

# Symposium

## LAW, SCIENCE, AND THE ENVIRONMENT FORUM: A MEETING OF THE MINDS

Environmental and natural resources law in the United States is undergoing a quiet revolution.

This assertion may seem audacious given Congress has not passed major environmental legislation for over a decade; on the contrary, in recent years the federal government has emphasized incentives and “partnerships” rather than regulation and enforcement to promote environmental protection goals. But behind the scenes of familiar debates over pollution control and resource use and protection, path-breaking developments in these fields have focused on the fundamental components of environmental decision making—who may participate, what data and information regulators may employ and how they may use that information, and even which potential environmental threats may be ignored and which cannot. This ongoing revolution has also transformed many facets of environmental dispute resolution. For instance, the decisive battles between civil litigants today often come well before trial when one or both parties attempt to exclude from evidence their opponents’ essential expert testimony.

The early years of environmental law centered on building a regulatory infrastructure with components such as technology mandates, environmental assessment requirements, and planning schemes. The Information Age revolution in environmental law now underway focuses on the questions, data, processes, and participants that make this regulatory machinery run. The key feature of this metamorphosis is its multidisciplinary nature. Answers to today’s environmental questions often depend on the interplay between law, science, and policy: How does a regulator tell sound science from flawed? How much risk to human health or an endangered species is too much? What should happen in the face of uncertainty? Statutes and regulations alone cannot provide answers.

Perhaps the most visible symbol of this new direction in environmental law is the 2007 Nobel Peace Prize, shared jointly by a former lawmaker and political leader, former Senator and Vice President Al Gore, and an international scientific panel, the Intergovernmental Panel on Climate

Change. In addition to underlining the importance of climate change as perhaps the defining environmental challenge facing humans today, the Nobel committee's selections made it clear that rising to this challenge will require not only joint input from the fields of law, policy, and science, but societies and a community of nations that can better *integrate* these disciplines in order to understand the scope of the problem and devise effective responses.

Climate change provides a rich source of examples for understanding some of the important aspects of the intersection between law, science, and policy. Climate science has progressed rapidly over the past decade to starkly outline the ways in which human activities have influenced and are likely to continue to affect the weather, as well as the potential consequence of these changes for the biosphere and human health and well-being. However, predictions about the rate of climate change and its specific manifestations are fraught with uncertainty, and scientists of course cannot detail the degree of change societies will be willing to live with. Therefore, establishing legal standards for carbon emissions is not simply a matter of asking experts for the "right" answer; instead, this decision requires decision makers to combine the most current scientific understanding of the problem, policy calculations of how much risk to the planet people are willing to accept, and how to include within such standards a margin for error to acceptably account for the great deal we do not know about climate change. The outcome of such a process will of course depend to a significant extent on who gets to make such decisions in the first place—and the extent to which the public may participate.

Additional multidisciplinary challenges abound in administering standards once they are established. For instance, if a power company claims to have offset a portion of its carbon emissions through some sort of off-site carbon sink, how does it prove this to a regulator? Should the regulator simply accept the company's scientific conclusions, perform its own verification studies, or establish some sort of standardized scientific process for evaluating carbon sequestration? More generally, how should regulatory bodies—or dispute resolution processes—distinguish between good science and bad?

Law and policy can also substantially influence the public's understanding of science and even science itself. For example, debates about climate change in the United States have included charges that the Bush Administration has attempted to downplay the issue by editing government reports and muzzling federal agency scientists. Increased attention has also focused on funding for science; governments wield enormous influence over science itself simply by deciding how much money to devote to funding research and how to allocate those funds.

Finally, implementing regulatory standards and the science processes that support them presents its own host of challenges with intertwined elements of law, policy, and science. At its most basic, implementation simply requires a social and governmental commitment to funding and carrying out decisions already made—though events virtually every day

demonstrate that this is much easier said than done. Moreover, the implementation phase is where the law's need for certainty and stability collides head on with the dynamic nature of science and knowledge. If, for example, scientists learn that climate change is occurring at a much different rate than previously expected or producing a serious but previously unseen consequence, will regulatory schemes be able to adapt to incorporate this new knowledge or must the entire process for creating a policy and legal response go back to the drawing board?

Four decades ago, statutes such as the Wilderness Act, Clean Water Act, Clean Air Act, and Endangered Species Act marked the beginning of the modern era of environmental regulation. Today, statutes such as the Data Quality Act and the Access to Data Act, Supreme Court rulings in *Daubert v. Merrell Dow Pharmaceuticals*<sup>1</sup> and *Kumho Tire Co. v. Carmichael*,<sup>2</sup> administrative rules requiring peer review of regulatory decisions, proposals to protect scientific integrity, and concepts such as adaptive management are evidence of a paradigm shift in environmental and natural resources law. One thing is certain in this new phase of ordering society's relationship with the world around us: success requires willingness to think and act beyond traditional disciplinary boundaries, and ability to better integrate science, law, and policy.

Unfortunately, our educational institutions are typically organized by discipline, with doctrinal, philosophical, and often even physical distances between schools devoted to law, policy, and the sciences. This separation is one of the greatest obstacles to producing the scientists, managers, attorneys, legislators, judges, and other decision makers who can create and perfect the new multidisciplinary paradigm for protecting the environment.

In an effort to break down some of these artificial disciplinary barriers, in April 2007 Lewis and Clark Law School hosted the Law, Science, and the Environment Forum. Over thirty experts from around the country—including scientists, legal scholars, practicing attorneys, and regulators—spent two days presenting and discussing ideas for better integrating law, science, and policy in managing and conserving the environment.

The following Articles arose out of this dialogue; they explore many different facets of the interactions of environmental law and science. All of the authors call for a more interdisciplinary approach to the problems that environmental laws seek to solve. Each author approaches this issue from his or her area of expertise. David Adelman<sup>3</sup> examines proper benchmarks for the function of science in environmental policymaking. Mary Jane Angelo<sup>4</sup> and Mark Brown<sup>5</sup> offer valuable insights into incorporating economics, ecology, and law into the decision-making process through

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<sup>1</sup> 509 U.S. 579 (1993).

<sup>2</sup> 526 U.S. 137 (1999).

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energy synthesis. Deborah Brosnan<sup>6</sup> recognizes the frequent intersection between law and science and provides means for people involved in this intersection to deal effectively with one another. Robert Hetes<sup>7</sup> analyzes the importance of risk assessment, its function in risk management decisions, and the influence of science on risk assessment procedures. Thomas McGarity<sup>8</sup> evaluates the need for sharing scientific information between regulatory agencies and common law courts due to their mutual obligation to protect the public from unnecessary health and environmental risks posed by modern industrial products and activities. J.B. Ruhl<sup>9</sup> investigates how to incorporate scientists into the policy decisions and ensure the transparency and honesty of the law-science process of environmental agencies. Finally, Sidney Shapiro<sup>10</sup> examines the politicization of science in safety, health, and environmental regulation in the form of a proposed draft Risk Assessment Bulletin issued by the Office of Management and Budget and analyzes what role the Office of Management and Budget should play in developing risk assessment guidelines.

The area of intersection between law, science, and the environment is ever-increasing. The need for a useful dialogue between disciplines is crucial to reaching solutions that accurately reflect law and science, while adequately considering impacts on the environment. The Articles included here elucidate some situations where this dialogue is needed. As a result, the Articles will contribute to a greater understanding of ways to bridge the gap between law and science. *Environmental Law* sincerely appreciates all of the authors and the symposium planning committee for all of their work in contributing to this vital conversation.

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