

Chapter 8

Introduction: Natural Resource Management – Framing Governance Challenges

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In 1969, six miles off the coast of Santa Barbara, a blow-out at an offshore oil-drilling platform spewed crude oil into the sea and onto shores. I joined volunteers to tend birds coated in oil. Some survived; thousands died. A few years earlier, Rachel Carson's *Silent Spring* described a natural world in peril from the chemical potions intended to stamp out malaria, improve crop yields, and, generally, serve mankind. Together – a book and an event – form the foundations of America's modern environmental policy journey. During four decades, that journey has unfolded in fits and starts, with an accumulating toolkit and an evolving narrative. That narrative began as a series of wake up calls. It developed into a basket of statutes – the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, the Endangered Species Act, and others. It matured – and debates unfolded.

Round one in these debates, predictably, pitted economy against the environment as political antagonists argued the merits – and, even, constitutional appropriateness – of federal action. In round two, many participants accepted the relevance of federal action to protect the environment but tangled over the toolkit. Were command-and-control regulations that prescribed specific actions effective and efficient? Could market-based tools – pollution fees, tradable pollution credits, stronger liability rules, and so on – do a better job? We have entered round three in this journey. The old narratives have not vanished. But an additional plot is unfolding. That newest element is one of adaptation and collaboration among scientists, decision makers and the public juxtaposed against linear and fixed solutions developed among a circle of technical experts.

The chapters in this section probe this storyline. Why are collaboration and adaptation relevant to the environmental challenges of the twenty-first century? What is adaptation? How do concepts of collaboration transform into governing practices

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and decision-making settings? What are the relationships of scientists (experts), policy makers, and the many “publics” who, increasingly, participate in collaborative decision making about lands, waters, and wildlife?

As the authors in this section probe these questions, key themes recur. These include the complexities of the problem set: Nature is dynamic, nonlinear, and interconnected. “Scientists,” write Kathi Beratan and Herman Karl in Chap. 10 (“Managing the Science-Policy Interface in a Complex and Contentious World”), “have increasingly recognized that disruptions to one element of the global social-ecological system can reverberate throughout the system in surprising and potentially catastrophic ways.” Problems, they note, “are highly interlinked and complex, which limits our ability to decipher cause-effect relationships.” Stephen Light and Jan Adamowski, picking up the theme of interconnectivity and complexity in Chap. 13 (“Flow in the Everglades: The Game Inside the Game”), point to a cognitive challenge of “tearing down the imaginary vials that entomb our past and deny access to the future.” They describe a cultural ‘blind spot’ that “is our almost subconscious and instantaneous separation of objects from relationships embedded in experience. The centrifugal force of our cognitive powers tends to rip the rich mosaic of reality, separating its interwovenness.”

People, too, behave in dynamic ways; participants change. Newcomers arrive with new values. Daniel Hogendoorn, David Laws, Dessie Lividikou and Arthur Petersen, writing of water management in the Netherlands, describe the interaction of scientists and policy makers as unfolding in a context of ever-emergent knowledge and new actors. “With new actors,” they note, “values change, as well as the status of what is known.” They describe the decision-making dilemmas such evolution educes: “From one perspective, changing values and changing status of technical knowledge open up knowledge-development and produce a wealth of insights.... From another perspective, searching results in an impenetrable cloud of expertise that produces new uncertainties by continuously recombining and pruning expert knowledge.”

Knowledge is, inevitably, incomplete. Uncertainties percolate. For example, the effects of a changing climate, broadly understood in general terms, unfold with devilish details at the regional and local scales – and we do not wholly understand these details. Yet it is these details that often matter to a neighborhood, a community, a city, a natural resource manager.

Relevant knowledge is complex. It is dynamic. It is also many faceted and includes the knowledge of those with “boots-on-the-ground” professional experience. Such knowledge helps to illuminate the details of place and identify what’s practical. Hogendoorn et al. describe nine practitioners within the context of Dutch water management whose work ranges from mathematical modeling of waves and subsoil conditions to dike inspectors who must implement the decisions of policy makers. Why, ask the dike inspectors, must they tangle with complex measurements and formulas? Why can they not simply watch the water rise (or fall)?

Natural resource management involves more than a dispassionate assembly of scientific, technical, and practical knowledge. Fundamentally, resource management decisions – whether in the context of a changing climate, a major restoration

project, or public lands management – affect people, their values, their livelihoods, and their communities. In Chap. 9 (“Transcending Boundaries: The Emergence of Conservation Networks”), I suggest that “Identifying enduring outcomes inherently involves questions of values, priorities, and place. Thus, a persistent challenge for resource managers and communities is how to provide a rich context for expression of individual values and a means of generating management options acceptable to people with competing priorities.”

The significance of values, and how decision processes give expression to these values, brings particular relevance to Chap. 12 (“Values in Natural Resource Management and Policy”) by David Mattson, Herman Karl, and Susan Clark. These authors offer a definition of “values” and distinguish values from needs, preferences, attitudes, and interests. They define values as physical and psychological indulgences that people seek or desire and note that “people seek values through institutions using resources.” Using the case of the Glen Canyon Adaptive Management Plan and associated decision making, they then discuss how institutional design can have a significant effect on how fully values are expressed and on decision making power, respect, and outcomes.

As many authors in this book suggest, healthy ecological systems are fundamental to human well being. But, on landscapes inhabited by people, achieving and sustaining healthy ecological systems involves relationships – sustainable relationships of people and place. Stephen Light and Jan Adamowski examine those relationships as they have unfolded over many decades in the Everglades. Theirs is a personal, passionate, and probing account in which they describe ecological restoration as “a process of creative emergence that lies beyond our ability to direct or command.” They critique decision processes characterized by a “quest for certitude and the propensity to resort to unilateral power,” a term they apply to the imposition of a dominant interest – for example, urban needs for water supply and flood control – on resource management decisions.

Light and Adamowski offer a case study situated within a larger philosophical exploration of the relationship of mankind and Nature; the idea of emergent knowledge; and the importance of the capacity to evolve in a context that is ever-changing. They perceive the central governance challenge as one of transitioning from project-centric management in a context of unilateral power to one of “evolutionary design.” Evolutionary design, as they describe it, is not a variation on adaptive management. Adaptive management, a centerpiece of much discussion throughout this book, builds upon a perspective of the ecological world as dynamic and complex and our knowledge as uncertain. Given those characteristics, adaptive management introduces experimentation, monitoring, and evaluation of results against previously identified goals. But adaptive management, at least as practiced, still unfolds on a project-centric basis and often within an “efficiency” framework that Light and Adamowski critique.

I come full circle back to issues of collaboration. As Herman Karl, et al. point out in Chap. 15 (“Adapting to Changing Climate: Exploring the Role of the Neighborhood”), “action requires agreement about the nature of anticipated problems and motivation to address those problems. Achieving that agreement and

motivation lies at the intersection of science and politics.” Fundamentally, governance structures, institutions, and processes affect how that science and policy dialogue plays out.

Mariam Merad, N. Dechy, and F. Marcel describe a decision by the French government to launch a highly collaborative decision making framework within which to identify climate adaptation options. They situate this case study within a broader examination of participation. What does public participation mean? Merad et al. present a continuum of participatory models anchored at one end by the long-familiar construct of representative democracy, with citizens selecting representatives who, in turn, make decisions in their behalf, to what Merad et al. refer to as “deliberative democracy,” in which the public (or relevant stakeholders) are involved throughout the decision-making process and influence final decisions. In my chapter on “transcending boundaries,” I describe other emergent forms of shared (network) governance in which multiple participants engage in something akin to “deliberative democracy.”

At root, collaborative conservation springs from a growing attempt, as Karl et al. point out in Chap. 15, “to incorporate the views and knowledge of multiple stakeholders” in natural resource management decision processes. Light and Adamowski, examining the Everglades with its many value-laden conflicts, note that the search, within such a context of multiple values, is not “for mediocrity, compromise, ‘just getting by,’ or even for ‘he who gets the gold.’” The search, they write, is “for composite solutions...that order, reconcile, and mutually reinforce 80–90% of the conflicts,” while leaving decision space for addressing remaining (and emergent) “constraints, uncertainties and divergences.” Light and Adamowski sum up what is, perhaps, the essential theme of all the authors as they probe issues of adaptation, collaboration, knowledge-building, and sustainability: “The search is for excellence.”