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The Law of Sustainable Development: Keeping Pace

John R. Nolon*

Abstract: This article describes the emerging field of sustainable development law and examines whether it is up to the challenge it faces. In a world of finite resources overrun by sprawl, threatened by climate change, short on fuel, and long on greenhouse gas emissions, the law must keep pace. After discussing what sustainable development law is, the article considers the relationship between change in society and the evolution of legal principles, strategies, and practices, particularly with respect to land use, property, and natural resources. Documented in this review is the steady change exhibited in the common law applicable to the ownership, use, and preservation of natural resources, the rapid spread of zoning in the early 20th century, and the current explosion of climate change litigation and regulation. Based on these and other examples, the first half of the article demonstrates that the law can and does evolve in response to crises in society, particularly when lawyers, judges, professionals, and policy makers are trained to understand that law is an instrument for positive change. The article then turns to why law schools matter by drawing lessons from the author's personal

* This article is written in preparation for a lecture given in conjunction with my appointment as James A. Hopkins Professor at Pace University School of Law, where I also serve as Counsel to the Land Use Law Center and Director of the Kheel Center on Environmental Dispute Resolution. My thanks to Pace for this appointment and for the multi-year support it has provided for my scholarship on the topics covered by this article. Thanks also to several students who assisted with parts of this paper: Kelly Belnick, Alexandra Campbell-Ferrari, Noelle Diaz, Mike Goonan, Anne Ronan, Jamie Schenk-Allyn, and the editors of the Pace Law Review who did some heavy lifting of their own to document my narrative. My colleagues at the Land Use Law Center and Kheel Center whose steadfast commitment to using the results of our research to effect positive change on the ground have inspired my work more than they know. Heartfelt thanks to my stepfather, Watson W. Foster, for indelible life lessons too many to mention.

experience at Pace University School of Law.

Foreword: Too Big a Job

I grew up on a ranch in western Nebraska. My stepdad supervised us as we worked around the main house one day when a young man named Ernest came to work for the first time. I watched as my stepdad told Earnest to fill a wheel barrow with dirt from a pile near the house and move it to a spot near the corral. After each trip, my stepdad told Ernest to move another load, then another, then another. By mid-afternoon the entire pile of dirt was in its new location, where it was needed for a construction project. That night, I asked my stepdad why he didn't just tell Earnest to move the pile from the one place to the other. "Because," he replied, "that would have been too big a job."

As our society grows more populated, complex, and demanding, we expect our laws and lawyers to do heavy lifting as well. In my experience, particularly as a teacher and supervisor of student work, the movement of the law is a bit like this story about Ernest. Let me explain.

I. What is Sustainable Development Law?

In 1983, the Secretary-General of the United Nations tapped Gro Harlem Brundtland, Prime Minister of Norway, to chair the independent World Commission on the Environment and Development, which had just been created by the U.N. General Assembly. Following World War II, economic development tended to be unfriendly to environmental interests and, in many countries, leave the poor behind. It was the Brundtland Commission's task to address this problem.

In 1987, the Commission issued its report entitled *Our Common Future*. It defined sustainable development as development that meets "the needs and aspirations of the present without compromising the ability to meet those of the future."¹ The report begins with this aspiration:

1. WORLD COMM'N ON ENV'T & DEV., UNITED NATIONS, *OUR COMMON FUTURE* 40 (Oxford Univ. Press 1987) [hereinafter *OUR COMMON FUTURE*].

This Commission believes that people can build a future that is more prosperous, more just, and more secure. Our report, *Our Common Future*, is not a prediction of ever increasing environmental decay, poverty, and hardship in an ever more polluted world among ever decreasing resources. We see instead the possibility for a new era of economic growth, one that must be based on policies that sustain and expand the environmental resource base.”²

That economic development is linked to the quality of the environment is undeniable. The Commission noted that “[t]here has been a growing realization in national governments and multilateral institutions that it is impossible to separate economic development issues from environmental issues; many forms of development erode the environmental resources upon which they must be based, and environmental degradation can undermine economic development.”³ Those who urge environmental preservation are called upon to support sustainable development. Advocates of economic growth are urged to promote sound environmental protection policies.

The Commission, nearly a quarter of a century ago, gave us a clear signal: support policies that encourage the proper type of economic development in appropriate locations, in order to protect the environment and ensure that development benefits all economic classes. Economic development is to be modulated both to lessen poverty and to improve the environment, and to do this with a view toward the needs of future generations! Sustainable development comprises economic development, ecology, and intergenerational equity: a heavy load indeed.

The Brundtland Commission Report demonstrates that the serious threat of “global warming” was well understood over twenty-five years ago. Its words, and the evidence on which they are based, are not ambiguous. The report cites work done

2. *Id.* at 1.

3. *Id.* at 3.

by the World Meteorological Organization (“WMO”) and the U.N. Environment Programme (“UNEP”) which concluded in October of 1985 that “climate change must be considered a ‘plausible and serious probability.’”⁴ It goes on: “[These organizations] estimated that if present trends continue, the combined concentration of CO₂ and other greenhouse gases in the atmosphere would be equivalent to a doubling of CO₂ from pre-industrial levels, possibly as early as the 2030s, and could lead to a rise in global mean temperatures ‘greater than any in man’s history.’”⁵ The report noted that CO₂ emissions were accumulating in the atmosphere causing a “greenhouse effect” leading to the warming of the planet, sea-level rise, the inundation of low lying coastal cities and river deltas, and grave effects on agricultural production, economic development, and trade systems.⁶

This dire evidence led the WMO and the UNEP to form the Intergovernmental Panel on Climate Change (“IPCC”) in 1988. The IPCC began issuing comprehensive assessment reports in 1990, which warned that business as usual will result in “unprecedented” warming.⁷ Its Fourth Assessment Report, dated 2007, noted that the concentration of CO₂ in the atmosphere is roughly 385 parts per million (“ppm”) and concluded that human activity is “very likely” the cause of global warming, which, it documented, was continuing apace.⁸

Our Common Future followed a decade and a half of federal environmental law-making in the United States: top-down rules and strict enforcement aimed at environmental excesses such as toxic waste and the pollution of the air and water by smoke stacks and water pipes.⁹ A giant step had

4. *Id.* at 175.

5. *Id.* at 175-76.

6. *Id.* at 176.

7. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 1990: IMPACTS ASSESSMENT OF CLIMATE CHANGE (1990).

8. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT (2008), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf [hereinafter IPCC SYNTHESIS REPORT].

9. National Environmental Policy Act of 1969 (“NEPA”), 42 U.S.C. §§ 4321-4370f (2006); Federal Water Pollution Control Act (“CWA”), 33 U.S.C. §§ 1251-1387 (2006); Endangered Species Act of 1973 (“ESA”), 16 U.S.C. §§ 1531-1599 (2006); Solid Waste Disposal Act (“RCRA”), 42 U.S.C. §§ 6901-

been taken in our country over a relatively short span of time to lessen environmental degradation. The law moved quickly in America to respond to the chilling reports of environmental havoc catalogued and passionately reported in 1962 by Rachel Carson in *Silent Spring*. “Only within the moment of time represented by the present century,” she writes, “has one species—man—acquired significant power to alter the nature of his world.”¹⁰ The federal environmental laws adopted at this time are credited with significantly improving the quality of surface and ground water and the air. Congress inched the federal environmental law movement forward, one load at a time, adopting over a dozen and a half separate statutes—all designed to protect some aspect of the environment.

At the same time that the Congress initiated this top-down environmental law movement, a related but disconnected initiative was occurring at the state and local level. State legislatures, during this era, planted the seeds of sustainable development law, adopting statutes that control future land development in the interest of resource preservation. The growth management movement began in Oregon in the early 1970s with the creation of state-legislated urban growth boundaries.¹¹ This gave rise to the notion that human settlements should be shaped so that they do not consume disproportionate amounts of land and resources to accommodate homes, offices, and other building.

Gradually, this movement merged into the smart growth campaign whose purpose is to properly locate human settlements to avoid the wasteful consequences of sprawl, which eats up land at a rate greatly in excess of population growth, and to promote the development of affordable

6992k (2006); Clean Air Act (“CAA”), 42 U.S.C. §§ 7401-7671q (2006); Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601-9675 (2006).

10. RACHEL CARSON, *SILENT SPRING* 5 (1962).

11. See OR. REV. STAT. § 197.300 (1973) (repealed 1979); OR. REV. STAT. § 197.305 (1973) (repealed 1979); OR. REV. STAT. § 197.315 (1973) (repealed 1979). “As of 1995, Florida, Georgia, Maine, Maryland, New Jersey, Oregon, Rhode Island, Vermont, and Washington had statewide growth management laws in one form or another.” HENRY L. DIAMOND & PATRICK F. NOONAN, *LAND USE IN AMERICA: THE REPORT OF THE SUSTAINABLE USE OF LAND PROJECT* 26-27 (1996).

housing.¹² Over the last three decades, state and local governments have adopted countless land use laws that exhibit, to greater or lesser degrees, their commitment to shaping settlements to preserve the environment and promote affordable living.¹³ They are working to revitalize urban centers, reconfigure older suburbs, and support patterns that sustain transit systems. In the last few years, there is evidence that these same governments are deliberately using smart growth tools to mitigate and adapt to climate change.¹⁴

To understand how this recent movement began requires a review of zoning law: a unique American legal invention. A half century before Congress created the federal environmental regime, the legal system adjusted suddenly at the state and local level to the ill effects of unregulated market movements through the creation of districts within which land uses and buildings are regulated. This is a lengthier story about the emergence of modern land use controls—sustainable development law’s first cousin. It is a story that illustrates how quickly the fundamental paradigm can shift, in this case from unregulated to modulated development, and how law can be used to effect the transition.

A. *The Rapid Rise of Zoning*

1. Ambler Realty’s Discontent¹⁵

On November 14, 1922, William Ambler considered his predicament. The previous evening the Euclid, Ohio village council had adopted Ordinance 2812: a comprehensive zoning scheme for the entire community. By this action, all land in the village was divided into six land use districts, three height

12. See SMART GROWTH POLICIES: AN EVALUATION OF PROGRAMS AND OUTCOMES 2-3 (Gregory K. Ingram et al. eds., 2009) (discussing the change in land use thinking post-World War II).

13. Jonathan D. Weiss, *Local Governance and Sustainability: Major Progress, Significant Challenges in ENVIRONMENTAL LAW INSTITUTE, AGENDA FOR A SUSTAINABLE AMERICA* 43 (John C. Dernbach ed., 2009).

14. John R. Nolon, *The Land Use Stabilization Wedge Strategy: Shifting Ground to Mitigate Climate Change*, 34 WM. & MARY ENVTL. L. AND POL’Y REV. 1 (2009).

15. This story is adapted from information contained in SEYMOUR I. TOLL, *ZONED AMERICAN* (1969).

districts, and four area districts. Ambler Realty's business plan for the sixty eight acres it owned between Euclid Avenue and the Nickel Plate rail line was to develop the land industrially. When the company bought the land it, along with most land in America, was unregulated. The unanimous vote of the village board to adopt zoning changed that in a stroke and frustrated the company's plan. Ordinance 2812 divided the sixty-eight acres into three use districts, limiting development along the avenue to residential development and confining industrial uses to a portion of the site adjacent to the railroad tracks, with a small strip committed to apartment development in between.

William believed that the offending zoning law reduced the value of his property by as much as 75%; indeed, he wondered if anyone would buy his land under such a crazy quilt of restrictions. At his request, his lawyers brought an action in federal court contending that zoning, on its face, is unconstitutional: it confiscated Ambler's property, denied just compensation, promoted aesthetic values, which are not a legitimate object of public regulations, and was unreasonable. This was to become the seminal case to determine whether zoning was constitutional. Interestingly, the village was named after Euclid, the Greek mathematician. If the courts upheld the village's action, the technique forever would be called "Euclidian Zoning," a neat play on words because geometric shapes dominate zoning maps—districts tend to be rectangles, squares, or parallelograms—bounded by streets and property lines. The federal district court, however, agreed with William, invalidated zoning on its face, and left it to the Supreme Court to determine whether to memorialize the metaphor.

Prior to the advent of zoning districts to control land uses, the law prohibited private nuisances, enforced restrictive covenants, and upheld local laws that prevent public nuisances or that protect public safety; these were the primary tools for controlling the impacts of random urban development. The Supreme Court had validated local laws that prevented dangerous brick kilns from operating in residential areas,¹⁶ for example, and the creation of districts within which the heights

16. *See* *Hadacheck v. Sebastian*, 239 U.S. 394 (1915).

of buildings were limited to lessen congestion in the streets.¹⁷

Euclid's elected leaders decided that these tools were insufficient. To deal with traffic congestion, the limited supply of water, and provide a reliable blueprint for proper community development, more was needed. The village was located northeast of Cleveland and contained sixteen square miles, mostly still farm land when zoning was adopted. Euclid Avenue was a broad expanse shaded by large trees and bordered by stately homes. Much of the undeveloped land had been purchased by speculators intent, like Ambler, on developing it industrially—and development pressures were mounting. The village's concern was that its very character was threatened. True enough, but how, William Ambler asked, can it be constitutional for the village to divide his land into three distinct districts with disparate use, height, and lot area prescriptions and so greatly reduce the market value of his land?

2. Saving the Fifth Avenue Merchants

This was all quite novel at the time. Just six years earlier—in 1916—New York City adopted the country's first comprehensive zoning law; the village itself was only nineteen-years-old when Ordinance 2812 was adopted. Ohio's state legislature had just adopted the Standard Zoning Enabling Act, promulgated by the U.S. Department of Commerce, which, if adopted by state legislatures, delegated to municipalities—like Euclid—the legal power to divide municipalities into land use districts and to prescribe the use, bulk, and placement of buildings on lots of certain sizes within each district.¹⁸ By 1922, a number of local governments in the country had adopted similar ordinances, legal challenges had been brought, and the case law was in disarray; the courts could not decide whether to embrace or reject zoning as the type of standard to which property rights should be subordinated.

During the years leading up to New York City's adoption of city-wide zoning in 1916, lower Fifth Avenue was undergoing a

17. See *Welsh v. Swasey*, 79 N.E. 745 (Mass. 1907).

18. See U.S. DEP'T OF COMMERCE, A STANDARD STATE ZONING ENABLING ACT (rev. ed. 1926).

rapid transformation. Market forces conspired to expand and accelerate the garment industry, transforming it from a diffuse cottage industry into a powerful economic force locating in tall loft structures, which were moving north, up the Avenue. The combination of new building technology, immigrant laborers, availability of materials, an abundance of entrepreneurs, supportive industries, and public transportation sparked explosive growth. In the early years of the 20th century, the number of workers employed in New York City's garment trades more than doubled.

This was alarming news to Robert Cooke and the members of the Fifth Avenue Association, which included a variety of businessmen in retail, publishing, real estate, the arts, and a variety of professions. Cooke served as the convener of the Association whose members' livelihoods depended on the success of the Avenue as a retail corridor. Like the march of development east of Cleveland along Euclid Avenue, the northern movement of the garment industry—with its rustic buildings, congested streets, and workers coursing noisily in front of shops and galleries—threatened orderly community development and the preservation of the investments of the members of the Association. They owned or occupied large buildings containing mostly retail, art, professional, and service establishments.

The Fifth Avenue retail corridor owed its own existence to New York City's *laissez faire* attitude toward development. By the end of the 19th century, steel-frame construction made it possible to build sky scrapers—a brand new urban form. Speculators arrived on the Avenue below Central Park (Fifty-ninth Street), and constructed large luxury hotels and department stores in what had been an elegant, largely residential, if somewhat chaotic, neighborhood of low-rise brownstones, mansions, and other buildings. In the absence of land use controls, those stately properties were purchased, demolished, and replaced with imposing retail and commercial structures.

Steel-frame construction also facilitated the building of tall loft buildings, and these structures were perfectly suited to the needs of the rapidly expanding and consolidating garment industry. By 1907, the retail neighborhood was sufficiently threatened by the movement of the garment trade from the

south and into new loft buildings on Fifth Avenue that the Association sought a new regime; some form of public control of development to protect their investment.

Here was their dilemma: public regulation cannot serve private interests, it must accomplish a public objective. In truth, the objective of Cooke's Fifth Avenue Association was to protect its members' investment. They needed a new legal idea. What to do? A clue was provided by *Welch v. Swasey*, a 1907 decision of the U.S. Supreme Court which declared constitutional the division of Boston into two districts, each with a maximum height restriction for buildings.¹⁹ The apparent justification for this district approach to building height regulation was that it controlled population density, reduced congestion, and, thereby, addressed the multiple problems of high-density city living and the chaos that attends unruly and random development, such as that caused by the swarming garment industry, for example.

The *Swasey* case was important because it established that limiting building was within the police power: the authority state governments retained under the Tenth Amendment when they formed the federal union. The police power allows the state legislatures to adopt laws to protect the public health, safety, welfare, and morals of the people. The extent of this power was hotly debated at the turn of the 20th century, and the expansive view of the power contained in the *Swasey* decision buoyed the proponents of building controls. The only other legal authority that could be used to support building regulations is the power of eminent domain, that is, the right of government to condemn private property to serve the public interest. This was an insecure legal base for land use controls to save the retail district for two reasons: the interests at the heart of the Fifth Avenue Association's campaign were private, and the price of compensating owners justly for the lost value associated with building limitations was well beyond the capacity of the city to afford.

As they pushed for the adoption of some form of control on the lower Fifth Avenue garment district, Cooke and his members were benefited by a variety of reform ideas emerging in America at the turn of the 20th century: the City Beautiful

19. See *Welsh*, 79 N.E. 745.

and Garden City movements, and the inspired notion of city planning that was enjoying some success in Europe, notably Germany and Britain.²⁰

German cities were using districts, or zones, to control land development. Configured to sustain existing commercial and residential uses in well-planned cities, zones preserved the status quo and provided a blueprint for new development as cities expanded. German cities were descendents of medieval “municipalities,” and, in the early 1800s, were given discrete legal authority over their own affairs within decentralized states.²¹ They were heirs of a culture of obedience to governmental authority and respect for public service. German cities used extensively their power to purchase land to check speculation and control economic development; several German cities owned more than half of the acreage within their borders.²² Under supportive national programs, they built quantities of housing for their expanding populations. The German Zone System encouraged the mingling of diverse land uses and populations in established districts, rejecting the idea of exclusive use neighborhoods. Zoning was one of an integrated set of tools used by German cities to create livable communities that were the envy of the early city planning advocates in the United States.

The wisdom of transplanting a legal organism from such different soil to the American landscape was questionable, but the Fifth Avenue merchants were desperate. They successfully lobbied for the creation of a study commission charged with examining the prospect of imposing height restrictions on various districts, like Boston did. The first of these commissions was appointed by the Manhattan borough president; it was called the Fifth Avenue Commission and was served by seven commissioners, six of whom were members of the Fifth Avenue Association.²³ In time, the mayor appointed a committee of three borough presidents and charged them with creating a Heights of Buildings Commission composed of some

20. See IUCN ACAD. OF ENVTL. LAW RESEARCH STUDIES, COMPENDIUM OF LAND USE LAWS FOR SUSTAINABLE DEVELOPMENT XV (John Nolon ed., 2006).

21. *Id.* at XX.

22. *Id.* at XXI.

23. SEYMOUR I. TOLL, ZONED AMERICAN 146 (Grossman Publishers 1969).

Association members,²⁴ other real estate experts, and various professionals: largely power brokers. Their mission was to investigate height limits and other controls in the interest of enhancing the value of land and to conserve the value of buildings.

Within six months, this commission reported back. It found that the problems besetting Fifth Avenue were city-wide and that there should be height, setback, and other controls organized by zones, borrowing from the German experience. In 1914, the New York state legislature amended the city's charter to give it the power to zone, based on the police powers given to the state legislature in the state constitution.²⁵ A new commission was then formed: the Commission on Building Districts and Restrictions. Its members were the same cast of characters. The Commission's report was issued in June of 1916 after an extensive "public education" and lobbying campaign led largely by the Fifth Avenue Association. The campaign threatened a boycott of all clothing made by manufactures located within the heart of the Fifth Avenue district, bounded by Thirty-third and Fifty-ninth streets and Third and Seventh avenues, a de facto zone of the private sector's creation. This strategy worked. On July 25, 1916 zoning was adopted by a vote of 15-1, creating the template that was to be emulated by cities and villages throughout the country, including the Village of Euclid.

Here we see the creation of a new legal framework for controlling private land use. Herbert Hoover, then Secretary of Commerce, established the Advisory Committee on City Planning and Zoning in 1921 and appointed a number of thoughtful leaders in the country to serve. These included Fredrick Law Olmstead, a luminous landscape architect who had just concluded a term as chair of the fledgling National Conference on City Planning. Two other former chairs of the Conference also served on the Committee along with other representatives of the legal profession, real estate, and the private sector.

This Committee framed and promulgated two enabling acts for state legislatures to consider, one to authorize local

24. *Id.* at 146-47.

25. *Id.* at 173-74.

governments to adopt zoning, another for them to adopt city wide comprehensive plans. The Committee released a mimeographed version of the *Zoning Primer* on June 18, 1922, a copy of which was reviewed by the drafters of the zoning ordinance adopted by Euclid's village council. Thousands of copies of the Standard Zoning Enabling Act released on September 15, 1922 were distributed throughout the country, along with tens of thousands of copies of the *Zoning Primer*. The Commerce Department reported that, by 1930, thirty-five states had adopted some version of the Standard Zoning Enabling Act, ten had adopted the Standard City Planning Enabling Act, and hundreds of cities and villages had adopted zoning, created planning boards, and zoning boards of appeals, and that thousands of local citizens had been appointed to these new tribunals to help promote and rationalize the development of their communities.

3. The Supreme Court Settles the Matter

When the U.S. Supreme Court finished reviewing *Euclid v. Ambler Realty Co.*, it upheld zoning as constitutional, rejecting all of William Ambler's carefully constructed arguments.²⁶ The Court reasoned that the separation of noxious industrial uses from peaceful residential neighborhoods promoted public safety and that the separation of large-scale multi-family housing from single-family homes promoted public health.²⁷ In justifying its decision, the Court noted that zoning accomplishes the same objective as nuisance law: preventing land owners from using their property to injure that of others. A new law of the land was established—an entire local framework for land use control created in just over a decade—and a new understanding of the rights and limitations of land ownership emerged.

But, what does this have to do with the law of sustainable development, the lessening of poverty and intergenerational equity? Zoning was far from perfect as its many critics have ably demonstrated. It is parochial, exclusionary, frustrates regional planning, was designed to protect existing

26. 272 U.S. 365 (1926).

27. *Id.* at 390-92.

investments in property by the landed members of society, and was all about the present. Voltaire counseled, “Don’t let the perfect be the enemy of the good.” Another wheelbarrow load had been moved; it was now established that governmental power could be used to shape private development and that the U.S. Constitution’s protection of property rights was no barrier.

B. *From Despotism to the Law of the Land*

1. Property Rights

Thirty years after the advent of zoning, I was an eighth grader in Western Nebraska. Our phone number was 54. To reach us, you picked up the receiver, waited for the switchboard operator, had a chat with her about the weather, gave her the number, and waited for an answer. When we got a call, our ring was two shorts and a long. We had a party line: shared with nine other families with distinctive rings (every call had at least a few uninvited listeners). My stepdad refused to answer the phone and seldom spoke, even when the call was for him.

One night we got a call, which I answered. “Dad,” I said, “it’s the neighbor on the south side of our ranch. He wants to talk to you and it sounds important.”

“Ask him what he wants,” he barked.

I did and then reported, “You know that uncontrollable bull of his? It broke down the fence again and is in with our mother cows. He wants you to know that he’ll go into our pasture tomorrow, get him out, and repair the fence.” This was the second time the neighbor’s bull had breached the perimeter of our land and threatened my stepdad’s well organized breeding program. He kept careful records on our cows’ production records and retained in the herd only those cows with the best records. Our income depended on the success of this effort.

“Tell him that if that bull gets into my cows one more time, I’ll neuter the SOB,” he spit out.

Weeks later, it happened again; I fielded the late afternoon call from the neighbor this time too. My stepdad told me to follow him. We got some supplies, jumped in the pickup, and went to the south pasture, leaving a long stream of dust in our

wake as we raced down the country road and onto our land. We saddled two horses, took three ropes, and rode around until we found the poor bull. We roped him, tethered him to the corral fence, and removed the offending body parts, as painlessly as possible. It took a half hour. My stepdad's production testing system was safe: a result of a spontaneous act of self-help, unencumbered by the advice of lawyers.

Through the agency of his errant bull, our neighbor was a trespasser on our land. Although the bull was the property of another, my stepdad didn't hesitate to diminish its value to protect our herd. Did he violate our neighbor's property rights in his animal? Was there a privileged entry here, validating the bull's presence on our land? Fine legal questions, but it didn't matter: our neighbor violated a well-understood convention among ranchers, which we relied on knowing that no summons and complaint would be served against us.

Our right to exclude our neighbor, and his bull, from our land is an inherent, fundamental, and time-honored right of property under our legal system. It had fully matured by 1782, when William Blackstone, one of the earliest commentators on the common law, referred to the right of property as "that sole and despotic dominion which one man claims over the external things of the world, in total exclusion of the right of any other individual in the universe."²⁸ He cited a Latin maxim that illustrated the extent of land ownership under Roman Law: *Cujus est solum, ejus est usque ad coelum et ad inferos*. Roughly translated this means that the owner of the surface owns from the center of the earth to the outermost limits of the atmosphere.

Never mind that a scant few centuries earlier, after the maturation of the Norman reign in England, all land was held of the King, subject to His whim. Those who "owned" the land held as tenants, mere lessees, so to speak, of the King. They even took an oath of loyalty and had to provide knights to fight the King's wars. They could not sell their land, nor could their heirs inherit it. By the date of publication of Blackstone's Commentaries on the Common Law, things had changed. "Despotic dominion" suited the needs and interests of the landed gentry, many of whom were members of Parliament,

28. 2 WILLIAM BLACKSTONE, COMMENTARIES *2.

which passed statutes enlarging their rights and limiting the King's prerogatives.

2. Public Interests

But the seeds of new rights that limit one's despotic dominion were planted early too. Blackstone, in a much less frequently quoted phrase, noted that property rights were to be enjoyed "without any control or diminution, save only by the laws of the land."²⁹ He referred to another Roman Law maxim that limits land use: *Sic utere tuo ut alienum non laedas*—one should use his own property in such a manner as not to injure that of another.

The courts of Nebraska and the other states adopted the principles of British Law to govern private affairs in the new republic. These early, conflicting concepts of property ownership frustrate law students' attempts to understand how competing interests can be resolved and flummox the attempts of absolutists (libertarians and liberals both) to define the extent of, or limits on, land ownership. Confusing as it is, we adhere to these two principles: first, that land rights are extensive, and, second, they can be limited by the interest of the neighbors, who can sue us if we cause a nuisance, and by the interest of society, which can be protected by reasonable laws of the land.

Sic utere . . . cautions landowners to be careful in the exclusive enjoyment of their property. They must not use their land to cause a nuisance, for example, by building a cement plant that spews particulate contamination on nearby farms, or by building a tennis court in a way that floods and erodes the neighbor's parcel.

The results of nuisance suits between neighbors depend on the circumstances of each case. Courts balance the reasonableness and utility of the offending land use with the extent of harm to the offended neighbor. If your new tennis court speeds rain water discharge and causes significant erosion of my vegetable garden, I am likely to win. You could have done that work more carefully, prevented the excessive

29. *Id.* at *138.

flow, and still enjoyed your recreational use. I win. The court will enjoin your use, require you to stop the flow, and award me damages for lost carrots and restoration work. But, what if a company builds a cement plant in a rural area that costs millions, employs hundreds, and deposits particulate contamination on my orchard causing the fruit to drop and, eventually, the trees to die? This is a tougher call. If the court enjoins the cement plant, the investors lose, the employed are jobless, and the area is denied a needed building product for the economy, all in the interest of saving a few apples. Balance that.

When New York's highest court was faced with these precise facts in 1970 in *Boomer v. Atlantic Cement Co.*, it punted.³⁰ In a break with precedent, the justices failed to enjoin an offensive land use that completely destroyed the utility of the neighbors' farming operations. Instead of mandating the closure of the plant, the court awarded damages to the farmers, effectively requiring the cement company to buy them out. The court reasoned that such factories must exist somewhere, this place was reasonable (if not here, where?), and the utility of cement was indisputable.

3. Resolving Tensions

There was no legal framework for the resolution of such a case in 1970. The court realized that a national solution to the issue of air pollution could not be crafted by random nuisance suits between neighbors. Like the problems of climate change today, the issue of interstate air pollution was too big for the existing legal system to handle. Shortly after the *Boomer* case was decided, the federal Congress added the Clean Air Act to the law of the land, beginning an unprecedented fifteen year record of command-and-control legislation.³¹ The Clean Air Act established a permitting system for point sources of air pollution, like smoke stacks. The Act allowed factories to continue to operate, but required new or expanded facilities to secure a government permit, which required air pollution

30. 257 N.E.2d 870 (N.Y. 1970).

31. Clean Air Act of 1970, Pub. L. No. 91-604, 84 Stat. 1676, 1678, 1685 (codified at 42 U.S.C. §§ 7507, 7543 (2000)).

control; this motivated the cement industry and other air polluting businesses to clean up their acts.

The same tension existed between the owners of a pig farm and the residents in and around Champion, Nebraska, a small town (population 65) near our ranch. Nuisance law used to be up to the task of balancing the benefit of pork against the annoyance of pig farms to the residents of sparsely settled rural areas. There were balancing tests that closed down the most offensive piggeries in developing areas, but allowed well-managed operations to continue where the neighbors knew they were living in farm country with its funky smells, slow moving equipment, and noisy livestock. But what happens when the piggery becomes a CAFO, a Concentrated Animal Feeding Operation, with hundreds of tightly penned pigs living under one large roof? These places smell for miles around and produce vast quantities of manure, which is washed out of the pens and into retention ponds, which often reside precariously over valuable groundwater aquifers.

Nuisance law will not force CAFO owners to purchase all the land affected by potential groundwater contamination, nor all the home sites where owners lie awake nights cursing the smell. At the same time, CAFO regulation is at an awkward stage in the maturation of land use regulation. The Environmental Protection Agency (“EPA”) has jurisdiction to regulate some CAFOs under the Clean Water Act.³² In 2008, the EPA issued tepid regulations requiring CAFOs that actually discharge into federal waters to get a discharge permit; which involves adoption of some best manure management practices.³³ This requirement is freighted with ambiguity and confronts practical barriers to its enforcement. What is a federal water? (The case law is confused.) Does a particular plant actually discharge into one? (What’s a discharge?) How is the requirement enforced when a CAFO adopts a nutrient management plan of its own design and claims not to discharge into the federal water? (How can this be proved?)

In response to these difficulties, rural counties in pig

32. Federal Water Pollution Control Act (“CWA”), 33 U.S.C. § 1362(14) (2006).

33. 40 C.F.R. § 122.23 (2009).

country have turned to zoning: establishing districts where certain land uses are allowed and others proscribed or regulated.³⁴ They adopt a comprehensive land use plan, articulate the objective of reducing the adverse impacts of CAFOs, establish zones where they can locate and regulate their operations. Local regulation of CAFO operations might be preempted by EPA regulations under the Clean Water Act and, therefore, might not be within the zoning powers of rural counties. Even the libertarian-leaning residents of Champion, Nebraska find this perplexing and write letters to their congressional representatives seeking relief from the fear and frustration of CAFO living.

The history of land use law in this country follows the shifting calamities of our time. We didn't need a set of positive laws to guide our path to the offending bull and right the wrong. The CAFO that sprung up ten miles to the east of our ranch and thirty years after the bull's undoing is begging for a new legal framework to define rights, duties, and remedies. In the same way, as the public learns more about the consequences of climate change, it anxiously asks whether the law of the land will respond rapidly enough to reduce greenhouse gases—including methane released by pig manure—before we reach a tragic tipping point. The smells that invade homes in Champion, Nebraska are inextricably connected to the gases that are changing our climate and threatening our planet.

C. The Emergence of Climate Change Law

1. Casebooks Without Cases

For development to be sustainable, it must improve, or at least not worsen, environmental conditions. Climate change and its consequences, to be sure, will worsen environmental conditions. Seen in this light, climate change has become a complicating factor in sustainable development, another force that must be reckoned with in the constant tug of war between the economy, equity, and the environment. I don't remember

34. See *e.g.*, *Enter. Partners v. County of Perkins*, 619 N.W.2d 464 (Neb. 2000).

seeing a book on climate change law suitable for law school teaching until the 2008 publication of *Global Climate Change and U.S. Law*.³⁵ In this work, Professor Gerrard notes that his volume is up-to-date as of mid-2006. At over 750 pages, it is evidence that there was a fair amount of law to cover by that time.

Gerrard's book was followed in 2009 by *Climate Change Law: Mitigation and Adaptation*, by four U.S. professors and educators including my Pace Law School colleague Nicholas Robinson.³⁶ It was published by West as part of its American Casebook Series. The authors noted that they found it "both challenging and exciting to offer an early synthesis of the law of climate change."³⁷ Hefty, too, at over 800 pages, the casebook covers U.S. law, but largely in the context of international law and global matters.

LexisNexis published a book, also copyrighted in 2009, entitled *Climate Change and the Law*,³⁸ prepared by three U.S. law professors who claim that "[c]limate change has become the defining environmental legal and policy challenge of the 21st century, as well as one of the most dynamic."³⁹ Outweighing the other books at nearly 1,000 pages, this one starts to cover U.S. law at Chapter Eleven, after over 450 pages about background scientific and policy issues and the international framework of the climate change regime.

The Environmental Law Institute ("ELI"), which serves the needs of practicing environmental lawyers among others, published the *Climate Change Deskbook*, also in 2009.⁴⁰ It is written by a Paul Hastings' partner, Tom Munteer, who acknowledges the help of several members of the firm's Sustainability and Global Climate Change Practice Group. The introduction asserts that the *Deskbook* is one of the first

35. SECTION OF ENV'T, ENERGY AND RES., AM. BAR ASS'N, *GLOBAL CLIMATE CHANGE AND U.S. LAW* (Michael Gerrard ed., 2008).

36. RICHARD G. HILDRETH, DAVID R. HODAS, NICHOLAS A. ROBINSON & JAMES GUSTAVE SPETH, *CLIMATE CHANGE LAW: MITIGATION AND ADAPTATION* (2009).

37. *See id.* at viii.

38. CHRIS WOLD, DAVID HUNTER & MELISSA POWERS, *CLIMATE CHANGE AND THE LAW* (2009).

39. *Id.* at v.

40. TOM MOUNTEER, *CLIMATE CHANGE DESKBOOK* (2009).

“comprehensive assessments of U.S. climate change law and policy.”⁴¹ In her foreword to the Deskbook, ELI’s President, Leslie Carothers describes the ELI’s climate program, which coordinates climate and energy governance. It works, she notes, “to ensure effective implementation of energy and climate laws and policies”⁴² The book and the ELI now see energy law as tightly associated with climate change, as the connections between energy production, transmission, and use and the emission of carbon dioxide become clearer.

All of these books followed closely on the heels of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (“IPCC”),⁴³ which concluded—for the first time—that human activity is “very likely” the cause of global climate change:

Most of the observed increase in global average temperatures since the mid-20th century is *very likely* [i.e. between 90–95% likely] due to the observed increase in anthropogenic GHG [greenhouse gas] concentrations. This is an advance since the TAR’s [Third Assessment Report’s] conclusion that “most of the observed warming over the last 50 years is *likely* [i.e. greater than 66% likely] to have been due to the increase in GHG [greenhouse gas]

41. *Id.*

42. Leslie Carothers, *Foreword* to TOM MOUNTEER, CLIMATE CHANGE DESKBOOK (2009).

43. The Intergovernmental Panel on Climate Change, established by the United Nations Environment Programme (“UNEP”) and the World Meteorological Organization (“WMO”), is a scientific body that “reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change.” Intergovernmental Panel on Climate Change, Organization, <http://www.ipcc.ch/organization/organization.htm> (last visited May 1, 2010). The IPCC is an intergovernmental body that welcomes all UN and WMO member countries. *Id.* It is twenty-one years old. Intergovernmental Panel on Climate Change, History, http://www.ipcc.ch/organization/organization_history.htm (last visited May 1, 2010). There are currently 194 countries represented within the IPCC. Intergovernmental Panel on Climate Change, Structure, http://www.ipcc.ch/organization/organization_structure.htm (last visited May 1, 2010). The IPCC provides reports at regular intervals which immediately become standard works of reference on the issue of climate change. *See id.*

concentrations.⁴⁴

The report further found that influences now extend to other climate aspects, including ocean warming, continental-average temperatures, temperature extremes, and wind patterns.⁴⁵ In conclusion, the report found:

The observed widespread warming of the atmosphere and ocean, together with ice mass loss, support the conclusion that it is *extremely unlikely* [less than 5%] that global climate change of the past 50 years can be explained without external forcing and *very likely* that it is not due to known natural causes alone.⁴⁶

Since the IPCC's Fourth Assessment Report was published, new studies indicate that climate change is more advanced than previously thought and that standards for acceptable levels of CO₂ concentration in the atmosphere—the point at which anthropogenic interference is regarded as dangerous—should be lowered.⁴⁷ The present concentration of CO₂ in the atmosphere is roughly 385 parts per million (“ppm”).⁴⁸ The IPCC suggests that atmospheric CO₂ concentration should not exceed 450 ppm,⁴⁹ a goal that was

44. IPCC SYNTHESIS REPORT, *supra* note 8, at 39.

45. *Id.* at 30, 39-40.

46. *Id.* at 39. See also THE NATIONAL ACADEMIES, UNDERSTANDING AND RESPONDING TO CLIMATE CHANGE 2 (2008), available at http://dels-old.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf (stating that “[m]ost [climate] scientists agree that the [earth’s] warming in recent decades has been caused primarily by human activities that have increased the amount of greenhouse gases in the atmosphere” (emphasis added)).

47. See, e.g., James Hansen et al., *Target Atmospheric CO₂: Where Should Humanity Aim?*, 2 OPEN ATMOSPHERIC SCI. J. 217 (2008) (discussing the need to lower levels of CO₂ to avoid irreversible effects); Susan Solomon et al., *Irreversible Climate Change Due to Carbon Dioxide Emissions*, 106 PROC. NAT’L ACAD. SCI. 1704 (2009) (discussing the potential irreversible effects of climate change).

48. Hansen et al., *supra* note 47, at 218.

49. See IPCC SYNTHESIS REPORT, *supra* note 8, at 67 (“[S]tabiliz[ing] CO₂ concentrations at, for example, 450 ppm could require cumulative emissions over the 21st century to be less than 1800 [1370 to 2200] GtCO₂, which is about 27% less than the 2460 [2310 to 2600] GtCO₂ determined without consideration of carbon cycle feedbacks”). See also ELIZABETH KOLBERT, FIELD

supported by the Copenhagen Accord. However, more recent studies state that the proper level of concentration is closer to 350 ppm, if not lower.⁵⁰ Because CO₂ lingers in the atmosphere for centuries, some scientists believe that some of the consequences of climate change caused by anthropogenic CO₂ emissions, such as polar ice melts, are irreversible.⁵¹ Other scientists state that we have not yet reached a point of no return, although by any measure, we are alarmingly close to that tipping point.⁵²

2. Two Early Decisions

Due to no fault of their authors, the current set of law school texts on climate change law have but a few cases. They contain extensive narrative, discuss relevant case law from the pre-climate change era of environmental law, but offer only a few complete cases. They are published at the inception of a movement in the decisional law in this field; litigants were just beginning to assert justiciable climate change issues as these books were being published. Parties aggrieved by climate change injuries, like law professors, reacted to the IPCC Fourth Assessment Report in 2007 and so filed cases while the professors prepared their law books. The 2009 ELI *Deskbook*,

NOTES FROM A CATASTROPHE 126 (2006) (reporting studies that regard 500 ppm as the proper threshold). Kolbert writes that “this figure has at least as much to do with what appears to be a socially feasible goal as with what has been scientifically demonstrated.” *Id.*

50. Hansen et al., *supra* note 47, at 229.

51. Solomon et al., *supra* note 47, at 1704 (stating that “the physical climate changes that are due to anthropogenic carbon dioxide already in the atmosphere today are expected to be largely irreversible.”).

52. See, e.g., Robert H. Socolow & Stephen W. Pacala, *A Plan to Keep Carbon in Check*, SCI. AM., Sept. 2006; Stephen Pacala & Robert Socolow, *Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies*, SCIENCE, Aug. 2004; Hansen et al., *supra* note 47, at 225–26, 229 (“A point of no return can be avoided, even if the tipping level is temporarily exceeded The greatest danger is continued ignorance and denial, which could make tragic consequences unavoidable.”). See also KOLBERT, *supra* note 49, at 153 (explaining that the goal of the international community is to avoid “dangerous anthropogenic interference” (“DAI”)—the tipping point at which global catastrophes become unavoidable); Press Release, National Oceanic and Atmospheric Administration, Greenhouse Gases Continue to Climb Despite Economic Slump (Apr. 21, 2009), available at http://www.noaa.gov/stories2009/20090421_carbon.html.

for example, mentions *Massachusetts v. EPA*,⁵³ which held that carbon dioxide is a pollutant under federal law, and the *Center for Biological Diversity v. National Highway Transportation Safety Administration*⁵⁴ case, which held that the National Highway Traffic Safety Administration must prepare a revised Environmental Assessment or an Environmental Impact Statement to assess the impact on climate change of its corporate average fuel economy (“CAFE”) standards. The most recent of the available law books, *Climate Change and the Law*, contains four additional climate change cases that are over two pages in length and that were decided since 2000.⁵⁵

In the past year or so, the law has started to move so quickly that all of these recent books are outdated. Just since their publication, numerous reported climate change cases have enlarged and advanced the applicable legal issues involved. A review of these cases, in conjunction with those in the “casebooks,” provides a fascinating study of climate change law moving load-by-load, but in rapid succession.

In *Massachusetts v. EPA*, Justice Stevens’ majority opinion states, “[t]he harms associated with climate change are serious and well recognized.”⁵⁶ It was undisputed in *Massachusetts* that a number of serious, adverse impacts of climate change had already occurred, “including ‘the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of ice on rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years’”⁵⁷ The Court referred to the “strong

53. 549 U.S. 497 (2007).

54. 538 F.3d 1172 (9th Cir. 2008).

55. *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520 (8th Cir. 2003); *California v. Gen. Motors Corp.*, 2007 U.S. Dist. LEXIS 68547 (N.D. Cal. 2007); *Cent. Valley Chrysler Jeep v. Goldstene*, 529 F. Supp. 2d 1151, 1171-89 (E.D. Cal. 2007) (holding that both EPA and California are equally empowered through the Clean Air Act to promulgate regulations that limit the emission of greenhouse gasses, principally carbon dioxide, from motor vehicles); *Nw. Env'tl. Def. Ctr. v. Owens Corning Corp.*, 434 F. Supp. 2d 957, 963-64, 967-68 (D. Or. 2006) (stating that “issues such as global warming and ozone depletion may be of ‘wide public significance’ but they are neither ‘abstract questions’ nor mere ‘generalized grievances.’ An injury is not beyond the reach of the courts simply because it is widespread.”).

56. 549 U.S. at 521.

57. *Id.* (citing NAT’L RESEARCH COUNCIL, CLIMATE CHANGE: AN ANALYSIS OF SOME KEY QUESTIONS 16 (2001)).

consensus” among scientific experts that global warming:

threatens (among other things) a precipitate rise in sea levels by the end of the century, severe and irreversible changes to natural ecosystems, a significant reduction in water storage and winter snowpack in mountainous regions with direct and important economic consequences, and an increase in the spread of disease Rising ocean temperatures may [also] contribute to the ferocity of hurricanes.⁵⁸

The second case cited in the *2009 Deskbook* is *Center for Biological Diversity v. National Highway Transportation Safety Administration*,⁵⁹ which involves the requirements found in the Energy Policy and Conservation Act (“EPCA”). The Act delegates authority to the National Highway Traffic Safety Administration (“NHTSA”) to set “maximum feasible fuel economy standards” for “non-passenger automobiles.”⁶⁰ NHTSA issued a final rule that would have set CAFE standards for the model years 2008-2010 at 22.5-23.5 miles per gallon for “light trucks,” which by statutory definition include personal vehicles such as sport utility vehicles, minivans, and pickup trucks. Eleven states, the District of Columbia, the City of New York and four public interest organizations brought suit arguing that this standard, which seemed too low to them, was arbitrary, capricious and contrary to EPCA.⁶¹

The plaintiffs argued that NHTSA’s calculations were in error because it used a cost-benefit analysis that “assign[ed] zero value to the benefit of carbon dioxide emissions reduction.”⁶² The Ninth Circuit agreed, observing that passenger cars and light trucks produce about five percent of the world’s greenhouse gases, primarily carbon dioxide, and that these gasses have caused climate impacts and will cause

58. *Id.* at 521-22 (citations and quotations omitted).

59. 538 F.3d 1172 (9th Cir. 2008).

60. Energy Policy and Conservation Act of 1975, Pub. L. No. 94-163, 89 Stat. 871.

61. *Ctr. for Biological Diversity*, 538 F.3d 1172.

62. *Id.* at 1181.

even more severe damage; this includes the melting of Arctic sea ice, the risk of extinction of a vast number of animal species, the spread of infectious and respiratory diseases, and substantial sea level rise.⁶³ The court also noted that “[s]everal studies also show that climate change may be non-linear, meaning that there are positive feedback mechanisms that may push global warming past a dangerous threshold (the ‘tipping point’).”⁶⁴

3. Environmental Impact Review Impacted

For several decades, federal and state environmental review statutes have required governmental entities and agencies to consider the potential impacts of their actions before proceeding, and given citizens the right to sue to enforce the procedures established to ensure such consideration. These statutes now provide a method for all kinds of litigants to insist that governmental agencies fully consider the ways climate change may be implicated by their actions.

In *Save the Plastic Bag Coalition v. City of Manhattan Beach*,⁶⁵ a case brought under the California Environmental Quality Act (“CEQA”), an association of plastic bag manufacturers successfully challenged a municipality’s failure to perform a thorough environmental impact review before enacting an ordinance that banned retailers from providing plastic bags to customers. The association showed, among other things, that the ordinance might increase the use of paper bags, which could result in increased greenhouse gas emissions and more demand for non-renewable energy. The California Court of Appeals agreed stating:

We do not resolve the question of the ultimate merits of whether the plastic bag distribution ban should be implemented. All we are saying is that an environmental impact report must be prepared given that it can be fairly argued based on substantial evidence in the record that the

63. *Id.* at 1219-21.

64. *Id.*

65. 105 Cal. Rptr. 3d 41 (Ct. App. 2010).

ordinance may have a significant environmental impact.⁶⁶

In *Riverside Citizens for Smart Growth v. City of Riverside*,⁶⁷ on appeal to the fourth appellate district in California, the trial court denied the appellant's petition for a writ of mandamus. The appellant citizens' group is arguing that the city violated its obligations under CEQA by approving a new large Wal-mart store without including in its environmental impact report any consideration of the project's greenhouse gas emissions, cumulative effect on climate change, or energy consumption issues.⁶⁸ The appellant specifically objects to the municipality's acceptance of a letter from the lawyer for Wal-mart arguing that the environmental impact report did not need to consider greenhouse gas issues because there is no "recognized authority or means of evaluating the effects of a specific project' on global warming and climate change."⁶⁹

The absence of any established methods for evaluating the effects of specific emissions of greenhouse gasses is a recurring factor in environmental impact review cases. In *Minnesota Center for Environmental Advocacy v. Holsten*,⁷⁰ for example, the Court of Appeals of Minnesota upheld the adequacy of an Environmental Impact Statement ("EIS") relating to the reactivation of a taconite mine and tailings basin that had been out of use for more than twenty years. The court determined that in the absence of greater regulatory guidance, it was sufficient that the Minnesota Department of Natural Resources ("DNR") had acknowledged that the project would add greenhouse gases to the environment; that greenhouse gases cause climate change; and that climate change has many adverse impacts, some of which were described in the EIS. The court accepted as reasonable the DNR's conclusion that "[t]here currently are not reliable analytical and modeling tools to evaluate the incremental impact of discrete emissions, such as

66. *Id.* at 43.

67. No. E047587, 2009 WL1454811 (Cal. Ct. App. May 11, 2009) (Appellant's opening brief).

68. *Id.*

69. *See id.* at *5.

70. No. A08-2171, 2009 WL 2998037 (Minn. Ct. App. Sept. 22, 2009).

those from the . . . project, on global and regional climate or on any cascading incremental impacts to natural ecosystems and human economic systems in Minnesota.”⁷¹ Thus it concluded: “Given the uncertainty in directly connecting the emissions from an individual facility to the environmental consequences of climate change, it would not be possible to properly and fairly evaluate these potential incremental consequences in the EIS.”⁷²

In *Laidlaw Energy and Environmental, Inc v. Town of Ellicottville*,⁷³ the petitioner challenged the Ellicottville Planning Board’s denial of its application for site plan approval of a cogeneration plant that would use wood chips as a fuel source. The site previously housed a cogeneration plant that was fueled by natural gas, but its operations had been suspended. After reviewing a draft EIS prepared by the applicant pursuant to the New York State Environmental Quality Review Act, the planning board found, among other things, that “serious increases in harmful emissions” from the [proposed] plant would result in an “unacceptable adverse impact.”⁷⁴

The board’s analysis in its Statement of Findings and Decision is quite sophisticated. The board understood that wood burning emits more CO₂ than other fuels. It allowed that this impact could be mitigated by planting new trees to sequester the CO₂ that would be produced by the proposed plant.⁷⁵ But Laidlaw flatly refused to plant any trees, and the board denied its application, for this and numerous other well-explained reasons.⁷⁶ The intermediate appellate court in New York refused to reverse the denial of the petitioner’s application because the record showed “that the Board took the requisite hard look at the evidence and made a reasoned

71. *Id.* at *4.

72. *Id.*

73. 873 N.Y.S.2d 814 (App. Div. 2009).

74. *Id.* at 815 (internal quotations omitted).

75. See Town of Ellicottville, Statement of Findings and Decision, Laidlaw Energy Group Inc., Biomass CoGeneration and Lumber Drying Kilns Applications, *available at* [http://www.leadfreeordie.com/PDFs/Laidlaw/Findings\[1\].pdf](http://www.leadfreeordie.com/PDFs/Laidlaw/Findings[1].pdf).

76. See *id.* at 26-28; see also *id. passim*.

elaboration of the basis for its determination.”⁷⁷

4. A Revitalized Nuisance Doctrine

Connecticut v. American Electric Power Co.,⁷⁸ and *Native Village of Kivalina v. ExxonMobil*⁷⁹ are two novel federal cases based on public nuisance and negligence principles brought against industrial businesses responsible for significant greenhouse gas emissions. The issues raised in these cases have received different treatment at the trial and appellate court levels.

In *Connecticut*, the Second Circuit reversed the Southern District of New York and allowed two groups of plaintiffs, one consisting of eight States and New York City, and the other of three land trusts “with legally recognized missions to preserve ecologically sensitive land areas,”⁸⁰ to prosecute federal public nuisance claims for equitable abatement of the greenhouse gases emitted by six big electric power companies. The state plaintiffs claimed to represent the interests of more than seventy-seven million people; they alleged that the defendants produced “approximately one quarter of the U.S. electric power sector’s carbon dioxide emissions.”⁸¹ Both groups of plaintiffs sought to limit and then reduce those emissions by certain amounts over a decade or so.

The Court of Appeals held that all of the plaintiffs had standing and that they stated cognizable claims under the federal common law of nuisance. The Second Circuit’s decision gives the plaintiffs the right to prove their allegations and persuade the District Court that there is a remedy that it can and should fashion to correct the allegedly unreasonable volume of defendants’ emission. The decision rejects the argument that existing federal statutes and regulations relating to greenhouse gas emissions are extensive enough to “displace” the common law.⁸²

77. 873 N.Y.S.2d at 815.

78. 582 F.3d 309 (2d Cir. 2009).

79. 663 F.Supp.2d 863 (N.D. Cal. 2009) (*appeal docketed*, No. 09-17490 (9th Cir. 2009)).

80. 582 F.3d at 368.

81. *Id.* at 316.

82. *See id.* at 387. *See generally id.* at 371-87.

In *Native Village of Kivalina v. ExxonMobil*,⁸³ the governing bodies of an Alaskan Inupiate village sought damages from twenty-four large greenhouse gas emitters claiming that the diminishment of the arctic sea ice, allegedly because of global warming, threatens the destruction of their island community. The complaint sought damages under the federal common law of public nuisance, and under state law for private and public nuisance, civil conspiracy, and concert of action. Like the district court in *Connecticut*, the Northern District of California dismissed Kivalina's public nuisance claim as presenting a political question, citing the lack of "judicially discoverable and manageable standards" available to apply to the case, and the need for an "initial policy determination of a kind clearly for nonjudicial discretion."⁸⁴ The opinion explains that the fact that plaintiffs' were not seeking injunctive relief would not relieve the court of the unmanageable duty of balancing the social utility of defendants' conduct with the harm it inflicts.⁸⁵

The court wrote, "by pressing this lawsuit, Plaintiffs are in effect asking this Court to make a political judgment that the two dozen Defendants named in this action should be the ones held responsible for damaging Kivalina allegedly because 'they are responsible for more of the problem than anyone else in the nation . . .'"⁸⁶ The court noted that, "even if that were true, plaintiffs ignore that the allocation of fault for global warming is a matter appropriately left for determination by the executive or legislative branch in the first instance."⁸⁷

One can sense in these new climate change cases the legal machinery gearing up to define rights and duties in an era dominated by climate change as a key factor in the equation of sustainable development. One load at a time, these cases are moving the law to a new location where further construction of the legal system can proceed.

II. Keeping Pace

83. 663 F. Supp. 2d 863 (N.D. Cal. 2009).

84. *Id.* at 872.

85. *See id.*

86. *Id.* at 877 (internal citation omitted).

87. *Id.*

I became a professor at Pace University School of Law in 1988, the year the Intergovernmental Panel on Climate Change was created. It occurred to me then, somewhat dimly, that the law was an effective means for advancing sustainable development, which includes managing climate change. From reading *Our Common Future*, which was released the year before, I suspected that our legal system was about to be tested; the optimistic spirit of the Brundtland Commission's Report suggested, however, that it would be up to the challenge.⁸⁸ Its prognosis implied that the law is a living and evolving system, which seemed an important lesson for law students to learn. I began this investigation of how the law changes where the students begin, with the first year Property course.

A. *Teaching Property: First Impressions*

I organized my Property syllabus to examine the ownership and use of natural resources during the first week of class. We begin, classically, with *Pierson v. Post*,⁸⁹ which holds that actual occupancy, or capture, determines the ownership of wild animals. The case demonstrates what Karl Llewellyn describes as the "operating method" of judges who decide common law cases. The students learn that judges are trained to look for and apply precedents and, where new issues arise, to be guided by notions of justice on the case and congruency between social and legal norms.⁹⁰

88. See OUR COMMON FUTURE, *supra* note 1.

89. 3 Cai. 175 (N.Y. Sup. Ct. 1805).

90. See Paul Gewirtz, *Introduction* to KARL LLEWELYN, THE CASE LAW SYSTEM IN AMERICA (Paul Gewirtz ed., The Univ. of Chicago Press 1989). Llewellyn believed that a legal rule "functions not as a closed space within which one remains, but rather as a bough whose branches are growing; in short, as a guideline and not as a starting premise." *Id.* at xix. Churchill concurs when he writes, "In the course of time the Common Law changed If a judge could be shown that a custom or something like it had been recognized and acted upon in an earlier and similar case he would be more ready, if it accorded with his sense of what was just and with the current feelings of the community, to follow it in the dispute before him." 1 WINSTON CHURCHILL, A HISTORY OF THE ENGLISH SPEAKING PEOPLES 224-25 (Dorset Press 1956).

Students learn about the mystifying movement of legal principles from one context to another when we read the other cases assigned during the first two classes. In *Hammonds v. Central Kentucky Natural Gas Co.*, the court applies the law of capture to determine the ownership of underground gas, whose character, like Pierson's fox, is "fugitive and wandering."⁹¹ We then turn to *Anderson v. Beech Aircraft Corporation* where Beech is found not to have trespassed against Anderson by injecting gas under its ground, which found its way into caverns under Anderson's land.⁹² If one owns a wild animal that escapes, title is lost in that moment. The same principle applies, we learn, to the subterranean movement of gas. Beech lost the ownership of its gas when it escaped from its premises. Anderson loses the trespass case, but gains access to the gas, which it pumped out and sold to its delight and profit. The court in *Anderson* cites *Hammonds* as persuasive authority, and the students learn about the vertical reach of land ownership which, *rationae soli*,⁹³ brings with it constructive possession of natural resources on, over, and under the surface: *cujus est solum, ejus est usque ad coelum ad infernos*, again.⁹⁴

Society may not care as much about foxes in the modern era, but how water rights are determined is a critical issue. The first week of property ends with an examination of groundwater and surface water rights in two illustrative cases. The movement of ground water law from the ancient English absolute rule to the correlative rights doctrine in Ohio in the 20th century is illustrated by *Cline v. American Aggregates Corporation*.⁹⁵ The Supreme Court of Ohio notes that the common law "recognizes no correlative rights with respect to ground water between adjoining landowners."⁹⁶ When the common law rule originated, the court writes, the movement of ground water was "mysterious and occult" and "that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would be

91. 75 S.W.2d 204, 205 (Ky. Ct. App. 1934).

92. 699 P.2d 1023 (Kan. 1985).

93. By reason of the ownership of the soil.

94. See 2 BLACKSTONE, *supra*, note 28, at *2.

95. 474 N.E. 2d 324 (Ohio 1984).

96. *Id.* at 325

therefore, practically impossible.”⁹⁷ In overturning the age-old absolute rights doctrine in Ohio, the court noted the “advances in the understanding of subsurface waters since the early 1800’s.”⁹⁸ As science evolves, so does the law.

In *Adirondack League Club, Inc. v. Sierra Club*, New York’s highest court updates common law tests that determine the navigability of surface waters.⁹⁹ Navigability, at common law, was determined by the capacity of a river to be used in commerce, especially to float logs to market. The court updates that approach by examining the recreational use of the South Branch of the Moose River to determine navigability, which in turn determines whether the land owned by the Club is subject to the navigational servitude that is “owned” by the state under the public trust doctrine. The court notes how drastically things have changed: “Once one of the five busiest rivers in New York for the transport of logs, it appears that the South Branch has not again been used for that purpose since 1948, and the possibility of such use in the future is unlikely. Today logs are transported by truck.”¹⁰⁰

As a corollary to adopting the recreational use test, the *Adirondack* court, in dicta, adds this flourish: “the [public] right to navigate carries with it the incidental privilege to make use, when absolutely necessary, of the bed and banks, including the right to portage on riparian lands,” which otherwise would be a clear trespass on the land.¹⁰¹ The court takes notice of how fundamentally the use of rivers and streams has changed—how they are now valued for “historic,

97. *Id.* at 326 (citing *Frazier v. Brown*, 12 Ohio St. 294, 311 (1861)). The concurrence in *Cline* writes that:

[t]he restatement standard preserves the general rule of non liability, the privilege to use the water beneath one’s land, and it also recognizes the exception when there is usually enough water for all users but one landowner removes an excess to the detriment of others . . . the adopted rule will justly meet the changing needs of the users of water.

Id. at 328.

98. *Id.* at 326.

99. 706 N.E.2d 1192 (N.Y. 1998).

100. *Id.* at 1195.

101. *Id.* at 1197.

ecological, and recreational values.”¹⁰² Pierson’s fox appears again by analogy. The Sierra Club, as proxy for the public, has the right to take advantage of natural resources, such as surface waters, that are not subject to private ownership.

By the end of the first week of Property, the inherent fluidity of the law, and how it runs with the currents of society, is embedded in my students’ understanding of their future, ever-changing mistress. At the end of the Property course, they learn that the elaborate estate system and the property rights that protect land ownership are subject to land use regulation. They examine the role of state and local governments in adopting use regulations and reviewing and approving development projects; they learn that communities are divided into zones that can be used creatively to shape human settlements: a principal predicate of sustainable development. This prepares them for a course of study that integrates our school’s concentrations in environmental, real estate, energy, climate change, land use, and sustainable development law.

B. *Teaching Land Use and Sustainable Development Law*

1. The Curriculum and the Casebook

The introductory upper-division class on Land Use and Sustainable Development Law at Pace Law School begins a course of study that includes two advanced land use and sustainable development law seminars, a capstone course on the lawyer’s role in sustainable development, a seminar on resolving environmental interest disputes, and a clinic that supervises student work in the cities that our Land Use Law Center assists. The introductory course uses a casebook that I co-author with my Albany Law School colleague, Patricia Salkin. In the Preface to the seventh edition, we note that our casebook emerged, in mimeograph form, in 1954 and has undergone a major revision every half decade since.¹⁰³

We explain that each new edition was necessitated by the

102. *Id.* at 1195.

103. JOHN R. NOLON, PATRICIA E. SALKIN & MORTON GITELMAN, *LAND USE AND COMMUNITY DEVELOPMENT: CASES AND MATERIALS* (7th ed. 2003).

dramatic changes in American land use and the law that guides it. Twenty million Americans moved to the suburbs between 1950 and 1960,¹⁰⁴ and conversion of land to urban use increased consistently, from 15 million acres per year in 1945 to 60 million acres in 2000,¹⁰⁵ occurring primarily in areas dedicated to farming, ranching, or forestry.¹⁰⁶ Nearly 2,250 of the 3,000 counties in the contiguous United States suffered losses of 10 percent or more of their farmland after 1950.¹⁰⁷ The catalysts for this immense movement of people included the availability of low cost mortgages, highway construction, and building technology improvements.¹⁰⁸ Moreover, these enticements lowered average acre population densities per acre and led to sprawling development.¹⁰⁹ As a result, growth in land use outpaced population growth.¹¹⁰ For example, between 1950 and 1990, St. Louis witnessed a 355% increase in developed land during a time when its population increased by thirty-five percent.¹¹¹ Similarly, the Chesapeake Bay watershed population increased by fifty percent from 1950 to 1980, while the Bay's land development increased by 180% in the same period.¹¹² Deteriorated and impoverished cities saw many of their wealthy residents and businesses move to nearby suburbs,¹¹³ leading cities to become "a place from which men turn."¹¹⁴

Each of these changes was geographic in nature, causing dramatic alterations in the physical landscape and the places where our population lives and works.¹¹⁵ These changes implicate land use law; with each economic and demographic shift, the law of the land was amended to accommodate changing conditions.¹¹⁶

104. *Id.* at v.

105. *Id.*

106. *Id.*

107. *Id.*

108. *Id.* at v–vi.

109. *Id.* at vi.

110. *Id.* at vi.

111. *Id.*

112. *Id.*

113. *Id.*

114. *Berman v. Parker*, 348 U.S. 26, 33 (1954).

115. NOLON, SALKIN & GITELMAN, *supra* note 103, at vi.

116. *Id.*

In our casebook, we point out that during the lifetimes of our students our country's population will increase by over 100 million and that, by mid-century, over two-thirds of the development on the ground will have been built between now and then. This demonstrates that how the law shapes human settlements is a critical concern, and it must be done sustainably.¹¹⁷

The eighth edition of our casebook carries the title: Land Use and Sustainable Development Law; it memorializes the kinship between, if not the merger of, land use and sustainable development as a subject of legal study and practice. Among the topics the casebook has contained since its sixth edition are smart growth, affordable housing, and local environmental law where the capacity of the law to evolve to meet the changing needs of society is evident. The eighth edition adds a chapter on sustainable buildings where legal practices and principles are evolving with dazzling rapidity.

This tendency of the law to evolve to meet the changing needs of society is explored, as well, in the context of affordable housing, urban revitalization, smart growth, and lately, sustainable development. This analysis begins with the sudden advent and rapid spread of zoning itself in the early decades of the 20th century. Students reflect on how change in society happens and how the law can be an instrument for needed change. Some exposure to theories of diffusion of innovations, reflexive law, and complexity theory helps them understand the interdisciplinary dimensions of the law and its practical application. Meanwhile, they have opportunities to study and intern at the Land Use Law Center, where all these legal trends are explored on the ground.

2. Well Grounded, Sustainable Development, and the Land Use Law Center

I founded the Land Use Law Center in 1993. Shortly thereafter, President Clinton's Council on Sustainable Development asked us to conduct a study on the sustainability of land development in the Hudson River Valley, one of

117. This trend and the relationship between human settlement patterns and climate change are discussed *infra* at notes 161-65.

America's most dramatic landscapes—a worthy laboratory easily accessible to our students and staff. The results of our study indicated that the subdivision of the land into single-family home tracts, if continued at its present rate, would reduce the open space in the Valley from seventy percent to thirty percent within fifty years. The projected pattern was not a happy fate for the landscape that inspired the Hudson River school of painters and that leaves tourists slack-jawed by its natural diversity and beauty.

Recognizing that this land use pattern was not sustainable and that our legal system places control over land use in the hands of local officials, the Land Use Law Center, with help from Clinton's Council and Congress, created an intense four-day training program for local land use leaders. It has now trained leaders from over eighty percent of the 256 towns, villages, and cities in the Valley.

3. The Land Use Leadership Alliance Training Program (“LULA”)

The program, known as the Local Land Use Leadership Alliance Training Program, has expanded into the Finger Lakes Region, the Delaware River watershed, including Pennsylvania, the Hudson Highlands, including New Jersey, several key watersheds in Connecticut and, even, into the Wasatch Mountain Range in Utah. The first class of local leaders was graduated in 1996. By the end of 2009, the Center had conducted fifty of these four-day training programs, graduating over 1,750 leaders from communities with widely different land use problems. Our curriculum focuses on sustainable development, fair and affordable housing, compact, mixed-use development, transit oriented development, agricultural land protection, intermunicipal watershed planning, energy conservation in buildings, and neighborhood revitalization: all using existing local land use law authority.

Our work with local land use leaders has shaped the Center's programs. When graduates from the village and town of Warwick wanted to team up to direct development from fertile agricultural soils in the town to the village center, we learned to conduct strategic workshops and to turn them into mediation moments; the result was an award winning

intermunicipal compact that lowered densities in the town and increased densities in the village using novel land use techniques. Successful case studies like these cropped up after each LULA class graduated, and the need to know about these successes led to the publication of *Gaining Ground*, the Center's electronic newsletter. As graduates successfully amended their local land use regulations, we created the *Gaining Ground Information Database*; our students abstracted each of these laws and placed initially some 200 samples on the site for other graduates and future trainees to study. By the end of 2009, there were over 2500 laws on the database.¹¹⁸ We provide "sample" laws rather than "model" laws knowing that communities differ immensely and that local leaders want to adapt legal standards to their own local conditions. We published a small book on this new technology entitled *Gaining Ground Information Database: A Report on a New Internet Research Library of Innovative Land Use Laws, Regulations, and Practices*.¹¹⁹

The curriculum of the training program includes in-depth exploration of two prime topics: first, the many strategies localities may employ to achieve sustainable land use patterns; second, consensus-based decision-making techniques that trained leaders can use to effect change responsive to unique local circumstances. Early in this process, we wrote an encyclopedia of New York land use law as a handbook for local land use leaders and their attorneys entitled: *Well Grounded: Using Local Land Use Authority to Achieve Smart Growth*.¹²⁰ The term "well grounded" is a hedge. It can be read to reflect on how mired down in parochial control land use law is or how local land use authority, in the hands of well trained leaders, can be used to achieve sustainable development. *Well Grounded* covers over seventy-five separate land use topics. Most of those sections are based on the results of student work

118. See *Gaining Ground Information Database*, <http://www.landuse.law.pace.edu> (last visited May 1, 2010).

119. *GAINING GROUND INFORMATION DATABASE: A REPORT ON A NEW INTERNET RESEARCH LIBRARY OF INNOVATIVE LAND USE LAWS, REGULATIONS, AND PRACTICES* (John R Nolon, Jessica A. Bacher & Susan Moritz eds., Yale F&ES Publication Series 2004).

120. JOHN R. NOLON, *WELL GROUNDED: USING LOCAL LAND USE AUTHORITY TO ACHIEVE SMART GROWTH* (2001).

in land use classes and seminars offered at Pace or through their work as interns for the Land Use Law Center.

4. The Advent of Local Environmental Law

Our students respond to the legal problems and questions that our trained leaders experience and raise. One of the persistent questions we encountered was “what can we do to reduce the disappearance of open space and to protect our local environmental resources.” While looking into this issue in 1999, a first-year intern working with the Land Use Law Center came to me with a question. “Professor”, he said, “don’t you think this law that I found is a local environmental law.” He knew that environmental laws are predominately federal. Congress passes them using its authority under the Interstate Commerce Clause. Land use laws are local; they are adopted by local legislatures—town boards, city councils, or village boards of trustees.

“Take a look,” he said. “This seems like something new.” I did and realized that he had found something that was not then well understood, something mostly absent from the legal literature. It was a local law that was passed for the sole purpose of protecting an environmental asset. Although this type of local legislation emerged, tentatively, over fifty years ago, there was little use of this authority and, when it was exercised, it was seldom used primarily to protect environmental values. Adopting laws for environmental protection is not what local governments historically had done in their role as land use regulators. They adopt comprehensive land use plans and zoning ordinances, and set up planning boards to review and approve applications for developments of residential, industrial, or commercial projects. This is about locating places for people to work and live, and the supportive infrastructure. It is mostly about engineering and architecture, and a bit about public health. We look to Congress to protect endangered species and their habitats, to shield wetlands from development impacts, and to prevent and punish air and water pollution.

This intern was one of a team of students that year who were animated by this discovery and spent hours looking for additional environmental laws adopted by local governments in

numerous states. They prepared a 175 page compendium of these new legal creatures, including how they protect local habitats, species, wetlands, ground and surface water in parallel with federal law but, in some cases, more aggressively. I believe that their document was the first of its kind; it contained evidence of the advent of a new field of study and practice: local environmental law. Based on this student initiative, we hosted a symposium of a dozen land use and environmental law scholars who delivered papers on the topic of local environmental law. We published their work in 2003 through the Environmental Law Institute (“ELI”) under the title *New Ground: The Advent of Local Environmental Law*.¹²¹ A companion book, *Open Ground: Effective Local Strategies for Protecting Natural Resources* was published that same year by the ELI.¹²² It contained a selection of sample local environmental laws, each containing alternative provisions selected from other exemplary samples by our students. Local leaders can use this menu of sample laws to create a comprehensive local framework for protecting every environmental feature and function in their communities.

Our casebook on *Land Use and Sustainable Development Law* includes nearly two dozen cases that trace the evolution of local environmental protection, from narrowly-focused drinking water standards to broad-based critical environmental area protection regimes. This section is studied with interest by Pace land use law students, many of whom are attracted to the school because of the depth of the environmental law curriculum. They are surprised to learn that much can be done to preserve wetlands, watersheds, species and their habitats, water quality, and other natural resources through local land use regulations. They also study how the law changed at the local level to respond to the same environmental threats that motivated Congress to adopt federal environmental protections.¹²³

The local environmental law section in the casebook begins

121. JOHN R. NOLON, *NEW GROUND: THE ADVENT OF LOCAL ENVIRONMENTAL LAW* (2003).

122. JOHN R. NOLON, *OPEN GROUND: EFFECTIVE LOCAL STRATEGIES FOR PROTECTING NATURAL RESOURCES* (2003).

123. *Silent Spring* was read by local officials too. See CARSON, *supra* note 10.

with a 1955 case, *DeMars v. Zoning Commission of Town of Bolton*.¹²⁴ In *DeMars*, the court considered whether the local zoning commission acted arbitrarily, illegally, or abused its discretion in amending its zoning to increase the minimum lot area requirements in a substantial portion of the town.¹²⁵ The commission cited an environmental reason—its concern over the effect of sewage disposal from septic systems on small lots on the town’s drinking water supply. The court found a reasonable relationship between lot size, sewage disposal, and potential contamination of a local lake, groundwater, and drinking water, which it understood were all connected. This was an anthropocentric issue, to be sure; nevertheless, an environmental resource was protected as a direct result of the amendment of a local land use law.

The casebook also examines a cluster of cases from the early 1970s. In *Steel Hill Dev., Inc. v. Town of Sanbornton*, the court noted that it, “like other federal and state courts, throughout the country, finds itself caught up in the environmental revolution.”¹²⁶ The same year, in *Potomac Sand & Gravel Co. v. Governor of Maryland*, Maryland’s high court wrote, “[t]he current trend is for courts to consider the preservation of natural resources as a valid exercise of police powers.”¹²⁷

In 1972, the Supreme Court of Wisconsin sustained local protection of wetlands in *Just v. Marinette County*:

Swamps and wetlands were once considered wasteland, undesirable, and not picturesque. But as the people became more sophisticated, an appreciation was acquired that swamps and wetlands serve a vital role in nature, are part of the balance of nature and are essential to the purity of the water in our lakes and streams. Swamps and wetlands are a necessary part of the ecological creation and now, even to the uninitiated, possess their own beauty in nature .

124. 115 A.2d 653 (Conn. 1955).

125. *Id.*

126. 469 F.2d 956, 959 (1st Cir. 1972).

127. 293 A.2d 241, 249 (Md. 1972).

. . . The changing of wetlands and swamps to the damage of the general public by upsetting the natural environment and the natural relationship is not a reasonable use of that land which is protected from police power regulation.¹²⁸

Five years later, the protection of a major source of drinking water was at issue in *Moviematic Industrial Corporation v. Board of County Commissioners*.¹²⁹ The plaintiff had purchased undeveloped industrially-zoned property that was located over a critical groundwater aquifer in Dade County, Florida. The county commission subsequently placed a building moratorium on a large area, including plaintiff's property, to give it time to study how to protect "the fresh water supply and the [area's] natural ecosystems."¹³⁰ Following the study, the plaintiff's property was rezoned for large-lot single-family development. Its previously approved special permit for business airport uses was rescinded. Plaintiff brought suit, claiming that the rezoning was invalid since it bore "no reasonable relationship to the public health, safety, morals and welfare."¹³¹ The court disagreed, holding that "preservation of an adequate drinking water supply and ecological system" are "legitimate objectives of zoning resolutions and ordinances" ¹³²

By the end of the century, many local governments had adopted wetlands regulations that were more restrictive than federal and state wetlands laws. The Town of Barnstable,

128. 201 N.W.2d 761, 768 (Wis. 1972) (emphasis added).

129. 349 So. 2d 667, 668 (Fla. Dist. Ct. App. 1977). Note that today the court here would consider whether a substantive due process violation existed under *Lingle v. Chevron*, 544 U.S. 528 (2005), rather than regulatory taking, since the amended zoning allowed one home per five acres, undercutting the modern total takings claim.

130. 349 So. 2d at 668.

131. *Id.* at 668-69.

132. *Id.* at 669. See also *Graham v. Estuary Props., Inc.*, 399 So. 2d 1374 (Fla. 1981) (affirmed in part, reversed in part, and remanded with instructions) (holding that: the proposed development would cause pollution in contiguous bays; the county commission had authority to demand that the proposed development be halved; and that the commission erred by failing to point out development proposal changes that would have enabled the developer to obtain a permit).

Massachusetts, for example, “enacted a wetlands protection bylaw in order to regulate work in and around wetlands more strictly than does the State’s wetlands protection act.”¹³³ In Massachusetts, state law protects wetlands and local commissions are authorized to issue or deny permits for certain development activities affecting wetlands resources.¹³⁴ In *Fafard v. Conservation Commission of Barnstable*, land owners sought to build a pier on the Eel River, but were denied permission by the local commission. Plaintiffs claimed the commission’s regulatory action was *ultra vires* and that it was preempted by state law. The court held that the state and local regulations were compatible and both agencies had co-terminous jurisdiction over the matter. The plaintiffs were not permitted to construct their pier.¹³⁵

The tendency of courts in many states to construe local land use power broadly, evident in *Fafard*, is seen again in *Danziger v. Conservation Comm’n of Town of Newtown*.¹³⁶ Here the town conservation commission amended its inland wetlands and watercourse regulations, adding additional definitions and regulated activities. Plaintiffs, who owned land in town wetlands areas, challenged the amendment as a regulatory taking and *ultra vires*. The court upheld the amended regulation, stating:

The inland wetlands and watercourses . . . are an indispensable and irreplaceable but fragile natural resource . . . The preservation and protection of the wetlands and watercourses from random, unnecessary, undesirable and unregulated uses, disturbance or destruction is in the public interest and is essential to the health, welfare and safety of the citizens of the state.¹³⁷

133. *Fafard v. Conservation Comm’n of Barnstable*, 733 N.E.2d 66, 69 (Mass. 2000).

134. *Id.*

135. *Id.* at 75.

136. No. CV990337403S, 2001 WL 236758, at *1 (Conn. Super. Ct. Feb. 20, 2001).

137. *Id.* at *3.

By the time the students finish the casebook's section on local environmental law, the diverse types of resources such laws protect impress them. In addition to groundwater and wetlands, they learn that such laws now protect steep slopes and their habitats, scenic views, watersheds, flood plains, individual trees, large forests, and a range of surface waters, including vernal pools and the spotted salamanders that they harbor.¹³⁸

5. The Surprising Origins of Smart Growth

The Town of Ramapo is located just across the Hudson River, twenty miles from our law school. In the late 1960s, it adopted another form of legal protection to control the rush of development north from New York City. In 1972, New York Court of Appeals upheld what amounted to an eighteen year plan to gradually develop the town as the locality could afford to provide supportive infrastructure: such as water, sewer, schools, and roads.¹³⁹ This concurrency requirement was wholly new at the time: an invention of a local government in crisis.¹⁴⁰ This local law, and the seminal case that upheld it, helped give rise to the concept of growth management, a predecessor of the smart growth movement.

On the 30th anniversary of the *Golden v. Ramapo* decision, we invited the distinguished professor, scholar, and practitioner, Robert H. Freilich, to our law school to participate in a conference on the origins of smart growth in this otherwise undistinguished suburban community where he, to everyone's surprise, served as young town attorney after graduating from Yale Law School. With Professor Freilich's help, we secured the participation of the former town supervisor, planner, councilmen, and other local leaders who contributed to Ramapo's growth management plan. We also invited several other distinguished land use law professors to deliver papers on Ramapo's legacy. The result was a symposium edition of

138. See JOHN R. NOLON, *OPEN GROUND: EFFECTIVE LOCAL STRATEGIES FOR PROTECTING NATURAL RESOURCES* (2003).

139. *Golden v. Planning Bd. of Ramapo*, 285 N.E.2d 291 (N.Y. 1972).

140. The full story is contained in *The 30th Anniversary of Golden v. Ramapo*, 35 URB. LAW. 15 (2003).

The Urban Lawyer that told this story in full.¹⁴¹ Students of our Land Use Law Center worked closely with the contributing scholars, helped organize the conference, and learned much working at the elbows of the architects of, and the commentators on, this remarkable flourish in the evolution of local land use law.

The legal authority that Ramapo exercised was identified by the same New York court twenty years earlier in *Rodgers v. Village of Tarrytown*.¹⁴² In that case, the village was challenged for creating floating zoning, another novel land use technique. It was the village's way of providing affordable housing for workers following World War II—workers needed to encourage employers to locate in Tarrytown so that its tax base could support its increasing local budget needs. The plaintiff complained that the technique was beyond the reach of the local government's authority. She pointed out that nothing in New York's zoning enabling act expressly authorized the village to first create a multi-family zoning district then, later, apply it to a parcel in a single-family district upon the application of the parcel's owner. The state's highest court disagreed, broadly interpreting the creative authority of local governments. The court noted that “[c]hanged or changing conditions call for changed plans, and persons who own property in a particular zone or use district enjoy no eternally vested right to that classification if the public interest demands otherwise.”¹⁴³

Our casebook covers this story. It goes on to describe statutes and cases that allow the clustering of permitted density on a small portion of land in the interest of protecting open space,¹⁴⁴ the creation of regional authorities to guide and govern land use patterns,¹⁴⁵ the establishment of urban growth boundaries to contain development in centers and protect agricultural lands outside,¹⁴⁶ the transfer of development

141. See *The 30th Anniversary of Golden v. Ramapo: A Tribute to Robert H. Freilich*, 35 URB. LAW. 15 (2003).

142. 96 N.E.2d 731 (N.Y. 1951).

143. *Id.* at 733.

144. *Chrinko v. S. Brunswick Twp. Planning Bd.*, 187 A.2d 221 (N.J. Super. Ct. Law Div. 1963).

145. *Wambat Realty Corp. v. New York*, 362 N.E.2d 581 (N.Y. 1977).

146. *Haviland v. Land Conservation & Dev. Comm'n*, 45 Or. App. 761

rights from fragile environmental areas to growth districts,¹⁴⁷ and the imposition of moratoria on development to get the time needed to plan without being burdened by *per se* regulatory takings complaints.¹⁴⁸

Over time we fielded repeated questions from leaders participating in our Land Use Leadership Alliance Training Program (“LULA”) about how they can use their legal authority to create growth centers, what they termed priority growth districts, and to direct growth to those areas and away from the more fragile environmental landscapes in their communities. We realized that this was too big a job for lawyers alone to handle; the expertise of engineers, hydrologists, land planners, and developers was needed. We assembled an eclectic group of experts to meet over several months to engineer and design a book that we published in June of 2005: *Breaking Ground: Planning and Building in Priority Growth Districts*, edited by three of our students.¹⁴⁹ The book draws on successful case studies from around the country, including three in the New York region that were the work of our previous LULA graduates.

6. Zoning for Affordable Housing

With their exposure to the advent of local environmental law and the origins of smart growth, students are not surprised to learn that local land use authority can be used to create affordable housing when the need and political will exist. Again, our location in New York and the Hudson Valley provides a fertile learning laboratory. The political will of suburban communities to zone for affordable housing was heightened by a string of exclusionary zoning cases in New York, beginning in 1975 and continuing through 2008.¹⁵⁰ The

(Ct. App. 1980).

147. *Suitum v. Tahoe Reg'l Planning Agency*, 520 U.S. 725 (1997).

148. *Tahoe-Sierra Pres. Council Inc. v. Tahoe Reg'l Planning Agency*, 535 U.S. 302 (2002).

149. *BREAKING GROUND: PLANNING AND BUILDING IN PRIORITY GROWTH DISTRICTS* (Jeremy Stone ed., 2005).

150. *See Gernatt Asphalt v. Town of Sardinia*, 664 N.E.2d 1226 (N.Y. 1996); *Suffolk Hous. Servs. v. Town of Brookhaven*, 511 N.E.2d 67 (N.Y. 1987); *Berenson v. Town of New Castle*, 341 N.E.2d 236 (N.Y. 1975); *Land*

town of New Castle is located ten miles north of the law school. In 1975, New York's highest court instructed the town that it could not insulate itself from providing residences housing by zoning out multi-family housing.¹⁵¹

During the pendency of this lawsuit, New Castle's neighbor to the north, the Town of Lewisboro, adopted the state's first local inclusionary zoning ordinance. Lewisboro, following the lead of Tarrytown and Ramapo, created a new zoning technique: bonus-density zoning. Local zoning was amended in Lewisboro to increase the number of market rate houses so that developers could use the profits to provide some affordable homes. This example was followed in a number of other communities in the area. In just the past fifteen years, nearly a dozen communities have enacted ordinances that either incentivize or require developers to set aside a percentage of new housing as affordable dwelling units for families and seniors of limited income.¹⁵²

As more communities requested help in zoning for affordable housing, we teamed with the not-for-profit Housing Action Council to develop and deliver four day training programs on the topic. Over 150 local leaders have graduated from this specialized version of our training initiative where they study the successful examples of local laws adopted in towns and villages in the lower Hudson Valley. Our book, *Meeting Housing Needs*, reports on the results of this burst of local law making and is used as the resource provided to

Master Montg I, LLC v. Town of Montgomery, 862 N.Y.S.2d 292 (App. Div. 2008); Cont'l Bldg. Co., Inc. v. Town of North Salem, 625 N.Y.S.2d 700 (App. Div. 1995); Blitz v. Town of New Castle, 463 N.Y.S.2d 832 (App. Div. 1983); Triglia v. Town of Cortlandt, N.Y. L.J., Jan. 21, 1998 (N.Y. Sup. Ct. Jan. 8, 1998).

151. *Berenson*, 341 N.E.2d 236.

152. *See, e.g.*, BEDFORD, N.Y., CODE ch. 125, art. III, §§ 125-29.2, 125-29-6, 12S-29.3 (1994); CORTLANDT, N.Y., CODE ch. 307, art. XV, § 307-94 (2007); GREENBURGH, N.Y., CODE ch. 285, art. IV, § 285-41 (1996); HASTINGS-ON-HUDSON, N.Y., CODE ch. 295, art. XII, § 295-112.1 (2001); CITY OF NEW ROCHELLE, N.Y., CODE ch. 331, art. XIX, § 331-152 (2006); NORTH SALEM, N.Y., CODE ch. 250, art III, V (2000); OSSINING, N.Y., HOUSING POLICY STATEMENT (2006); PORT CHESTER, N.Y., CODE ch. 345, art. IV, § 345-18 (2004); SOMERS, N.Y., CODE ch. 170, art. III, § 170-13 (2002); CITY OF WHITE PLAINS, N.Y., AFFORDABLE HOUSING ASSISTANCE FUND (2005); YORKTOWN, N.Y., CODE ch. 300 (2005).

current participants in our housing training programs.¹⁵³ Based on the growing regional interest in this topic, the Center sponsored a conference in conjunction with the Housing Action Council and the Urban Land Institute in 2006, using as materials *The Affordable Housing Law Book* to which nearly a dozen students contributed.

C. Land Use and Sustainable Development Law in an Era of Climate Change

Does it seem surprising that the advent of local environmental law, the origins of smart growth, and zoning for affordable housing trace the outlines of sustainable development law as defined by *Our Common Future*?¹⁵⁴ Lewisboro induced developers—the agents of economic development—to behave equitably. Communities adopting local environmental laws ensure that economic development projects respect the surrounding environment. Ramapo made developers wait until, at some point in the future, the infrastructure exists that is needed to serve the structures that they build. Certainly the legal system has evolved in the right direction but, the question remains, is it up to the job of creating the kind of sustainable development that a future complicated by climate change requires?

What is the relationship between climate change, land use, and sustainable development law? Over two-thirds of the CO₂, the principal Greenhouse Gas responsible for climate change, is attributable to factors within the reach of this body of law.¹⁵⁵ How we regulate building construction and location, how far and how often we travel, and how well we preserve the sequestering environment are critically important. For decades the paradigm for most residential and community development in America has been dictated by suburban zoning that permits construction of single-family homes on individual lots and prohibits, in these districts, any retail, office, or commercial development.

153. LAND USE LAW CENTER, PACE UNIVERSITY SCHOOL OF LAW, MEETING HOUSING NEEDS (2003).

154. See *supra* notes 1-3 and accompanying text.

155. See *infra* notes 162-66 and accompanying text.

In the post-World War II era, zoning that favors single-family living in suburbs made some sense; cities tended to be “dirty, sooty, smelly, and crowded.”¹⁵⁶ This perception, however, is changing; in fact, the image of cities as concentrations of polluting influences is dead wrong when viewed through the lens of climate change. On a per capita basis, urban dwellers produce dramatically less CO₂ and other pollutants than those in surrounding suburbs.¹⁵⁷ This is a critical matter when one considers that, by the year 2039, the population of the United States will have swelled to over 400 million people, a dramatic increase of 100 million people since 2006.¹⁵⁸ By 2040, it is projected that America will add ninety-three million new homes and 137 billion square feet of nonresidential construction to accommodate this growth and to replace obsolete buildings.¹⁵⁹ One hundred million people translates into forty million new households whose members

156. Richard Florida, *How the Crash Will Reshape America*, ATL. MONTHLY, Mar. 2009, at 44, 55.

157. REID EWING ET AL., GROWING COOLER: THE EVIDENCE ON URBAN DEVELOPMENT AND CLIMATE CHANGE 46 fig. 3-10 (2008). (showing that Chicago households drive less than 21,000 miles, compared with nearly 30,000 in suburban Chicago County, and emit eighty percent fewer tons of CO₂ per household than suburbanites in the surrounding county).

158. U.S. Census Bureau, U.S. Population Projections (2008), <http://www.census.gov/population/www/projections/summarytables.html> (last visited Oct. 8, 2009) (follow “Projections of the Population and Components of Change for the United States: 2010 to 2050” hyperlink). The United States population in 2006 was 299.4 million people. U.S. Census Bureau, Population Estimates, <http://www.census.gov/popest/states/NST-ann-est2006.html> (last visited Oct. 8, 2009) (follow “Annual Estimates of the Population for the United States, Regions, States, and for Puerto Rico: April 1, 2000 to July 1, 2006” hyperlink). Population projections are estimates only. See Robert E. Lang, Mariela Alfonzon & Casey Dawkins, *American Demographics—Circa 2109*, PLANNING, May 2009, at 10. They depend on fertility, immigration, and aging trends that are difficult to project. See *id.* at 10–11. That said, most credible evidence indicates that the U.S. population will increase significantly throughout the next century. See *id.* at 13 (“[I]t is very likely that the U.S. population will be at 400 million by midcentury.”). Calculations used in this article assume generally that within three or four decades there will be 100 million more Americans and that the average household size will be 2.5 persons per household, resulting in a net increase of 40 million households. The official U.S. projection for the next 100 years conducted by the U.S. Census Bureau, using a medium scenario for growth, projects a doubling of the 2000 population by the year 2100, a total of 571 million people. *Id.* at 10.

159. See Arthur C. Nelson, University of Pennsylvania, *Mega Trends: Thinking Beyond the Crisis* 9–10 (Mar. 12, 2009), [http://www.upenn.edu/penniur/pdf/Nelson Presentation.pdf](http://www.upenn.edu/penniur/pdf/Nelson%20Presentation.pdf).

will live, work, and shop in these buildings, traveling from one to the other and beyond, largely by car.¹⁶⁰

Unless we change the current pattern of land development, the buildings and cars occupied by these new Americans will dramatically increase the emission of CO₂. CO₂ constitutes approximately eighty-five percent of total United States greenhouse gas emissions and can be reduced significantly by reshaping human settlement patterns.¹⁶¹ Residential and commercial buildings are responsible for nearly thirty-five percent of the CO₂ emissions in the United States,¹⁶² and the use of personal automobiles alone is responsible for approximately seventeen percent of emissions.¹⁶³ Vegetation that thrives on undeveloped landscapes absorbs, or sequesters, fifteen percent of the CO₂ emitted each year.¹⁶⁴ This topic is of critical importance as evidence mounts that we must act urgently to address the catastrophic consequences of climate

160. One hundred million divided by an average household size of 2.5 results in forty million households. The average household size by 2039 could be smaller, resulting in more households and a demand for even more homes. See EWING ET AL., *supra* note 157, at 24 (“From 2000 to 2025, households without children will account for 88 percent of total growth in households. Thirty-four percent will be one-person households. By 2025, only 28 percent of households will have children.”).

161. CO₂ is the primary anthropogenic greenhouse gas and its control is critical to climate change mitigation. See E.P.A., PUB. NO. EPA 430-R-09-004, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2007 (2009) [hereinafter EPA PUB. NO. EPA 430-R-09-0044], available at <http://www.epa.gov/climatechange/emissions/downloads09/InventoryUSGhG1990-2007.pdf> (reporting that in 2007, out of the 6,103.4 Tg CO₂ released in the U.S., 1,887.4 Tg CO₂ was attributable to transportation sources). See *id.*, at ES-4 (showing that CO₂ represents 85.4% of the total greenhouse gas emissions in the United States and is the primary greenhouse gas emitted by humans). See also INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Summary for Policymakers*, in CLIMATE CHANGE 2007: MITIGATION OF CLIMATE CHANGE 3 (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-spm.pdf> [hereinafter IPCC WG III] (noting that CO₂ emissions represented 77% of the total global anthropogenic greenhouse gas emissions in 2004).

162. EPA PUB. NO. EPA 430-R-09-0044, *supra* note 161, at ES-2 to -19.

163. *Id.*

164. U.S. Evtl. Prot. Agency, Carbon Sequestration in Agriculture and Forestry: Frequent Questions, <http://www.epa.gov/sequestration/faq.html#6> (last visited Oct. 17, 2009) (“Net sequestration . . . in U.S. forests, urban trees and agricultural soils totaled almost 840 teragrams (Tg) of CO₂ equivalent . . . in 2001. This offsets approximately 15% of total U.S. CO₂ emissions from the energy, transportation and other sectors.”).

change. By shifting ground from predominately single-family to predominately urban settlements, which fosters more energy efficient buildings and transportation systems, and discourages development on sequestering open spaces, we can lower per capita CO₂ emissions significantly. Indeed, unless we alter the current human settlement pattern, it may be impossible to reduce the nation's emissions of CO₂ in time to prevent the devastating consequences that our climate change crisis portends.¹⁶⁵

1. Shifting Ground at the Land Use Law Center

The programs and emphases of the Land Use Law Center are shifting, just as our development patterns must shift. To achieve sustainable development today requires that we create dynamic cities for the new demographics, revitalized older suburban centers, priority growth areas in newer suburbs, waterfront planning that adapts to sea level rise, communities planned for resiliency in anticipation of natural disasters, and landscapes capable of maximum sequestration.

2. Sustainable Urban Development

165. See Socolow & Pacala, *supra* note 52, at 52.

The task of holding global emissions constant would be out of reach, were it not for the fact that all the driving and flying in 2056 will be in vehicles not yet designed, most of the buildings that will be around then are not yet built, [and] the locations of many of the communities that will contain these buildings and determine their inhabitants' commuting patterns have not yet been chosen

Id. It is possible that future generations of Americans will live in a post-carbon era at some point, where most transportation is electrified and where energy is produced from predominately non-carbon sources. *See id.* at 53–55 (discussing alternative sources of renewable energy and means of “decarbonizing” energy resources). While such a society could better tolerate long and frequent automobile trips and large, single-family homes on individual lots, climate change must be mitigated now, using available technologies such as those this article describes. Further, other critical environmental goals such as reducing water, material, and resource consumption, stormwater run off, water pollution, and the destruction of wetland and habitats will still require more concentrated patterns of settlement.

Our Center organized the regional Mayors' Redevelopment Roundtable in January 2008. We invited the mayors of the nine largest cities in the region to attend; all accepted and have now sent letters and legislative resolutions of support for the program. Together, these mayors have jurisdiction over a half-million people and, together, their staffs and attorneys constitute a significant technical support group, aided by our Center's training and research efforts. The mayors and their principal staff meet with us quarterly to explore how they can create livable urban neighborhoods and prepare themselves for the new market pressures they will experience as our population grows. We also meet quarterly with the lawyers for the cities, a subgroup we call the Corporation Counsels' Roundtable, to discuss the legal authority cities have for the tasks that lie ahead.

Our interest in the power of cities to revitalize aging neighborhoods was captivated by a single project, Hudson Park, located on the waterfront in Yonkers, an older industrial city bordering the Bronx. As we studied the handiwork of lawyers for the city and Collins Enterprises, the project's developer, we realized that they were using old urban renewal tools in a new way. The success of Hudson Park in sparking the revitalization of the Hudson River waterfront in Yonkers and its adjacent downtown is reported in *Reinventing Redevelopment Law*, which we published in 2005. This book, too, was edited and contributed to by a number of students working with the Land Use Law Center.¹⁶⁶ The publication served as the materials for another conference sponsored by the Center on the revitalization of cities in the region, which featured as speakers many of the mayors who later joined the Redevelopment Roundtable.

We turned the attention of our LULA Training Program to this new cohort of urban leaders, and it began conducting four-day training programs for leaders selected by these nine mayors and their staff. Students, working through our clinic, now serve as researchers for these cities and explore the issues that are raised at the quarterly meetings and in the LULA

166. NOELLE V. CRISALLI, LAND USE LAW CENTER, PACE UNIVERSITY SCHOOL OF LAW, *REINVENTING REDEVELOPMENT LAW* (2005).

training programs.

Predictably, these urban leaders want to know how they can remediate distressed properties, create more energy efficient buildings, foster renewable energy facilities, plan for sustainable neighborhoods, and support transit oriented development by adopting station area development plans. This pushes us to explore the rapidly evolving field of urban sustainable development law and to examine the legal issues involved in strengthening and enforcing energy conservation construction codes, the incorporation of LEED standards in local land use laws, the formation of property assessed clean energy districts, the use of land use incentives and zoning districts to facilitate district energy systems, and in remediating distressed properties and neighborhoods.

Students, now fully accustomed to tracking the rapid evolution of legal practices, are quick to discover how localities are providing for green infrastructure, green roofs, less water consumption and runoff, pervious surfaces, other low impact site development, the use of recycled materials in new buildings, healthful interior environments, individual building wind turbines or on-ground solar systems, food production and markets, combined heat and power systems within buildings, among other techniques—mostly unknown to legal researchers a few years ago.

We continue to train suburban leaders through the LULA Training Program. Representatives of older suburbs now need to know how to retrofit sprawling malls and strips into more sustainable places that reduce car travel today and that eventually support bus rapid transit or light rail, and then be fitted into a cost-effective regional transportation system. Leaders from newer suburbs are being trained to get it right the first time around and to identify priority growth areas where more efficient buildings are located in patterns that require fewer car trips, emit less CO₂, and can become transit ready as they continue to grow.

Outside urban centers, older revitalizing suburbs, and priority growth districts, our training emphasizes the use of local environmental law to preserve open space, not just to protect fragile environmental features, but to promote the sequestration of CO₂.

Our scholarship has been transformed by these new

engagements of the Land Use Law Center. Aided, as always, by students in our seminars and our research assistants, we have written recently on the relationships between human settlement and climate change,¹⁶⁷ how the law can foster energy conservation in new and renovated buildings,¹⁶⁸ how vehicle miles travelled—and the emissions they cause—can be reduced,¹⁶⁹ and how local law can protect the sequestering environment.¹⁷⁰

3. Yielding to the Rising Sea and the Storms to Come

Within the cities that are located on the Hudson River and Long Island Sound and along the coastlines generally, we are exploring the effects of sea level rise and natural disasters on the existing built environment and searching for a proper blueprint for future development. Among the most dramatic consequences of climate change is the rise in sea level, which is discussed in a recent report from the U.S. Climate Change Science Program.¹⁷¹ The report notes that “thoughtful precaution suggests that a global sea-level rise of 1m[eter] to the year 2100 should be considered for future planning and policy discussions.”¹⁷² Coastal communities are becoming aware of the consequences and the potential threat that sea level rise poses to their homes, businesses, and infrastructure. As a result,

167. My recent articles include *The Land Use Stabilization Wedge Strategy: Shifting Ground to Mitigate Climate Change*, 34 WM. & MARY ENVTL. L. POLY REV. (2009); *Climate Change and Sustainable Development: The Quest for Green Communities, Part II*, PLAN. & ENVTL. L. (2009), at 3; and *Climate Change and Sustainable Development: The Quest for Green Communities*, PLAN. & ENVTL. L. (2009), at 3.

168. Jessica A. Bacher & Jennie C. Nolon, *Energy Codes, Green Building Initiatives, and Beyond*, 38 REAL EST. L.J. 231 (2009).

169. John R. Nolon & Jessica A. Bacher, *Climate Change, Zoning and Transportation Planning*, 37 REAL EST. L.J. 211 (2007).

170. John R. Nolon & Jessica A. Bacher, *Creating a Local Environmental Law Program: Building a National Framework of Laws*, 36 REAL EST. L.J. 351 (2007).

171. See generally U.S. CLIMATE CHANGE SCI. PROGRAM, COASTAL SENSITIVITY TO SEA-LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION (2009), available at <http://www.climatechange.gov/Library/sap/sap4-1/final-report/sap4-1-final-report-all.pdf> (discussing trends and projections for changes in sea level).

172. *Id.* at 20.

these communities are starting to adjust their land use regulations for development in potentially inundated areas accordingly. Our staff and students are finding dozens of examples of local governments that are adopting plans and ordinances in response to rising waters.¹⁷³

I wrote for and edited a book titled *Losing Ground: A Nation on Edge* that was published by the Environmental Law Institute in 2007. My co-editor was Daniel Rodriguez, then dean at San Diego School of Law. We identified over a dozen distinguished scholars who participated in three symposia on his campus and mine, and at the Yale School of Forestry and Environmental Studies. Then we asked them to submit papers, which we edited and published in *Losing Ground*. Dan and these authors didn't know that the inspiration for my involvement in this project came from a student in my land use law class in 2005. This was the year of Katrina, the year that spawned the most hurricanes on record. She asked why hurricanes seemed so frequent and fierce, and why our legal system seemed determined to encourage rebuilding in vulnerable places. This instinct to redevelop in harm's way sparked a vigorous debate in class that continued for the remainder of the semester, paralleling persistent policy debates at the state and federal level.

In his Preface to our book, Jim Schwab of the American Planning Association refers to this unfinished debate and America's self-doubt. Jim wrote, "[W]e've become a nation on edge, wondering whether we really can handle the big tasks."¹⁷⁴ He goes on to urge that we "understand that we have many tools available to help solve the problem [of disaster damage], but most of them involve planning *before* as well as *after* disasters."¹⁷⁵ Since that time, Jim has written extensively about communities engaging their planning and regulatory powers to conduct safe growth audits, identify

173. See generally Jessica Bacher, *Zoning and Land Use Planning Yielding to the Rising Sea: The Land Use Challenge*, 38 REAL EST. L.J. 93 (2009) (discussing the response of many states and localities to the possibility of rising sea levels). See also John R. Nolon & Kristen Grzan, *Rising Tides-Changing Title: Walton County v. Stop the Beach Renourishment, Inc.*, 38 REAL EST. L.J. 392 (2009).

174. Jim Schwab, *Foreword* to LOSING GROUND: A NATION ON EDGE xviii (John R. Nolon & Daniel B. Rodriguez eds., 2007).

175. *Id.*

disaster mitigation areas, adopt stricter building codes and zoning prescriptions in such areas, create overlay zones for areas that will be hammered by disasters or inundated by sea level rise, and involving their citizens in a clear-eyed look at the future; they are asked to consider the prospects of damage if we continue to build in fire or fault zones, on or below unstable slopes, or in areas vulnerable to hurricanes. These techniques are creating another new area of practice that is becoming known as “resiliency planning.” It explores not just how we prepare for, respond to, and recover from natural disasters, but how we plan in advance to be resilient by locating and constructing buildings and infrastructure appropriately.

4. Changing Curriculum and Changing Practice

In 2008, the famed mediator Ted Kheel made a generous donation to our school to create the Kheel Center for the Resolution of Environmental Interest Disputes. Kheel was at Rio, read *Our Common Future* when it was first published, and has promoted sustainable development ever since. He has the idea that the fact finding and settlement skills of lawyers are needed, more than ever, to manage and resolve the conflicts that come with climate change. The staff of the Land Use Law Center was tagged to serve as the staff of the new Kheel Center, so we had to understand what Mr. Kheel had in mind.

He realizes that from the students’ first day in law school, they work with professors and casebooks that examine the fruits and spoils of litigation. In Property, Torts, Contracts, and Civil Procedure, the student’s life is consumed by examining the outcome of reported cases: law school’s equivalent of the medical school cadaver. This is reinforced by upper division litigation clinics, moot courts, appellate advocacy seminars, as well as many substantive courses that examine the results of ever more complex case law. Students are taught to persuade judges that their clients should win and their opponents lose; they anticipate using the well-honed rules of discovery, evidence, and cross examination; they learn to appreciate how trials are conducted and how courts work: the venue of choice for dispute resolution.

Ted Kheel knows, on the other hand, that much of legal

practice emphasizes skills suited to conflict resolution in more novel forums using more flexible processes. He is interested in what lawyers do when existing legal forums and their procedures do not keep pace with the times, when the outcome of litigation or administrative decision-making is too uncertain for their clients' comfort, or when there is no available tribunal whose jurisdiction is appropriate for the dispute's resolution. As the clouds of climate change gather, our legal system is being challenged for solutions and approaches to the resolution of grave conflicts regarding the environment and the use of land and natural resources. With complex environmental interest disputes, the parties may be advantaged by following procedures typically used by mediators and facilitators who seek to discover and meet the "interests" of the parties, rather than arrive at a rights-based conclusion.

In the 21st century, novel environmental conflicts and disputes abound.¹⁷⁶ In these cases, lawyers can suggest alternatives to their clients, including the creation of new institutions and mechanisms for conflict management. They can also create new venues for dispute resolution where they negotiate settlement.¹⁷⁷ In these venues, lawyers can help the parties establish their own procedures: ground rules and timetables for coming to an agreement. They can also use novel mechanisms for convincing the stakeholders to participate and settle. Venues that can be created include the full range of facilitated or mediated settlement environments where a neutral party helps convene the disputants, build trust among them, agree on procedures for negotiation, and lead the parties to settlement.¹⁷⁸ Attorneys for disputants and stakeholders can build new practice areas where they are known for their abilities to function in this new arena of environmental interest conflict management and dispute resolution. Lawyers can help lead the way or, at least, be productive participants where client interests are adrift in a

176. See, e.g., Joseph A. Siegel, *Alternative Dispute Resolution in Environmental Enforcement Cases: A Call for Enhanced Assessment and Greater Use*, 24 PACE ENVTL. L. REV. 187, 189 (2007).

177. See generally Symposium, *Panel Discussion: Problem-Solving Mechanisms to Achieve Consensus: How Do We Ensure Successful Resolution?*, 35 FORDHAM URB. L.J. 205, 209-12 (2008).

178. *Id.* at 209-10. See generally Siegel, *supra* note 176, at 189.

changed world.

Our law school curriculum is changing in response. It now hosts a three credit, practice-oriented seminar on Environmental Dispute Resolution. Most of our land use offerings now have the words “sustainable development” in their titles, and their content has been adjusted accordingly. Our widely-respected LL.M. Program in Environmental Law just added a track devoted to the study of Land Use and Sustainable Development Law. Students now can extend their studies and emerge from our curriculum with skills and knowledge uniquely suited to tomorrow’s practice. They know that the law will continue to change and they will be ready for what lies ahead.

5. Thinking Globally

Pace Law School’s environmental law program has focused on international legal issues from its inception. In 2004, Professor Nick Robinson came to our Land Use Law Center and asked us to become involved with his work at the global level. His plan, which we now refer to fondly as the “fortnight folly,” was to have us assume scholarly stewardship of a conference in Kenya, sponsored by the Academy of Environmental Law Research Studies of the International Union for the Conservation of Nature (“IUCN”). Robinson chaired the IUCN’s Commission on Environmental Law at that time. He needed help in publishing the results of an international conference to be held in Nairobi, Kenya on Land Use and Sustainable Development. He gave us a fortnight to say yes or no. We were too busy to say yes. The assignment was too compelling to say no. Robinson is enormously persuasive.

A few months later, I was listening to a presentation in Nairobi by Wangari Maathai. Maathai was on the agenda because she was a member of Kenya’s parliament and was serving as her country’s Assistant Minister for Environment, Natural Resources, and Wildlife. She presented her persuasive views on land use and sustainable development just weeks before she won the 2004 Nobel Peace Prize, recognizing her work with the Green Belt Movement. The Nobel Committee noted that peace depends, as the Brundtland Report

confirmed,¹⁷⁹ on development that protects the environment and embraces the poor. Maathai's presentation was followed by those of law professors from dozens of countries, all reflecting on land use law and sustainable development in their nations.

Every continent was represented in Nairobi, as were many cultures and languages. Our job was to work with the presenters to transform their presentations into respectable articles, in English, to be published by Cambridge University Press. I was one of four editors assigned this task and worked mostly with the papers presented by Latin American scholars and those from North America. My further assignment was to produce a compendium of land use laws for sustainable development. I was to work with all the presenters to collect, analyze, and describe laws from each of their countries.

The time that all of this took seemed preposterous, given that our work locally in the Hudson River Valley was far from done. The lessons learned, however, were worth the effort. The immediate result of this work was the publication of two books by Cambridge University Press: *Land Use Law for Sustainable Development*, which I co-edited, and a *Compendium of Land Use Laws for Sustainable Development*, which was my work alone, assisted, as always, by Pace law students. Both were published in 2006. In the Acknowledgements section of the Compendium, I recognized my debt to Professor Robinson who I noted charitably had "coaxed me into this project." I thanked also two Pace students for leading a team of six others who labored for a summer to abstract and abridge nearly seventy laws from countries from every continent on the planet.¹⁸⁰

This work is being harvested today in the work I have been asked to do by the Intergovernmental Panel on Climate Change, which has formed a working group on human settlement and infrastructure and their relationship to climate change. As I wrote this article, I was preparing to go to

179. OUR COMMON FUTURE, *supra* note 1, at 6-7.

180. See COMPENDIUM OF LAND USE LAWS FOR SUSTAINABLE DEVELOPMENT (John R. Nolon ed., 2006); LAND USE LAW FOR SUSTAINABLE DEVELOPMENT (Nathalie J. Chalifour, Patricia Kameri-Mbote, Lin Heng Lye & John R. Nolon eds., 2007); John R. Nolon, *Comparative Land Use Law: Patterns of Sustainability*, 37 URB. LAW. 807 (2005).

Calcutta, India to participate in the initial deliberations of this working group. Its assignment is to determine whether sufficient scholarship exists on these linkages to merit a separate report on human settlements and climate change in the IPCC's Fifth Assessment Report. Based on the research I have been coaxed to do by Professor Robinson and the leaders of the Hudson River Valley, my answer will be yes.

Conclusion: Ernest Redux

At the beginning of this article, I told a story about a young farmhand named Ernest. When we left him, he had just finished moving a pile of dirt from one place to another. He was the agent of my stepfather's vision for work that needed to be done. That story took place in the 1950s, during the Eisenhower era—a time dedicated to highway construction, low cost mortgages, and the movement of homes, households, and jobs to the suburbs.

Our vision has changed in the intervening half century. While we quibble about the extent and causes of climate change, and precisely where on the ground our work should focus, citizens and elected leaders on every continent know that future development must be sustainable and that the law will be a force for positive change. In the hands of properly trained attorneys and leaders, the law will continue to move us, one step at a time, toward our common future: one that “is more prosperous, more just, and more secure.”¹⁸¹

181. OUR COMMON FUTURE, *supra* note 1, at 3.