures, ecosystem restoration projects, forestry and agricultural “best management practices,” and a variety of other implementation measures.⁶

But these Southern California successes are slow to diffuse to all HCPs because the emergent nationwide conservation planning regime is by and large unable to pool the information generated by local projects or to systematically learn from innovative developments, trends, successes, and errors. Such pooling as does occur is done mainly by the FWS,⁷ whose highly decentralized internal structure has so far proved far better at dispersing authority to local decision makers than at reviewing the ensuing decisions. The result is nearly unsupervised local autonomy with correspondingly wide variations in the performance of HCPs from one place to another. Thus local circumstance, seldom corrected by national discipline, determines whether an HCP monitors its progress well or poorly,⁸ or whether its decision-making is accessible not only

⁶ An effective system must be an adaptive one because even the best science gets better; “There is never enough information” to allow timeless determinations of fixed rules, and “[n]o key ecosystem management decision ever gets made in a setting of adequate information.” George Frampton, *Ecosystem Management in the Clinton Administration*, Duke Environmental Law and Policy Forum 7 (1996): 39. Frampton was, at the time he wrote these words, Assistant Secretary for Fish, Wildlife and Parks in the Department of the Interior, overseeing the Fish and Wildlife Service and its endangered species program.

⁷ In interviewing FWS and Interior officials in July, 1998, the authors learned that no one in Washington had even collected the HCPs that had already been negotiated up until that point—much less read them, or attempted to absorb any generally-applicable lessons that might be learned from them.

⁸ Peter Kareiva et. al. *Using Science in Habitat Conservation Plans* (University of California, Santa Barbara:

to local deal-makers, but also to independent scientists, conservationists, and generally informed citizens. Often, in fact, HCPs amount to an agreement between a permit seeker and a Service field agent. Where the experience of the Chesapeake tributary teams shows that open participation and good science may be mutually reinforcing, this kind of involution—especially in the absence of rigorous monitoring—can lead to self-deluding celebrations of expert powers and so to underestimation of the combined political, scientific, and practical complexity of large-scale ecosystem management.⁹ At the worst it can undermine the democratic legitimacy of HCPs by transforming them into unprincipled backroom deals between regulators and the regulated.¹⁰

In response to such concerns two measures—a new FWS guidance and the Endangered Species Recovery Act of 1999 (HR960, or the Miller Bill)—have been proposed to create a minimal informational infrastructure for the coordination of the HCPs, and thereby to improve performance of individual plans with respect to monitoring and accessibility. As concerns monitoring, the guidance directs the Service to create a database that tracks basic plan features such permit duration, acreage covered, species and habitat details, authorized take, and permitted activity. It may also record monitoring programs, actual take, operational adjustments, and field visit reports.¹¹ Similarly, the Miller Bill directs bilateral monitoring of the implementation of HCPs and their biological outcomes; permit holders would be required to report publicly on actions taken in accordance with the plan, status of jeopardized species, and progress toward objective, measurable biological goals, while the Secretary would be required to report on the implementation and quantitative biological progress of each plan every three years.

As concerns accessibility, the FWS guidance responds tepidly by extending the Administrative Procedure Act's after-the-fact "notice and comment" period from 30 to 60 days and offering the only slightly more ambitious proposal to add advisory and informational

National Center for Ecological Analysis and Synthesis, 1998).

⁹ Frampton describes how FWS' traditional emphasis on purely science-based decisionmaking stands at odds with the inherently political nature of ecosystem management.

¹⁰ For a thoughtful and textured environmentalist critique of the shortcomings of public participation in HCP planning, see Kostyack, *op. cit.*

¹¹ Federal Register, Vol. 64, No. 45 (March 9, 1999): 11488. A first draft of this database can be obtained on the Internet at: <<http://www.fws.gov/r9endspp/hcp/hcptable.pdf>>.

committees in cases of large-scale HCPs. The Miller Bill goes further, instructing the department to take steps to ensure balanced public participation in the development of large scale, multiple landowner, and multi-species plans. Without better institutionalizing the distinctive contributions that the public can make to ecosystem governance—information, monitoring capacity, oversight, and democratic legitimacy—reformers risk losing elements critical to a successful process. On an optimistic reading these measures, or something like them, will lay the groundwork for a TRI-style, information-based pooling system whose own initial shortcomings will be incrementally corrected even as the emergent infrastructure makes it possible to begin overcoming, locale by locale, the defects of disjointed decentralized of ecosystem management.

Weaving the Whole

Does this tale of environmental reorientation merit further elaboration, beyond recounting these illustrations? On one interpretation, the independent emergence of this architecture in diverse settings attests to its robustness across local environments and political regimes. Formulating a comprehensive regulatory design might then be unnecessary because some groups will eventually discover it, or unhelpful because it would shackle novel local experimentation to half-baked and half-replicable experiences.

This incremental view is too optimistic, and in any case has already been overtaken by events: Federal agencies are extending and elaborating the emergent principles of innovation by undertaking large projects that aim to replicate the kinds of regulatory successes we have been examining. The piecemeal decentralization of authority from federal to subnational authorities has excited the interest of the states. And crucially, Congress is noticing the anomalies of the new regimes as viewed in the light of the legislation from which their authorization is derived.

Like it or not, debate about the legitimacy of the performance-based systems is (about to be) on the agenda. At the core of that debate will be a fundamental question: how can directly-deliberative, problem-solving regimes co-exist with the institutions of pluralist democracy? This question arises, we will now see, as much when the reformers aim for self-limiting modesty, as

when they are more ambitiously expansive. Precisely because the problem is ubiquitous, consolidation of the new architecture will, we believe, in the end depend on an open validation—probably through Congress—of the changes that have emerged as much outside the current order as within.

To illustrate the vulnerability of administrative reform not backed by law, consider the recent HCP experience. High officials in the Department of the Interior argued that under conditions of modern complexity, government can at most reveal the possibilities of new forms of collective problem-solving through a discrete politics of the deed. Once working models of the alternative have proved their worth, the equilibrium mechanisms of pluralist society ensure that the incipient experiments develop in ways society judges fair and effective. With regard to the HCPs, for instance, local “under-enforcement” that threatened vulnerable species would be registered by national environmental groups, who would press the authorities for corrective action; “over-enforcement” would conversely provoke protests by local property owners, and move their national representatives to corresponding interventions. Aggressive advocates of more comprehensive strategies misunderstand what government under modern conditions can do, and imperil what has been done by bringing it to the attention of busybodies.

This peculiar optimism seems misplaced. Why assume that the dueling political powers produce an exquisite balance, rather than a welter of clashing rules, or a self-canceling swing of policy from “too much” to “too little” protection of endangered species or prosecution of other goals? In recent decades, in policy area after policy area, this, not harmony, has been the outcome. The introduction of forms of direct deliberation at the local levels will, if anything, make pluralist interest balancing at the highest levels less practicable than before. Institutions such as HCPs work precisely by uncovering, through experimentalist investigation, potential solutions initially unknown even to the local actors. How, and on the basis of which incentives, will the pluralist rule-makers at the center come to know of the local discoveries? If they knew, would they in turn support? But if higher-ups predictably rule in ignorance, indifference, or

hostility to these innovations, why should local actors engage in experimentalist exploration at all?

The Miller Bill could furnish an elegant resolution to this clash between directly deliberative and pluralist decision-making in the case of HCPs. The proposed Bill in effect carries forward the careful environmentalist criticism of the promise of HCPs. It aims to solve much of the problem simply by requiring the Department of the Interior to respect minimum HCP conditions. Thus, to be recognized as valid, the HCPs must incorporate objective, measurable biological goals aimed at species recovery, a regime to monitor the biological status of each covered species, regularized reporting, and appropriate adaptive management measures. Development of large-scale HCPs involving multiple landowners or multiple species would require substantial public participation, and to ensure consistency, transparency, and accountability within individual HCPs and throughout the system as a whole, the Secretary would be required to review each HCP triennially and recommend such adjustments as be necessary to ensure species recovery, and publish an annual report on the status of all HCPs.

Thus Congress, if it passed the Miller Bill, would subtly modify both its own legislative role and that of the administrative agency. Congress's role would shift from the familiar one of setting some relatively circumscribed public goal—protecting endangered species—and delegating responsibility for achieving it to a federal rule maker, to authorizing and conferring pluralist political legitimacy on the constitutive framework under which citizens as local agents can experimentally determine how to pursue a presumptively broad and changing project—protecting and restoring habitats. The role of the Department of the Interior would shift from relying on its own expertise and judgment to help craft the agreements and determine their acceptability, to rigorously policing a framework within which a broad and open circle of participants, local and national, can determine for themselves whether particular HCPs, and the institution taken as a whole, are meeting the goals it sets for itself. Familiar fights will of course continue, but the rules for adjudicating them will change.

None of this is likely to happen immediately. But the very variety of ways in which deep users are prospectively combining the current, imperfect buildings blocks suggests that there will also be many opportunities to crystallize this democratic regulatory reorientation in political discussion, and so to insert a promising new item on the reform agenda.

Environmentalism as Democratic Reform

The great dilemma for twentieth-century democrats has been the conflict between efficiency and the values of fairness and self-determination served when citizens rule themselves. The mainstream view is simply that markets are the most efficient instruments for allocating resources and hence that any democratically inspired adjustments to market operations or redirection their proceeds comes induces inefficiency. Even the great currents of American popular reform—such as Jacksonianism, populism, and Progressivism, which shared a deep fear of the predatory power of economic elites—themselves treat private ordering as a kind of precious nature preserve, easily disrupted by excesses of democratic participation.

Jacksonians, populists, and their contemporary descendants, Reagan-era monetarists and supply-siders, sought to reform finance once and for all. They aimed to re-make the market so that the everyday transactions by which citizens effected their economic advancement would not result in accumulations of wealth and influence that might then be turned against their freedom. Through these movements runs the thread of the characteristically American distinction between well-ordered markets as the instrument and guarantee of legitimate self-assertion and perverted ones as the tool of domination.

The Progressive impulse in contrast seeks redress not in a once-and-for-all institutional reform, but rather in an enduring and self-reinforcing shift of authority away from contending class interests and towards the trusteeship of a circle of technically-versed experts. The hope—in the turn-of-the-century struggle against trusts and corrupt political machines as well as in recent battles with cigarette makers, pharmaceutical companies, and drug dealers—is to attenuate the

destructive contest between elite and mass by interposing stewards of the common good who would themselves be disciplined by the canons of rigorous inquiry.

The environmental reforms discussed above arose within these channels, but overflowed their original banks. They commingle these streams of reform and reveal in their novel course the most improbable of possibilities: that participation of a directly deliberative kind, far from being a charge against efficiency, may be today a precondition for it. The profusion of participation that makes backyard environmentalism work springs from our traditional ideas of reform, yet holds promise of freeing us from deep limits to our idealism.

The inspiration of TRI and, more diffusely, of the Chesapeake Bay Program, was the Jacksonian or populist notion that occulted powers were literally poisoning the people in pursuit of private gain. The remedy was to use government authority to force transparency—to require the disclosure to local communities of the additional information they needed to defend themselves from those who would poison them. Both had the distinctly Jacksonian flavor of efforts to re-order markets, not attack market order as such. Opponents of both programs disparage the ability of common people to digest and responsibly respond to the disclosures in terms that recall the nineteenth-century patrician fear and disdain of the tempestuous mob. Moreover, because both programs were launched with the intent of creating self-contained and self-enforcing mechanisms, neither anticipated the need, soon manifest, for higher-order mechanisms continuously to adjust the frame of intervention itself according to the findings of initial investigations.

TURA, Responsible Care, and HCPs, in contrast, were Progressive. All depend on the active participation of experts—toxics use reduction planners, conservation biologists—whose disciplining presence on both sides of the bargaining table is said to make the bargains possible and manageable once struck. The chief limitation of these programs has accordingly been the tension they create between the circle of experts, exchanging information openly amongst themselves, and the concentric circles of the more or less engaged public who are not formally

included in the discussion but by virtue of their information and experience eventually move toward its center.

To establish these continuities between past and present is not, of course, to foretell a continuation of the old errors of Jacksonianism and Progressivism. On the contrary, the confluence of expertise and market ordering of both traditions in the new regime holds the promise of transcending their separate limitations. Thus the successes of TRI, as well as many aspects of the operation of certain HCPs or of INPO, shame the Progressives in their deference to expertise and vindicate the Jacksonian faith in the capacity of citizens to govern their own affairs. Above all, the self-transformative successes of the Chesapeake Bay Program reveal the needless limitations of the Jacksonian faith in once-and-for-all solutions to problems of social order and vindicate the confidence of many Progressives that the public could respond to its problems through institutionalized, deeply informed self-scrutiny in a way that John Dewey—the boldest of them all—could himself scarcely imagine. The common lesson is that expertise without local participation remains ignorant of crucial detail while localism unprovoked by expertise remains haplessly parochial.

To be sure, some parts of the established environmental movement continue to prefer the insider's game of pluralist grappling for influence at power centers. But other parts are reorganizing to take advantage of the local participatory possibilities of the emergent regime. For example, largely self-directed chapters of the Nature Conservancy and other, often ad hoc groupings of conservation-minded citizens are stepping forward on their own initiative to lead ambitious ecosystem-management projects, loosely coordinated by the flow of information to national conservation organizations and government agencies, and back again to other local projects. In these efforts, distinctions between the public sphere and the private begin to blur, as the citizen-authors of public policy come to view government at all levels as a partner to be

recruited into a broadly collaborative effort, rather than as master rule-maker or ultimate arbiter before whom they must come as supplicant or subject.¹²

Even at the pinnacle of the Washington environmental establishment, some see the need for self-redefinition and democratic renewal. The National Wildlife Federation, for one, candidly acknowledges that with habitat conservation programs now dominant in endangered species policy, decision-making authority has already shifted from the center to localities. Consequently, they say environmentalists' emphasis must also shift. No longer able to influence the substantive rules directly, the national organizations must instead work to ensure a deeply participatory local process, both by influencing the overall design of the regulatory architecture and by encouraging and supporting citizen participation in HCP planning, locality-by-locality.¹³ The national organizations thus begin to reinvent themselves as independent monitors of local performance and poolers of best practices, in effect becoming a separate and parallel repository for the rich flow of information generated by the new regime.¹⁴ In this way, they position themselves simultaneously to monitor and offer informed critiques of the regime's design and performance overall and in the local particulars, and to provide local citizens an independent channel of information to guide, assist, and empower them in local efforts. Thus do participation, coordinated decentralization, and the open flow of information merge over time into a self-reinforcing system of deep use, and in so doing enrich our democratic polity.

Whatever the immediate outcomes of the struggles over environmental reform, backyard environmentalism has progressed far enough to make us insist on exploring the possibilities for augmenting and transforming our democracy before continuing to settle for less and less of it.

¹² See Lee P. Breckenridge, "Reweaving the Landscape: The Institutional Challenges of Ecosystem Management for Lands in Private Ownership," *Vermont Law Review* 19 (1995): 363 .

¹³ See Kostyack, *op. cit.*

¹⁴ Tellingly, the Washington office of the National Wildlife Federation made itself a central repository for Habitat Conservation Plans before it occurred to anyone in the Department of the Interior that such a thing might be useful. In addition, NWF convened the first national conference to assess HCP policy and practice, and has produced thoughtful and detailed critiques of many HCPs that will undoubtedly inform future ones.