IS THERE A THERE THERE IN ENVIRONMENTAL LAW?

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Table of Contents

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I would like to thank my colleagues at Chicago-Kent with whom I discussed fragments of this article, especially Christopher Leslie and Nancy Marder. I would also like to thank those in the environmental law academic community with whom I have been privileged to share the task of developing environmental law out of the whole cloth since the now mythic '60s. The ideas expressed in this article are solely mine, but they reflect the influence of some 35 years of exchanges, formal and informal, with my colleagues. Space limitations prevent me from citing all the articles and books from which I have profited greatly over the years, but the chances are high that many relevant uncited articles are sitting in my office (read and unread); I apologize for their omission. In many cases, there is no excuse except advancing age and laziness.

I. INTRODUCTION: WHY THE "THERE" QUESTION IS IMPORTANT

A. The Hidden Weaknesses of Environmental Law

As environmental law enters its fourth decade, it is now appropriate, if not imperative, to ask the question: what have environmentalism and environmental regulation contributed to the law? Gertrude Stein, the American expatriate writer, once described Oakland, California, where she spent much of her youth before fleeing to the East Coast and Paris, as a place where "there is no there there."[1] In addition to stigmatizing the city of my birth,[2] her quip haunts all efforts to legitimize new, especially contested, ideas and methods in modern culture, from twelve tone music to environmental protection.[3] In this article, I leave the question of the

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1. The complete quotation is: "[W]hat was the use of my having come from Oakland it was not natural to have come from there yes write about it if I like or anything if I like but not there, there is no there there."GERTRUDE STEIN, EVERYBODY'S AUTOBIOGRAPHY 289 (1937). The webmistress of Gertrude Stein Online posts that the quotation has no deep meaning and simply referred to her inability to find her house during her famous 1937 United States lecture tour, which was her first visit to the country of her birth since moving to Paris. Gertrude Stein Online, *Frequently and Rarely Asked Questions*, *at* http://www.tenderbuottons.com/gsteononline/alice./html (last visited Feb. 27, 2003).

2. Unlike Ms. Stein, who was born in Allegheny, Pennsylvania but lived in Oakland from 1880 to 1891, I was born in Oakland but have never lived there. Still, the quotation has always been part of my life. My mother and father frequently quoted it when they apologized for the need to use an Oakland maternity hospital for my birth. A quick surf of the web reveals that Oakland has never been able to live down the Stein zinger.

3. Witness the intense reactions to the publication of the English language edition of Bjørn Lomborg's book, THE SKEPTICAL ENVIRONMENTALIST: MEASURING THE REAL STATE OF THE ENVIRONMENT (Cambridge Univ. Press 2001) (1998), which questioned most of the current justifications for environmental protection. *Symposium on Bjørn Lomborg's* THE

merits of post-modern culture to others and address only the question, does Ms. Stein's famous epigram apply to environmental law? The question may initially seem heretical because so much of environmental thinking has a theological cast to it.[4] Environmental law is often taken as a logical, non-contestable consequence of the imperative need for the immediate protection of the planetary "environment" from accelerated human degradation,[5] and no deviation is permitted from this confession. Questions of theology aside, the question may seem silly because lawyers widely, if not universally, assume that environmental law exists and there is good objective evidence that this is a correct assumption.

What we now call environmental law is very much embedded in the legal landscape. The area has developed in an astonishingly short period of time as a result of the rise of environmentalism as a political force in the late 1960s.[6] The field was created virtually out of whole cloth by a receptive Judiciary and Congress. In the 1960s, environmental protection was a marginal political idea. Lawyers followed the great common law tradition left open to socially marginal groups and pursued a "rule of law litigation" strategy.[7] To discipline public agencies through what we now call "public interest" litigation, they had to convince courts that something called environmental law existed, when in fact it did not. Creative lawyers used a few meager precedents and vague, seldom applied statutes to convince courts that public agencies had a duty to consider "environmental" interests and to take steps to avoid or mitigate adverse "environmental" impacts.[8] Lawyers skillfully created the fiction that the recognition of new environmental protection duties

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SKEPTICAL ENVIRONMENTALIST, 53 CASE W. RES. L. REV. 249 (2002) (exploring the book and the reactions of supporters and denouncers from a variety of legal and non-legal perspectives). *See also* Douglas A. Kysar, *Some Realism About Environmental Skepticism: The Implications of Bjørn Lomborg's* The SKEPTICAL ENVIRONMENTALIST *for Environmental Law and Policy*, 30 ECOLOGY L.Q. 223 (2003).

4. *See* Christopher H. Schroeder, *Prophets, Priests, and Pragmatists*, 87 MINN. L. REV. 1065 (2003) (stating environmentalism has both prophets who condemn the status quo and call for redemptive change, and more moderate, reformist priests).

5. For an articulation of the accelerating degradation thesis, see J. R. MCNEILL, SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD (2000).

6. For efforts to sort out the causes of the rapid rise of environmentalism, see SAMUEL P. HAYS, BEAUTY, HEALTH, AND PERMANENCE: ENVIRONMENTAL POLITICS IN THE UNITED STATES, 1955-1985 (1987), and RICHARD N.L. ANDREWS, MANAGING THE ENVIRONMENT, MANAGING OURSELVES: A HISTORY OF AMERICAN ENVIRONMENTAL POLICY (1999).

7. *See* A. Dan Tarlock, *The Future of Environmental "Rule of Law" Litigation*, 17 PACE ENVTL. L. REV. 237 (2000), *reprinted in* 19 PACE ENVTL. L. REV. 575 (2002).

8. The most influential roadmap to "rule of law" litigation remains JOSEPH L. SAX, DEFENDING THE ENVIRONMENT: A STRATEGY FOR CITIZEN ACTION (1971). *See also* David Sive, *Some Thoughts of an Environmental Lawyer in the Wilderness of Administrative Law*, 70 COLUM. L. REV. 612 (1970).

merely required courts to perform their traditional and constitutionally legitimate function of applying and enforcing, rather than creating, pre-existing rules.

Once Congress ratified many of the principles established in these lawsuits, such as non-governmental organization ("NGO") standing, the need to consider alternatives to the proposed action, the need for a fuller administrative record and enacted legislation to limit air and water pollution, and the need to require environment impact assessments for a wide range of federal activities, the statutes and the cascade of cases interpreting them quickly took on the appearance of a mature legal system. The academy followed. Environmental law became a widely taught law school course[9] supported by a core of dedicated academic "specialists," although the elite ivy league law schools continue to give the field scant recognition.

The legal profession never harbored any doubts about the legitimacy of environmental law; the most important driver in the rapid rise of environmental law was money. Environmental regulation changed the way that many industries and public bodies did business, and thus there was money to be made from interpreting these regulations for clients and defending them against public and NGO lawsuits. Practitioner demand for information about this new field quickly spawned a large number of law reviews and other specialized publications such as this one. The profession considers it a firmly established practice specialty as reflected in ABA and state bar association sections. In 2002, environmental law received the ultimate recognition; it got its own West key number when health was dropped from "health and environment."

Environmental law's rapid rise and great success is nonetheless a mixed blessing because it postponed consideration of the hard questions about the content and legitimacy of the field and environmental protection generally. The relative neglect of these difficult problems is neither surprising nor unknown. It is, however, troubling. The neglect of content and legitimacy is not surprising because environmental law, as we understand it, is still an infant area of the law. Environmental law grew so rapidly and quickly that there was no time, or need, to worry about its jurisprudential

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9. The 2002-2003 AALS Directory of Law Teachers lists 217 persons who have taught it 1-5 years, 110 who have taught it 6-10 years, and 130 senior teachers who have taught it more than 10 years. I did not attempt to eliminate people who have not taught it for years (e.g., Judge, and former Dean, Guido Calabresi) or who were listed in more than one category. For example, Professor Joseph Sax, who more than anyone else is responsible for defining the field, is listed as both a senior and a rookie environmental law teacher! The point is simply that there are a great many teachers of environmental law.

underpinnings.[10] It enjoyed the luxury of skipping the stages of debate over fundamentals and incremental growth and acceptance. Debates went directly to the important, but narrower, question about the merits of the suite of policy instruments available to achieve the Congressional protection objectives.[11] This "papering over" has not gone unnoticed. Over the years, many have observed that the impressive formal superstructure of environmental law masks the persistent doubts about the existence of a "there" in environmental law,[12] but the continued stream of law, cases, and regulations pushed these concerns to the background. However, as environmental law continues to mature, the largely neglected questions of content and legitimacy become more troubling and need to be addressed if the area is to sustain itself.

We often lose sight of three related but disturbing features of environmental law that make its future survival problematic. First, it is, in the span of legal time, an infant area of the law that may not necessarily live to maturity. Second, its survival is more problematic than other areas of law because it is not an organic mutation of the common law, or more generally, the western legal tradition. Third, as a result of the first two, environmental law remains largely unintegrated into our legal system; thus, it is vulnerable to marginalization as support for environmentalism ebbs and flows.[13]

As many have observed, environmental law has substantially influenced other, established areas of law such as administrative law, international law, property, torts, and water law as well as more remote subjects such as corporations, securities regulation, and intellectual property. However, when one sums up the cases, statutes, and administrative regulations that make up the core of

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10. I use the term "jurisprudence" simply as the search of the nature of law, as opposed to the understanding of legal doctrine. *See* ALF ROSS, ON LAW AND JUSTICE § 2 (1958). I do not endorse any of the competing philosophical theories offered to answer the question.

11. The book that framed the policy instrument debate is JOHN H. DALES, POLLUTION, PROPERTY AND PRICES (1968). *See* Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21 (2001); Douglas A. Kysar, *Law, Environment, and Vision*, 97 Nw. U. L. REV. 675 (2003) (giving modern analyses and summaries of the policy instrument debates).

12. *See, e.g.*, John P. Dwyer, *The Pathology of Symbolic Legislation*, 17 ECOLOGY L.Q. 233 (1990); *see also* Alyson C. Flournoy, *In Search of an Environmental Ethic*, 28 COLUM. J. ENVTL. L. 63 (2003); Cass R. Sunstein, *Paradoxes of the Regulatory State*, 57 U. CHI. L. REV. 407 (1990).

13. *See* Richard J. Lazarus, *Meeting the Demands of Integration in the Evolution of Environmental Law: Reforming Environmental Criminal Law*, 83 GEO. L.J. 2407, 2413-19 (1995) (discussing the process of legal evolution that results in the assimilation of new ideas such as environmental protection and noting the instability of environmental law); *see also* William H. Rodgers, Jr., *The Lesson of the Red Squirrel: Consensus and Betrayal in the Environmental Statutes*, 5 J. CONTEMP. HEALTH L. & POL'Y 161 (1989).

what most people consider environmental law,[14] one is hard pressed to reduce them to a set of distinctive, fundamental principles, let alone rules[15] that can be applied to a wide range of current and future issues, as one can do in other areas of "real law."[16]

B. A Thesis: The Need For a Bounded, Dynamic Process of Environmental Protection

My argument is that it is important to put a "there" in environmental law for the simple reason that environmentalism represents a potentially transformative, fundamental, if still semi-coherent and contested, paradigm shift in the ways in which we enjoy the use of our air, water, and soil planetary life support systems and our biodiversity heritage.[17] As the great American geographer Gilbert White has written:

> People around the world in the 1990s are perceiving the earth as more than a globe to be surveyed, or developed for the public good in the short term, or to be protected from threats to its well-being both human and natural. It is all of these to some degree, but has additional dimensions. People in many cultures accept its scientific description as a matter of belief. They recognize a commitment to care for it in perpetuity. They accept reluctantly the obligation to come to terms with problems posed by growth in numbers and appetites. This is not simply an analysis of economic and social consequences of political policies toward environmental matters. The roots are a growing solemn sense of the individual as

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14. The teaching of environmental law is like dealing a deck of cards. The cards do not change, but the order and number displayed can, depending on the game. The leading environmental law casebooks are very similar in their organization and case selection, but the order of presentation and number of cards displayed varies considerably. *E.g.*, ROBERT GLICKSMAN ET AL., ENVIRONMENTAL PROTECTION: LAW AND POLICY (4th ed. 2003); ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE AND POLICY (4th ed. 2003); ROGER FINDLEY ET AL., ENVIRONMENTAL LAW (6th ed. 2003); THOMAS J. SCHOENBAUM ET AL., ENVIRONMENTAL POLICY LAW (2002).

15. I use the distinction between rules and principles first articulated by Ronald Dworkin in his critique of positivism. Ronald M. Dworkin, *The Model of Rules*, 35 U. CHI. L. REV. 14 (1967).

16. *See infra* Section II: The "Real Law" Problem.

17. For an ambitious effort to illustrate how a desire to "connect" with nature influenced early environmental politics in Maine and Oregon, see RICHARD W. JUDD & CHRISTOPHER S. BEACH, NATURAL STATES: THE ENVIRONMENTAL IMAGINATION IN MAINE, OREGON, AND THE NATION (2003).

> part of one human family for whom the earth is its spiritual home.[18]

Eastern Europe,[19] Central and East Asia,[20] and China are examples of the costs of continuing to view the planet simply as a storehouse of exploitable commodities. This said, the question remains, can we construct a stable legal regime to reflect this meta-value transition? I argue, then, an effective and long-lasting environmental law cannot be constructed around a series of abstract substantive principles. There is a reason that no Restatement (First) of Environmental Law exists or is in process. The candidate suite of principles such as advance environmental impact assessment, polluter pays, precaution, and sustainable development[21] are useful starting points but they can only serve as guideposts to structure a dynamic, but inevitably ad hoc, decision making processes.

The extremely complex and evolving moral and scientific nature of environmental problems[22] ensures that, for the foreseeable future, environmental law will be a law about the process of decision rather

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18. Gilbert White, *Reflections on Changing Perceptions of the Earth*, *in* 19 ANNUAL REVIEW OF ENERGY AND THE ENVIRONMENT 9 (1994).

19. ROGER MANSER, FAILED TRANSITIONS: THE EASTERN EUROPEAN ECONOMY AND ENVIRONMENT SINCE THE FALL OF COMMUNISM (1993).

20. JAMES DAVID FAHN, A LAND ON FIRE: THE ENVIRONMENTAL CONSEQUENCES OF THE SOUTHEAST ASIAN BOOM (2003).

21. For an unsuccessful attempt to create an international law of environmental torts around "the polluter pays," the precautionary principle, and the proximity principle, see Beanal v. Freeport-McMoRan, Inc., 969 F. Supp. 362 (E.D. La. 1997), *aff'd,* 197 F.3d 161 (5th Cir. 1999).

Some may be puzzled by the omission of the public trust doctrine from this list. The argument, that the common law/constitutional doctrine (that the use of navigable waters and their beds are subject to public rights) can be extended to the principle that "the conservation of ecological values should be preferred to developmental ones," has attracted worldwide attention. However, outside of water law, the doctrine has not created a common law of environmental rights. *See* Nat'l Audubon Soc'y v. Super. Ct., 658 P.2d 709 (Cal. 1983); *In re* Water Use Permit Applications for Interim Instream Flow Standard Amendments, 9 P.3d 409 (Haw. 2000). The trust doctrine is most effectively applied when it is the basis for legislation. For example, South Africa has used the doctrine to create environmental water reserves on individual watercourses in its post-Apartheid water code. National Water Act § 16 (1998). An extensive literature exists on the potential application of the public trust doctrine to environmental decisions. *E.g.*, Joseph L. Sax, *The Public Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970); Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631 (1986); William D. Ariza, *Democracy, Distrust, and the Public Trust: Process-Based Constitutional Theory, the Public Trust Doctrine, and the Search for a Substantive Environmental Value*, 45 UCLA L. REV. 385 (1997); Erin Ryan, *Public Trust and Distrust: The Theoretical Implications of the Public Trust Doctrine for Natural Resource Management*, 31 ENVTL. L. 477 (2001).

22. For an excellent exposition of how little we actually know about our planet, see VACLAV SMIL, THE EARTH'S BIOSPHERE: EVOLUTION, DYNAMICS, AND CHANGE (2d ed. 2003).

than a process of evolving decision rules. My argument is not, however, a simple reiteration of procedural versus substance debate that has been part of environmental law since the enactment of the National Environmental Policy Act of 1969 ("NEPA"). The thesis that environmental law is fated to be about process rather than predictable outcomes is equally not just a call for open-ended transparent, democratic decision-making as many environmentalists advocate.

Environmental problems are characterized by the need to reduce their inevitable uncertainty through the constant generation and application of new knowledge. They often do not, as do many other areas of the law, display a repetition of similar fact patterns. They must be rational processes constrained as a set of principles that ensure that they are responding to our understanding of what makes a problem environmental. Decision processes equally must be more than ad hoc, open-ended, stakeholder negotiations.[23] My argument builds on an idea advanced by Judge Hans Linde of the Oregon Supreme Court that courts should impose a right to due process of law making[24] and the newer theory of reflexive environmental law.[25] Environmental decisions should be made through science-based processes that use the various candidate principles of law that have emerged in the past four decades as rebuttable presumptions rather than hard rules to structure decisions. The best we can hope for are presumptions because, in the end, environmental law is a series of hypotheses that must be tested (and often modified) over a long time horizon by rigorous monitoring and experimentation.

This approach is designed to respond to three challenges that environmental protection faces today. First, its fundamental legitimacy continues to be questioned, and thus it remains highly vulnerable to political pressures and legal marginalization. Environmentalism will, of course, always be a product of representative government. However, there needs to be some legal drag on the amplitude of the political oscillations. Otherwise, the

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23. Richard B. Stewart, *Administrative Law in the Twenty-First Century*, 78 N.Y.U. L. REV. 437, 460 (2003) (reaching the same conclusion).

24. *See* Hans A. Linde, *Due Process of Law Making*, 55 NEB. L. REV. 197 (1976).

25. Gunther Teubner's theory of reflexive law is based on the development of a post-modern theory of law, premised on a constantly evolving knowledge base and multiple participants in problem solving. Reflexive law is proposed as a remedy for the inability of substantive, or as Americans would say, "instrumental," law principles to cope with new, complex social problems. *See* Gunther Teubner, *Substantive and Reflexive Elements in Modern Law*, 17 LAW & SOC'Y REV. 239 (1989). For possible applications to environmental law, see Eric W. Orts, *Reflexive Environmental Law*, 89 Nw. U. L. REV. 1227 (1995), and Sanford E. Gaines, *Reflexive Law as a Legal Paradigm for Sustainable Development*, 10 BUFF. ENVTL. L.J. 1 (2003).

environment simply becomes an equally weighted factor to be balanced against competing objectives, e.g., to be ultimately ignored. Second, the formal structure of environmental law increasingly functions as a set of background rules for negotiation. For a variety of reasons, environmental disputes are increasingly being addressed by multi-stakeholder processes.[26] The jury is still out on the efficacy of this reaction to the political gridlock that has prevented the reform of federal environmental laws. What is clear is the importance of maintaining a strong public legal background structure as a default rule[27] to measure the merits of the outcome. Third, the term "environmental" has become so all-encompassing that it has been robbed of any operative meaning; it needs contours.

II. THE "REAL LAW" PROBLEM

Environmental law faces increasing difficulty in fulfilling the drag and bounded rationality functions because it arguably does not meet many of the conventional tests for "real law" in the United States or in the broader western legal tradition.[28] The question of what is "real law" is either simple or hopelessly complex. I define it roughly as the relatively stable, closed legal system described by H.L.A. Hart. Hart is one of the dominant figures of post World War II jurisprudence. His core idea was that law is a set of relatively narrow, formal rules which function to order human behavior by communicating preexisting binding standards.[29] Hart, of course,

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26. Professors Jody Freeman and Bradley C. Karkkainen, among others, have been tracking the break-up of of the modern regulatory state and the role of public law in the emerging "lite" state. *See* Jody Freeman*, The Contracting State,* 28 FLA. ST. U. L. REV. 155 (2000)*;* Bradley C. Karkkainen*, Collaborative Ecosystem Governance: Scale, Complexity and Dynamism*, 21 VA. ENVTL. L.J. 189 (2002). *See generally* MATTHEW A. CRENSON & BENJAMIN GINSBURG, DOWNSIZING DEMOCRACY: HOW AMERICA SIDELINED ITS CITIZENS AND PRIVATIZED ITS PUBLIC (2002).

27. This argument is well developed by Bradley C. Karkkainen, *Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward A Bounded Pragmatism*, 87 MINN. L. REV. 943 (2003). *See also* Freeman, *supra* note 26; Jody Freeman, *Extending Public Law Norms Through Privatization*, 116 HARV. L. REV. 1285 (2003).

28. Teemu Ruskola, *Legal Orientalism*, 101 MICH. L. REV. 179, 182-83 (2002), defines "real law" as either "formal legal rationality," or the rule of law tradition that constrains state behavior. The historicity of law is linked with the concept of its supremacy over the political authorities; thus, "real law" usually exhibits the characteristics of (1) a distinctive or unique set of abstract core principles, or (2) a constitutional foundation.

29. This is a gross over-simplification of a philosophy evolved over time and has been subject to intense criticism and exegesis. However, the debate about how formalistic Hart's jurisprudence does not detract from the basic point that the Hart model of rules describes the strategy of much of environmental litigation. The Hart model focuses the court on the application of pre-existing rules rather than on more opened-ended moral justifications for the decision. S*ee* MICHAEL MARTIN, THE LEGAL PHILOSOPHY OF H.L.A. HART: A CRITICAL APPRAISAL 15-67 (1987); *see also* JEFFRIE G. MURPHY & JULES L. COLEMAN, THE PHILOSOPHY OF LAW: AN INTRODUCTION TO JURISPRUDENCE 42-60 (rev. ed. 1990).

recognized that a complete system of *a priori* rules was impossible, if not undesirable, and that judges must always exercise discretion at the margins,[30] but his project was to close the gap between rule and discretion by developing a theory of law as a consistent, coherent set of rules.

One does not need to enter into the extensive debate about the merits of Hart's theory to test environmental law against his definition of law.[31] My argument is that despite all the reservations, corrections, and counter theories, Hart's model of real law as formal law remains the dominant vision of what a legal system should look like; the important point is that his model, as well as the more open-ended alternatives, do not fit environmental law at all. To fit the Hart model of "real law," an area of law either has to have an internal set of over-arching rules that courts can use to develop doctrines that create identifiable, distinctive (if permeable) boundaries between other areas of law, or constitutional foundation. Formal law is, of course, only one possible definition of law.[32] However, some level of autonomous principles is a necessary component of permanence and acceptance.[33]

A. The Lack of an Internal Set of Rules

Environmental law, as now defined, is primarily a synthesis of pre-environmental era common law rules,[34] principles from other areas of law, and post-environmental era statutes which are lightly influenced by the application of concepts derived from ecology and other areas of science, economics, and ethics.[35] The primary reason that it lacks internal logic and consistency is because it is so new and radical. Hart's definition of a legal system assumes a pre-existing set of widely accepted legal doctrines limited to the conventional economic wealth, dignity, and status relations of a

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30. Hart distinguished between a core of certainty and a penumbra of uncertainty. H.L.A. Hart, *Positivism and the Separation of Law and Morals*, 71 HARV. L. REV. 593, 607 (1958).

31. The debate is largely about the range of discretion that judges have to decide cases at the margin of hard rules. Hart's leading critic is Ronald Dworkin. RONALD DWORKIN, TAKING RIGHTS SERIOUSLY (1977). For a good summary of the debate, and an attempt to synthesize the divergent positions, see NEIL MACCORMICK, LEGAL REASONING AND LEGAL THEORY 229-58 (1978).

32. *See* Guido Calabresi, *An Introduction to Legal Thought: Four Approaches to Law and to the Allocation of Body Parts*, 55 STAN. L. REV. 2113 (2003) (noting that formalism is only one of four approaches that have characterized law since the 1900s).

33. *See* Guido Calabresi, *Two Functions of Formalism*, 67 U. CHI. L. REV. 479 (2000).

34. For an examination of nuisance rules on air pollution regulation, see NOGA MORAG-LEVINE, CHASING THE WIND: REGULATING AIR POLLUTION IN THE COMMON LAW STATE (2003).

35. Christopher Stone, Do Morals Matter? The Influence of Ethics on Courts and Congress in Determining U.S. Environmental Policies 41 ("[R]elevance of moral philosophy (or any sort) to the working of government is infrequent.") (unpublished book) (on file with author).

well-ordered civil society, primarily contract, tort, property, and criminal law.[36] No such rules or doctrines exist to apply to environmental disputes because there is no longstanding social consensus about the central question of modern environmentalism - the "correct" human stewardship[37] relationship to the natural world. Thus, any new relationship has to be created not recognized.

Roughly speaking, throughout history, societies have adopted one of three views of nature. The early view of nature was that parts of it were sacred space,[38] but this gave way to the rational view that the earth was an unlimited treasure chest of commodities to be exploited for human progress, either recklessly or scientifically. The environmental movement has challenged the treasure chest view. The environmental movement has either recast the pagan view of nature as sacred space and a resource of intrinsic value, or as a modified treasure chest of ecosystem services to be managed for human progress.[39] The commodity and services treasure chest views continue to compete with each other and make it very difficult to posit any consistent set of rules about how humans should relate to nature. One can still drive a Hummer with a "Save the Rainforest" sticker on it and feel good about both choices.

B. The Lack of Constitutional Foundation

Environmental law's legitimacy problems are compounded by the lack of a constitutional foundation in both the narrow and broad sense.[40] Environmental protection has almost no constitutional

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36. As Frederick Schauer has observed, "implicit in Hart's conception of formalism is the view that in the core, unlike in the penumbra, legal answers are often tolerably determinate." Frederick Schauer, *Formalism*, 97 YALE L.J. 509, 515 (1988).

37. JOHN PASSMORE, MAN'S RESPONSIBILITY FOR NATURE: ECOLOGICAL PROBLEMS AND WESTERN TRADITIONS 28-49 (1974) (surveying the theological and philosophical origins of the idea that humans bear some responsibility for nature).

38. *See* J. DONALD HUGHES, PAN'S TRAVAIL: ENVIRONMENTAL PROBLEMS OF THE ANCIENT GREEKS AND ROMANS (1994).

39. *See* James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607 (2000).

40. In addition to the United States' theory (that a constitution is a binding, written charter, it is intended to endure for a long period of time, and it is intended to exert positive, prior external limits on the exercise of political power) there is a broader definition: a set of principles that restrain the state. The second definition developed out of the long European struggle to assert control over the sovereign. The roots of this tradition are traced to 10th century disputes over rival papal claimants. This led to the fundamental western and Christian idea of divided authority, secular-church, pope-bishops, or the whole church. *See* BRIAN TIERNEY, RELIGION, LAW, AND THE GROWTH OF CONSTITUTIONAL THOUGHT 1150-1650 (1982). The long canonical debates worked out the fundamental idea that a person or body can still be subject to legal constraints. This is the idea that power could derive from representation. The result was a secular state controlled by popular sovereignty, a stunning advance in political theory, but it grew out of a long tradition of Catholic doctrine that the Church was the whole people.

foundation except as an exercise of the Commerce Power.[41] More generally, there are no over-arching general protection principles such as "keep nature in balance"[42] or "minimize long term health risks" equivalent to the emotive power of "rule of law," "equal protection," "freedom of speech and conscience," and "due process," which are at the heart of constitutionalism[43] that can be invoked to object to an anti-environmental decision. In fact, one of the many paradoxes of environmental law is that it has thrived in the absence of a firm constitutional foundation and in the face of Supreme Court indifference or hostility.[44]

Environmental law lacks a constitutional foundation because the distinctive features of it do not draw upon the philosophical, religious, and jurisprudential bases of the constitution, all of which are rooted in the enhancement of human dignity. Rather, as has long been, calls for a constitutional right to environmental quality assert for a fundamentally different conception of the role of government than the traditional protection of human rights and property embedded in our tradition.[45] Natural systems of non-

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41. Writing in the early 1970s, Philip Soper concluded that "[i]n view of the broad reach of the commerce power, it is difficult to imagine examples of federal action that could be justified only on the basis of some other constitutional authority." Philip Soper, *The Constitutional Framework of Environmental Law*, *in* FEDERAL ENVIRONMENTAL LAW 20, 27-28 (1974). The Supreme Court's post-*Lopez* Commerce Clause jurisprudence does not fundamentally contradict this statement, at least so far. *See e.g.*, Gibbs v. Babbitt, 214 F.3d 483 (holding the ESA constitutional as applied to reintroduction of wolf); Nat'l Ass'n of Home Builders v. Babbitt, 130 F.3d 1041 (D.C. Cir. 1997) (finding the ESA constitutional because cumulative impacts of local species' extinction risk can be aggregated to find interstate commerce nexus); Nebraska v. EPA, 331 F.3d 995 (D.C. Cir. 2003) (holding the Safe Drinking Water Act not per se unconstitutional because there are substantial numbers of interstate water sales).

42. The construct biodiversity has been advanced just for this purpose. DAVID TACKAS, THE IDEA OF BIODIVERSITY: PHILOSOPHIES OF PARADISE (1996). But a leading environmental law scholar finds the idea "too abstract a concept to be useful in building" political support for the conservation of nature. Holly Doremus, *Biodiversity and the Challenge of Saving the Ordinary*, 38 IDAHO L. REV. 325, 352 (2002). My colleague, Fred Bosselman, has exposed the inchoherencies in the construct of biodiversity. Fred Bosselman, 12 N.Y.U. ENVTL. L.J. (forthcoming 2004).

43. The natural law basis of this thinking has been well documented. *See, e.g.*, Paul E. Sigmund, *Carl Friedrich's Contribution to the Theory of Constitutionalism-Comparative Government*, XX Nomos 32 (1979).

44. Professor Richard J. Lazarus has demonstrated that the Supreme Court views environmental law as "merely an incidental factual context . . ." rather than as a distinct area of law and that the justices' attitudes toward environmental protection "have become increasingly skeptical over time." Richard J. Lazarus, *Restoring What's Environmental About Environmental Law in the Supreme Court*, 47 UCLA L. REV. 703, 706 (2000).

45. The progressive ideas of international environmental protection duties and human rights share the idea of a new concept of sovereignty, which is premised on the affirmative obligation of states to care for their citizens. *See* Helen Stacy, *Relational Sovereignty*, 55 STAN. L. REV. 2029 (2003).

human flora and fauna, and statistical victims,[46] more than the dignity of actual human beings, are the focal point of environmental protection. And, an environmental right would be a right *to* affirmative government action rather than a right to be free *from* the exercise of arbitrary or oppressive state power.

The United States Constitution is understood as a general structure for making federal decisions and as a charter of negative liberties rather than as source of positive, generally aspirational, rights characteristic of most other constitutions of the world.[47] Thus, the distinctive, fundamental objectives of environmental protection — protection from long-term, low probability but potential serious public and other risks and biodiversity protection — do not fit in our constitutional jurisprudence. In addition to the negative/affirmative dichotomy, environmental protection does not protect relatively powerless minorities from the risk of government sponsored or sanctioned discrimination. The usual explanation is that environmental protection reflects the majority will and produces benefits that cut across racial, religious, and economic boundaries. In short, environmental protection does not single out discrete, relatively powerless minorities, although there will be environmental "civil rights" issues in the future.[48]

The historian Roderick Nash tried to solve this problem by arguing that environmental protection is a logical extension of the Enlightenment legacy of the recognition of human dignity other worthy subjects; I am not persuaded that the analogy is right.[49] The negative Enlightenment entitlements — freedom of belief and freedom from the arbitrary exercise of state power — cannot easily or meaningfully be extended to freedom from certain risk levels, let alone substantive resource allocations,[50] because the desired

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46. The abstract and speculative nature of toxic risk assessment has been much noted. *See, e.g.*, Lisa Heinzerling, *Environmental Law and the Present Future*, 87 GEO. L.J. 2025, 2042-43 (1999); Lisa Heinzerling, *The Rights of Statistical People*, 24 HARV. ENVTL. L. REV. 189 (2000).

47. Constituicão Federal [C.F.] [Constitution] art. 225 (Braz.) ("All have right to an ecologically balanced environment."); Konstitutsiia [KONST. RB 1991] art. 15 (Bulg.) ("The Republic of Bulgaria ensures the protection and conservation of the environment.").

48. Proponents of environmental justice will object to the seeming insensitivity to the disparate impact of environmental regulations and decisions on the poor and minorities. *See, e.g.*, CLIFFORD RECHTSCHAFFEN & EILEEN GAUNA, ENVIRONMENTAL JUSTICE: LAW, POLICY, & REGULATION (2002). I do not dispute the fact that pollution-generating facilities may be concentrated in minority or low-income areas, and some regulations may not be sufficiently stringent to protect at-risk groups, especially minority women. However, environmental protection remains an example of majoritarianism because it seeks to provide benefits for all citizens rather than to deny these benefits to insular minorities.

49. RODERICK NASH, THE RIGHTS OF NATURE: A HISTORY OF ENVIRONMENTAL ETHICS (1989).

50. Joseph L. Sax, *The Search for Environmental Rights*, 6 J. LAND USE & ENVTL. L. 93 (1990).

outcome cannot be reduced to a consistent legally enforceable standard.[51] The benefits that environmental regulatory programs are designed to reduce, such as health risks or biodiversity conservation, are in the end examples of distributive, rather than corrective, justice. For this reason, they do not lend themselves to be the recognition of rights as opposed to inevitably provisional solutions that vary from situation to situation.[52] All people have a right to freedom of conscience, but not to have all forests and rivers be managed in the same way, or to a uniform baseline of toxic chemical risk protection.

A constitutional footing is not absolutely necessary for the effective implementation of new public policies as the spectacular success of environmental protection since 1970 illustrates. However, the greater the gap between the constitutional and legislative structure of a policy objective, the more an area of law is vulnerable to long run erosion through ossification, marginalization, or assimilation. The lack of constitutional footing makes it difficult to buffer the original public policy objectives against a hostile Executive and Judiciary. For example, both the labor and environmental movements are suffering from the lack of a constitutional or common law foundation in the face of the current Supreme Court's hostility to all non-Executive exercises of political power.

C. Labor Law: A Case Study in Ossification

The rise and fall of labor law is an example of the ossification[53] of what was once a new and dynamic area of the law, but now suffers from a combination of legislative and judicial hostility. The parallels between labor and environmental law are not perfect, but they are instructive. In contrast to environmental regulation, proponents of labor unions had to overcome hostile Supreme Court decisions, which prohibited union activity and restricted the power of the government to regulate working conditions through congressional protection. The resulting legislation, which recognized the right to collective bargaining, became the basis for a

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51. This argument is developed at greater length in J.B. Ruhl, *The Metrics of Constitutional Amendments: And Why Proposed Environmental Quality Amendments Don't Measure Up*, 74 NOTRE DAME L. REV. 245, 275-80 (1999).

52. CASS J. SUNSTEIN, AFTER THE RIGHTS REVOLUTION: RECONCEIVING THE REGULATORY STATE 90-91 (1990). For a mildly critical analysis of this position, see Daniel A. Farber, *Playing the Baseline: Civil Rights, Environmental Law, and Statutory Interpretation*, 91 COLUM. L. REV. 676, 687-91 (1991).

53. This analysis is taken from Cynthia L. Estlund, *The Ossification of American Labor Law*, 102 COLUM. L. REV. 1527, 1579-87 (2002).

series of Supreme Court opinions that extended union protection in the name of fidelity to congressional purpose. But the Court never developed a constitutional basis for the protection of employee interests, and after the 1940s began to "deconstitutionalize" labor law[54] by developing First Amendment employee rights to refuse to pay dues unconnected to an immediate range of activities that directly and immediately benefit union members. The result is a law that leaves a basic regulatory structure intact, but renders it increasingly ineffective and removed from its original, distributional remedial purpose.

Environmental law, too, is vulnerable to becoming a gutted shell of what has been generally hailed, despite persistent arguments that monitored markets could do a better job, as an effective regulatory regime.[55] At the present time, the Constitution primarily functions with respect to environmental law as it does to any other area of the law.[56] It checks the exercise of state power rather than promotes the remedial purposes of environmental legislation. Constitutional doctrines such as equal protection, procedural due process, affirmative and negative commerce powers, state sovereign immunity, and the Takings Clause apply to environmental regulation as they apply to all administrative and legislative action. Courts also serve as a check on the elected (and appointed) branches of government.

Environmentalists sometimes think of environmental law as an exceptional area of the law that should be immune from constitutional and other judicially imposed constraints. The extreme version of exceptionalism is without merit; environmental regulation must be exercised in a lawful, non-arbitrary manner just as all exercise of government power must. However, there is a crucial difference between the reflexive validation of any environmental position and the Court's failure to engage the idea of environmental protection as a new, but permanent public value, and to integrate it to its decisions. There is a serious risk that the Supreme Court and lower federal courts will invoke constitutionally based doctrines that undermine federal regulatory mandates.[57]

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54. *Id.*

55. For a spirited and detailed defense of the efficiency of command and control regulation, see Daniel H. Cole & Peter Z. Grossman, *When Is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 WIS. L. REV. 887 (1999).

56. For a critical analysis of the internal inconsistencies in the current Supreme Court doctrines restricting the powers of federal and state governments to enact environmental protection legislation, see Robert V. Percival, *"Greening" the Constitution--Harmonizing Environmental and Constitutional Values*, 32 ENVTL. L. 809 (2002).

57. Christopher H. Schroeder, *Environmental Law, Congress, and the Court's New*

D. Extinction Through Integration or Disintegration

Environmental law's soft core as opposed to a "hard" or "real law" one makes it a prime candidate for extinction through assimilation or disintegration. One of the primary characteristics of a distinct area of law is that it contains a relatively unique set of core principles distinguishing it from other areas of the law. One could dismiss environmental law, with considerable justification, as applied administrative law with a heavy dash of statutory construction law, if there is such an area of law. Many areas of law flourish without meeting this criteria, but a distinctive core along with the respect of the academy is important, if not necessary, to prevent their marginalization and perhaps extinction. Without a distinctive core and the self-study that the academy provides, an area of law will lose power in the judicial and political arena. It becomes a factor or screen to be considered from time to time rather than a consistent decision driver.

Environmental law also faces the additional problem of dismissal as just another example of "the law and . . ." problem. Academics have long debated whether an area of law is a set of relatively abstract, fundamental principles that can adapt to new technologies and societal conditions and preferences, or whether law is the product of a specific technology or societal change. The academy has always looked down on proposed categories of law that do not track the historic Roman categories of things, dialect, obligations, status, and actions[58] as faux areas of law. In addition to academic disdain, problem-specific courses run the risk of limited half-lives. In today's decentralized academic environment, a wide

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Federalism Doctrine, 78 IND. L.J. 413, 457 (2003) (finding narrow statutory construction as illustrated by *Solid Waste Agency v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001), "will cause a de facto contraction in federal problem solving abilities because the laws on the books will not soon be replaced by curative legislation."). Justice Scalia bashing has become a cottage industry and I will leave that to others, but his description of the Endangered Species Act ("ESA") in *Bennett v. Spear*, 520 U.S. 154 (1997), remains the most egregious environmental example of the substitution of a judge's personal beliefs for that of Congress. In the course of a justifiable extension of the citizen suit provision of the ESA to commodity user groups opposed to the enforcement of the ESA, he offered the following justification for the ESA's best available science and commercial data requirement: "While this no doubt serves to advance the ESA's overall goal of species preservation, we think it readily apparent that another objective (if not the primary one) is to avoid needless economic dislocation produced by agency officials zealously but unintelligently pursuing their environmental objectives." *Bennett,* 520 U.S. at 176. *See also* Robert A. Shapiro & William Buzbee, *Unidimensional Federalism: Power and Perspective in Commerce Clause Adjudication*, 88 CORNELL L. REV. 1199 (2003).

58. The argument that law should be general rather than specific is articulated in Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207 (1996).

range of subject areas and course offerings compete for legitimacy. Not all survive.

Environmental law can either evolve into a permanent area of the law, or the protection of environmental values could simply become a factor to be considered in a variety of established substantive contexts. A problem-specific context is often a necessary step in law's evolution, but the end product of this approach is often extinction or assimilation. Environmental law is one of the many legal products of the social ferment that lasted from the mid-1960s to Watergate. Environmental law was preceded by the rise of feminism, the civil rights movement, and the war on poverty. All of these moments in time have had profound influences on law and society, but the influences vary and often recede with time.

A specific focus often serves as a useful lens to understand the barriers that the law poses to social progress. However, once the problem is spotlighted, the subject disintegrates as a discrete legal subject and becomes integrated into the historic Roman-based categories as a new constraint or "factor." For example, law and poverty courses were very much in vogue in the late 1960s and early 1970s, reflecting the high political priority that structural poverty ameiliorization enjoyed. The course illustrated the way in which different areas of the law reinforced poverty, and many of the reform ideas entered the legal mainstream. One cannot teach landlord-tenant law without examining the impact of certain rules on low-income tenants. But, eventually, the legal construct of poverty died as political priorities shifted, although courses such as property and contracts continue to be influenced by the development. Feminism may be undergoing a similar fate.[59] It is increasingly an important perspective to be considered in a wide range of areas, but not a separate area of law. Occasionally, the obsolescence is planned. Gaylaw is one of a few new legal areas with a reform agenda that seeks to eliminate the need for the area. Gaylaw's sole focus is to eliminate discrimination against same sex conduct and relationships to guarantee equal treatment for all people regardless of sexual orientation.[60] The Supreme Court has now immunized consensual, same-sex adult sexual relations from criminal sanctions.[61] Were the state to recognize gay marriage or create the full functional equivalent, there would be much less need

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59. *See* Catharine A. MacKinnon, *Mainstreaming Feminism in Legal Education*, 53 J. LEGAL EDUC. 199 (2003) (articulating a vision of what the "true" integration of feminism into the legal system and the academy might be).

60. WILLIAM N. ESKRIDGE, JR., GAYLAW: CHALLENGING THE APARTHEID OF THE CLOSET (1999).

61. Lawrence v. Texas, 123 S.Ct. 2472 (2003).

for that area of law. Sexual orientation could simply be added to the list of categories protected from a wide variety of discrimination in housing, the work place, and other areas.

Environmental law could suffer this fate because it, too, began as a lens course. Environmental law held up existing areas of the law such as nuisance, public land law, and administrative law to the lens of environmentalism to show the defects in existing law, which were largely designed to promote rational (at best) resource exploitation, and to address problems such as systemic pollution, long term risks rather than immediate injuries, and poorly planned environmentally insensitive public works projects. Despite its success to date, it is still possible that environmental law could suffer the fate of other lens courses: total assimilation and marginalization. However, its proponents have higher aspirations for it than as a transition stage to integration and its marginalization as a "sensitivity." The thrust of environmental law is markedly different from what Judge Calabresi has called the "law and status" theory of law.[62]

In contrast to areas of the law that identify victims and devise strategies to end or ameliorate an unjustified inferior status, environmental law rests on the assumption that the imperatives of environmentalism require a permanent and fundamentally different approach to the use of the three bases of our planetary life support system: air, water, and soil. It follows that the external forces — economics, ethics, and science — that propel environmentalism should shape a new area of the law. Thus, environmentalism is not simply a new technology, such as the Internet, which can ultimately be organized by adapting established legal categories to it, or a new social movement with a limited half-life. The model, therefore, is not like the other social movements of the mid-1960s and other trendy but ephemeral areas such as law and literature, but like the earlier natural resource areas of water, oil and gas, mining, public land, and land use controls law. These areas grew from the special physical characteristics of a resource and the social dynamics that shaped the conflicts over the use of it, and as a result developed a coherent permanent body of law that continues to evolve.

III. THREE JURISPRUDENTIAL SOURCES OF REAL LAW AND THEIR LIMITATIONS

Once one rejects the easy Holmes-Gray position that law is a reasoned prediction of how a court will decide a case,[63] there are

62. Calabresi, *supra* note 32, at 2127-29.

63. Oliver Wendel Holmes, *The Path of Law*, *in* COLLECTED LEGAL PAPERS 168 (1920); *see*

three candidate jurisprudential answers to the real law problem in environmental law. First, environmental law can be characterized as positive law. Second, it can be seen as a textbook example of sociological jurisprudence. Third, it can be seen as a legal revolution which supplements the historic focus on human dignity with a new, dual focus of the interests of future generations and ecosystem integrity. This section examines the pros and cons of grounding environmental law in English positivism, sociological jurisprudence, and a legal revolution. It finds that all of them can contribute to an understanding of environmental law, but none is a complete explanation. The following section essays a new definition of environmental law.

A. The Case for Positivism

1. Environmental Law Looks Like and is Positive Law

Positivism is the most logical basis of environmental law because the subject is largely the product of legislative acts, administrative regulations, and judicial decisions interpreting the legislation.[64] Congress quickly responded to widespread public demands that the "environment" be protected with a decade of stringent regulatory programs.[65] If one defines law as the command of the sovereign and posits that all law is legislated,[66] environmental law is a field of "pure" positive law similar to many areas of law such as tax, securities regulation, or employment discrimination. A dense regulatory program such as that administered by the EPA and other government agencies has long been the foundation for the development of a new area of law.[67] The virtue of defining

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also JOHN CHIPMAN GRAY, THE NATURE AND SOURCES OF THE LAW § 276 (1909) ("[I]n truth, all the Law is Judge-made law.").

64. GEORGE P. FLETCHER, BASIC CONCEPTS OF LEGAL THOUGHT 33 (1996) (stating that "the simplest working definition of positivism is this: Positivism holds that all law is enacted law.").

65. Environmental law was the product of a unique moment in United States and world political history. Concern for the adverse consequences of human exploitation of nature had been building since the nineteenth century. More immediately, the foundations for the federalization of air and water pollution had been laid in the 1930s-50s. *See* Andrews, *supra* note 7, at 201-54; *see also* William L. Andreen, *The Evolution of Water Pollution Control in the United States: State, Local, and Federal Efforts, 1789-1972: Part I*, 22 STAN. ENVTL. L.J. 145 (2003).

66. MACCORMICK, *supra* note 31, at 60.

67. Mark Sagoff has characterized environmental protection as social rather than economic regulation to argue that efficiency should not be the primary criterion against which regulatory outcomes are measured. THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT (1988). *But see* Carol M. Rose, *Environmental Faust Succumbs to Temptations of Economic Mephistopheles, or Value by Any Other Name is Preference*, 87 MICH. L. REV. 1631 (1989) (noting the distinction has been much criticized).

environmental law as positive is that it grounds the field in the most widely accepted Anglo-American jurisprudential tradition and endows it with the needed capacity to adapt to changed knowledge. Ultimately, positivism reflects the views of Jeremy Bentham that the law is in constant need of reform and thus assumes Athat all law is changeable.[68] Adaptation to new knowledge and experimentation should be the hallmark of environmental law.[69]

Positive legislation is responsible for the successes of environmental law. The major achievements of the environmental decade, the Clean Air and Clean Water Acts, the Endangered Species Act, and the "Superfund" are justly celebrated as a major shift in United States resource policy.[70] The legislation and the early sympathetic judicial readings of them turned our air and watersheds from unlimited waste disposal sinks to limited access commons; they reduced large percentages of gross pollution. They also served as worldwide models of effective, enforceable environmental regulation.

2. The Limits of Positivism

The environmental legislation put in place during the environmental decade also illustrates the dangers and limits of positivism. Over time, our environmental legislation has become increasingly dysfunctional and immune to necessary adaptation to changed conditions. Environmental law's habitually under-exposed radical nature means that changes in political priorities, including judicial interpretation, can reduce an ephemeral set of positive statutes and regulations into a legal system that fails to evolve to fulfill its initial remedial purpose. Environmental law is simply another field of statutory interpretation. The Clean Air Act has not been able to tame automobile use or limit $C0_2$ emissions. The Clean Water Act, along with market-driven de-industrialization, has reduced discharges from large point sources but not non-point source pollution. The Endangered Species Act is an Emergency Room procedure for species on the brink of extinction, rather than a broad mandate for biodiversity conservation.

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68. MACCORMICK, *supra* note 31, at 60.

69. Daniel A. Farber, *Environmental Protection As A Learning Experience*, 27 LOY. L.A. L. REV. 791 (1994). Ironically, other countries have used the United States' litigation model to legislate new environmental rights. Brazil developed a new category of diffuse right called a transindividual right to allow class actions for pollution of commons. This categorization has given public interest litigation a firmer conceptual foundation than it enjoys in the United States. Código Comercial [C. CO.] art. 81 (Braz.). *See also* Antonio Gidi, *Class Actions in Brazil — A Model for Civil Law Countries*, 51 AM. J. COMP. L. 311, 349-56 (2003).

70. *See* RICHARD J. LAZARUS, THE MAKING OF ENVIRONMENTAL LAW (forthcoming 2004).

I am uneasy with a pure positivist answer because it ties environmental law too closely to the politics of environmentalism[71] since what goes up can go down.[72] At the present time, environmental law is undergoing a traditional Chinese torture death by slicing. For example, J.R. DeShazo and Jody Freeman have demonstrated that "legislators use their position on oversight and appropriations committees to divert the agency from compliance with the extremely specific requirements of the Endangered Species Act."[73] The result is a severe sub-majoritarianism that undermines national environmental mandates. This argument is not simply a reaction to the extreme anti-environmentalism of the current administration. Rather, it reflects one of the fundamental ideas of the western legal tradition: there has to be some space between law and politics.

B. Sociological Jurisprudence

As indicated above, one of the problems with pure positivism is that there is no need to worry about the utility of the substantive content of the law. In contrast, sociological jurisprudence has always been aware of the complex interplay between changing societal values and the need for purposeful legal rules, and principles to reflect these new values. Environmental law would seem to be a classic example of Roscoe Pound's view that law is social

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71. The idea of an unlimited sovereign troubled Austin and his critics. *See* JOSEPH RAZ, THE CONCEPT OF A LEGAL SYSTEM 26-43 (1970); *see also* Richard J. Lazarus, *A Different Kind of "Republican Moment" in Environmental Law*, 87 MINN. L. REV. 999 (2003) (arguing that the success of environmental law is based on the bipartisan nature of environmental issues and the divided nature of the federal government, and that the current domination of all three branches of government by the Republican party and the diversion of public attention to the Post-September 11th world of fear and economic hardship does not bode well for the future of environmentalism).

72. For years, water law scholars have argued that states should integrate water quantity and quality considerations in water use permits. In fact, Justice O'Connor labeled the distinction between quantity and quality "artificial." PUD No. 1 of Jefferson County v. Wash. Dept. of Ecology, 511 U.S. 700, 719 (1994). However, when the Washington State Department of Ecology actually started conditioning water rights permits, the legislature promptly prohibited it from using its water pollution authority to abrogate, supersede, impair, or condition the full exercise of water rights. Engrossed Substitute Senate Bill No. 38 (2003).

73. J.R. DeShazo & Jody Freeman, *The Congressional Competition to Control Delegated Power*, 81 TEX. L. REV. 1443, 1447 (2003). *See also* William Snape III & John M. Carter II, *Weakening the National Environmental Policy Act: How the Bush Administration Uses the Judicial System to Weaken Environmental Protections* (A Report of Judicial Accountability Project, Defenders of Wildlife) (2003), *available at* http://www.defenders.org/publications/nepareport.pdf (last visited Feb. 27, 2004) (describing multiple strategies that the Bush II Administration is using to circumvent NEPA). *See generally* Robin Kundis Craig, *Environmental Law Symposium: The First Year of the Bush Administration,* 25 W. NEW ENG. L. REV. 1 (2003).

engineering.[74] This theory posits that law reflects a clash of competing interests and has the potential to evolve as new interests are recognized.[75] Pound's jurisprudential theories fell out of favor in the 1930s under the spell of Freudian-influenced legal realism. A less developed version of his theory reemerged in the Henry Hart and Albert Sacks Harvard legal process school,[76] which was still in vogue at the beginning of the environmental decade.[77] Hart and Sacks developed a theory of adjudication that involved a constant interplay among three sources of law — rules, standards (rule-like norms), and principles[78] to permit reasoned judicial reform.[79]

The legal process approach legitimates an open-ended, progressive process of adjudication which allowed judges to test the validity of preexisting norms by reinterpreting these norms in light of contemporary social and economic conditions,[80] provided that the decision met the test of reasoned elaboration and proper consideration of the merits of deferring other law making institutions. Environmentalism is a changed social condition, and thus environmental law would seem to be a good candidate for reasoned legal change using the legislation as a guide. The problem is that environmental law has not developed in this fashion. A few early decisions invoked newly proclaimed general environmental principles to explain or justify an interpretation of a statute[81] or the

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74. ROSCOE POUND, AN INTRODUCTION TO THE PHILOSOPHY OF LAW (1922).

75. In contrast to the pseudo-Darwinistic claims once advanced by some law and economics scholars, I do not argue that law evolves in a deterministic fashion to produce efficient rules. *See* Gillian K. Hadfield, *Bias in the Evolution of Legal Rules*, 80 GEO. L.J. 583 (1992).

76. HENRY M. HART, JR. & ALBERT M. SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW (William Eskridge, Jr. & Phillip P. Frickey eds., 1994).

77. All good ideas return in a recycled and modified form. *See* Edward L. Rubin, *The New Legal Process, The Synthesis of Discourse, and the MicroAnalysis of Institutions*, 109 HARV. L. REV. 1393 (1996).

78. *See* ANTHONY J. SEBOK, LEGAL POSITIVISM IN AMERICAN JURISPRUDENCE 139-46 (1998) (giving an important rehabilitation of this theory).

79. *See* Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L. REV. 557 (1992); Kathleen M. Sullivan, *The Supreme Court, 1991 Term Foreword: The Justices of Rules and Standards*, 106 HARV. L. REV. 22, 57-69 (1992); MARK KELMAN, A GUIDE TO CRITICAL LEGAL STUDIES 15-63 (1987); FREDERICK SCHAUER, PLAYING BY THE RULES: A PHILOSOPHICAL EXAMINATION OF RULE-BASED DECISIONMAKING IN LAW AND IN LIFE 104 (1991).

80. Professor Margaret Jane Radin reaches this conclusion through Wiggenstein's argument that rules only exist when there is widespread community acceptance. *See* Margaret Jane Radin, *Reconsidering the Rule of Law*, 69 B.U.L. Rev. 781, 817-19 (1989).

81. *See* Weyerhaeuser Co. v. Costle, 590 F.2d 1011, 1043 (D.C. Cir. 1978). In rejecting the argument that the EPA must take the natural treatment capacity of the ocean into account in setting effluent limitations, the District of Columbia Circuit Court of Appeals bolstered its construction of the Clean Water Act with the observation that,

> [m]ore fundamentally, the new approach implemented changing views as to the relative rights of the public and of industrial polluters. Hitherto, the right of the polluter was preeminent, unless the damage caused by

application of a common law or constitutional rule. However, these decisions have not resulted in the consistent development of a distinct environmental jurisprudence.

C. The Revolutionary Theory

The most honest but challenging jurisprudential theory would be to characterize environmental law as a form of revolutionary law. Environmental law is a radical break with the Western legal tradition and the two manifestations of it in the United States, the common law and constitutionalism. Much of it seeks to protect two communities, natural systems and future generations, that have traditionally lacked a legal personality. Environmental law is further out of step with much of the western legal tradition because the hallmark of all great legal systems, common, civil and Islamic, is that they are backward looking systems that evolve slowly through a legal culture controlled by the governors of the system.[82] Adaptation to changed social conditions are often subordinated to the twin values of stability and predictability.

This does not mean, in Joseph Sax"s wonderful phrase, that law is a civil suicide pact that prevents it from dealing with radical new concepts of social organizations, which environmentalism requires.[83] However, the protection of settled expectations remains the primary objective of the law and adaptation remains a secondary objective to be carefully cabined. This is a major problem for environmental law because it is forward looking with a vengeance, and has little respect for the past. The past is seen as the source of our current problems and a legacy to be rejected and replaced with a new paradigm of human-nature relations. As the historian Simon Schama was written:

> environmental history offers some of the most original and challenging history now being written, it inevitably tells the same dismal tale: of land taken, exploited, exhausted; of traditional cultures said to

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> the pollution could be proven. Henceforth, the right of the public to a clean environment would be preeminent, unless pollution treatment was impractical or unachievable.

Id.; *see also* Ethyl Corp. v. E.P.A., 541 F.2d 1 (D.C. Cir. 1976) (rejection of mechanistic proof of cause-in-fact when statute is "precautionary in nature" and "on the frontiers of scientific knowledge."); Environmental Def. Council v. Corps of Engineers of U.S. Army, 470 F.2d 289 (8th Cir. 1972), *cert. denied*, 412 U.S. 931 (1973) (holding that ANEPA was intended to effect substantive changes in decisionmaking.")

82. *See* ALAN WATSON, THE EVOLUTION OF LAW 119 (1985).

83. Joseph L. Sax, Book Review, *Takings: Private Property and the Power of Eminent Domain*, 53 U. CHI. L. REV. 279, 282 (1986).

> have lived in a relation of sacred reverence with the soil displaced by the reckless individualist, the capitalist aggressor.[84]

Legal revolutions do occur, but the fundamental legal change that they bring is often minimal because the revolution is more of a social/political rather than legal one. Professor Alan Watson classifies legal revolutions as (1) the clarification of prior, largely customary, regime, (2) the adoption of a new legal regime to match a political revolution, (3) the wholesale adoption of a code as part of the process of modernization, and (4) the rare case of one legal tradition being replaced by the second.[85] In most cases, the revolutions continue the backward looking tradition by incorporation of prior law. The United States experience with revolutions reenforces the backward looking legal nature of them. The United States has had two revolutions and shows little inclination to have a third. Neither the Revolutionary War nor the Civil War disturbed the underlying legal regime. In fact, they sought to recapture an ideal legal past. Political change generally occurs through "republican" moments, either when a non-partisan consensus emerges or one party is sufficiently powerful to force its agenda on the nation.[86]

Environmental law would stem to be a perfect case for another kind of revolutionary change, the post- modern transformative jurisprudence advocated by Roberto Unger and others in the critical legal studies movement.[87] It is non-formal, indeterminate law at its best[88] and is more rhetoric than law;[89] its ultimate objective is to destabilize and redistribute the boundaries of property.[90] However, no such legal revolution has occurred in environmental law. Instead,

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84. SIMON SCHAMA, LANDSCAPE AND MEMORY 13 (1995); *see also* WILLIAM CRONON, CHANGES IN THE LAND: INDIANS, COLONISTS AND THE ECOLOGY OF NEW ENGLAND (1983) (a classic example of the lost Eden school of environmental history).

85. Watson, *supra* note 82.

86. Daniel A. Farber, *Politics and Procedure in Environmental Law*, 8 J.L. ECON. & ORG. 59 (1992).

87. MALCOLM M. FEELEY & EDWARD L. RUBIN, JUDICIAL POLICY MAKING AND THE MODERN STATE: HOW COURTS REFORMED AMERICA'S PRISONS 243-44 (1998) (arguing that in post-modern society the rule of law is achieved through process and the institutional structure rather than to fidelity to existing text).

88. *See* Duncan Kennedy, *Toward a Critical Phenonmenology of Judging*, *in* THE RULE OF LAW: IDEAL OR IDEOLOGY? 141 (A. Hutchinson and P. Monahan eds., 1987); Ruhl, *supra* note 51.

89. *See* JAMES BOYD WHITE, HERACLES' BOW: ESSAYS ON THE RHETORIC AND POETICS OF LAW 31-44 (1988).

90. *See* ROBERTO MANGABIERA UNGER, WHAT SHOULD LEGAL ANALYSIS BECOME? 152 (1996). For a proposal to apply this analysis to property, see Tony Arnold, *The Reconstruction of Property: Property as a Web of Interests*, 26 HARV. ENVTL. L. REV. 281 (2002).

we have followed one of two incremental, backward looking strategies. First, we have tried to use the courts as instruments of change by pursuing a rule of law strategy based on the fiction that courts were simply applying pre-existing duties.[91] Second, we have pretended that environmental law is consistent with liberal individualism because it is a modest extension of the principle that persons should be responsible when they cause harm to others.[92]

This fiction works tolerably for pollution that immediately damages persons or property, but it begins to break down for risk exposure protection and biodiversity conservation. The control of air and water pollution do have some roots in the common law,[93] but environmental law is more often a radical break rather than an incremental extension of the common law and the western legal tradition generally.[94] The interests that the law seeks to protect had no legal personality at common law and the definition of harm which it promotes was seldom recognized. Environmental law basically protects the interests of future generations in a sustainable planetary life support system[95] and natural system functions. Environmental law has sought to redefine harm as long term the risk of future illness or ecosystem malfunction rather than immediate manifestation of an injury mechanistically caused by an identifiable actor. These ideas continue to be bitterly contested. For example, there is some recognition of risk in the regulation of carcinogenic and mutenogenic substances but the law of torts

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91. *See* Tarlock, *Environmental Rule of Law Litigation*, supra note 7.

92. *E.g.*, ROBYN ECKERSLEY, ENVIRONMENTALISM AND POLITICAL THEORY: TOWARD AN ECOCENTRIC APPROACH (1992); R. GOODWIN, GREEN POLITICAL THEORY (1992); David A. Westbrook, *Liberal Environmental Jurisprudence*, 27 U.C. DAVIS L. REV. 619 (1994) (discussing that environmentalism is inconsistent with liberal values because it does not protect individual well-being); Geoffrey Wandesford-Smith, *Learning From Experience, Planning for the Future: Beyond the Parable (And Paradox?) of Environmentalists As Pin-Striped Pantheists*, 13 ECOLOGY L.Q. 725 (1986).

93. WILLIAM RODGERS, JR., ENVIRONMENTAL LAW, 112-22 (2d ed. 1994). For an articulation of the thesis that the Clean Air Act is not a revolutionary development but is deeply rooted in the common law of nuisance, see MORAG-LEVINE, CHASING THE WIND, *supra* note 34.

94. I use the broad definition of the western legal tradition put forth by Harold J. Berman in LAW AND REVOLUTION: THE FORMATION OF THE WESTERN LEGAL TRADITION 7-10 (1983). Professor Berman lists nine characteristics. His fifth is that "[i]n the western legal tradition law is conceived to be a coherent whole, an integrated system, a "body," and this body is conceived to be developing in time, over generations and centuries." *Id.* at 9.

95. EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS; INTERNATIONAL LAW, COMMON PATRIMONY, AND INTERGENERATIONAL EQUITY (1989); *see also* Daniel A. Farber, *From Here to Eternity: Environmental Law and Future Generations*, 2003 ILL. L. REV. 289 (2003). Professor Lisa Heinzerling offers an alternative, but not inconsistent categorization of the beneficiaries of environmental protection. Heinzerling, *The Rights of Statistical People*, *supra* note 46.

adheres rigorously to mechanistic theories or cause and has resisted the tort of risk creation.[96]

IV. THE PERSISTENCE OF PROCESS

A. The Special Features of Environmental Decisionmaking

The basic features of environmental decisionmaking such as the full assessment of potential adverse impacts, the application of state-of-the-art technology and beyond to reduce pollution, the attempted quantification of long term risks and the search for less environmentally destructive alternatives are so ingrained in contemporary thinking that we forget how novel and bitterly contested they recently were (and are once again) and how fundamentally they have changed the way that we now make a wide range of decisions. Environmental law was born as way to compel administrative agencies, private industry and local governments to adopt a new process of making decisions and to invest in pollution reduction technology. Prior to the 1960s, environmental values, as we now define them, existed under the rubric of conservation practices or aesthetic interests, but they were consistently given little weight in resource allocation and waste disposal decisions. Thus, there was limited assessment of the long adverse impacts of most activities and of the possibility of less damaging alternatives.

Environmental law changed all this. It was born out of the fight to stop a pump storage project at scenic Storm King Mountain on the Hudson River in New York State. The successful law suit to remand a Federal Power Commission license became the paradigm environmental law suit.[97] The plaintiffs convinced the court of appeals to read a broad regulatory statute, which at best conferred discretion on the agency to consider aesthetic values (a then much contested idea), to impose an affirmative duty to consider thoroughly environmental values and to justify more fully decisions not to protect environmental values once the objectors offered evidence of likely environmental degradation and a reasonable, less environmentally damaging alternative. The common thread that ties these concepts together is that they are almost all processes to

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96. Despite persistent argument that courts should become more receptive to probabalistic theories of cause, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), has raised rather than lowered the causation bar for toxic tort plaintiffs. Jean Macchiaroli Eggen, *Toxic Torts and Causation: The Challenge of* Daubert *After the First Decade*, 17 NAT. RES. & ENVTL. 213 (2003). When the tort has been recognized, the prima facie case is very difficult to meet. *E.g.*, Potter v. Firestone Tire Co., 863 P.2d 795 (Cal. 1993).

97. Scenic Hudson Preservation Conference v. FPC, 354 F.2d 608 (2d Cir. 1965), *cert. denied*, 384 U.S. 941 (1996). For a more detailed history of the litigation see Oliver Houck, *Unfinished Stories*, 73 U. COLO. L. REV. 867, 869-80 (2002).

deal with of the central characteristics of environmental problems — pervasive uncertainty.[98]

B. Process versus Procedure

Students of environmental law have often observed that what law that has emerged from environmental litigation is primary procedural rather than substantive. The procedural focus can be traced to the first cases that held that NEPA could be judicially enforced by the courts,[99] a view ultimately ratified by the Supreme Court.[100] The construction of NEPA as a procedural rather than substantive statute is the most striking example of the dominance of procedure over substance, but it is only one example. Once the Supreme Court moved away from the New Deal tradition of highly deferential review of informal agency action, courts had to reconcile more intrusive review with separation of powers principles. The focus on the process of decision and its internal logical coherence[101] rather than on the merits of the decision was the means reconciled the unprecedented response to environmentalism with the Constitution through the "hard look" doctrine.[102] However, the substance/procedure dichotomy was never as clear cut or stable as the courts pretended, and in fact intensive procedural review fundamentally changed the ways that agencies make decisions.

Environmental law's continued focus on procedure rather than substance if often lamented as a major failing because we expect an area of law to come as close to a suite of interlocking substantive rules as possible. However, the hoped-for substantive rules are unlikely to emerge in the future. The basic reason is the science-based nature of environmental law precludes the definition of hard

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98. *See* Doremus, *supra* note 42, at 319-409. Professor Doremus identifies four distinctive characteristics of environment problems: (1) pervasive uncertainty; (2) intractable value conflicts; (3) the need for collective action; and (4) the need for durable and dynamic solutions. These are present in most environmental controversies but the value conflicts, the need for collective action and the need for durable *but* dynamic solutions are all triggered by pervasive uncertainty. Uncertainty forces people to rely on empirical presumptions phrased as values, makes it impossible to rely solely on markets and common law suits to address many problems and makes all solutions contingent on the present state of knowledge. *Id.*

99. Calvert Cliffs Coordinating Comm., Inc. v. U.S. Atomic Energy Comm'n., 449 F.2d 1109 (D.C. Cir. 1971).

100. Stryker's Bay Neighborhood Council v. Karlen, 444 U.S. 223 (1980); Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989).

101. Charles H. Koch, Jr., argues that judicial review of agency policy making is a discrete category different from review of their statutory authority, that *Chevron U.S.A., Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837 (1984), blurred this distinction but the Court is slowly recognizing the difference by focusing on the process by which policy was articulated, not simply on whether the discretion to do was delegated. Charles H. Koch, Jr., *Judicial Review of Administrative Policymaking*, 44 WM. & MARY L. REV. 375 (2002).

102. Citizens to Preserve Overflow Park v. Volpe, 401 U.S. 402 (1971).

rules and pushes the law toward process rather than consistent outcome. This is the realty with which environmentalism must live,[103] but it need not be a negative factor for two primary reasons.

First, the dichotomy between substance and procedure has never been one of kind,[104] especially in the new administrative law that developed in the 1970s.[105] Procedures which impose new, affirmative duties on agencies to assemble and assess information that had been largely ignored in the past were intended to change the nature of substantive decisions. Second, there is a crucial, but not generally articulated, distinction between procedure and process as the term is used in "post-modern discourse." Procedure refers to the due process-based rules that we mandate to promote accuracy ("truth"), put before, rationality and fairness in a wide variety of fora. Procedure is therefore ultimately a neutral term because, we are indifferent to the correctness of the outcome if the standards of rationality and fairness are met in the search for truth. Process has a different standard of legitimacy.

In post-modern or post-Newtonian science, process refers to the way that we deal with the levels of uncertainties that have crept into our once static views of how the world works, but it is not a neutral term in the same sense that procedure is. It is a search for understanding which does not substitute fairness for accuracy. "With the rise of science a dream was born that the ultimate ground of reality would be discovered in tangible material things such as atoms, molecules, and elementary particles. It now seems that these are all manifestations of some underlying process, of symmetry principles and constant transformation."[106] The fact knowledge is always a search and a debate about what we actually know does not exclude the use of guidelines to structure the process which is defined by the three primary objectives of environmentalism: (1) the reduction of the immediate and unrestrained use of air, soil and water media as waste disposal sinks; (2) the reduction of the long term public health and ecosystem degradation risks that result from exposure to toxic and other harmful substances; and (3) the conservation of biodiversity.

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103. *See* DANIEL A. FARBER, ECO-PRAGMATISM MAKING SENSIBLE ENVIRONMENTAL DECISIONS IN AN UNCERTAIN WORLD (1999).

104. *See* Robert Cover, *For James William Moore: Some Reflections on A Reading of the Rules*, 84 YALE L.J. 718 (1975).

105. *See* Richard Stewart, *The Reformation of American Administrative Law*, 88 HARV. L. REV. 1667 (1975).

106. F. EDWARD PEAT, FROM CERTAINTY TO UNCERTAINTY: THE STORY OF SCIENCE AND IDEAS IN THE TWENTIETH CENTURY 69 (2002).

C. Environmentalism: Science or Ethics?

If we are to posit guidelines, the issue becomes their source. Environmentalism is fundamentally a science-based way of perceiving the plant. We now view the plant as an object to be conserved rather than heedlessly exploited. This question is how should we respond to this changed perception. To some, this is an ethical sea change. To others, it is a reflection of our increasing but maddeningly incomplete understanding of how natural systems operate under the stress of constant human manipulation. It has not been thought necessary to specify the precise reason to enact positive protection legislation because ethics and science are assumed to lead the same result: the need to restrain much human activity that modifies "nature". Thus, environmental law is an unstable blend of science-informed ethical postulates. Economists might object to this characterization since it seems to exclude economics, which have played a major role in the design and justification of programs from pollution prevention to biodiversity conservation. However, economics, powerful as it is, primarily operates as a constraint (often powerful) on regulatory decisions made for a mix of ethical and scientific reasons.[107] Tension and inconsistency can be productive for a period of time but at some point, it is necessary to decide if law is environmental primarily based on ethics or science. Much is at stake. An ethically based environmental law should yield a series of "hard" rights both for natural systems and humans. These rules can be "confessed"; they do not depend on empirical verification. A science-based environmental law will inevitably lead to processes that require that constant production of knowledge.[108]

In the end, the choice is easy because the ethics project has not succeeded. Environmentalists have struggled mightily but unsuccessfully to construct a system of neo-Kantian environmental ethics that covers both humans and flora as fauna around Aldo Leopold's dictum that "[a] thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."[109] Environmental lawyers have long hoped that equilibrium ecology, as stated in Eugene Odum's classic text, would provide the scientific support to convince courts and legislatures to adopt nature's rules as legal rules. There are at

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107. Mark Sagoff, *Principles of Federal Pollution Control Law*, 71 MINN. L. REV. 19 (1986). *But see* Rose, *supra* note 67.

108. I have explored the influence of science and ethics more fully in *Environmental Law: Ethics or Science?*, 7 DULCE ENVTL. L. & POLICY F. 193 (1996).

109. ALDO LEOPOLD, A SAND COUNTY ALMANAC AND SKETCHES HERE AND THERE 224-25 (1949).

least three major problems with this project which relegate environmental ethics to a sensibility rather than a source of decision rules.

The first problem is the failure to develop a coherent. operational theory of environmental ethics that can be applied by judges. Even Leopold's most passionate defenders recognize that the whole "project" of environmental ethics has not succeeded in creating a convincing case for non-human rights and in developing substantive rules which are capable of making the inevitable choices among competing resource use options.[110] The second problem is that environmental ethics attempts to collapse a dichotomy, which is at the center of western thought. Environmental ethics rejects the is/ought distinction, which is said to separate science from morals. Unfortunately, science can contribute wisdom[111] but not the level of precision necessary to make hard choices so the dichotomy persists. The third problem is that attempts to collapse the sentient/non-sentient dichotomy, not just for large mammals but for all flora and fauna dichotomy.[112]

It is tempting to avoid the choice and argue that since environmentalism is an emerging philosophy or value system that posits that we living humans should assume science-based ethical stewardship obligations to conserve natural systems for ourselves as well as for future generations, and therefore we can define environmental law as institutionalized stewardship. Appealing as the idea is, it is not a good explanation of how the law surrounding environmental protection actually functions; environmental stewardship remains more a statement of aspiration rather than a positive description of law because, as a substantive matter, environmentalism is such a radical break with the western philosophical and legal tradition.

D. The Problems of Science

1. The Limits of "Conservative" Science

The failure of the ethical rights project forces environmentalism and environmental law to confront the strengths and limits of science, and the limits are many. Science is powerful but not transformative. As Professor Holly Doremus has observed,

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110. CHRISTOPHER STONE, EARTH AND OTHER ETHICS (1987).

111. *But see* EDWARD O. WILSON, THE DIVERSITY OF LIFE 357 (1992) ("[F]or what, in the final analysis, is morality but the command of conscience seasoned by a rational examination of the consequences.")

112. M. ZIMMERMAN, CONTESTING EARTH'S FUTURE: RADICAL ECOLOGY AND POSTMODERNITY 374-75 (1995).

"[b]ecause environmental problems are wicked, they cannot be solved objectively."[113] Science thus is not a mechanical process of answers to "wicked" environmental questions so such as it is a tool box to help answer the questions. Environmental law is science-based; science is the primary but not controlling influence. At some point, the normative conclusions drawn from science must be recognized as much. Environmentalism has deep roots in the aesthetic and emotional appeal of nature worship as well as in rationality. However, the environmentalism that drives policy and law is a product of the Enlightenment's faith in reason and knowledge, as opposed to theology, to benefit society.

It was the careful work of scientists such as Rachael Carson. Her book *Silent Spring*, along with a few others, played a pivotal role in alerting society to the dangers of the unrestrained and un-assessed use of ecosystems as sinks for chemicals, industrial wastes and the consequent loss of biodiversity. Society's faith in science has the power to shape the environmental dialogue. Science seldom controls the final outcome of the dispute, but policy-makers must generally operate within its parameters to establish the legitimacy of a decision. We cannot paste over the problem that constructs such as biodiversity loss[114] conceal fundamental differences in perceptions shaped by different values. Scientists like Edmund Wilson hope these differences in understanding will narrow as science produces more information.[115] Information production is central, but the basic problem with science generating useable information is that it has not historically been geared to tell us what we need to know. We once assumed that science could tell us the rules to prevent pollution and conserve biodiversity but too often they have posed more questions than answers. For example, we have developed many indices of pollution but we still cannot define and measure the desired end state for a healthy river. Instead, we have turned to engineers to tell us how much a waste stream can be reduced or a polluted site cleaned up.

Science is frustrating to apply because there are many levels of contingency in science. The contingency that has special relevance to the attempt to apply science to many environmental disputes is the tension between regulatory and "hard" or theoretical science. For example, the Endangered Species Act requires scientists to provide clear answers to fuzzy questions that many scientists do not

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113. Holly Doremus, *Constitutive Law and Environmental Policy*, 22 STAN. ENVTL. L.J. 295, 332 (2003).

114. Fred Bosselman has suggested, it is not clear if "biodiversity" can ever be made into a scientifically credible guide for decision-making. Bosselman, *supra* note 42.

115. WILSON, *supra* note 111.

define as "scientific" such as whether a species is endangered or whether a specific project is likely to cause jeopardy, but jeopardy is a legal rather than scientific construct. Scientists are uncomfortable with answering questions like this for two reasons. First, it partially collapses the fact-value dichotomy which science has maintained to differentiate itself from the softer humanities and social sciences and to establish its authority. Scientists are asked to decide, without revealing that they have done so, not only how much risk the species will experience but how much risk is acceptable. Second, questions that require tight causal connections leave too little room for the contingencies and qualifications that "hard" science demands.

Science seeks truth, but approaches it through a continual process of experimentation and re-evaluation. Scientists are most comfortable giving answers as ranges of probability rather than bottom line, linear causal relationships. But, environmental protection statutes force them to practice regulatory science, which is science designed to answer, to the best extent possible, causal questions about management choices and a socially desired outcome, such as the preservation of a species from extinction or an ecosystem that functions more like it did prior to human intervention. Regulatory science requires scientists to contribute to the establishment of standards that have both a normative and scientific component and then to devise ways to measure whether these standards are being met over time.

2. Three Examples of Dynamic, Destabilizing Science

Science often changes its views of the world in ways that can undermine laws built on them. Three examples follow.

a. Unbalanced Nature

Much environmental law assumes that nature will be in balance if not disturbed. However, changes in ecology have undermined the simple faith that preventing changes in natural systems is a sufficient protection strategy and that general but hard substantive environmental protection rules could emerge from this process. As lawyers were busy looking to ecology and other science, scientists have been busy deconstructing all the notions of stability from ecosystem to the definition of a species and the hope of simple rules that this promised. Biologists have substituted non-equilibrium for equilibrium theories of ecosystem. "Nature" is no longer the simple

construct that it once seemed.[116] It has been desconstructed and reconstructed in multiple ways. Ecologists have moved away from the balance of nature theory, in favor of a more stochastic, dynamic system. Just as environmental lawyers were embracing equilibrium ecology, static views of nature were being replaced by more dynamic ones. The balance of nature or equilibrium paradigm has been replaced with a complex, stochastic or dynamic non-equilibrium one.

The images of nature which have influenced ecology are static, when in fact the kinds of resource use problems society faces require a dynamic view of nature and one which starts from the premises that human action is one of the principal forces operating on ecosystems and that system disturbances are both predictable and random. Ecosystems are patches or collections of conditions that exist for finite periods of time. The accelerating interaction between humans and the natural environment makes it impossible to return to an ideal state of nature. As one of the leading proponents of non-equilibrium ecology has written, "nature moves and changes and involves risks and uncertainties and . . . our own judgments of our actions must be made against this moving target."[117] The net result is that it is more difficult to derive science-based objectives and standards than environmentalists initially assumed. These developments are disturbing to many in the environmental community. As one recent writer observed, "[t]he idea of risky nature is one that is hard for many people to swallow. Environmentalists recoil at the notion that precisely because it seems to give man license to transform nature at will."[118] Finally, humans have transformed nature from sacred space to be revered by using "lightly" to a high-end commodity to be consumed by active, intensive use.[119]

b. Desconstructed Species

Science has not stopped with "unbalancing" nature. Almost every cornerstone of modern environmental protection is changing. For example, a species is not what we once thought it was because modern biologists reject the Linnaean hierarchy that forms the

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116. I have explored this paradigm shift in A. Dan Tarlock, *The Nonequilibrium Paradigm in Ecology and the Partial Unraveling of Environmental Law*, 27 LOY. L.A. L. REV. 1121 (1994).

117. DANIEL BOTKIN, DISCORDANT HARMONIES: A NEW ECOLOGY FOR THE TWENTY-FIRST CENTURY (1990).

118. STEPHEN BUDIANSKY, NATURE'S KEEPERS: THE NEW SCIENCE OF NATURE MANAGEMENT 98 (1995).

119. The question of whether nature is a source of redemption or just another recreational experience has been extensively debated. *See* Sarah Krakoff, *Mountains Without Handrails . . . Wilderness Without Cellphones*, 27 HARV. ENVTL. L. REV. 417 (2003).

basis for scientific and legal concepts of a species.[120] This thinking has progressed so far that biologists are considering the abolition of all Linnaean species ranks. One can read that "[to conserve biodiversity, it will be necessary to replace current classification methods and] develop valid measures of the diversity of lineage taking into account their actual properties and phylogenetic significance."[121] Finally, to add insult to injury, the whole construct of biodiversity has been trashed as incoherent.[122]

c. A New View of What Makes a Cancer Victim

These developments are not limited to biodiversity but carry over into pollution regulation.[123] The basis for risk regulation has also potentially changed. Until recently, all participants in the debate have accepted two common assumptions. First, there is some need to protect the population at large and specific sub-populations of at-risk groups, such as children, from the adverse affects of *involuntary* exposures to specific pollutants. Second, it would be unfair and inefficient to shift the burden of protection to the individuals for a wide variety of pollution risks because of exposure. However, these assumptions are open to question in light of advances in genetic research which suggest that illness and genetic mutation have a much more complex interaction between an individual's genetic factors and environmental factors.

During the 1970s, when the environmental theory of cancer became the basis of federal cancer policy and risk regulation, the scientific issue centered the proper dose-response curve. The primary regulatory issue was whether or not there was a safe threshold of exposure. Federal agencies used the linear, no-threshold model which presumed "that the dose-response curve extends linearly to the origin (at least for low-level exposures), that there are no thresholds, and that a single hit is sufficient to induce cancer."[124] This model was generally based on extrapolations from animal experiments to humans. Environmental and occupational health and safety regulation is still based on scientific inference and mathematical models based on animal studies.

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120. *See* Brent D. Mishler, *Getting Rid of Species?*, *in* SPECIES: NEW INTERDISCIPLINARY ESSAYS 307 (Robert A. Wilson ed.) (1999).

121. *Id.* at 313.

122. *See* Bosselman, *supra* note 42.

123. This portion is drawn from A. Dan Tarlock, *Genetic Susceptibility and Environmental Risk Assessment: An Emerging Link*, 30 ENVTL. L. REP. 10277 (2000).

124. ROBERT PROCTOR, CANCER WARS: HOW POLITICS SHAPES WHAT WE KNOW AND DON'T KNOW ABOUT CANCER 163 (1995).

Regulators have either had to assume that all persons subject to a specific exposure pathway are equally subject to the same health risk or they have calculated exposure levels for identifiable sub-populations for whom sufficient information exists which suggests that they are subject to higher exposure risks. These at risk groups might include children, asthmatics, pregnant women and members of particular ethnic groups.[125] Our assumption that pollution and work place regulation should be based on statistically observed population susceptibilities rather than the potentially more accurate individual genetic susceptibility to exposure to dangerous substances is at variances with advances in genetic research. Our understanding of the relationship between exposure to a toxic and harmful substance and the clinical appearance of cancer is still incomplete, but we now recognize that genetic sensitivity or susceptibility may kick in at any stage of carcinogenesis and may play a large role in explaining which risks actually materialize in specific individuals or sub-groups in the form of illness.[126] The actual risk to which an individual is subject is ultimately a function of an individual response to a given dose of a hazardous substance, and this response is a function of individual genetic susceptibility.[127]

Environmental law is still premised on the one-hit theory of cancer that posits that there are no safe exposure thresholds. As cancer researchers increasingly focus on genetic explanations of cancer, these theories are being replaced by theories that examine how environmental factors may act in conjunction with genetic and acquired susceptibility. The scientific validity of the one-hit theory has now been questioned by one of the originators of the theory,[128] and modern genetic theory suggests that cancer is part caused by the genetic susceptibility of individuals. In short, cancer is more likely to be the result of multiple hits rather than a single hit as

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125. *Dioxin/Organochlorine v. Clarke*, 57 F.3d 1519 (9th Cir. 1995), illustrates how extra-risk subpopulations are often factored out of risk assessments. *See* Catherine O'Neill, *Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples*, 19 STAN. ENVTL. L.J. 3 (2000).

126. H. Vanio, Biomarkers in Metabolic Subtyping-Relevance for Environmental Cancer Control, 20 ARCH. TOXICOL. SUPPL. 303-10 (1998).

127. C.J. Portier & D. A. Bell, Genetic Susceptibility: Significance in Risk Assessment, Toxicological Letter 102 (1998).

128. Bruce N. Ames, *Six Common Errors Relating to Environmental Pollution*, 7 REG. TOXICOLOGY AND PHARMACOLOGY 281 (1987).

previously assumed.[129] But, the one-hit hypothesis may still be valid in some circumstances.

D. The Role of Security

The argument that the maddening complexity of environmental issues compels a process approach must acknowledge the need for certainty as a constraint on the inevitable open ended processes of environmental decisionmaking. One of the benefits of static decision making is that it reaches end points such as an EIS, an effluent limitation or a wetlands mitigation plan, and these points generate legitimate reliance interests. The trade off for compliance with a legal mandate is a high level of assurance that the assumed obligations, usually financial, will remain unchanged for a substantial period of time.[130] Ultimately, complete certainty in the environmental context is an illusion because one cannot predict what new information will teach us about the impact of our use of nature. The risk of future modification, either toward stricter or more relaxed obligations, is inherent in any regulation from a pollution standard to an ecosystem restoration plan. This said, environmental regulation has always tried to correlate the level of legitimate reliance on no change with the level of regulated community expenditure and the magnitude of the regulated activity. This rough proportionality standard will continue to define the certainty constraint.

V. FIVE CANDIDATE PRINCIPLES TO STRUCTURE ENVIRONMENTAL DECISION PROCESSES

The dynamic process-making of environmental decisions means that we can only to hope to structure decisions with principles that allow us to identify decisions as legitimate efforts to advance environmental goals, but do not lock us into consistent but dysfunctional decisions.[131] I suggest the following candidate

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129. The shift in thinking and its possible regulatory consequences is summarized by the Presidential Commission on Risk Assessment and Risk Management, created by the 1990 Clean Air Act Amendments. The Presidential/Congressional Commission on Risk Assessment and Risk Management, *Risk Assessment and Risk Management in Regulatory Decision-Making* 63-78 (1997).

130. To induce private land owners to dedicate land for multiple species habitat conservation reserves in return for incidental take permits under the Endangered Species Act, the Department of Interior promulgated a "No Surprises Policy" which shifted the financial responsibility to the federal government to remedy the failure of the original reserve to fulfill the objects of the Act. *See* Fred Bosselman, *The Statutory and Constitutional Mandate for No Surprises Policy*, 24 ECOLOGY L.Q. 707 (1997).

131. *See* J.B. Ruhl, *Thinking of Environmental Law As a Complex Adaptive System: How to Clean Up the Environment By Making a Mess of Environmental Law*, 34 HOUS. L. REV. 933

principles. They are a mix of how environmental law has evolved and how it should evolve.

A. Minimize Uncertainty Before and As You Act

This principle is an expansion and correction of the more familiar first principle of environmental law that activities with potentially adverse environmental impacts, however defined, should be assessed before they are undertaken. It is codified in NEPA, but over time the original purpose of assessment — real risk and environmental damage minimization — has been lost. Assessment has too often become an end in and of itself rather than a means to obtain the necessary information for long-term, informed decisionmaking to achieve the necessary changes in the way that resources are used and managed.[132] The duty to minimize uncertainty is a continuing one during all phases of an activity. For example, it will often require monitoring and adaptive management for activities that will last over a long period of time.

Adaptive management was developed in the late 1970s as a criticism of static or deterministic environmental assessment. The basic argument was that "a fixed review of an independently designed policy"[133] was inconsistent with the experience of resource managers world-wide and with what has come to be called non-equilibrium ecology. The need for rigorous but flexible procedures to make decisions under conditions of uncertainty has a long intellectual pedigree. Howard Raiffa's pioneering work in the 1960s on decision analysis, which led to his famous decision trees,[134] was one of the major influences on the development of the concept.[135] Adaptive management is designed to close the gap between the available information and the information needed to make sound environmental decisions. It posits a continuous process of acquiring and evaluating scientific information through the practice of regulatory science.[136]

(1997).

132. This position is fully articulated in Bradley C. Karkkainen, *Toward A Smarter NEPA: Monitoring and Managing Government's Environmental Performance*, 102 COLUM. L. REV. 903 (2002).

133. ADAPTIVE ENVIRONMENTAL AND MANAGEMENT ASSESSMENT 119 (C.S. Holling ed., 1978).

134. Howard Raiffa, DECISION ANALYSIS (1968).

135. ADAPTIVE ENVIRONMENTAL AND MANAGEMENT ASSESSMENT, *supra* note 133, at 119.

136. Bruce Pardy, *Changing Nature: The Myth of the Inentability of Ecosystem Management*, 20 PACE ENVTL. L. REV. 675 (2003).

B. Environmental Degradation Should Be A Last Resort After All Reasonable, Feasible Alternatives Have Been Exhausted

This principle casts another pillar of environmental law: an activity that is likely to cause the degradation of media and ecosystems environmental values should only be undertaken if there are no acceptable alternatives. A general non-degradation standard for all resources is not possible for economic and ethical reasons; human society does not, as some radical environmentalists have argued,[137] have a duty to self-destruct. The most that we can do is to be highly skeptical of substantial departure from the baselines of environmental quality that we choose to establish. The search for alternatives has been too often subsumed in the NEPA process and has been subsumed under the idea of mitigation.[138] My rule would return to the pre-*Vermont Yankee*[139] duty to consider alternatives[140] and is broader than the assertion of any duty to mitigate. It assumes that environmental values are of equal dignity to developmental ones, and thus mitigation may not always be an acceptable solution. Mitigation is generally a substitute for full compliance, and is in economic terms, a second best[141] solution.

C. Risk Can be a Legitimate Interim Basis for Prohibition of An Activity

This principle attempts to strike a balance between the rejection of the due process-based common law background rule that mechanistic proof that an activity will cause demonstrable harm in the immediate future as a universal predicate for health and ecosystem protection regulation and the candidate replacement

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137. Jenkins, *Nature's Rights and Man's Duties*, *in* LAW AND ECOLOGICAL CHALLENGE 91 (E. Dias ed., 1978) ("Man will . . . confront the moral obligation to make himself extinct — to commit racial suicide.").

138. Two leading environmental law scholars, who represent a power company that seeks to comply with section 316 of the Clean Water Act by restoring an ecosystem around the power plant rather than eliminating fish killed through a closed cycle cooling retrofit, have set out in the case for mitigation a superior environmental compliance mechanism in Thomas J. Schoenbaum and Richard B. Stewart, *The Role of Mitigation and Conservation Measures in Achieving Compliance With Environmental Regulatory Statutes: Lessons From Section 316 of the Clean Water Act*, 8 N.Y.U. ENVTL. L.J. 237 (2000).

139. Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc., 435 U.S. 519 (1978) (holding that an agency's limitation of the scope of alternatives that it must consider was entitled to substantial deference).

140. Natural Res. Def. Council v. Morton, 458 F.2d 827 (D.C. Cir. 1972) (consideration of reasonable alternatives not per se limited to those that agency has the power to adopt).

141. Second best is a welfare economics theory that refers to "how to find the best compromise when some inefficiency" is inevitable in a particular allocation of resources. TIBOR SCITOVSKY, WELFARE AND COMPETITION 481 (1971). *See generally Symposium on Second-Best Theory and Law & Economics*, 73 CHI.-KENT L. REV. 1 (1998).

principle — the precautionary principle — endorsed in the 1992 Rio Declaration on Environment and Development.[142] The principle that a high degree of certainty about the adverse impacts of a substance or activity is not a necessary prerequisite to limit it is well established in United States environmental law. The Constitution does not require mechanistic proof of cause in fact for pollution and toxic substance regulation because a lesser standard of proof is appropriate for public health based regulation because liability can be justified as a form of taxes imposed on those who directly profit from harmful activities and which is fairly spread over larger segments of the population.[143]

The precautionary principle has, however, evolved, at least in the legal literature, from a limited tool to bridge the gap between current information and the societal desire to limit exposure to serious risk to a harder rule.[144] Critics have begun to "demonize" it as incoherent[145] and unfair compared to more rigorous decision methods such as risk analysis. The nub of the objection is the argument that once some potential, but uncertain risk of future

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142. U.N. Conference on Environment and Development: Rio Declaration on Environment and Development, UNCED, U.N. Doc. A/Conf.151/Rev. 1, 31 I.L.M. 874 (1992), Principle 15.

143. The Supreme Court recognized this principle when it approved liability "tax schemes," but it is increasingly willing to impose constitutional limits on these schemes. *Usrey v. Turner Elkhorn Mining Co.*, 428 U.S. 1 (1976), upheld the Black Lung Benefits Act of 1972 which required coal operators to compensate miners who were no longer employed in the industry because the Act was "a rational measure to spread the costs of the . . . disabilities to those who have profited from the fruits of their labor. . ." *Id.* at 18. *Concrete Pipe & Products of California v. Construction Laborers Pension Trust for Southern California*, 508 U.S. 602 (1993), held that Congress could impose withdrawal liability from a pension fund although such liability was not contained in the contract. But the plurality opinion in *Eastern Enterprises v. Apfel*, 524 U.S 498 (1998), held that the application of Coal Industry Retiree Health Benefit Act of 1992 was a taking as applied to a mining company that had ceased operations and did not participate in a series benefit plan established under National Bituminous Coal Wage Agreement. The Agreement required operators to contribute to retiree health plans so long as they remained in the coal business. *Eastern Enterprises*, 524 U.S at 498. The opinion acknowledged that the case was not a classic takings case because there was no appropriation of a property interest and that Congress can impose retroactive liability in national legislation, which adjusts the benefits and burden of national economic life. However, it found that the Act interfered with the company's investment backed expectations. *Id.* "Our decisions . . . have left open the possibility that legislation might be unconstitutional if it imposes severe retroactive liability on a limited class of parties that could not have anticipated the liability, and the extent of that liability is substantially disproportionate to the parties' experience." *Id.* at 528-29. Justice Kennedy concurred in the result but not in the Court's takings analysis because the Act under the Due Process Clause did "not affect an obligation relating to a specific property interest." *Id.* at 544.

144. *See generally* THE PRECAUTIONARY PRINCIPLE AND INTERNATIONAL LAW: THE CHALLENGE OF IMPLEMENTATION (David Freestone & Ellen Hey eds., 1996); PROTECTING PUBLIC HEALTH & THE ENVIRONMENT: IMPLEMENTING THE PRECAUTIONARY PRINCIPLE (Carolyn Raffensperfer & Joel Tickner eds., 1999).

145. Christopher D. Stone, *Is There a Precautionary Principle?*, 31 ENVTL. L. REP. 10790, 10792 (2001); Frank B. Cross, *Paradoxical Perils of the Precautionary Principle*, 53 WASH. & LEE L. REV. 851 (1996).

environmental harm is established, it is legitimate to prohibit an activity that leads to "bad," "irrational" or inefficient choices.[146]

It is essential to separate the soundness of the basic idea that society can choose to minimize risks in the face of scientific and other uncertainty from the question of implementation.[147] The precautionary principle is firmly grounded in the scientific method.[148] Many of the concerns can be addressed through burden of proof standards and the addition of a crucial element that is often missing in debates about the precautionary principle: a feed back loop to trigger reevaluation of the initial decision. Proponents of the precautionary principle have argued that opponents of precaution should bear the burden of rebutting the exercise of the principle,[149] but given the risk that the precautionary principle could choke off a wide range of considerations, such as risk trade-offs, it seems more sensible to place the burden of justification on the government body that invokes it. This would ensure that alternative methods of minimizing the uncertainty, such as compensation, have been adequately explored, and that the principle is reserved for the most serious and largely irreversible risks.[150] In addition, the idea that once the principle is invoked to minimize risk, the decision is permanent should be excised. The precautionary principle needs to be linked to the idea of adaptive management. The existence of monitoring and adaptive feed-back mechanisms should be a major factor in validating the decision to limit an activity when the adverse impacts are uncertain.

D. Polluters Must Continually Upgrade Waste Reduction and Processing Technology

Environmentalism dethroned engineers from the preeminent position they enjoyed for most of the twentieth century, but much of the progress in environmental protection has come from compelling polluters to install state-of-the-art technology. Sources of media pollution should be rolled-backed by the installation of progressively higher standards of technology established by the government. This principle incorporates two ideas: (1) technology has a major role to

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146. *E.g.*, Jonathan H. Adler, *More Sorry Than Safe: Assessing the Precautionary Principle and the Proposed International Biosafety Protocol*, 35 TEX. INT'L L.J. 173 (2000). See David A. Dana, *A Behavorial Economic Defense of the Precautionary Principle*, 97 NW. U.L. REV. 1315, 1318-20 (2003), for an elegant rebuttal.

147. *See* John S. Applegate, *The Taming the Precautionary Principle*, 27 WM. & MARY ENVTL. L. & POL'Y REV. 13 (2002).

148. J.B. Ruhl, *The Battle Over Endangered Species Act Methodology*, 34 ENVTL. L. (forthcoming 2004).

149. Freestone & Hey, *supra* note 144, at 265.

150. *See* Stone, *supra* note 145, at 10797.

play in environmental protection; and (2) the level of technology required is a moving, not fixed, target.

E. Environmental Decisionmaking Should Be Inclusive Rather Than Exclusive within the Limits of Rationality

This final principle endorses the pluralistic nature of decision-making that has emerged from the efforts to force public and private actors to consider environmental values up to a point. Environmental law helped to undermine (but not overthrow) the New Deal model of the expert managerial or regulatory agency because outsiders offered a new perspective to the experts[151] and helped to expose many of the unstated, crucial assumptions in purported "objective" analysis.[152] The net result has been the development of hybrid forms of shared governance which depends as much on information disclosure to alter behavior as it does on command and control regulation.[153]

Increased lay participation in decision making to promote transparency and a broadened perspective is a laudable, democratic objective, but transparency and public participation come with costs such as delay, the introduction of extraneous issues and the rejection of science-based solutions. However, environmental policy and law must remain bonded by science. The relevant question is always: how can we bridge the gap between what we want from science and what it can supply? The goals of public participation are to legitimate the application of science to an informed lay public and to allow an avenue for relevant scientific and non-scientific perspectives. They should never be allowed to substitute deals for scientifically credible outcomes.

VI. CONCLUSION

This summing up of environmental law may strike many as disappointing because it dismisses the possibility of powerful, general transformative nature-centered rules, emerging to tame the drive to exploit and modify all planetary life support systems. Instead, it argues that environmental law will for the foreseeable future be a messy process of adapting the contingencies and

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151. Barton H. Thompson, Jr., *The Continuing Innovation of Citizen Enforcement*, 2000 U. ILL. L. REV. 185 (2000), argues that participatory techniques such as citizen suits bolster democratic values.

152. *See* A. Dan Tarlock, *Who Owns Science*?, 10 PA. ST. ENVTL. L. REV. 135 (2002).

153. The pros and cons of "spotlighting" are examined in GREENING NAFTA: THE NORTH AMERICAN COMMISSION ON ENVIRONMENTAL COOPERATION (David L. Markell & John H. Knox eds., 2003), especially Chapters 11-15.

limitations of science to "wicked" problems informed by rebuttable principles. This hard road seems inevitable because of the radical nature of the objectives of environmental law. If protection is to evolve into a permanent check on the full range of resource consumption decisions, it must be grounded in the enlightenment values of knowledge and reason.[154]

154. For a lucid account of the post World War II project of reasserting enlightenment values World War II and the Holocaust, see IRA IKATZNELSON, DESOLATION AND ENLIGHTENMENT: POLITICAL KNOWLEDGE AFTER TOTAL WAR, TOTALITARIANISM, AND THE HOLOCAUST (2003).

THE DEVELOPMENT OF REGIONAL IMPACT IN FLORIDA'S GROWTH MANAGEMENT SCHEME: THE CHANGING ROLE IN REGIONALISM

JOSEPH VAN ROOY*

Table of Contents

I. INTRODUCTION

Florida's growth management legislation is among the most sophisticated in the nation. But, in recent years, many have noted the prevalence of strained infrastructure and ugly sprawl, and have questioned the ability of Florida's existing legislation to adequately and effectively manage its rapid growth. As the recent Growth Management Study Commission Report states, "although the processes established by [the existing growth management laws] were well intended, the quality of growth has not met our expectations, the strains on infrastructure have been only marginally reduced and, in essence, . . . a more complicated, more costly process [has been established which does not provide] the expected corresponding benefits."[1] Although this was written about Florida's growth management laws as a whole, many would assert that it could have been written about Florida's Development of Regional Impact (hereinafter DRI) program specifically.

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1. A LIVEABLE FLORIDA FOR TODAY AND TOMORROW, FLORIDA'S GROWTH MANAGEMENT STUDY COMMISSION FINAL REPORT, STATE OF FLORIDA, 13 (2001).

The DRI program exists to give regional interests a voice at the bargaining table concerning large developments that are expected to have an impact on the region.[2] Typically, absent the DRI, seats at this bargaining table would be reserved only for the developer and the local government with permitting authority. Without the DRI program there would be very little opportunity for input from neighboring local governments about developments within the region that may have a direct effect on the neighboring local government.

The DRI has regional planning intentions, but, strong localist tendencies within Florida's legislature have signaled a retreat from that intent over time. The DRI program has been amended a number of times since its inception, and Florida's implementation of other growth management legislation has reduced its role. However, the DRI's basic operation has remained largely unaffected. Regional planning councils are required to analyze the effect of a proposed DRI on the region and issue reports to the local government. The recommendations in the reports are not binding on the local governments but are used by the local government in development order negotiations with the developer. Decision making authority is largely retained by the local government.

The DRI program in Florida was created amongst great controversy, a controversy that has plagued the program for the last 30 years. As a result, the program has been frequently amended in order to make the program more developer-friendly and less duplicitous.[3] The amendments to the DRI process are more

2. The DRI is defined as "development which, because of its character, magnitude, or location, would have a substantial effect on the health, safety, or welfare of citizens of more than one county." FLA. STAT. § 380.06 (1)(2002).

3. The DRI review is intended to examine the impacts of the development that will be felt regionally. While consideration is given to regional effects, these are closely related to, and derive from the more local effects of the development. The result of this relationship is the common complaint of duplication that is associated with the DRI. Notwithstanding the rigorous review associated with the DRI process, the DRI developer must also, in completely separate applications and proceedings from the DRI process, satisfy all of the local government's permitting requirements, including amendments to the local government's comprehensive plan and/or its zoning map. At these proceedings, the local government will regularly seek further exactions from the DRI developer, above and beyond the exactions made in DRI negotiations.

streamlined and certain.[4] However, by many accounts, the DRI remains a cumbersome, expensive,[5] time-consuming process.[6]

Localist and Regionalist theories of planning, and to a lesser extent, governance, provide us with a framework for examining the evolution and the history of the DRI as it has been amended and as the context of planning in Florida has changed over time. This paper uses those theories as a way of explaining and evaluating the evolution of the DRI.

Part II of this paper takes a close look at the operation of Florida's DRI program. In some detail, the major statutory requirements and procedures will be discussed to provide an understanding of the DRI and to facilitate discussion of the DRI throughout the paper.

Part III of this paper explains two competing theories of planning and governance, Regionalism and Localism, each of which inherently influences growth management programs. The regionalist theory focuses on the connections and relationships between localities and looks for ways to make the relationships more efficient and equitable. The localist theory is based in small government and the importance of property rights in the American system. The DRI program has attempted to blend these two conflicting theories. It has done so by providing a means of regional comment and review, while permitting remains at the local level.

Part IV of this paper discusses the evolution and development of land use regulation, with particular attention paid to Florida's experience. The Environmental Land and Water Act of 1972 created the DRI program. For thirteen years, the DRI was the central element of development regulation in Florida. The role of the DRI in the Florida system changed with the passage of the Growth Management Act of 1985. The DRI became just one important part of a more comprehensive whole, and concurrency

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4. Ms. Alex Magee, 1000 Friends of Florida, telephone interview (February 27, 2003). Prior to associating with 1000 Friends of Florida, Ms. Magee was the DRI Administrator for the Florida Department of Community Affairs, and also worked with DRI at the Florida Department of Transportation. Currently, the DRI program imposes a rigid timeline for government decisions, while providing flexibility in terms of time to the developer. The statute very specifically sets forth changes that can and cannot be made to an approved DRI without requiring further DRI review. The DRI also offers increased vesting of rights. Specifics of the DRI program are discussed at greater length in section II of this paper.

5. Charles L. Siemon, *Growth Management in Florida: An Overview and Brief Critique, in* STATE AND REGIONAL INITIATIVES FOR MANAGING DEVELOPMENT 46 (Douglas R. Porter, ed., 1992). "[T]he cost of processing a typical DRI is astronomical, ranging from $250,000 to millions of dollars." *Id.*

6. *Id.* "DRI reviews often take years despite the time limits provided by the [Act establishing the DRI program]. The delay means that developers are vulnerable to the 'it's cheaper to pay than fight' temptation." *Id.*

became the central element of the state regime. The Growth Management Act of 1993 resulted in the temporary termination of the DRI, and a substantial reduction in the authority of the Regional Planning Councils (hereinafter RPC), which play an important role in the administration of the DRI program. This analysis indicates that regionalism has not played an important role in the Florida Growth Management System. In fact, the role of regionalism has been eroded from the Florida growth management scheme over time. Furthermore, the DRI is duplicitous of other permitting programs as well as comprehensive planning. Most importantly, however, is the finding that the DRI over-regulates the wrong developments, those that are the most highly capitalized and most likely to be well planned. It over-regulates those developments that least need the oversight while ignoring those that tend to be most problematic, undercapitalized, poorly planned, sub-DRI threshold developments, built by inexperienced or non-professional developers.

Part V is the conclusion, which summarizes the main themes of the paper and provides some parting thoughts.

II. A CLOSE LOOK AT FLORIDA'S DRI PROGRAM

The DRI brings a limited regionalist approach to Florida's growth management scheme by "establish[ing] a process for in-depth review of certain large developments by one of Florida's eleven regional planning councils."[7] The RPC acts as an intermediate reviewing body.[8] The RPC "has an influence on local decisions, even though no formal hearing is held, or decision made, at the regional level."[9] The Model Code, on which Florida's growth management laws were based, had no inclusion of RPCs as a major participant in the review process.[10] Rather this innovation was made by the State of Florida.[11] "This shift in the structure of the law has likewise shifted much of the conflict over DRI applications to the local and regional levels [from the state level under the ALI[12]

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7. FINAL REPORT OF THE ENVIRONMENTAL LAND MANAGEMENT STUDY COMMITTEE, STATE OF FLORIDA, 38 (1984) [hereinafter ELMS II REPORT].

8. DANIEL R. MANDELKER, ENVIRONMENTAL AND LAND CONTROLS LEGISLATION 116 (1976).

9. *Id.*

10. *Id*.

11. *Id*.

12. The American Law Institute was established in 1923:

> to promote the clarification and simplification of the law and its better adaption to social needs, to secure the better administration of justice, and to encourage and carry on scholarly and scientific work. The Institute drafts for consideration by its Council and its membership and then publishes various Restatements of the Law, Model Codes, and other

model code], as relatively few applications" are appealed to the Florida Land and Water Adjudicatory Commission,[13] an administrative body that will be discussed further in this section.

The review of the proposed development by the RPC must be completed before the local government allows the development to move forward.[14] The DRI developer must file an application for development approval with the local government with permitting authority, the RPC, and any other local, regional, or state agency.[15] The RPC must then prepare and submit a report to the local government containing recommendations on the regional impact of the proposed development.[16] The RPC's report must address whether:

> 1) [t]he development will have a favorable or unfavorable impact on state or regional resources or facilities identified in the applicable state or regional plans; . . . 2) [t]he development will significantly impact adjacent jurisdictions; . . . 3) the development will favorably or adversely affect the ability of people to find adequate housing reasonably accessible to their places or employment.[17]

The RPC can then request that other applicable agencies review the proposed development, and prepare reports concerning the agency's particular expertise.[18] One commentator has said that this government report-generating requirement, "looks more like an environmental assessment process than a statute aimed at state review of development projects that serve more than local needs. For this reason, the Florida law may have as much kinship with the environmental impact statement requirement of the National Environmental Policy Act as with the [Model] Code."[19]

Developers or any other substantially affected parties are permitted to bring forth evidence to the head of the RPC to help the RPC make its recommendations.[20] The recommendations, once

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proposals for law reform.
http://www.ali.org (last viewed January 21, 2004).

13. *Id.*

14. FLA STAT. § 380.06(6)(a)(2002).

15. James C. Nicholas & Ruth L. Steiner, *Growth Management and Smart Growth in Florida*, 35 WAKE FOREST L. REV. 645, 655 (2000); FLA. STAT. § 380.06(10)(a).

16. FLA. STAT. § 380.06 (12)(a).

17. *Id.* at § 380(12)(b).

18. *Id.* at § 380.06(12)(b).

19. MANDELKER, *supra* note 8, at 115.

20. FLA. STAT. § 380.06(12)(c).

made, are sent to the local government.[21] The local government then decides if the development "shall be approved, denied, or approved subject to conditions, restrictions, or limitations."[22] In making this decision, "the local government shall consider whether, and the extent to which: (a) [t]he development is consistent with the local comprehensive plan and local land development regulations; (b) [t]he development is consistent with the report and recommendations of the regional planning agency; . . . and (c) [t]he development is consistent with the State Comprehensive Plan."[23] Interestingly, as calculated in 1984, "[a]pplications are approved without conditions 9% of the time. They are approved with conditions 84% of the time, and denied only 7% of the time."[24] The local government then must hold a public hearing,[25] and within 30 days of the hearing, render a development order concerning the application.[26] The development order:

> 1) [s]hall specify the monitoring procedures and the local official responsible for assuring compliance by the developer with the development order; 2) [s]hall establish compliance dates for the development order . . . ; 3) [s]hall establish a [date that development rights vest and the DRI] shall not be subject to downzoning . . . unless the local government can demonstrate that substantial changes in the conditions underlying the approval of the development order have occurred or the development order was based on substantially inaccurate information provided by the developer . . . or is essential to the public health, safety, or welfare; and 4) [s]hall specify the requirements [and contents] of the biennial report.[27]

There is an appeal process available to the owner, the developer, or the Department of Community Affairs from the local government

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21. *Id*. at § 380.06(12).
22. *Id*. at § 380.06(14).
23. *Id*.
24. Nicholas & Steiner, *supra* note 15, at 656. It is difficult to assess what the high approval rate means without knowing the extent of the conditions imposed, and/or the ability to compare the initial proposal to the final resulting DRI. However, in a negotiating process, one would expect there to be concessions on the part of both parties, so the high rate of approvals with conditions is as expected.
25. FLA. STAT. § 380.06(11).
26. *Id*. at § 380.06(15)(a).
27. *Id*. at § 380.06(15)(c).

development order. [28] The appeal is heard by an Administrative Law Judge, "who forwards . . . recommended findings of fact, conclusions of law, and final development orders" to the Florida Land and Water Adjudicatory Commission who has final order authority.[29] This Commission is made up of the Governor and the Cabinet.[30] A notice of appeal must be filed with the Commission within 45 days of the development order being rendered.[31] Also, "[u]pon the request of an appropriate regional planning council, affected local government, or any citizen, the [Florida Department of Community Affairs] shall consider whether to appeal the order and shall respond to the request within the 45-day appeal period."[32]

> The Commission is to issue a decision granting or denying permission to develop pursuant to 'the standards of this [Chapter].' The difficulty with this provision is that the Act only provides factors for consideration by the regional planning [councils] and by the local governments that initially review DRI applications. As in the [Model] Code, these factors do not contain substantive review criteria or standards. The reference to the "standards of the [Chapter]" is therefore ambiguous.[33]

Usually, however, appeals are made either because a DRI is inconsistent with the local, regional, or state comprehensive plan, or, the appeal concerns differing opinions about the impacts of a development and the corresponding mitigation required.[34]

The act limits the local government's ability to exact land, public facilities, or funds to the amount necessary to mitigate the effects of the DRI.[35] The statute also includes an adequate public facilities requirement, which prohibits a local government from approving a

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28. *Id.* at § 380.07.
29. *Id.* at § 380.07(4); Siemon, *supra* note 5, at 40.
30. *Id.* at § 380.07(1).
31. *Id.* at § 380.07 (2).
32. *Id.*
33. MANDELKER, *supra* note 8, at 116.
34. David L. Powell, *Managing Florida's Growth: The Next Generation*, 21 FLA. L. REV. 223, 329 (1993) [hereinafter Powell, *Managing*]; Magee, *supra* note 4.
35. FLA. STAT. § 380.06(15)(d)-(e). This language limiting the power of local government may not be necessary, as these situations would likely fall under the limitations within the 5th and 14th amendments of the United States Constitution. *See* Nollan v. Calif. Coastal Commn., 483 U.S. 825 (1987) (essential nexus) and Dolan v. City of Tigard, 512 U.S. 374 (1994) (rough proportionality). However, landowners like these property rights assurances to appear in the statutes themselves.

DRI prior to ensuring that public facilities are provided consistent to the schedule in the development order.[36]

"Once approved, a DRI development order becomes the controlling instrument for land use within the boundaries of the DRI, and the rights conferred by the development order are vested."[37] The developer has the responsibility to file the development order with the clerk of the circuit court in each county in which the development is located.[38] The local government that issues the permit is "responsible for monitoring the development and enforcing provisions of the development order."[39] This monitoring includes reviewing and requesting the biennial report from the developer.[40] Every two years, the developer is responsible for submitting this report to the local government that issued the development order, the RPC, and the Department of Community Affairs.[41] Failure by the developer to provide the report to any of the parties will ultimately result in a suspension of the development order.[42]

The statute very specifically sets out what changes to the development are, and are not, allowed, without subjecting the development to further DRI review.[43] For example, the statute includes "[a]n increase in the number of hospital beds by 5 percent or 60 beds, whichever is greater" shall constitute a substantial deviation and shall cause the development to be subject to further DRI review.[44]

Also addressed by the statute are comprehensive applications for developments involving two or more DRIs,[45] Downtown Development Authorities,[46] the adoption of rules by the Department of Community Affairs,[47] exemptions from the statute,[48] areawide DRIs,[49] the abandonment of the DRI,[50] and a dispute resolution process available to the developer when they are in doubt as to their rights, responsibilities, and obligations under a development order.[51]

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36. FLA. STAT. § 380.06(15)(e).
37. Siemon, *supra* note 5, at 40; FLA. STAT. § 380.06(20).
38. FLA. STAT. § 380.06(15)(f).
39. *Id*. at § 380.06(17).
40. *Id*. at § 380.06 (18).
41. *Id*.
42. *Id*.
43. *Id*. at § 380.06(19).
44. *Id*. at § 380.06(19)(b)(3).
45. *Id*. at § 380.06(21).
46. *Id*. at § 380.06(22).
47. *Id*. at § 380.06(23).
48. *Id*. at § 380.06(24).
49. *Id*. at § 380.06(25).
50. *Id*. at § 380.06(26).
51. *Id*. at § 380.06(27). More specific DRI rules and procedures can be found in Chapter

The DRI is, therefore, effectively a mandatory, formalized development agreement process for developments over a given size.[52] The focus is on the development order, which lays out the limits of the development as negotiated[53] by the developer and the local government. The DRI process affords the developer more vesting of rights than other types of approvals.[54] Also, the time frames set forth in the statute provide a lot of flexibility to the developer, while imposing a very firm schedule for the government entity responding to the developer's actions.[55] While regional oversight is provided by the RPC in the form of its report, the DRI's localist roots are clear as the findings in the report are not binding on the local government.[56] It is largely up to the local government to determine how much weight is to be given to suggestions made by the RPC.[57] The DRI process is a frequent subject of developer complaints.[58] The process is expensive, frequently costing millions of dollars, and time consuming, often taking over two years to complete.[59] Developers often complain that the process also subjects them to a "high public profile, thus making them 'targets' for various anti-development groups."[60]

III. TWO COMPETING THEORIES OF GOVERNANCE AND PLANNING

Regionalism and Localism are two competing theories of governance and planning that affect a growth management system. The DRI has provided a limited amount of regionalism in a Florida system otherwise dominated by a localist theory.[61]

9J-2 of the Fla. Admin. Code R. (2002).

52. DRI thresholds for residential development range from 250 units in counties with a population of less than 25,000 persons, to 3000 units in counties with a population in excess of 500,000 persons. It is worth noting, however, "that any residential development located within 2 miles of a county line shall be treated as if it were located in the less populated county." FLA. ADMIN. CODE ch. 28-24.010.

53. Most developers would argue that the upper hand in these negotiations is held by the public agencies. Nicholas &Steiner, *supra* note 15, at 656.

54. *Id*.

55. Magee, *supra* note 4.

56. FLA. STAT. § 380.06(12).

57. *Id.*

58. Nicholas & Steiner, *supra* note 15, at 655-56.

59. *Id*; Siemon, *supra* note 5, at 46. The cost of DRI approval is a function of the sophisticated nature of DRI work. Land use planning and transportation consultants, engineers, and attorneys frequently play important roles in the DRI process. Magee, *supra* note 4.

60. Nicholas & Steiner, *supra* note 15; Siemon, *supra* note 5, at 46.

61. *See* Thomas G. Pelham, *Regulating Developments of Regional Impact: Florida and the Model Code*, 29 U. FLA. L. REV. 789, 814 (1977) [hereinafter Pelham, *Regulating*]. "Except for its rather perverse dalliance with regionalism, the Acts DRI provisions are unswervingly faithful to the principle of localism." *Id.*

The American Law Institute (ALI) Model Code, on which the Florida growth management system was based, and, to an even greater degree, the Florida legislature, had the retention of local government authority as one goal or aspect of their growth management systems. This is likely due to the fact that there is a long history of local government control in the land use arena. As such, it is politically much less controversial[62] and structurally easier to add an element of regional or state oversight, as utilized in the DRI program, than to actually change the power structure from the local government level to more regionally responsive governmental entity.

The DRI program has attempted to meld together the conflicting regionalist and localist theories of government in a fashion that has satisfied neither. One commentator has stated that "[t]he demand for regional equity and the protection of local autonomy conflict with each other, and it is disingenuous to pretend otherwise."[63] Both the regional and localist theories are discussed below, and will be used to assess the evolution of the DRI and to ultimately suggest an alternative growth management structure with which to replace the DRI.

A. Regionalism

While the Florida DRI program does involve regional oversight, it is unlike the system of regional governance and planning that many academics and land planners often claim to be an ideal. These regionalist theories are based on the very real "premise that places have relationships and connections to other places that should not be ignored."[64]

The regionalist movement has existed for some time. "During the 1930s, 1940s, and 1950s, city planners and political scientists (such as Louis Mumford and New York's Regional Plan Association) promoted the notions of regional planning and metropolitan-wide government, either to promote government efficiency or to promote a sound environment."[65] The movement traditionally has focused on the "irrational and inefficient" duplication of services provided by the adjacent local governments in metropolitan areas.[66] The movement took root after World War II as many people began moving to the suburbs from the central city.[67] But, "[a]sking these

62. "The irresistible attraction of DRI is its political feasibility." *Id.* at 849.
63. Gerald E. Frug, *Beyond Regional Government*, 115 HARV. L. REV. 1763, 1780 (2002).
64. Bruce Katz, *Editor's Overview, in* REFLECTIONS ON REGIONALISM 3 (2000).
65. MANUEL PASTOR ET AL., REGIONS THAT WORK 4 (2000).
66. *Id.*
67. *See id.*

new refugees to share their local taxes, schools, and other public services with central-city residents was a hard sell indeed."[68]

Regionalists see many problems as related, for example: "urban decline increases development pressure on the suburban fringe; and government policies that facilitate fringe development and keep poor people concentrated in urban neighborhoods make it more difficult for cities to maintain their social and economic health. Their conclusion is that cross-jurisdictional problems demand cross-jurisdictional solutions."[69]

While regional governance has been utilized by a number of jurisdictions, including Portland,[70] Minneapolis,[71] Indianapolis,[72] and Jacksonville,[73] it still faces a difficult road ahead. However, many commentators continue to argue for "a new synthesis of physical, social, and economic planning focusing on the metropolitan region."[74] The regionalists themselves acknowledge this tough road, but stress the importance of their mission. One regionalist described the importance of his goal as one where "[b]uilding a constituency for changes in land-use policy and governance, wresting corrective policy from 50 state legislatures, and implementing that new policy in 270 metropolitan regions and 39,004 municipalities is the most important community-building challenge to face America since the adoption of the Constitution."[75] "The growth of small suburban municipalities around central cities over the course of the twentieth century has gradually fragmented

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68. *Id.*

69. Katz, *supra* note 64.

70. Portland has a directly elected regional government, the only one in the United States. ROLF PENDALL & JONATHAN MARTIN, HOLDING THE LINE: URBAN CONTAINMENT IN THE UNITED STATES 21 (The Brookings Institute, August 2002).

71. Minneapolis is governed by the Metropolitan Council, created in 1967, that serves 2.5 million residents living in the 7 counties and 189 cities and townships that comprise the region. The Metro Council operates the region's bus system, collects and treats wastewater, is a housing and development authority, is involved in planning and funding parks and trails, and also prepares long range plans. *See* http://www.metrocouncil.org/about/about.htm.

72. "Indianapolis-Marion County is the only consolidated government in the nation that was formed by an act of the state. In 1970, the Indiana General Assembly enacted legislation, "Unigov," that consolidated these governments." National Assoc. of Counties *at* www.naco.org /pubs/research/briefs/consol/cfm.

73. Robert D. Yaro, *Growing and Governing Smart: A Case Study of the New York Region, in* REFLECTIONS ON REGIONALISM, *supra* note 64, at 44. Jacksonville and Duval County consolidated in 1967. *See* ROBERT A. CATLIN, LAND USE PLANNING, ENVIRONMENTAL PROTECTION, AND GROWTH MANAGEMENT: THE FLORIDA EXPERIENCE, 11 n.21 (Ann Arbor Press 1997). Each one of these regions are considered a regionalist success because the people of each have seen the benefit a regional perspective can provide, and have overcome political inertia to take advantage of that perspective.

74. Stephen M. Wheeler, *The New Regionalism,* 68 J. AM. PLAN. ASS'N. 267, 268 (2002).

75. Henry R. Richmond, *Metropolitan Land-Use Reform: The Promise and Challenge of Majority Consensus, in* REFLECTIONS ON REGIONALISM, *supra* note 64, at 36.

metropolitan regions into tiny tax and zoning bocks. Chicago is surrounded by 262 cities; Philadelphia, 245; and New York, 765."[76] One commentator compares the fragmentation of local government to the America of the 1780's, under the Articles of Confederation.[77] He writes, "[t]his time the question is not unworkable fragmentation with respect to common national concerns, but unworkable fragmentation with respect to metropolitan concerns–and metropolitan regions where 80 percent of the American people now live."[78]

Tarlock and Lucero explain that there are two types of fragmentation. "The gaps between the different layers of government — federal, state, and local — create a complex disconnect, which might be called 'vertical disconnects.'"[79] "There are also conflicts between different communities within the same region, or 'horizontal disconnects.'"[80] Regionalists are concerned with both. Fragmentation of local governments is an example of horizontal disconnects, and the permitting duplication required by Florida's DRI program[81] is an example of a vertical disconnect.

A recent adaption of the traditional regionalist movement has been by a group referred to as the neo-regionalists. This group came together in the early 1990's with common "concern[s] about suburban sprawl, traffic congestion, central city/suburban inequities, environmental degradation, and the sterility and homogeneity of the built landscape."[82] All these problems ultimately "raised questions of [true] regional planning, since in the absence of regional coordination, initiatives by local jurisdictions could easily be undercut by neighboring communities."[83]

Various members of the neo-regionalist movement focused their work in different areas, including, the new urbanist movement,[84] the transit supportive urban design,[85] and the improvement of equity within metropolitan regions, often through tax sharing.[86]

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76. *Id.* at 10.
77. *Id.* at 37.
78. *Id.*
79. A. Dan Tarlock & Lora A. Lucero, Connecting Land, Water, and Growth, 54(4) LAND USE L. & ZONING DIG. 4 (2002).
80. *Id.* at 5.
81. *See supra* note 3.
82. Wheeler, *supra* note 74, at 269.
83. *Id.*
84. New Urbanism is a smart growth initiative based on "traditional neighborhood design." This requires a built environment that is 1) pedestrian scaled, 2) diverse in use and population, and 3) capable of supporting mass transit as well as the automobile. *See* ANDRES DUANY, ET AL., SUBURBAN NATION: THE RISE AND FALL OF THE AMERICAN DREAM 245-252 (2000).
85. Wheeler, *supra* note 74, at 269.
86. *Id.* at 270.

In fact, the neo-regioalists point out that some aspects of metropolitan life require a regional perspective to be effectively addressed. This is due to a disconnect between the small, fragmented size of government and the size of the economic, ecological, and social regions.[87]

The economic region is a function of proximity and networking among a large number of specialized people and businesses.[88] Important to the success of any business is access to these networks, including job networks, money networks, idea networks, and networks of vendors and services.[89] "Economic relationships have always slopped over political boundaries– local, state, and national–but, because of the increasing globalization of th economy, we have seen a dramatic transformation in the past decade."[90] Today, economic regions have even come to overshadow nations as important players in the world economy.[91]

The ecological region is made up of entire watersheds, agricultural territory, and ecosystems that can cover many communities.[92] "Many of the most important environmental initiatives of the past twenty years have focused on maintaining and enhancing larger 'ecosystems' based on land and water patterns: the Chesapeake Bay, the Everglades, and the southwestern deserts."[93]

The social region includes the relationships between people of a metropolitan area, and their common identity with regional institutions and amenities.[94] It also includes the transportation networks that allow the people in a region to interact.[95] The necessity of the regionalist approach is most evident "with regard to 'hard' urban infrastructure — transportation, water delivery, sewage treatment and disposal, and the like — which must necessarily operate at a regional scale."[96]

Florida is not, by any means, immune from the effects of the 'unworkable fragmentation' or the need for a regional perspective in regard to the economic, ecological, and social regions. 1000 Friends of Florida, a growth management watchdog group, published a series of essays by former Secretaries of the Florida Department of Community Affairs (FDCA). In these essays, each of the five

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87. *See* PETER CALTHORPE & WILLIAM FULTON, THE REGIONAL CITY 17-30 (2001).
88. *See id.* at 18.
89. *See id.* at 19.
90. *Id.* at 18.
91. *See id.*
92. *See id.* at 23.
93. *Id.*
94. *See id.*
95. *Id.* at 27. Transportation is also an important factor in the economic region.
96. *Id.*

contributing former FDCA Secretaries cited intergovernmental coordination as a area that needs much improvement to effectively manage growth.

Tom Pelham, FDCA Secretary from 1987 to 1991, wrote:

> [Florida's] growth management system has been far less successful in improving intergovernmental coordination, creating an effective regional planning mechanism, and subjecting the state government to the process. Predictably, the weak intergovernmental coordination element has been largely ineffective. Consequently, our fragmented system of 476 local governments continues to be a formidable barrier to effective growth management. Although they perform many valuable functions, our regional planning agencies have not been given the legal authority or the political and financial support needed to fill the void in intergovernmental coordination.[97]

James F. Murley, Esq., FDCA Secretary from 1995 to 1999, similarly found fragmentation to be a barrier to effective growth management. He recognized that "[t]here are a variety of decision-making bodies that affect policy and planning in our communities at the local level. They often act in isolation and their decisions may have negative impacts on neighboring communities and essential statewide interests."[98]

Tom Lewis, Jr., Secretary of the FDCA from 1985 to 1987, similarly addressed the relationship between the DRI process and intergovernmental coordination when he wrote: "My hope was that by now the DRI program would have been abolished, since we would have had in place a strong program of intergovernmental coordination elements."[99]

John De Grove, FDCA Secretary from 1983 to 1985, while focusing his essay on infrastructure funding concerns, wrote "Florida needs to recognize and implement a regional approach to dealing with regional issues."[100]

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97. Tom Pelham, *Perspectives on Growth Management*, *in* DCA SECRETARIES SHARE THEIR VIEWS, *at* http://www.1000fof.org/growth_manage_process_revision_dca_secretaries.asp.

98. James F. Murley, *Back to the Future*, *in* DCA SECRETARIES SHARE THEIR VIEWS, *at* http://www.1000fof.org/growth_manage_process_revision_dca_secretaries.asp..

99. Tom Lewis, Jr., Florida's Growth Management Process: Success or Failure, *in* DCA SECRETARIES SHARE THEIR VIEWS, *at* http://www.1000fof.org/growth_manage_process_revision_dca_secretaries.asp.

100. Dr. John M. DeGrove, *Growth Management in Florida*: *My Perspective on What Has*

This experienced group's advice should not be taken lightly. But there is a hurdle to the implementation of a regional strategy that must be acknowledged. This hurdle involves the same distribution of authority issue faced by the writers of the Model Code: localism.

B. Localism

The local government role in land use regulation primarily consists of the power to say no, or at least derives from the threat of saying no.[101] The local government cannot actually require any development to take place within its borders.[102] However, it can take action to make itself more attractive to outsiders, but this requires competing with neighboring local governments for the investment which, as discussed above, can harm the region as a whole.[103]

Notwithstanding this observation, "Americans like the idea of small, accessible, responsive local governments and have not been quick to embrace larger governing bodies."[104] One commentator claims "[a] key reason for this reluctance to pursue regional alternatives is that local land use control remains the security blanket for suburbanites and exurbanites who seek to control the patterns of development typified by the single-family homes in which [they/we] live."[105]

Other commentators have cited other, possibly less caustic, reasons for the continued persistence and popularity of local control in the land use arena. "First, local control provides a powerful means for enabling grass–roots participation in land-use decision making, for assuring that elected and appointed decision-makers are accountable to the public, and for facilitating regulation that is responsive to a wide variety of differing local needs, circumstances, and conditions."[106] The regionalization of metropolitan life, by expanding the circle of those affected by local actions without expanding the circle of participation, has undermined the democratic nature of local control. But decision-making by small-scale communities still provides an important means of enabling the

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and Hasn't Worked and Why, *in* DCA SECRETARIES SHARE THEIR VIEWS, *at* http://www.1000fof.org/growth_manage_process_revision_dca_secretaries.asp..

101. *See* Richard Briffault, *Smart Growth and American Land Use Law*, 21 ST.L.U.P.L.REV. 253, 268 (2002).

102. *See id*.

103. *See id.*

104. Katz, *supra* note 64, at 3.

105. Peter Buchsbaum, *Neither Home Rule Nor State Mandate: A Third Way to Growth Management, in* TRENDS IN LAND USE LAW FROM A TO Z: ADULT USES TO ZONING, 235, 236 (Salkin ed. 2001).

106. Briffault, *supra* note 101, at 268.

people most directly affected by land use actions to have their voices heard and their views taken into account.

Second, land use regulation directly affects the home, a fundamental fixture of American society, which is characterized by its emotional and wealth aspects.[107] "[E]ven residents of the poorest communities want the measure of control over their immediate environment that local land use decision–making represents."[108]

Third, local control is the historic norm.[109] As the prevailing tradition, "[p]eople have invested in land under a certain institutional framework which they have come to know and understand."[110] This group may prefer local decision-making because they feel that a regionalist approach would result in more bureaucracy, more regulation and would not be as sensitive to local concerns about property rights. Many people who have had land use decisions concerning their property made at public hearings, under the current local control system, would agree that there seems to be something rather unsettling about another person having a say in the use of their property when the only interest connecting the other person to their property is the fact that they live across town. The idea of allowing more people, over a greater geographic area, to have standing to oppose a desired land use, or, to have decisions concerning allowable land uses made in a more distant governmental bureaucracy, is often, and frequently not undeservingly, viewed with suspicion.

As growth management regulation has expanded, more and more people have become concerned that land use regulations have gone too far. One author notes that "regulation has become so pervasive that even judges, scholars, and average citizens predisposed to support government have begun to fear that things have gotten out of hand."[111] Such concerns often stem from worries related to the protection of private property rights.

Any dispute about the use of land concerns property rights. "[D]isputes about property rights reveal fundamental clashes between opposing perspectives on the proper society."[112] The United States has a long tradition of property rights.

> In general, purely regulatory solutions to land-use issues have become more controversial in the last 20

107. *Id.*
108. *Id.*
109. *Id.*
110. *Id.*
111. *See* DENNIS J. COYLE, PROPERTY RIGHTS AND THE CONSTITUTION, 13-14 (1993).
112. *Id.* at 18.

> years, especially if they involve downzoning or maintaining non-urban zoning for property on the fringe of metropolitan areas that is subject to intense growth pressure. This is due in large part to a long series of property rights lawsuits brought by landowners and their advocate against government agencies, many of which have been successful in altering the "state of the law" regarding takings of property through regulation.[113]

These property rights cases have played an important role in keeping regulation of land reasonable, because "[r]ights, when enforced, keep procedural hurdles and substantive outcomes from becoming too abusive."[114]

The ALI Model Code, on which Florida based its early growth management program, and even more so, the Florida legislature have been very conscious of the tradition of making land use decisions at a local, politically accountable, level. In fact, the ALI wrote that one of the most difficult issues it faced in preparing the Model Code was in the distribution of authority between the state and the local governments.[115] As the foreword to the Model Code states:

> [t]he judgment is that total localism in the regulation of land development has now become anachronistic but that recourse to the State's authority should be confined to protecting defined values that ought not to be subordinated to competing local interests; and that even then reliance should be placed so far as possible on local agencies as organs of administration.[116]

The deference to local control that was utilized in the Model Code remains popular today, and likewise, Florida's DRI program has remained true to this notion.

> A guiding principle of both the Environmental Land Act [1972 Florida Legislation that created the DRI program] and the Model Code is that state land

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113. PENDALL & MARTIN, *supra* note 70, at 20.
114. COYLE, *supra* note 111, at 6.
115. A MODEL LAND DEVELOPMENT CODE: PROPOSED OFFICIAL DRAFT, THE AMERICAN LAW INSTITUTE p. x (April 15, 1975).
116. *Id*. at xi.

> management policies, 'to the maximum possible extent, be implemented by local governments through existing processes for the guidance of growth and development.' Except for its rather perverse dalliance with regionalism, the Act's DRI provisions are unswervingly faithful to the principal of localism. Local government retains the power initially to make all DRI decisions subject to state review under certain carefully constricted circumstances.[117]

The DRI program has changed incrementally over the years, and these changes have typically sent even more authority to the local governments. As discussed in the next section, this includes the early change from the Model Code of DRI review taking place at the state level, to the use of comparatively more local RPCs to perform the review. Other examples include exceptions made to DRI review, and the repeal of much of the RPCs' authority. The Florida legislature has ensured that the DRI remained true to the concept of local control. As a result, Florida has not adopted the regional governance model promoted by many planners and academics.

IV. EVOLUTION AND DEVELOPMENT OF GROWTH MANAGEMENT LEGISLATION

An examination of the evolution of state growth management systems would be inadequate without at least an acknowledgment of the environmental movement which played an important role in shaping early growth management legislation.

A. Federal Environmental Regulation

In late 1960s and early 1970s, a new awareness emerged toward the physical environment. The years 1970 to 1980 particularly experienced an explosion of federal environmental law, including the passage of such important and ground breaking federal environmental laws such as the National Environmental Policy Act[118] (1969), the Clean Air Act[119] (1970), the Clean Water Act[120] (1972), the Endangered Species Act[121] (1973), the Resource

117. Pelham, *Regulating*, *supra* note 61, at 814 (quoting in part FLA. STAT. § 380.021(1975)).
118. 42 U.S.C. §§ 4321-4370f.
119. 42 U.S.C. §§ 7401-7671q.
120. 33 U.S.C. §§ 1251-1387.
121. 16 U.S.C. §§ 1531-1544.

Conservation and Recovery Act[122] (1976), and the Comprehensive Environmental Response, Compensation, and Liability Act[123] (1980).

There has, however, never been explicit federal land use regulation.[124] In 1974, The Land Use Planning Act, which would have provided $800 million in three to one matching grants to states that developed a comprehensive land use planning process, was defeated in the United States House of Representatives by seven votes.[125] In 1975, a similar act, the Land Use Resource Conservation Act, also failed to become law.[126]

While this period has been most frequently noted for the development of federal environmental laws, it was also during this time, and out of the prevailing heightened sense of environmental awareness, that state growth management laws developed.[127]

B. State Land Use Regulation

Prior to the 1970s, many states used basic zoning and subdivision regulations, but the 1970s saw an increase in the sophistication of land use controls. This time period has been called the "Quiet Revolution in Land Use Control," with states asserting more control over land use decisions that were formerly thought to be only local in nature.[128]

Land use controls are a function of the state's police power.[129] "The state may delegate the police power to local government, and by this delegation, local government has the authority to regulate the use of land in the service of community health, safety, morals, and welfare."[130] This delegation of general zoning authority requires enabling legislation from the state to the local government.

Local control of zoning was challenged and affirmed in *Village of Euclid v. Ambler Realty*.[131] "The parties seeking to invalidate Euclid's ordinance, in an argument foreshadowing the contemporary regionalist critique of local zoning, stressed that Euclid was 'a mere suburb of the city of Cleveland' and thus not really a free standing community."[132] They argued that industrial development denied by

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122. 42 U.S.C. §§ 6901-6992k.
123. 42 U.S.C. §§ 9601-9675
124. COYLE, *supra* note 111, at 223.
125. *Id*.
126. *Id*.
127. MANDELKER, *supra* note 8, at 2-14.
128. David L. Powell, *Growth Management: Florida's Past as a Prologue for the Future*, 28 FLA. L. REV. 519, 521 (2001) [hereinafter Powell, *Growth Management*].
129. Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926).
130. JULIAN C. JUERGENSMYER, FLORIDA LAND USE LAW, Ch.2 at 1 (2d ed. 1998).
131. 272 U.S. 365 (1926).
132. Briffault, *supra* note 101, at 261.

Euclid's local government would only be pushed on a different, neighboring suburb within the Cleveland metropolitan area.[133] "The Supreme Court, however, rejected the implied claim that Euclid was too small a piece of the Cleveland Region to be allowed to zone autonomously."[134] The court wrote: "[t]he village, though physically a suburb of Cleveland, is politically a separate municipality, with powers of its own and authority to govern itself as it sees fit, within the limits of the organic law of its creation and the state and federal Constitutions."[135] This decision, is typically considered a "big win" for planning interests because it officially recognized zoning as a appropriate activity for a city. But, the regionalists might view the Supreme Court's decision in *Euclid* as a double-edged sword. This may be because the decision may have potentially harmed planning interests in the long run by legitimizing the practice of creating small, independent, suburbs around large urban centers, fragmenting a region's power structure.[136]

1. Two Waves of State Land Use Control

One well-known commentator has asserted that "[s]tate interest in growth management has occurred in two fairly distinct waves, the first of which, in the early 1970s, stressed environmental concerns, and the second of which, beginning in the mid-1980s, emphasizes a broader array of issues."[137] In light of the strength of, and broad interest in, the environmental movement in the early 1970s, this two wave growth management process makes sense. This is because, "[a]s a political matter probably the most feasible method of moving towards a well-planned system of state land use regulation is to begin with a regulatory system that concentrates on a few goals that are generally perceived as important, and then to gradually expand the system by adding more comprehensive planning elements."[138] During the first wave, preserving the environment came to the foreground as a very important issue.

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133. *Id.*
134. *Id.*
135. 272 U.S. at 389.
136. This problem was discussed in section III. A. of this paper. *See* Jay Wickersham, *Jane Jacobs's Critique of Zoning: From Euclid to Portland and Beyond*, 28 B.C. ENVTL. AFF. L. REV. 547 (2001) for a further exploration of modern implications of Euclidean Zoning.
137. John M. DeGove, *Growth Management and Governance, in* UNDERSTANDING GROWTH MANAGEMENT, 22, 23 (Urban Land Institute, 1989).
138. Powell, *Growth Management*, *supra* note 128, at 521-22.

a. The First Wave

The first wave involved environmental and citizen groups who were frustrated with the localist status quo because they felt that local governments either would not, or could not protect the environment in their management of growth.[139] Therefore, the environmental and citizen groups demanded the adoption of a regionalist perspective and a larger role for the state in control of land use.[140] In six states, including Vermont in 1970, Florida in 1972, California (coastal) in 1972, Oregon in 1973, Colorado in 1974, and North Carolina (coastal) in 1974, legislatures enacted laws creating growth management schemes.[141] These laws frequently incorporated varying amounts of regionalist theory "by mandating certain actions by state, local, and, where applicable, regional agencies aimed at strengthening the capacity of these states to manage growth so as to avoid the negative impacts of unplanned, haphazard development that was at a high level in each of these states."[142] These states were then forced to face the difficult question of deciding what the role of each level of government — local, regional, and state — would play in the management of growth.[143] Each state answered this question of allocation of authority differently.[144] The solutions range from strong state and regional solutions, to those that retain strong local government control.[145] As such, the programs will be discussed in that order, beginning with California, with a very strong state role, to Oregon which was particularly innovative, to Vermont and Colorado, with their state and regional solutions inspired, like Florida, by the ALI Model Code, and finally, to North Carolina, which retained the most local control.

California's coastal program had a very strong state role. The program, created in 1972, "imposed strict restrictions on the use of coastal [property]."[146] At first, California's law ignored homerule issues completely.[147] "It placed the responsibility for planning and managing the coast in the hands of a state coastal commission appointed by the governor, the house and the senate, and in six

139. DeGrove, *supra* note 100, at 23.
140. *Id*.
141. *Id*. at 23-24.
142. *Id*. at 24.
143. *Id*.
144. DeGrove, *supra* note 100, at 24-40.
145. *Id*.
146. Douglas R. Porter, *in* STATE AND REGIONAL INITIATIVES FOR MANAGING DEVELOPMENT, *supra* note 5, at 6.
147. DeGrove, *supra* note 100, at 26.

regional coastal commissions."[148] While local governments were cut out of the picture entirely in the beginning, in 1976, responding to local government outcry, the local governments were given responsibility for planning and permitting.[149]

In Oregon, "the strength of the state role in a statewide process including all levels of government" drew the support of state legislators.[150] Even today, "[t]he Oregon Land Conservation and Development Act (LCDA) of 1973 is probably the strongest state growth management law in the nation."[151] All cities and counties in the state were required to create plans consistent with the state's goals, and the plans had to be approved by the Governor appointed Land Conservation and Development Commission.[152] The LCDA "require[d] the drawing of urban growth boundaries around all of the state's cities and a metropolitan growth boundary around the Portland region.[153] Within the growth boundaries there is streamlined permit review.[154] Furthermore, the Portland region has a directly-elected regional government responsible for maintaining a 20-year supply of buildable land within the urban growth boundary, and provides transportation and land use planning services.[155] Metro, as the regional government is called, is the only directly elected regional government in the United States.[156] It currently encompasses all or part of 24 incorporated cities and urban portions of three counties.[157]

Vermont's early growth management program also had a strong state and regional role.[158] The program was established in 1970, and received strong bipartisan support due to the fear that uncontrolled development would destroy the state's "special quality of life featuring small towns and farms."[159] The program featured eleven district environmental commissions who were to make permitting decisions.[160] The commission members were lay people appointed by the governor.[161] This effectively created a "permitting

148. *Id*.
149. *Id*. at 27.
150. *Id*.at 24.
151. PENDALL & MARTIN, *supra* note 70, at 20.
152. Degrove, *supra* note 100, *supra* at 24.
153. PENDALL & MARTIN, *supra* note 70, at 21.
154. *Id*. at 21.
155. *Id*.
156. *Id*.
157. *Id*.
158. DeGrove, *supra* note 100, at 30.
159. *Id*. at 31. For a detailed history and explanation of the Vermont experience, see Jeffery F. Squires, *Growth Management Redux: Vermont's Act 250 and Act 200*, *in* STATE AND REGIONAL INITIATIVES FOR MANAGING DEVELOPMENT, *supra* note 5, at 11-34.
160. DeGrove, *supra* note 100, at 31.
161. *Id.*

system operating essentially independent of the existing local and regional governments."[162] All development over a certain unit and acreage threshold was required to get a permit from the commission. However, the Vermont system was severely weakened because it operated until 1988 without a system of comprehensive plans, and Vermont's local governments have opposed an increased state role.[163]

Colorado encountered difficulty in the implementation of the state role in its growth management program.[164] Its system, as enacted in 1970, "included a State Land Use Commission with largely advisory powers."[165] In 1974, amendments to the program included provisions influenced by the Model Code. These elements required local governments "to identify 'matters of state interest,' ([similar] to Florida's [DRI] program and areas of critical state concern.)"[166] However, "[t]he Colorado story from then on is a sad one for those who support a growth management system set within a meaningful state framework of goals and policies."[167] The failure of the system was largely due to the fact that while the growth management system enjoyed bipartisan support at its inception, by the 1975 Gubernatorial election, growth management became a partisan issue.[168] The Democratic Governor, Richard Lamm, attempted to protect the system, but conservative Republicans, who controlled the Senate and House, were able to cut the State Land Use Commission's budget, and the Commission had to reduce its role.[169]

In North Carolina, the state played a largely supervisory role using regional advisory committees, and the local governments retained authority.[170] By and large, the program required all coastal local governments to create plans.[171]

These states' first wave programs provide a context and background to now consider the Florida program. Most of these growth management programs "have in common a change in the allocation of authority and responsibility vertically; and, at a minimum, new coordination requirements horizontally between and

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162. *Id.* This aspect of the law was created because the legislature "[r]ecogniz[ed] the inability of the typical Vermont town to evaluate a large development proposal." Squires, *supra* note 159, at 14.
163. DeGrove, *supra* note 100, at 30.
164. *Id.* at 30.
165. *Id.*
166. *Id.*
167. *Id.*
168. *Id.* "[T]he effort foundered in heavy political weather." Siemon, *supra* note 5, at 7.
169. DeGrove, *supra* note 100, at 30.
170. *Id.* at 26.
171. *Id.*

among state agencies, and between and among cities and counties where both are players in the growth management process."[172] Each of these states was concerned about development's effect on the environment and the quality of life in the state. While Florida's program is not identical to any one of the other first wave programs discussed above, there are substantial similarities and differences with each of the programs.

i. The Florida "First Wave" Program

In 1970 and 1971, Florida experienced a terrible drought. Muck fires burned through the everglades, and salt water intrusion threatened the Biscayne Bay Aquifer.[173] Prompted by this crisis, and in response to the historical and widespread abuse[174] of the state's land and water resources, Governor Rubin Askew called a statewide conference in August 1971.[175] The conference, which was called to discuss potential approaches to solving the environmental problems Florida faced, "was attended by over 150 participants, including developers, state and local government officials, federal agency representatives, and environmentalists."[176]

> In addressing those who offered only a cautious approach, one that would not negatively affect the agendas of developers and agribusiness interests, Askew replied, 'It is time we stopped viewing our environment through prisms of profit, politics, geography, or local and personal pride.' He warned that 'a failure to find appropriate solutions . . . would be disastrous to our economy as well as to our environment. The conference responded to Governor Askew's theme by drafting a strongly worded set of findings and policy recommendations. The report stated that 'an enforceable comprehensive land and water use plan … must be designed to limit increases in population . . . to a level that will ensure a quality environment.'[177]

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172. *Id.*
173. CATLIN, *supra* note 73, at 53.
174. See *id.* at 15-43, for a historical account of environmental abuse and corruption in Florida.
175. *Id.* at 53.
176. *Id.* This conference was termed the Governor's Conference on Water Management in South Florida. *See* Siemon, *supra* note 5, at 36.
177. CATLIN, *supra* note 73, at 53.

Florida enacted four laws in 1972 in response to this new focus on growth and the environment.[178] Florida's approach differed from the other states discussed above in that it involved extensive state and regional involvement in narrowly selected areas, previously solely in the domain of local government.[179] The four laws were a) The Environmental Land and Water Management Act, b) The Water Resources Act, c) The Comprehensive Planning Act, and d) The Land Conservation Act.[180] Each piece of legislation was politically volatile, and involved many compromises.[181]

> The Florida Water Resources Act of 1972 . . . created the regional water management districts, which today regulate the consumptive use of water and perform other planning and regulatory functions related to water resources. . . . The Florida State Comprehensive Planning Act of 1972 required Governor Askew to prepare a State Comprehensive Plan to articulate goals and policies to guide Florida's future growth. The Land Conservation Act of 1972 authorized the Governor and Cabinet to buy environmentally endangered lands throughout the state.[182]

The centerpiece of the 1972 reforms, though, was the Environmental Land and Water Management Act.[183] This act was based on Tentative Draft No. 3 of the American Law Institute (ALI) Model Land Development Code.[184] It limited local government authority by imposing state oversight of developments in environmentally sensitive areas when they were designated as "areas of critical state concern."[185] It also "created a new regulatory process for 'developments of regional impact' (DRIs) in those local jurisdictions with local land use controls."[186] Florida, however, made a number of changes from the Model Code to make its adaption better fit its localist political environment. These changes included moving the DRI review process from the state level to the

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178. *Id.* at 53-56.
179. DeGrove, *supra* note 100, at 28-29.
180. *Id.* at 28.
181. CATLIN, *supra* note 73, at 53-56.
182. *Id.* at 53-56.
183. Powell, *Growth Management*, *supra* note 128, at 524.
184. *Id.* at 523; Siemon, *supra* note 5, at 36-54.
185. Powell, *Growth Management*, *supra* note 128, at 523.
186. *Id.*

local and regional level.[187] The result of this arrangement, to this day, is that the:

> [DRI] process rests primarily with the initiative and activity of developers and local government, as the regional planning agency simply prepares the regional impact statements, which are not binding on the local government. Therefore, if a local government is developer oriented, it would be difficult to maintain strong regulation . . . . The ultimate responsibility for DRI land use decisions rests with local governments, and local government can ignore the regional agency's recommendations.[188]

The Act defined the DRI as "development which, because of its character, magnitude, or location, would have a substantial effect on the health, safety, or welfare of citizens of more than one county."[189]

> This approach to the definition of Development of Regional Impact appears to be based on the theory that the regional impact of any development is directly related to its size. In the case of residential development there is the additional assumption that the effect of development size varies directly with the size of the county; the larger the county, the larger the development must be before a regional impact occurs.[190]

Development interests opposed the legislation because they "realized that mandatory planning tied to zoning and the Development of Regional Impact criteria plus the imposition of impact fees would be the final nail in the coffin of 'business as usual.'"[191] For this reason, there was significant contention surrounding the passage of The Environmental Land and Water Management Act. The Florida Senate voted on the bill, Committee Substitute for Senate Bill 629, multiple times, each time amending, and re-voting. The bill finally won approval in the Senate on March 28, 1972, and included an "Explanation of Vote on CS for SB 629," written by Richard Deeb, Senator for the 22nd District. His

187. MANDELKER, *supra* note 8, at 116.
188. *Id*.
189. FLA. STAT. § 380.06(1).
190. MANDELKER, *supra* note 8, at 113.
191. CATLIN, *supra* note 73, at 59.

"explanation" illustrates the concerns of many localists, and many critics of land use regulation. The Explanation, in part, reads:

> CS for SB 629 is a bill that concentrates more power in state government, usurps the zoning and planning powers of local government (after two legislative sessions geared toward placing more power in local government), discriminates against owners and developers of land and all the employees in construction and related industries . . . . CS for SB 629 was a usurpation of the property rights of individuals when it was first introduced and it was the same usurpation of property rights when the first substitute amendment was adopted.[192]

In April 1972, Committee Substitute for Senate Bill 629 was passed by the Florida House of Representatives. There were multiple amendments, and attempted amendments before passage, not unlike the bill's experience in the Senate. One House member, Ted Randell, who opposed the bill, also included a strongly worded, "Explanation" after the passage of the bill. He wrote:

> In my consideration of CS for SB 629, I endeavored to weigh many factors, including the bill's relationship to present environmental laws, its effect on home building, land development, highway construction, agriculture, and the unemployment picture. I also considered the strong possibility there might be serious and fundamental constitutional questions, and a potential hazard to local government powers.
>
> After a thorough study of the bill, I concluded that present pollution and environmental laws, which I have favored and helped enact over the past few years, are sufficient to control the problems in that field and that progress is being made. I am strongly against creating additional bureaus with there attendant overlapping red tape.
>
> I also concluded that CS for SB 629 was a slap at local government in that it required our city and county officials to follow the dictates of Tallahassee in

192. JOURNAL OF THE SENATE, STATE OF FLORIDA, 649, March 28, 1972.

> matters of zoning, planning and serious employment problems would have to be faced in the home building and construction industries. Furthermore, debate and consideration of amendments was cut short.
>
> For these reasons, I voted against CS for SB 629.[193]

Both the Senate and the House explanations[194] echo many of the concerns that some people have with growth management regulations to this day. These include localism, property rights, and employment concerns.[195] In spite of the opposition to the DRI program, the DRI provisions quickly became the principal state land control in Florida.[196]

The Florida legislature passed the Local Government Comprehensive Planning Act in 1975. This act "required all of Florida's 467 cities and counties to adopt a comprehensive plan in accordance with certain procedural state standards."[197] This act was written, at least in part, to make the DRI provision effective. The DRI requires that "the development must be consistent with local land development regulations," therefore, each local government must have an "up-to-date, enforceable comprehensive plan" as the source of those land development regulations, to give the DRI provision meaning.[198]

Meeting the requirements of the Local Government Comprehensive Planning Act (LGCPA) in 1975, however, was difficult indeed for many of Florida's cities and counties. At the time of the LGCPA's passage, "less than half a dozen cities and counties with populations over 10,000 had comprehensive plans prepared after 1960 . . . . The LGCPA would require 461 cites and counties to prepare plans in just three years."[199] There was a very real shortage of trained planners to prepare these plans, and many of the plans reflected this shortage in their poor quality.[200] However, "[b]y January 1980, over 300 of Florida's 461 units of local

193. JOURNALS OF THE HOUSE OF REPRESENTATIVES, STATE OF FLORIDA, 1182, April 5, 1972.
194. Curiously, these are the only Explanations for the bill included in the Journal of the Senate and Journal of the House of Representatives. Unfortunately, those in favor of the bill apparently did not feel that an explanation discussing the bill's importance was necessary.
195. Concerns with the DRI's effect on the housing sector have proven to be unfounded.
196. MANDELKER, *supra* note 8, at 117.
197. CATLIN, *supra* note 73, at 57.
198. *Id*.
199. *Id*.
200. *Id.* at 58.

government had submitted plans to the Florida State Department of Community Affairs for review and comment."[201]

b. The Second Wave

Florida was among the first states to enter into what has been described as the second wave of land use controls.[202] During this time:

> [t]he catchword became 'balance,' balancing the equally legitimate needs of economic development and environmental protection. Add the elusive but still very real concept of 'quality of life'; articulate its expression through demands that infrastructure, especially transportation be adequate to support the impact of development . . . and you have the key ingredients of the 'second wave' of state actions in planning and growth management.[203]

The passage of Florida's Growth Management Act of 1985 put the state at the forefront of this second wave. A number of other states were to follow in expanding the scope of their growth management plans, including New Jersey in 1986, Maine, Vermont, and Rhode Island in 1988, and Georgia in 1989.[204]

In Florida, the Environmental Land Management Study Committee, better known as the ELMS II committee, played an important role in the shaping of the Growth Management Act of 1985.

i. The ELMS II Committee and its Final Report

Florida's entrance into the Second Wave of Land Use Control was prompted by disappointment and frustration with the system in place at that time. In late 1982, Governor Bob Graham appointed the Environmental Land Management Study Committee (referred to as ELMS II) and asked the members "to Review Chapter 380, and all related growth management programs, and to prepare a blueprint to guide growth and development in Florida for the [19]80's and beyond."[205] The ELMS II Committee held numerous public meetings around the state to take comment on the status of

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201. *Id.* at 60.
202. DeGrove, *supra* note 100, at 31.
203. *Id.* at 32.
204. *Id.* at 31.
205. ELMS II REPORT, *supra* note 7, at 1.

Florida's growth management laws, and issued its final report in February 1984. The ELMS II Committee's recommendations fell under three major areas.

The first area dealt with the development of a statewide planning framework. The state's goals and policies would be reflected in the state plan, regional plans, and local government comprehensive plans, with each level of planning coordinated and consistent with the next.[206] There would also be mechanisms to resolve differences in the plans.[207]

The second area dealt with "revisions to the DRI process that [were] intended to improve the process in the short term, and, for the long term, to integrate it into the developing statewide planning framework."[208] The committee recommended, in a nod to localism, to allow counties with comprehensive plans to adjust the applicable DRI threshold themselves.[209] It also recommended adjusting the presumptive bands around the thresholds, and streamlining a number of procedures.[210]

The third area dealt with recommendations which involved the strengthening of Florida's Coastal Management program.[211]

"Over the course of its meetings, the ELMS II Committee heard a great deal of testimony concerning the DRI [program]."[212] At these public hearings, "[the DRI program] received heavy criticism from the business community for, among other reasons, the expense and delay caused by DRI review. However, it received strong support from environmental interests and persons concerned with the impacts of growth who wish[ed] to see more development undergo DRI review."[213]

The DRI program received criticism from public officials as well, because it ignored the cumulative impacts of smaller developments.[214] "The ELMS II Committee found that only in rare cases did the DRI cover as much as 10%[215] of the residential

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206. *Id*. at 2.
207. *Id.*at 2-3.
208. *Id*. at 3.
209. *Id.* This recommendation was not enacted by the Florida legislature. While DRI thresholds are typically a function of county population, the DRI statute includes a number of circumstances that allow threshold increases, as well as a process for the RPC or local government to petition the DCA to increase or decrease the threshold applicable to a particular local government, or part of a local government. *See* § 380.06(2) and (3)(2002). For current DRI thresholds, see *supra* note 52.
210. ELMS II REPORT, *supra* note 7, at 3.
211. *Id*. at 4.
212. *Id*. at 37.
213. *Id*.
214. *Id*. at 39-40.
215. This number may no longer be applicable to Florida's more urbanized counties.

development in a cross-section of Florida counties."[216] Despite the criticism, the ELMS II Committee found that the DRI program had clearly become the most important and controversial of state growth management programs.[217]

The Committee considered phasing out the DRI program, but determined that such a step, in 1984, would be premature.[218] Rather, the Committee recommended making the DRI process more user-friendly,[219] less duplicitous,[220] and more certain,[221] while at the same time creating a new system of growth management that could focus on the cumulative impacts of all development.[222]

The ELMS II Committee concluded that Florida's growth problems could not be solved with a piecemeal solution, and that Florida was failing to address the multiplying incremental impacts of new growth and development, which were ignored by the DRI process.[223] This recommendation served as the catalyst for Florida's step into the forefront of the "Second Wave" of growth management, with the passage of the Growth Management Act of 1985.

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216. ELMS II REPORT, *supra* note 7, at 40.

217. *Id.* at 37.

218. *Id.* at 37-38.

219. "More user friendly," likely means a reduction in the time associated with DRI review, and a reduction of the expense associated with the process.

220. *See supra* note 3, for an explanation of duplication.

221. There was very little certainty associated with the DRI process early in its life because there was no policy on which to base decisions concerning the DRI application – for years there was no state plan, regional plan, or even local government comprehensive plans. Siemon, *supra* note 5, at 46. "This policy void created a situation whereby large-scale developments were reviewed on an ad hoc, reactive basis that inevitably 'presumed' that any development was undesirable." *Id.* "DRI development reviews have . . . often resulted in conditions that border on the ridiculous." *Id.*

222. ELMS II REPORT, *supra* note 7, at 41-43. These recommendations, as stated in the Final Report of the ELMS II Commission include:

> (1) Revising the present DRI guidelines and standards, as well as allowing local variations of DRI thresholds and the development of regional thresholds for DRI status determination; (2) Clarifying the scope of, and the use of the presumption in binding letter review; (3) Expanding the use of DRI review to include area-wide DRI's and locally undesirable land uses; (4) Focusing regional DRI review on important regional issues; (5) Limiting DRI development order exactions; (6) Coordinating DRI and permit reviews; (7) Strengthening the value and content of DRI development orders; (8) Strengthening administrative enforcement of the DRI process of appeals of DRI development orders.

Id. at 42-43.

223. *See id.* at 4.

ii. Florida's Growth Management Act of 1985

The Growth Management Act of 1985:

> made important procedural changes in the state-regional-local scheme for managing growth; and it also imposed important substantive requirements on the system, in general, and on local governments, in particular. The major ones were: (1) various planning, plan implementation, and regulatory requirements aimed at getting development activity along Florida's coast away from barrier islands and other high-hazard coastal areas; (2) a second set of policies calling for incentives and disincentives to promote more compact urban development patterns; and (3), most radically, a new system requiring that after new local plans and land development regulations are in place, no development may be approved by local governments unless it can be shown that the infrastructure, especially roads, necessary to support the impacts of development are in place.[224]

This third requirement is referred to as an adequate public facilities requirement, or more commonly in Florida, as "concurrency."[225] "[Concurrency] is a growth management tool for ensuring the availability of adequate public facilities and services to accommodate development."[226] The term "concurrency" is used because the infrastructure to serve the development, and the impacts from the development, must come into place at the same time, or, put another way, concurrently. If the infrastructure is not in place or does not have available the capacity the development necessitates by the time the impacts from the development will occur, the development is not allowed to move forward.

With the adoption of the Growth Management Act of 1985, concurrency became the main tool of Florida growth management, and the DRI process was made just one important part of a larger,

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224. DeGrove, *supra* note 100, at 33.

225. FLA. STAT. § 163.3180.

226. Thomas Pelham, *Adequate Public Facilities Requirements: Reflections on Florida's Concurrency System for Managing Growth*, 19 FLA. ST. U. L. REV. 974, 981-82 (1992) [hereinafter Pelham, *Public Facilities*]. "The purpose of the concurrency management system is to establish an ongoing mechanism which ensures that public facilities and services needed to support development are available concurrent with the impacts of such development." Fla. Admin. Code Ann. R. 9J-5.0055 (2002).

more comprehensive growth management system, rather than the focus[227] of the system. The concurrency requirement also may have reduced the importance of the DRI to some extent by reducing the importance of many of the exactions from the DRI process. This is because concurrency may require the developer to increase the capacity of the infrastructure, for example, to compensate for the effects of the development, whereas, those exactions formerly would have been made in development order negotiations. This new system created by the Growth Management Act of 1985 focused on the impacts of all development, not just large developments, as was considered by many to be the major failing of the previous system with the DRI as the cornerstone.

iii. ELMS III and the Subsequent 1993 Legislation

Governor Lawton Chiles created the ELMS III Committee in November 1991, amid continuing controversy regarding implementation of the Growth Management Act of 1985.[228] Not unlike the ELMS II Committee before it, ELMS III was directed to 'review the operation and implementation of Florida's growth management statutes . . . and . . . make recommendations for improvements in the State's system for managing growth.'[229] The recommended changes, and subsequent legislation in the form of the Growth Management Act of 1993, involved just about every component of Florida's growth management legislation, from minor changes, to the temporary termination of the DRI program.[230]

The DRI program was terminated because many felt that it did not fit into the more comprehensive growth management system created under the 1985 Act. Even under the 1975 Local Government Planning Act, "it was understood that the impact analysis required for large-scale projects under the DRI program would result in wasteful and 'unnecessary duplication' of local comprehensive planning."[231] Illustrating this concern, one commentator explained very early on:

> A comprehensive plan considers a broad range of environmental, social, and economic values and makes the necessary trade-offs [across the

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227. *Counter* ELMS II REPORT, *supra* note 7, at 37.

228. Powell, *Managing*, *supra* note 34, at 229-30 (citing Fla. Exec. Order No. 91-291, § 2 (Nov. 19, 1991)).

229. Powell, *Managing*, *supra* note 34, at 229.

230. *Id.* at 230. *See also* FLA. STAT. § 380.06 (27)(1993) for the section entitled TERMINATION OF THE DEVELOPMENT-OF-REGIONAL-IMPACT PROGRAM.

231. Powell, *Managing*, *supra* note 34, at 316.

> jurisdiction]. Impact analysis, which assesses a specific project in relation to its surroundings, entails consideration of the same factors as a comprehensive plan, But [sic] the difference . . . is that under impact analysis, in contrast to comprehensive planning, each individual project must be studied anew.[232]

Stated another way, if a proposed development is consistent with the local comprehensive plan, and that local plan is consistent with the regional plan, a review such as the DRI should be unnecessary because the effects of such a development would have been previously considered. Therefore, from very early in the DRI program's life, a program of comprehensive local planning was seen as a superior alternative to the DRI program.[233]

In order for a local government to terminate the DRI program under the 1993 Act, the local government was required to adopt certain required amendments to the intergovernmental coordination element of its comprehensive plan.[234]

While there were few supporters for the DRI program when the termination provision was enacted in 1993, the implementation of the provision "created so much uncertainty that even development interests came forward to say the existing system wasn't so bad after all."[235] By 1996, the termination of the DRI program was deemed a failure, and the termination provision disappeared from the act, leaving the DRI firmly in place."[236]

The Growth Management Act of 1993 saved the RPCs, it also dramatically weakened the role that they would play in the development process. "During the 1992 Regular Session, the legislature [enacted] a sunset provision of the Florida Regional Planning Council Act" (FRCPA).[237] The FRCPA would have expired

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232. *Id.* (quoting Thomas G. Pelham, *Regulating Development of Regional Impact: Florida and the Model Code*, 29 U. FLA. L. REV. 789. 827 (1977)).

233. Powell, *Managing*, *supra* note 34, at 316.

234. *Id*. at 317. *See also* FLA. STAT. § 380.06(27) (1993).

235. Charles Pattison, *Growth Management Study Commission Issues its Final Report*, FORESIGHT, Spring 2001, *available at* http://www.1000friendsofflorida.org/Growth_Manage_Process_Revision/GMSC_Report.asp.

236. *Compare* FLA. STAT. § 380.06 (27)(1993) through (1995) to FLA. STAT. § 380.06(27)(1996).

237. Powell, *Managing*, *supra* note 34, at 247. The Florida Regional Planning Council Act can be found in sections 186.501–186.513 Florida Statutes. The FRPCA begins with a very regionalist statement: "The problems of growth and development often transcend boundaries of individual units of local–general purpose government, and often no single unit can formulate plans or implement policies for their solution without affecting other units in their geographic area." FLA. STAT. § 186.502 (1)(a) (2002). The legislature has not followed this very regionalist passage with legislation to match.

if it had not been reenacted by September 1, 1993.[238] This situation arose from a "frustration of many with the performance of the regional planning councils because of overreaching and poor accountability."[239] Ultimately, the RPCs were retained, but with altered structure and reduced authority.[240] "[T]he 1993 Act enhanced their coordination and mediation roles, eliminate[d] their regulatory powers, and [made] dramatic changes in the nature of the regional policy plans."[241] More specifically, the 1993 Act required each RPC to establish a dispute resolution process,[242] and repealed authority to appeal local government decisions administratively.[243] This repeal of the RPC's powers greatly weakened the regionalist approach in Florida because the Florida program relies on the RPCs to provide the only regional perspective in the development process.

Two reasons were given for the repeal of RPC appeal authority. "One was to eliminate a source of friction between state, regional, and local agencies, as well as between regional planning councils and developers and landowners."[244] The second reason "was to diminish the regulatory role of the councils and emphasize the councils' planning, coordination, and technical assistance roles."[245] Although the RPCs maintain influence in the decision of whether to appeal a DRI development order, the RPCs' work in regard to the DRI program is focused on advising developers and local governments on project impacts and mitigation strategies stemming from the DRI.[246] Not unlike a private sector land-use consultant, "[t]heir principal tools [are] now . . . the quality of their analysis and art of persuasion."[247]

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238. Powell, *Managing*, *supra* note 34, at 247.
239. *Id*.
240. *Id*. at 248.
241. *Id*.
242. *Id*. at 253.
243. *Id*. at 261.
244. *Id*.
245. *Id*. at 261-62.
246. *Id*. at 262.
247. *Id*.

iv. Current Events Concerning the DRI Program

In an attempt to address disappointments[248] surrounding Florida's growth management laws, Governor Bush assembled the Growth Management Study Commission in mid-2000 to analyze the Florida system and recommend changes. The Commission filed its final report in February 2001. The Report, entitled "A Liveable Florida For Today and Tomorrow" contained 89 recommended changes. Prominent among the recommended changes was the recommendation to "[d]esign and implement regional cooperation agreements for developments with extra-jurisdictional impacts to eventually eliminate the [DRI] process."[249]

The Report called for the elimination of the DRI program by January 1, 2003, at the latest.[250] The report recommended replacing this program with regional cooperation agreements, whereby the RPCs and local governments would all come to agreement on how to mitigate and permit large projects affecting more than one of the governments.[251] This particular recommendation, has not been met, and there does not appear to be great support for such a move at this time.

1000 Friends of Florida, a growth management watchdog group, has said that this recommendation by the Growth Management Study Commission:

> would replace the current complex process with an even more cumbersome system. Admittedly, it is time to get rid of the DRI program, but not before creating a well-thought-out, feasible alternative. A rushed effort five years ago to eliminate the DRI process created so much uncertainty that even development interests came forward to say the existing system wasn't so bad after all.[252]

In response, legislation was passed during the 2002 legislative session specifically concerning the DRI program. Effective May 31, 2002, Senate Bill 1906 made changes to the DRI program, though

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248. "In February 2000, the Florida Department of Community Affairs issued a Report of its first Growth Management Survey. The report found that the most serious growth management problems noted in the survey were traffic congestion, urban sprawl, loss of wildlife habitat and limited water supplies." Patricia Salkin, *The Smart Growth Agenda: A Snapshot of State Activity at the Turn of the Century*, 21 ST. LOUIS U. PUB. L. REV. 271, 282 (2002).

249. GROWTH MANAGEMENT STUDY COMMISSION FINAL REPORT, *supra* note 1, at 3.

250. *Id.* at 21.

251. *Id.* at Recommendations 50-58.

252. Pattison, *supra* note 235.

not nearly as ground breaking as the changes recommended in the Report. Senate Bill 1906 did create a bright line rule concerning those projects that needed to undergo DRI review, by doing away with the presumptive band between 80% and 100% of the DRI threshold.[253] Now, only those projects at or above the given DRI threshold must undergo review. "The presumption for developments at 100-120 percent of the DRI threshold was maintained, allowing a developer with a development between those percentages to prove that the development is not a DRI."[254]

The bill also exempted three types of development from DRI review. These are certain marinas, petroleum storage facilities, and airports, each of which already receives significant oversight from a variety of federal, state and local administrative agencies.[255] Marinas are exempted from DRI review in local governments that have adopted boating facility siting plans that address specific issues, including the protection of endangered species such as the manatee.[256] Petroleum storage facilities are exempted if they meet the comprehensive plan requirements of the jurisdiction.[257] Airport facilities are exempted from DRI review if an Airport Master Plan required by the Federal government is included in the local government's comprehensive plan. These issues were each a common source of developer complaints because they closely duplicated other permitting programs necessary to build the respective facility.[258]

Termination of the DRI program was once again considered during the 2002 session. "One of the bills that failed during the 2002 legislative session attempted to replace the DRI process with an optional process to certify local governments with adequate capabilities to review and coordinate extra-jurisdictional impacts from development within the jurisdiction."[259] The passage of such a bill would have ended any semblance[260] of regionalist planning

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253. *See* FLA. STAT. § 380.06 (2)(d)(2002).

254. Cari Roth & Laura J. Feagin, *Reforms to Growth Management*, 76 FLA. BAR J. 57, 60 (July/August 2002); FLA. STAT. § 380.06(2)(d)(2002). For current DRI thresholds, see *supra* note 52.

255. Roth & Feagin, *supra* note 254, at 61.

256. *Id.*

257. *Id.*

258. Magee, *supra* note 4.

259. Roth & Feagin, *supra* note 254, at 61.

260. The "end any semblance" language could be slightly overstated from one perspective; Florida has five regional water management districts whose primary role is the management of water resources, and as such, they are tangentially related to real estate development and growth management. In fact, Tom Pelham, a former DCA secretary, as early as 1977, had proposed the use of the water management districts as agencies for regional governance, due to their "independence from local government" and ability to "inject a genuine regional perspective into land use decision making." *See* Pelham, *Regulating*, *supra* note 61, at 852.

and regulation in Florida legislation, and would have symbolized a retreat to the status quo of fragmented local governments. However, such a move would have just been a continuation of the undermining of regionalism that has been taking place in Florida, marked most clearly by the ELMS III recommendations and the Growth Management Act of 1993.

During this coming 2003 legislative session, there will likely again be pressure to make changes to the DRI program, and consideration given to doing away with the program entirely, as recommended in the Growth Management Study Commission Report. If the DRI program is done away with, Florida has been implemented with a different program to potentially replace the DRI, the optional sector plan.

Florida has currently implemented the optional sector plan demonstration program as an alternative to the DRI process.[261] The sector plan is intended to "avoid duplication of effort in terms of the level of data and analysis required for a [DRI], while ensuring the adequate mitigation of impacts to applicable regional resources and facilities."[262] The local governments enter into agreements with each other concerning various factors concerning the sector plan. These include: "the geographic area to be [covered by] the sector plan, the planning issues [to be] emphasized, requirements for intergovernmental coordination to address extra-jurisdictional impacts, supporting application materials including data and analysis, and the procedures for public participation."[263] Optional sector plans are approved through comprehensive plan amendments initiated by the local government with approval from with the FDCA.[264] "The sector plan will be of two levels: a conceptual, long-term build-out overlay; and detailed specific area plans."[265] The required contents of the long-term build-out overlay and the detailed specific area plans are set forth, in some detail, in the statute.[266]

This demonstration project was created during the 1998 legislative session, so it is somewhat early to judge its success. The sector planning process is an interesting planning concept because

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261. Optional sector plans are currently being utilized on developments in Bay, Clay, Collier, Orange, and Palm Beach Counties, *at* http://www.dca.state.fl.us/fdcp/DCP/sectorplans/Optsectpln .htm.

262. FLA. STAT. § 163.3245(1)(2002).

263. *Id*. at § 163.3245(2).

264. *Id* at § 163.3245(1).

265. Florida Department of Community Affairs webpage *at* http://www.dca.state.fl.us/fdcp/DCP/sectorplans/Optsectpln.htm; *see also* FLA. STAT. § 163.3245(3)(2002).

266. *See* FLA. STAT. § 163.3245(3)(a)(2002) for long-term build-out overlay details. *See* FLA. STAT. § 163.3245(3)(b)(2002) for detailed specific area plan requirements.

the local government is "institutionally responsive,"[267] or proactive in projecting demand for development and infrastructure and allocating the resources to accommodate the demand by changing zoning and securing funding for the infrastructure. However, the sector planning process is not necessarily regionalist. In fact, the local government, in developing the sector plan, seems to write the "DRI report" that is written by the RPCs in the DRI process.[268] While regional issues are addressed in the sector plan, they are addressed only by the local government in which the sector plan is located.[269] Notwithstanding this lack of a true regionalist perspective, if the program is successful, there will likely be pressure to implement the sector planning program more widely and ultimately replace the DRI program.

It is also worth noting that a recent study by Chapin and Connerly found that Floridian's support of growth management initiatives has waned in recent years.[270] The study was based on the results of two surveys administered to Florida residents in 1985 and 2001. One of the study's findings was that "between 1985 and 2001, there has been a shift in citizen preference from state-level growth management to county-level growth management."[271] In fact, localism seems to be garnering support, as there is "an emerging belief that growth management is best undertaken at the local level."[272]

Chapin and Connerly extrapolated from their research an explanation for the waning support of Florida's growth management system. They wrote "[a]ny public policy that is poorly understood by citizens, deemed ineffective at addressing key problems, and perceived as an incorrect organizational response to these problems is almost certain to lose citizen support over time."[273]

The research also indicates that "over two-thirds of Florida's citizens still perceive growth to be a problem in their community."[274] This indicates that despite the eroding support for growth management in general, and state mandates specifically, the public

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267. Arthur C. Nelson, Presentation "Regulations and Planning" notes on file with author.

268. For example, see Objections, Recommendations and Comments Report for Clay County, 02–1B Amendment, May 8, 2002, *available at* http://www.claycounty.gov.com/planning_Dept/Plans_&_Amendments/Branan_Field_Plan/ORC_report_dept_communitiy_affairs.pdf (last viewed April 11, 2003).

269. *Id*.

270. Tim Chapin & Charles Connerly, *Attitudes Towards Growth Management in Florida: Comparing Citizen Support in 1985 and 2001,* DeVoe L. Moore Center Policy Brief, Issue #6, January 2003.

271. *Id.*

272. *Id.*

273. *Id.*

274. *Id.*

still believes that the regulation of development is necessary, particularly when done at the local level.[275]

The adoption of the Portland regional model in Florida involves a narrowly focused power shift, from a system of localism toward regionalism, which will make the implementation of regional plans much more effective. While it is clear that this proposal is not a cure-all, it would certainly be a huge step in the right direction.

v. Findings

Regionalism has not played a strong role in the Florida growth management system. In fact, the DRI is the only element of the Florida system that incorporates regional planning and regulation, and even then, the regionalist perspective is deferential to local government decision-making.[276] Localist interests within the Florida legislature seem to be much stronger than regional interests, and as a result, the DRI's small regional voice, over time, has been eroded in favor of localism, and frequently threatened with its termination. The increasingly important role of localism in the DRI program specifically, and Florida's growth management system generally, are clearly illustrated in the non–binding nature of the RPCs' recommendations, the reduction in the RPCs' regulatory powers, and the attempted terminations of the entire DRI process.

The DRI program should be terminated. The DRI is arguably duplicitous of other permitting requirements,[277] duplicitous of comprehensive planning at both the local and regional levels,[278] and

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275. Evidencing the localist sentiment in Florida is the growing support of an extremist organization entitled Florida Hometown Democracy. This organization of NIMBYs (not in my backyard), BANANAs (build absolutely nothing anytime not anywhere) support an amendment to the Florida Constitution requiring all comprehensive plan amendments to go through the normal local government review process, and then, as an additional step go to a referendum ballot of the voters as a condition to approval. *See* http://www.floridahometowndemocracy.com. As one can easily imagine, this proposal, if enacted, has the potential to bring the entire process of amending all local government comprehensive plans to a screeching halt. This could have drastic consequences to economic development, job growth, and housing. To date, it appears that this concept is being favorably received by a wide-array of voters — both Republican and Democrat — as a "feel good" proposition. It is unclear to what degree members of the general public understand the impact on jobs, industry, and housing prices that may result from such a constitutional amendment.

276. "Except for its rather perverse dalliance with regionalism, the Act's DRI provisions are unswervingly faithful to the principle of localism." Pelham, *supra* note 61, at 814. Tom Pelham wrote this passage in 1977, when regionalism associated with the DRI through the RPCs was comparatively much stronger than it is today. Most notably this was before the RPCs powers were dramatically reduced as discussed in sections IV.B.1.b.iii. of this paper.

277. Duplication of other permitting requirements is discussed *supra* note 3.

278. Duplication of comprehensive planning is discussed in section IV.B.1.b.iii of this paper. *See also* Pelham, *Regulating*, *supra* note 61, at 827.

from the very beginning, has over-regulated the wrong developments.

DRIs are over-regulated. The DRI focuses on the regional impacts of certain large developments. However, these large developments are the most unlikely to be done poorly. The developers who do DRI work are typically highly capitalized and therefore most able to provide the needed infrastructure to serve the development. Further, it takes a long time for a DRI-sized development to reach build out. Therefore, the developer is closely tied to the project for an extended time period. Market forces ensure that the development will be done right, because if the infrastructure is not in place or is inadequate, or the development is otherwise poorly planned, the developer will not have difficulty selling just one or two lots or houses, but 500 or 1,000 homes.[279]

The problem, then, continues to be the cumulative impact of small developments. These small developments tend to be undercapitalized and therefore unable to adequately address infrastructure needs. Furthermore, unlike DRI sized developments which are large enough to necessitate there own internal planning to build workable neighborhoods, small development, particularly those done by non-professional or inexperienced developers have a higher probability of being disconnected from neighboring existing development both aesthetically and physically.

VI. CONCLUSION

Florida's DRI program has played various roles in Florida's growth management scheme. When it was first created, over 30 years ago, the DRI program was the core of the growth management program. After the Growth Management Act of 1985 was passed, the DRI program became one part of a more comprehensive whole. Over the years, the DRI program has become much more specific and complex. The provision which initially spanned three pages of the Florida statute books, today exceeds sixteen. While much has changed since its inception, two things have remained constant. The DRI program has remained controversial, and the DRI program has remained increasingly true to its localist core.

This controversial, localist program has outlived its time. It is duplicitous of other permitting programs and comprehensive planning. But most importantly, it over-regulates large developments that, due to market forces and adequate capitalization, would provide the necessary infrastructure, and due to size would be well planned, without the time and expense of DRI

279. For current DRI thresholds, see *supra* note 52.

review. At the same time as it over-regulates the large developments, it ignores the cumulative, incremental impacts of sub-DRI developments which are more prone to be undercapitalized and poorly planned. It is these smaller developments that are more likely to be physically and aesthetically disconnected from the surrounding areas, less likely to provide adequate infrastructure, and more in need of oversight.

Despite the many benefits a regionalist approach may offer, the cumulative impacts of small development are best addressed at the local level, the level of government that the majority of Floridians believe should wield such responsibility and authority.[280]

The DRI program is not an effective means of managing growth in Florida. This is due to the duplication of the DRI program and the over regulation of DRI developments discussed throughout this paper. Therefore, the DRI program should be terminated.

280. Chapin & Connerly, *supra* note 270.

FINDING THE DEVELOPMENT VALUE OF WETLANDS AND OTHER ENVIRONMENTALLY SENSITIVE LANDS UNDER THE EXTENT OF INTERFERENCE WITH REASONABLE INVESTMENT-BACKED EXPECTATIONS

DONALD C. GUY*
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Table of Contents

I. INTRODUCTION

Palazzolo v. Rhode Island[1] raises subtle analytical questions regarding the determinations of liability and a remedy for an unconstitutional interference with reasonable investment-backed expectations[2] under the Takings Clause.[3] Regulatory takings disputes involving sensitive and non-sensitive lands will require lawyers to prove that both the existence of reasonable investment-backed expectations and the extent of interference with these expectations[4] by land use and environmental regulations amount to a regulatory taking.[5] If they are successful in establishing a regulatory taking based on the extent of interference by a particular regulation, they must also offer proof of the amount of just compensation for depriving landowners of reasonable investment-backed expectations in the development of the land.[6] Establishing

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1. 533 U.S. 606 (2001).

2. *Id*. at 632 ("The claims under the *Penn Central* analysis were not examined, and for this purpose the case should be remanded.").

3. U.S. CONST. amend. V.

4. *See Palazzolo*, 533 U.S. at 632-37 (Scalia, J. and O'Connor, J., concurring).

5. *See id.* at 632. *See also* Ruckelshaus v. Monsanto Co., 467 U.S. 986 (1984) (holding that reasonable investment-backed expectations did not exist under the circumstances); Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104 (1978) (holding that investment-backed expectations existed, but there was no unreasonable interference under the circumstances).

6. *See Palazzolo*, 533 U.S. at 636-37 (Scalia, J., concurring); *id*. at 632-36 (O'Connor, J., concurring) (finding the *value* of sensitive and other lands to the public or community is not a settled land valuation task). *See, e.g.,* Donald C. Guy & James E. Holloway, *The Recapture of Public Value on the Termination of the Use of Commercial Land Under Takings Jurisprudence and Economic Analysis*, 15 BYU J. PUB. L. 183 (2001); William N. Kinnard, Jr.,

the development value[7] of sensitive and other lands may be a challenging task under a confusing takings analysis.[8] The underlying nature of this analysis presently weighs different regulatory and economic circumstances that eventually affect land valuation.[9] Lawyers and judges need to understand social, business, and market principles[10] in proving land values resulting from an unreasonable deprivation of economic and financial expectations in holding or using land.[11]

Palazzolo's most contentious effects on takings liability and just compensation arise from the competing social equity and economic concerns within the takings analysis of Justices Scalia and O'Connor. *Palazzolo's* analytical impact on the extent of interference with reasonable investment-based expectations includes an examination of takings liability and just compensation. Moreover, the analytical impact implicates the movement towards a two-prong test: the circumstantial existence of constitutionally protected *return on investment* interest, and the extensiveness of the government interference with this interest. Part I of this article discusses the purpose, analytical issue, and constitutional scope of *Palazzolo's* impact on litigation and negotiation involving the extent of interference with reasonable investment-backed expectations. Part II explains takings analysis, real estate concerns, and land valuation affected by the development of sensitive lands. Part III examines *Palazzolo's* effects on takings liability and focuses on the Court's findings regarding sensitive land development, beneficial use of sensitive land, and the financial expectations of landowners. It discusses the economic effects of the regulation and the takings

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The New Noneconomics: Public Interest Value, Market Value, and Economic Use, 66 APPRAISAL J. 207 (April 1998).

7. We assume that the landowners of sensitive land lost the opportunity to develop the land or that the government chose to take the land for public use, and thus the landowner seeks just compensation for the taking of the land. *See Palazzolo*, 533 U.S. at 625. The landowner can petition state and federal courts to declare the regulation unconstitutional and thus unenforceable by federal, state, and local governments. *See* First English Evangelical Lutheran Church of Glendale v. County of L.A., 482 U.S. 304, 321 (1987).

8. *See Palazzolo*, 533 U.S. at 636-37 (Scalia, J., concurring); *id*. at 632-36 (O'Connor, J., concurring).

9. *Compare id.* at 636-37 (Scalia, J., concurring) (giving landowner a windfall under the present circumstances), *with id.* at 632-36 (O'Connor, J., concurring) (seeking fairness and justice by including past circumstances).

10. *See* JAMES H. BOYKIN & ALFRED A. RING, THE VALUATION OF REAL ESTATE 40-57 (4th ed. 1993). "An Appraiser must not only be conscious of the forces of changes, but must also learn to evaluate their impact." *Id*. at 57.

11. *See Palazzolo*, 533 U.S. at 636-37 (Scalia, J., concurring) (relying heavily on economic and financial theories in determining the effects of government regulation on the loss of land value and investment expectations); *id*. at 632-37 (O'Connor, J., concurring) (relying heavily on past policy, regulatory schemes, and individual financial decisions in determining the effects of government regulation on land value and investment expectations).

analysis applied to address these effects. Part IV examines just compensation for interference with reasonable investment-backed expectations, and focuses on the use of land valuation and appraisal methods to value sensitive land. It discusses how the duration of the regulation, use restrictions, and other considerations might affect the value of land when the takings dispute involves the extent of interference with reasonable investment-backed expectations. Part V discusses land valuation methods that courts can use to determine the amount of just compensation for a regulatory taking. It also discusses considerations that should be weighed by judges and lawyers in a takings analysis to determine the extent of interference with reasonable investment-based expectations. Part VI notes that the analytical nature of the extent of interference with reasonable investment-based expectations will necessarily involve takings liability and just compensation in the Court's effort to ensure fairness and protect market value in regulatory takings jurisprudence. Thus, the conclusion of this article demands the use of real estate appraisal and investment expertise to determine market value.

A. Palazzolo's Effects on Liability and Remedy

The differences in the takings analysis put forth by Justices Scalia and O'Connor directly explicate takings liability and strongly implicate just compensation in regulatory takings jurisprudence. Both Justices share the same takings jurisprudence, but are at different points in the same line of analysis. Specifically, Justices Scalia and O'Connor do not agree on the *circumstances* that should be examined to determine the extensiveness of interference and existence of reasonable investment-backed expectations in the determination of takings liability.[12] In fact, their differences suggest a more subtle but important question — whether they would agree on the *method to determine the amount of just compensation* if they were to find the existence of investment-backed expectations and an unconstitutional interference with these expectations.[13] Justice O'Connor wants fairness and justice for the

12. *See id*. at 636-37 (Scalia, J., concurring); *id*. at 632-36 (O'Connor, J., concurring).

13. *See id*. at 635-37 (Scalia, J., concurring); *id*. at 632-36 (O'Connor, J., concurring). Our focus on just compensation, U.S. CONST. amend. V., is on the recovery of the value of land, though an interference with reasonable investment-backed expectations may leave the landowner with less beneficial uses of the land. *See* A. A. Profiles, Inc. v. City of Fort Lauderdale, 253 F.3d 576 (11th Cir. 2001). Just compensation can include the fair market value for taking ownership of the land. *See Palazzolo*, 533 U.S. at 611. In some circumstances, courts cannot award fair market value and must award a modified market value (MMV) for an unreasonable economic impact. *See A. A. Profiles,* 253 F.3d at 576. Finally, courts can award injunctive relief to halt government interference, occupation, or use.

public[14] when the landowner would not or could not have developed the property, and thus the landowner's inability to develop may affect takings liability and just compensation under particular circumstances.[15] Justice Scalia, on the other hand, would not apply a broad factual analysis to determine takings liability[16] and would permit a windfall for land unsuitable for development in its natural state.[17] Plaintiffs' lawyers cannot ignore a broader takings analysis because the amount of any windfall may be greatly reduced if Justice O'Connor's factual analysis is used in determining this extent of interference. Under a broader takings analysis, courts may avoid finding any takings liability on the part of government, or use an appraisal method to give less compensation for an unconstitutional interference. Obviously, a regulatory taking of a speculative investment that is not financially feasible should not turn a sow's ear into a silk purse.

B. Palazzolo's Impact on Evidence of Liability and Just Compensation

Lawyers and judges need to understand how *Palazzolo* could affect takings analysis in the determination of the existence and extensiveness of a regulatory interference with reasonable investment-backed expectations and the appraisal methodology[18] applied to determine just compensation.[19] Negotiation and litigation will involve takings analysis in determining the extent of interference[20] and rely on appraisal methodology to determine the value of land when the extent of the interference amounts to a regulatory taking.[21] *Palazzolo* creates two evidentiary hurdles for lawyers and judges. First, judges and plaintiffs' lawyers face uncertainty regarding the breadth of the investment-backed

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See First English Evangelical Lutheran Church of Glendale, 482 U.S. at 321.

14. *See Palazzolo*, 533 U.S. at 633 (O'Connor, J., concurring) (noting that fairness and justice are not definite or fixed under the Takings Clause).

15. *See id*. (O'Connor, J., concurring).

16. *See id*. at 637 (Scalia, J., concurring) (arguing that use restrictions in existence at the time the petitioner took title should not be considered in a determination of takings liability).

17. *Id*. at 636-37 (Scalia, J., concurring).

18. *See id*. at 625 (citing Olson v. United States, 292 U.S. 246, 255 (1934)). The most common real estate valuation approach may not cover the political and regulatory circumstances Justice O'Connor weighs in the determination of a taking and just compensation under her approach to the *Penn Central* inquiry. *Id.*

19. *See id*. at 636-37 (Scalia, J. and O'Connor, J., concurring) (offering different but arguably reconcilable approaches to an underdeveloped *Penn Central* analysis for the determination of the existence of investment-backed expectations and the extent of interference with these expectations).

20. *See Palazzolo*, 533 U.S. at 632.

21. *See id*. at 625 (citing *Olson*, 292 U.S. at 255; 4 JULIUS L. SACKMAN, NICHOLS ON EMINENT DOMAIN § 12.01 (rev. 3d ed. 2000)).

expectations analysis in determining the extent of interference under past regulation of sensitive lands. Although the time of the imposition of the regulation was not necessarily the time of the regulatory taking,[22] Justice O'Connor's broad factual analysis would include policy and regulatory circumstances in the maturation of a takings claim.[23] Second, judges and defendants' lawyers face more confusion regarding an investment-backed expectations analysis which leaves doubts about the choice of appraisal methods[24] to determine just compensation for the sake of fairness to the public or government. Weighing the past effects of the regulation to determine a regulatory taking may create confusion in fashioning a remedy that considers missed opportunities to develop the land. Both appraisal methodology and takings analysis may weigh: the level and kind of interference; the quality and suitability of the land; the nature and feasibility of the development; and the timing and severity of the regulation. *Palazzolo's* takings and compensation questions that directly involve the extent of interference with reasonable investment-backed expectations on sensitive lands require greater emphasis on land development and appraisal expertise in negotiation and litigation to establish takings liability and fashion appropriate compensation.

C. Examining the Nature of Palazzolo's Impact on Liability and Compensation

Palazzolo's analytical question strongly suggests internal tension within the dominant line of analysis of the Rehnquist Court's takings jurisprudence.[25] This conflict involves the tenuous relationship between public fairness and financial expectations surrounding government regulation of environmentally sensitive land that had previously been mostly off limits for development, and still could be. But *Palazzolo* may extend to non-sensitive lands that have been subject to government regulation that were used by landowners with little financial expectations who chose not to

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22. *See id.* at 623. The existence of a regulation does not put a purchaser on notice of regulatory requirements or conditions that would constitute a taking or permit the government to take property without just compensation. *See id.* at 639. Justice Stevens finds that a taking is a discrete acquisition of private property that requires the payment of just compensation. *Id.* at 638-39 (Stevens, J., dissenting) ("It occurs . . . when the relevant property interest is alienated from its owner.").

23. *See id.* at 635 (O'Connor, J., concurring).

24. *See id.* at 632-37 (Scalia, J. and O'Connor, J., concurring).

25. *See id.* at 632. On remand, either the approach of Justice O'Connor or Justice Scalia will be applied to the circumstances under the *Penn Central* inquiry. *Id.* If the protection of property rights receives less protection under the Takings Clause, the direction of the takings jurisprudence of the Rehnquist Court may be affected. *Id.*

challenge the regulation as an unconstitutional taking.[26] Both obvious and subtle differences in the circumstances of Justices Scalia and O'Connor's approaches, which consider only one factor of the Court's takings analysis, address regulatory takings and just compensation issues.[27] Justices Scalia and O'Connor played pivotal roles in the development of the takings jurisprudence of the Rehnquist Court.[28] Therefore, their differences affect the Rehnquist Court's development of takings jurisprudence, and create uncertainty regarding the breadth of analysis the Court will apply to address competing financial expectations and public fairness issues when land use and other regulations do not permit landowners and developers to reap the economic and financial benefits of investments in land.[29] Consequently, *Palazzolo's* analytical impact on the extent of interference with reasonable investment-backed expectations involves an obvious takings liability question and a more subtle just compensation concern.

II. TAKINGS JURISPRUDENCE AND REAL ESTATE DEVELOPMENT

Obviously, Justice Holmes' simplistic observation that regulation can go too far[30] in burdening property rights of landowners for the benefit of the public has not been simple for the courts to define, including the United States Supreme Court.[31] The Court has used an ad hoc approach that depends heavily on the facts and circumstances of each case.[32] Under its ad hoc approach, the Court develops an analytical framework for each factor, but it

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26. *See id.* at 628. The Court is most explicit when it states that a regulation will not be permitted to place an expiration date on the Takings Clause and that future generations should be given the right to challenge unreasonable regulations. *Id.*

27. *Compare id.* at 636-37 (Scalia, J., concurring) (noting that "[t]he 'investment-backed expectations' that the law will take into account do not include the assumed validity of a restriction that in fact deprives property of so much of its value as to be unconstitutional."), *with id.* at 632-36 (O'Connor, J., concurring) (noting that "[f]urther, the state of regulatory affairs at the time of acquisition is not the only factor that may determine the extent of investment-backed expectations.").

28. *See, e.g.,* Dolan v. City of Tigard, 512 U.S. 374 (1994) (developing a means-ends analysis to scrutinize the nature of government action); Lucas v. S.C. Coastal Council, 505 U.S. 1003 (1992) (developing a per se test to prohibit a taking of all development use); Nollan v. Cal. Coastal Comm'n, 483 U.S. 825 (1987) (developing a means-ends analysis to scrutinize the nature of government action).

29. *See* Tahoe-Sierra Pres. Council v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 339 (2002). Justice Stevens, writing for the majority, adopts Justice O'Connor's comments in *Palazzolo* on "fairness and justice" to reject a per se rule for moratoria on the development of land. *Id.* at 335. Justice O'Connor joined the majority, which did not include Justice Scalia. *Id.* at 344.

30. Pennsylvania Coal v. Mahon, 260 U.S. 393, 415 (1922).

31. *See Palazzolo*, 533 U.S. at 606.

32. *Penn Central*, 438 U.S. at 137.

has been slow to develop an analytical framework for economic impact and interference with expected return on investment.[33] However, *Lucas v. South Carolina Coastal Council*[34] establishes an all or nothing rule for economic effects that deprive the land of all development value and use, where such use restrictions were not placed on landownership at common law.[35] Federal takings law has developed much during the Rehnquist Court, but still remains both confusing and under-developed on the issue of the economic effects of regulation on the exercise of property rights.[36]

A. Federal Takings Law and Liability

The Court has concluded that the purpose of the Takings Clause is to prevent some citizens from shouldering a burden that should be borne by the public or community as a whole, such as using taxes to buy land and property rights.[37] In *Penn Central Transportation Co. v. City of New York*,[38] the Court establishes three factors to determine the constitutionality of land use, environmental, and other regulations challenged as a regulatory taking.[39] The Court's ad hoc approach requires scrutiny of the nature of the government action,[40] an analysis of the economic impact of the regulation,[41] and the determination of the extent of interference with reasonable investment-backed expectations[42] to determine if the regulation

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33. *See Monsanto,* 467 U.S. at 986 (holding a lack of reasonable investment-backed expectations); *Penn Central*, 438 U.S. at 104 (holding a lack of unreasonable interference with reasonable investment-backed expectations).

34. 505 U.S. 1003 (1992).

35. *See id.* at 1020, 1031. *Palazzolo* applies *Lucas* to land that had monetary value but a greatly diminished development use based on natural conditions. *Palazzolo*, 533 U.S. at 631.

36. *See Palazzolo*, 533 U.S. at 631-37 (Scalia, J. and O'Connor, J., concurring) (joining the majority in *Palazzolo* but disagreeing on issues of timing, regulatory, and other circumstances to be weighed in the *Penn Central* inquiry on remand).

37. Armstrong v. United States, 364 U.S. 40, 49 (1960). *Armstrong* takes on great importance in Justice O'Connor's concurring opinion and continues to do so in *Tahoe-Sierra Pres. Council* where Justice Stevens uses *Armstrong* as a doctrine to underpin *Penn Central*'s deferential means-ends analysis. *Id.*

38. 438 U.S. 104 (1978).

39. *See id*. at 137.

40. *See, e.g., Dolan*, 512 U.S. at 374.

41. *See* Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926) (permitting substantial diminution in value); *Penn Central*, 438 U.S. at 104 (permitting reasonable economic impact). The Takings Clause has a social impact through regulations that limits the use of land and regulations that establish social welfare programs, such as recreation, job training, and transportation. *See generally* James E. Holloway & Donald C. Guy, *A Limitation on Development Impact Exactions to Limit Social Policy-Making: Interpreting the Takings Clause to Limit Land Use Policy-Making for Social Welfare Goals of Urban Communities*, 9 DICK. J. ENVTL. L. & POL'Y 1 (2000) (discussing the impact of the Court's interpretation of the Takings Clause on the development of social welfare programs).

42. *See Penn Central*, 438 U.S. at 136; *Monsanto,* 467 U.S. at 986. *Penn Central* and *Monsanto* are the Court's analysis of the existence and extent of interference with reasonable

effects a taking of private property for public use.[43] The development of takings doctrine to determine whether government regulation imposes a burden on landowners tantamount to an exercise of eminent domain has proven confusing under the *Penn Central* analysis.[44] In *Penn Central*, the Court concluded that New York City's historic preservation regulations were not a regulatory taking, though their restrictions on development of a local historic site limited the financial expectations of the landowner.[45] Yet, the Court's progress toward a development of a line of analysis to address investment-backed expectations, except for a total deprivation of developmental use,[46] has been slow.[47]

The factor in the *Penn Central* analysis that has received most of the Court's attention has been the nature of government action.[48] The Court has developed means-ends analyses to examine the connection between a regulation and its purposes and justifications.[49] The Court has limited its attention mostly to land dedication conditions and other development impact exactions.[50] It has developed an "essential nexus" test to scrutinize the relationship between a land dedication condition and its declared public purposes[51] and a rough proportionality test to scrutinize the relationship between a land dedication condition and the impact of development.[52] The essential nexus and rough proportionality tests closely scrutinize the relationship between conditional demands and public needs, but the Court has refused to apply these tests to other

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investment-backed expectations. *See infra* Part IV.B and accompanying notes.

43. *See Penn Central*, 438 U.S. at 124.

44. *See Palazzolo*, 533 U.S. at 631-37 (Scalia, J. and O'Connor, J., concurring) (typifying the confusion surrounding the Court's takings analysis in their disagreement on the presence and weight of time, regulatory, and other circumstances in the *Penn Central* inquiry).

45. *See Penn Central*, 438 U.S. at 138.

46. *See Lucas*, 505 U.S. at 1003 (denying all economically viable use).

47. *See, e.g.,* Steven J. Eagle, *The Rise and Rise of "Investment-Backed Expectations*," 32 URB. LAW. 437, 437 (2000); Daniel R. Mandelker, *Investment-Backed Expectations in Taking Law*, 27 URB. LAW. 215, 225-26 (1995); Lynda J. Oswald, *Cornering the Quark: Investment-Backed Expectations and Economically Viable Uses in Takings Analysis*, 70 WASH. L. REV. 91, 116 (1995). Commentators generally do not understand what the Court meant by investment-backed expectations. Eagle, *supra* at 437-40; Mandelker, *supra* at 225-27; Oswald, *supra* at 115-17. *Palazzolo* continues the Court's expansion of the concept of investment-backed expectations without establishing a discrete analysis in takings jurisprudence. *Palazzolo*, 533 U.S. at 606.

48. *See, e.g., Dolan*, 512 U.S. at 374 (scrutinizing the justification for regulation); *Nollan*, 483 U.S. at 825 (scrutinizing the ability of the regulation to further its declared purpose).

49. *See also* James E. Holloway & Donald C. Guy, *Land Dedication Conditions and Beyond the Essential Nexus: Determining "Reasonably Related" Impacts of Real Estate Development under the Takings Clause*, 27 TEX. TECH. L. REV. 73 (1996) (examining the impact of *Dolan* and *Nollan* on the scrutiny of the nature of government action).

50. *See, e.g., Dolan*, 512 U.S. at 374; *Nollan*, 483 U.S. at 825.

51. *See Nollan*, 483 U.S. at 837.

52. *See Dolan*, 512 U.S. at 391.

government regulations, such as land use, environmental, or coastal zone management regulations, that broadly affect the community as a whole.[53]

The Court has not found much need to develop a line of analysis for the economic impact and return on investment factors of the *Penn Central* analysis. It earlier concluded in *Village of Euclid v. Ambler Realty Co.*[54] and other cases that a diminution in market value would not constitute a taking of private property for public use.[55] However, in *Lucas*, the Court concluded that the denial of all economically viable use is a taking, but it did not develop a precise test to determine when all economically beneficial use has been denied by government regulation.[56] Likewise, it has not developed a workable, definitive analysis to determine the extent of interference with reasonable investment-backed expectations.[57] The Court has not concluded that a government regulation unconstitutionally interferes with reasonable investment-backed expectations.[58] The Court is slowly developing an analytical framework for economic effects beyond a diminution in value,[59] preserving much government discretion to affect the operation of land markets[60] and expectations of landowners.[61] The Court's reticence to check government discretion still would not justify the making of financially unsound real estate investments.

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53. *See* City of Monterey v. Del Monte Dunes of Monterey, Ltd., 526 U.S. 687, 702-03 (1999).

54. 272 U.S. 365 (1926).

55. *See Penn Central,* 438 U.S. at 131 (citing *Village of Euclid*, 272 U.S. at 365 (noting 75% diminution in value); Hadacheck v. Sebastian, 239 U.S. 394 (1915) (noting 87% diminution in value)).

56. *See Lucas*, 505 U.S. at 1015.

57. *See Monsanto,* 467 U.S. at 986 (finding no reasonable investment-backed expectations); *Penn Central*, 438 U.S. at 104 (finding no unreasonable interference with reasonable investment-backed expectations).

58. *See Monsanto*, 467 U.S. at 1066 (holding there is no reasonable investment-backed expectation in trade secrets of its product if it knew government would disclose secrets); *Penn Central*, 438 U.S. at 136 (denying the owners of the Grand Central Terminal the right to expansion that would generate greater profits did not interfere with the owner's investment-backed expectation).

59. *See Lucas*, 505 U.S. at 1003 (developing a narrowly designed per se test to prohibit the taking of all beneficial or development use).

60. *See* Suitum v. Tahoe Reg'l Planning Agency, 520 U.S. 725 (1997) (examining transferable development rights (TDRs) that may not have been salable or may have possessed limited economic value). For analysis of *Suitum*, *see* James E. Holloway & Donald C. Guy, *The Utility and Validity of TDRs under the Takings Clause and the Role of TDRs in the Takings Equation under Legal Theory*, 11 PENN STATE ENVTL. L. REV. 45 (2002).

61. *See City of Monterey,* 526 U.S. at 702-03 (delaying a development application that eventually ended with the state purchasing the property).

B. Real Estate Development Interests and Market Risks

Obviously, land and real estate development include financial, legal, and policy risks, and thus a market analysis is necessary to examine these attributes and forces.[62] Real estate developers, landowners, and business organizations acquire and hold private property for institutional, residential, commercial, and industrial development.[63] They own or purchase land for investment, speculation, or both, and eventually plan to develop the land for a return on invested capital.[64]

Land development is not risk-free. Real estate developers must assess and respond to local, state, and national land markets where sufficient supply and demand must exist for real estate products, such as housing and office space.[65] Economic conditions are not the only factors that affect local real estate markets.[66] Social conditions, government regulations, and public policy will have both negative and positive effects on residential and commercial development.[67] Public needs affect development by causing governments to impose responsibility on landowners and developers for social welfare needs, such as affordable housing, education, and recreation.[68] Population growth and other social changes affect the demand for real estate products.[69] The provision of real estate products may alleviate some social problems, such as a housing shortage, but may create other public needs, such as schools and other public facilities.[70] Finally, political or public policy concerns will affect residential, commercial, and other development when cities and communities control use and manage growth, including the imposition of limits on the expansion of public services.[71] Public policy concerns include environmental protection, land use, urban redevelopment, and growth management.[72] The provision of some

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62. *See* BOYKIN & RING, *supra* note 10, at 60-95; TERRY VAUGHN GRISSOM & JULIAN DIAZ III, REAL ESTATE VALUATION: GUIDE TO INVESTMENT STRATEGIES 66-93 (1st ed. 1991); C. F. SIRMANS & AUSTIN J. JAFFE, THE COMPLETE REAL ESTATE INVESTMENT HANDBOOK 45-98 (2d ed. 1984). Real estate market analysis is not a layman's tool; the stakes are too high. The real estate investors must analyze business risks that are related to legal restrictions, economic conditions, social forces, and other factors. *See* SIRMANS & JAFFE, *supra* at 46-45.

63. *See* BOYKIN & RING, *supra* note 10, at 294-95.

64. *See id.*

65. *See* GRISSOM & DIAZ, *supra* note 62, at 111-12.

66. *See* BOYKIN & RING, *supra* note 10, at 60-72.

67. *See id*.

68. *See id*. at 62-64.

69. *See id*. at 65.

70. *See id*.; Holloway & Guy, *supra* note 41, at 31-35.

71. *See* BOYKIN & RING, *supra* note 10, at 61-64.

72. *See id*. at 62-63; James E. Holloway & Donald C. Guy, *Smart Growth and Limits on Government Powers: Effecting Nature, Markets and the Quality of Life under the Takings and*

public needs may enhance the marketability and utility of residential and commercial development, but the timing and costs of these needs create political and legal risks that still make development more risky in some communities.[73] Real estate development is a business enterprise that must assess through market analysis business, legal, political, and social risks in financial, marketing, and other components of development plan. Hopefully, this enterprise operates on carefully designed plans, and not solely on intuition or speculation.

The availability of capital and accessibility to capital markets is also an investment need associated with residential, commercial, and other development.[74] Unless the land developer has its own capital, which is often not the case, it must find financing for its development project, and thus it must develop a financial analysis.[75] Although land development involves the local use of real estate products, the real estate industry may need capital from other locations, sources, and investors, such as banks and Real Estate Investment Trusts (REIT).[76] Governments may also use taxes and other revenues to fund real estate development and redevelopment.[77] In short, real estate development depends heavily on the availability of financing and thus cannot avoid weighing the results of a risk-return analysis.

Obviously, finding and holding land with the hope of future financial benefits or expectations from its development are not enough. Assuming there is actual demand for a particular real estate product, landowners and developers must acquire capital, overcome legal restraints, and anticipate political risks. In an investment-backed expectations analysis, the Court's confusion over the use of financial, social, and economic circumstances in the *Penn Central* analysis that consider the developer's planning for legal risks and political uncertainty places an added burden on real estate investment decisions. Under a confusing regulatory takings analysis, lawyers are left to make arguments while judges are left to fashion rationales that implicate finance, social equity, and economic principles, such as fairness and windfall, but takings analysis leaves the eventual weight of these principles unresolved

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Other Provisions, 9 DICK. J. ENVTL. L. & POL'Y 421, 423-26 (2001).

73. *See* Holloway & Guy, *supra* note 41, at 28-30. Municipalities are shifting part of the cost of providing new public facilities and expanding infrastructure to land developers. *Id*.

74. *See* SIRMANS & JAFFE, *supra* note 62, at 5-6.

75. *See id.*

76. *See id.* at 5-7. Investors may include equity investors, mortgagors, users, and government. *Id*. at 5; Holloway & Guy, *supra* note 72, at 440 & n.64.

77. *See* SIRMANS & JAFFE, *supra* note 62, at 5-6.

or unknown.[78] However, other well-established principles of finance, real estate, and real estate appraisal are applied to determine the measure of damages for a taking or condemnation under the exercise of eminent domain power.

C. Just Compensation and Appraisal Valuation

Justices Scalia and O'Connor's obvious differences regarding takings liability affect the determination of just compensation for an interference with reasonable investment-backed expectations, where courts may need to insure justice and fairness through the consideration of more circumstances, in finding a compensable taking.[79] The Court states that the value of the land in condemnation proceedings is its fair market value,[80] including use restrictions, zoning limitations, and other regulatory requirements.[81] The market value of condemned property is fair market value[82] which is also the measure of damages in condemnation actions.[83] Generally, fair market value is "the price

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78. *See Palazzolo*, 533 U.S. at 632-37 (Scalia, J. and O'Connor, J., concurring) (regarding the presence and weight of time, regulatory, financial, and other circumstances in the determination of the extent of interference with reasonable investment-backed expectations under the *Penn Central* inquiry Justices Scalia and O'Connor disagree).

79. *See id.* In *Brown v. Legal Found. of Wash.*, 538 U.S. 216 (2003), the Court addresses a just compensation issue and reaffirms that fair market value is the measure of damages. It creates an exception to, or new principle on, the payment of just compensation. When the net earnings taken by the government are less than the transaction costs of returning these earnings to property owners, the government need not pay just compensation. *Id.* at 238-39. In this transaction, the net loss to the property owners would be zero, though the government has a net gain on keeping these earnings that were too costly to return to the property owners. *Id.* at 220.

80. *See Palazzolo*, 533 U.S. at 625 (citing *Olson*, 292 U.S. at 255; SACKMAN, *supra* note 21).

81. *See id.*

82. *See* United States v. 50 Acres of Land, 469 U.S. 24, 29 (1984). The Court noted in *Tahoe-Sierra Pres. Council*, 535 U.S. at 321, that the "Fifth Amendment [U.S. CONST. amend. V.] itself provides the basis for drawing a distinction between physical takings and regulatory takings," and thus it is not unthinkable that the measure of damages in some regulatory takings may consider factors that greatly reduced or increased the economic value of the property. The Court was most adamant about the *wholesale use* of physical takings principles to decide regulatory taking issues. *Id.* at 1479 ("Our regulatory takings jurisprudence . . . is . . . designed to allow 'careful examination and weighing of all the relevant circumstances.'" *Palazzolo*, 533 U.S. at 636 (O'Connor, J., concurring)). Yet, Justice Stevens reasons that the Court in *Palazzolo* refuses to use rules from its physical takings jurisprudence to determine the time of the taking. *Id.* at 637 (Stevens, J., dissenting). It seems as though what goes around comes around.

83. *See* City of Harlingen v. Sharboneau, 1 S.W.3d 282 (Tex. App. 1999), *rev'd*, 48 S.W.3d 177, 182 (Tex. 2001). *See also Brown*, 538 U.S. at 238-39 (finding a physical taking of interest earned on the principal but no loss of value to support an award of just compensation). The Court reaffirms what it and other federal courts have concluded in prior cases when it states that "[t]he 'just compensation' required by the Fifth Amendment is measured by the property owner's loss rather than the government's gain." *Id.* at 237. It also states that an owner "is entitled to be put in as good a position pecuniarily as if his property had not been taken. He

the property will bring when offered for sale by one who desires to sell, but is not obliged to sell and is bought by one who desires to buy, but is under no necessity of buying."[84] Fair market value is not self-evident and thus courts may have to use other methods.[85]

Normally courts have determined fair market value in condemnation proceedings by using one of three appraisal methods: comparable sales method, cost method, or income method.[86] Many courts apply the comparable sales method to determine damages in condemnation proceedings.[87] Under this method, the appraiser finds the value of similar property and makes adjustments up or down in the sales price depending on the differences in the property.[88] Courts apply the cost and income methods when "comparable sales figures are lacking or the method is otherwise inadequate."[89] The use of cost and income methods depends on the nature and use of the land and other circumstances, such as the cost of producing similar properties and income producing capacity.[90] Courts apply the cost approach to unique property to determine the cost of replacing it,[91] and they apply the income approach to income-producing property to determine the value of a stream of income.[92] Using one or more of the three approaches under applicable circumstances should yield the fair market value as a measure of damages in condemnation proceedings.[93]

Although courts usually apply one of the three approaches just mentioned, other appraisal methodology may be applied in particular circumstances.[94] When government regulation

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must be made whole but is not entitled to more." *Id.* (quoting *Olson*, 292 U.S. at 255 (1934)).

84. *City of Harlingen*, 48 S.W.3d at 182 (citing State v. Carpenter, 89 S.W.2d 979 (Tex. App. 1936)).

85. *See id.* at 183 (examining the use of the subdivision development method as a land valuation technique in condemnation proceedings).

86. *See id.* at 182 (citing Religious Order of the Sacred Heart v. City of Houston, 836 S.W.2d 606, 615-17 & n.14 (Tex. 1992)).

87. *Id.* (citing Bauer v. Lauaca-Navidad River Auth., 704 S.W.2d 107, 110 (Tex. App. 1985); County of Bexar v. Cooper, 351 S.W.2d 956, 958 (Tex. App. 1961). Land appraiser will make adjustments to the value of the land to adjust for differences in the lots or tracts under the comparable sales approach. *See* BOYKIN & RING, *supra* note 10, at 179.

88. *City of Harlingen*, 48 S.W.3d at 182; s*ee* BOYKIN & RING, *supra* note 10, at 149-50.

89. *City of Harlingen*, 48 S.W.3d at 182.

90. *Id.*; SIRMANS & JAFFE, *supra* note 62, at 17-18.

91. *City of Harlingen*, 48 S.W.3d at 183; SIRMANS & JAFFE, *supra* note 62, at 17.

92. *City of Harlingen*, 48 S.W.3d at 183; SIRMANS & JAFFE, *supra* note 62, at 17-18.

93. *City of Harlingen*, 48 S.W.3d at 183. If we consider wetlands and other sensitive land to be truly unique lands, then Justices Scalia and O'Connor's differences call for more than the traditional land valuation approach to determine just compensation for a taking. *See A. A. Profiles*, 253 F.3d at 583-84 (applying a modified market value test when the economic impact of the regulation greatly affects land value and the traditional use is no longer available).

94. *See, e.g., City of Harlingen*, 48 S.W.3d at 183 (discussing application of the subdivision

constitutes a regulatory taking by interfering with investment-backed expectations on a tract of developable land (assume filling of land) Justice Scalia's economic analysis (windfall) and Justice O'Connor's regulatory effects analysis (broadly examining past circumstances) may support the modification of one of these land valuation methods or the use of another method that would permit the consideration of circumstances affecting a higher economic use.[95] Before pursuing that line of analysis in Parts IV and V, we must first examine *Palazzolo* and its impact on takings jurisprudence.

III. *PALAZZOLO* AND WETLANDS IN REGULATORY TAKINGS JURISPRUDENCE

Palazzolo illustrates that Justices Scalia and O'Connor do not agree on the issue of justice and fairness[96] in the determination of takings liability and just compensation for long held and uncertain financial expectations on sensitive and unique lands, such as wetlands and prime farmlands. Although the primary issues in *Palazzolo* were ripeness and postregulation acquisition, our focus is on the liability and compensation issues regarding the extent of interference with reasonable investment-backed expectations. These liability and compensation issues show a fundamental difference in fairness and economics in the regulatory takings jurisprudence of the conservative wing of the Rehnquist Court.[97]

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or land development method to ready-to-develop land); BOYKIN & RING, *supra* note 10, at 157-58 (discussing the application of the land development method to land easily converted to a higher economic use, such as converting farmland to urban land).

95. *See A. A. Profiles*, 253 F.3d at 576. Courts have applied a modified market value test when the impact of the regulation is a taking but circumstances do not permit compensation for the value. One commentator states that: "[i]n choosing the modified market value test over the lost income measure, which the court generally uses when a regulation only temporarily burdens an owner's land, the court emphasized that Profiles neither possessed nor retained the ability to derive economic value from the property at the point [the court] declared that a taking had occurred." *Constitutional Law – Regulatory Takings – Eleventh Circuit Finds Public Purpose Determination Irrelevant to Damages Calculation* – A.A. Profiles, Inc. v. City of Fort Lauderdale, 253 F.2d 576 (11th Cir. 2001), 115 HARV. L. REV. 899, 902 n.31 (2002) (quoting *A.A. Profiles*, 253 F.3d at 584). Justices Scalia and O'Connor's differences are caused by a temporary situation that did not, and may still not, permit the landowner to develop the land. However, past circumstances may indicate that the landowner could not have used his property for development or any other beneficial use, and thus the measure of damages must weigh these circumstances, which would permit a higher discount rate or a lower capitalization rate in determining the income producing value of the property.

96. *Compare Palazzolo,* 533 U.S. at 635-36 (Scalia, J., concurring) (giving landowner a windfall under present circumstances), *with Palazzolo*, 533 U.S. at 632-33 (O'Connor, J., concurring) (permitting government to seek some constitutional relief under past circumstances).

97. *See also Tahoe-Sierra Pres. Council*, 535 U.S. at 302. Economics and fairness clash again, but Justices Scalia and O'Connor are on different sides of the opinion. Justice O'Connor joins the majority written by Justice Stevens, but Justice Scalia does not. *Id*. at

Both Justice Scalia and Justice O'Connor's approaches to takings analysis are incomplete, though they contain elements necessary to initiate an economic analysis and provide justice and fairness to all parties.

In *Palazzolo*,[98] the petitioner owned waterfront property that was designated as wetlands under the Coastal Zone Management Regulation of the State of Rhode Island. The property was located in Westerly, Rhode Island.[99] In 1959, the petitioner invested in three undeveloped, adjoining parcels on the eastern stretch of Atlantic Avenue.[100] Petitioner's parcels faced and bordered Winnapaug Pond, north of the parcel.[101] To the south, the parcels faced the eastern end of Atlantic Avenue, the beachfront houses on the other side of the Avenue, and the dunes and ocean beyond the houses.[102] Petitioner and associates formed Shore Gardens, Inc., (SGI) to purchase and hold the property.[103] Later, petitioner bought his associates' interest and became the sole shareholder.[104] In 1971, while petitioner was submitting applications, Rhode Island enacted legislation establishing the Coastal Resources Management Council (Council) and granted it authority to protect the State's coastal properties.[105] The salt marshes were designated as "protected 'coastal wetlands.'"[106] In 1978, the petitioner became the sole owner of the property when SGI's corporate charter was revoked for a failure to pay taxes.[107] SGI and petitioner made several unsuccessful efforts to acquire a permit to develop the land.[108]

A. The Nature of Development Efforts by the Petitioner in Palazzolo

Petitioner's efforts to develop the land were demonstrated primarily by the submission of applications.[109] During the first decade, petitioner submitted a plat subdividing the property into 80 lots and engaged in transactions that left 74 lots.[110] The remaining

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98. *Palazzolo*, 533 U.S. at 606.
99. *Id.* at 610.
100. *Id.* at 613.
101. *Id.*
102. *Id.*
103. *Palazzolo,* 533 U.S. at 613.
104. *Id.*
105. *Id.* at 615 (citing 1971 R.I. Pub. Laws, ch. 279, § 1).
106. *Id.* (citing Rhode Island Coastal Zone Mgmt. Program § 210.3 (as amended June 28, 1983)).
107. *Palazzolo*, 533 U.S. at 615.
108. *Id.* at 614.
109. *Id.*
110. *Id.*

74 lots consisted of approximately 20 acres. At the same time, petitioner submitted intermittent applications to state agencies to develop the property by filling it.[111] The property consisted of "salt marsh subject to tidal flooding," and "would require considerable fill – as much as six feet in some places – before significant structures could be built."[112] The petitioner's first application in 1962 was denied for a lack of essential information.[113] The next two applications were submitted in 1963 and 1966, and were referred to the Rhode Island Department of Natural Resources, which gave initial approval but later withdrew it.[114] SGI did not contest the refusal to approve either application.[115]

In 1983, almost two decades later, petitioner submitted another application, similar to the 1962 application, "to construct a wooden bulkhead along the shore of Winnapaug Pond and to fill the entire marshland area."[116] "The Council rejected the application, noting it was 'vague and inadequate for a project of this size and nature.'"[117] The Council concluded that the project would have a significant impact on water and wetlands and would conflict with the existing Coastal Resource Management Plan.[118] Petitioner did not appeal the Council's decision.[119] In 1985, petitioner submitted another application "to fill 11 acres of the property with gravel to accommodate '50 cars with boat trailers, a dumpster, port-a-johns, picnic tables, barbecue pits of concrete, and other trash receptacles.'"[120] The Council's regulations required the landowner to have a "special exception" to fill a salt marsh.[121] Such an exception required "a compelling public purpose which provides benefits to the public as a whole as opposed to individual or private interests."[122] The Council rejected the application, finding a conflict with regulatory standards for a special exception.[123]

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111. *Id.*
112. *Palazzolo,* 533 U.S. at 614.
113. *Id.*
114. *Id. at 612-15.*
115. *Id. at 615.*
116. *Id.*
117. *Palazzolo,* 533 U.S. at 615.
118. *Id.*
119. *Id.*
120. *Id.* (quoting the petitioner's 1985 application).
121. *Id.*
122. *Palazzolo,* 533 U.S. at 615.
123. *Id.*

B. The Impact of Development on Beneficial Use and Acquisition

After the last application in 1985, petitioner turned to the courts to acquire compensation for a compensable taking.[124] Petitioner filed an inverse condemnation claim in the Rhode Island Superior Court claiming a taking of private property without just compensation in violation of the Fifth and Fourteenth Amendments.[125] Specifically, the petitioner claimed that he had been deprived of all "'economically beneficial' use of his property."[126] The Superior Court held for the State of Rhode Island, and the Supreme Court of Rhode Island affirmed its judgment.[127] The Supreme Court held that the takings claim was not ripe,[128] and that petitioner "had no right to challenge regulations predating 1978, when he succeeded to legal ownership of the property from SGI."[129] The United States Supreme Court granted a writ of certiorari[130] and reversed the Rhode Island Supreme Court on the ripeness and postregulation acquisition claims.[131]

The Court did not agree with the Rhode Island Supreme Court's conclusion that "notwithstanding the Council's denials of the applications, doubt remained as to the extent of development the Council would allow on petitioner's parcel."[132] The Court also found that the nature of coastal resource management regulation prohibited "filling or building residential structures on wetlands adjacent to Type 2 waters."[133] The Court also found that the Council rejected the application and refused to grant a special exception.[134] It found no indication that the Council would ever grant permission to develop a smaller surface area.[135] Further, the Court found that the Council's interpretation of the regulation barred all development of land, and thus petitioner could not fill the wetlands.[136] Therefore, the Court concluded that additional permit applications were unnecessary to establish this point.[137] The Court explicitly states that the "federal ripeness rules do not require the submission of

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124. *Id.*
125. *Id.*
126. *Id.*
127. *Palazzolo,* 533 U.S. at 615-16.
128. *Id.* at 616.
129. *Id.*
130. Palazzolo v. Rhode Island, 531 U.S. 923 (2000).
131. *See Palazzolo*, 533 U.S. at 618.
132. *Id.*
133. *Id.*
134. *Id.* at 620.
135. *Id.*
136. *Palazzolo,* 533 U.S. at 620.
137. *Id.*

further and futile applications with other agencies," [138] and thus the extent of restrictions on the development property can be determined from the facts and circumstances.[139] The Court held that petitioner's taking claims were ripe for review.[140]

C. Restricting Per Se Takings Liability but Permitting Development Value as a Beneficial Use

The Court refused to create another *Lucas*-type rule in regulatory takings jurisprudence, but it extended *Lucas* to include development value as a beneficial use. The Court reversed the Supreme Court of Rhode Island's holding that the postregulation acquisition of title did not permit petitioner to bring taking claims for "deprivation of all economic use" under *Lucas*[141] and its background principles of state law[142] for a regulatory taking under the *Penn Central* analysis,[143] especially the extent of interference with reasonable investment-backed expectations.[144] The Court reasoned that a passage of time and transfer of title do not make a regulatory taking any less onerous or unreasonable and thus does not justify cutting off the state obligation to defend against unreasonable or onerous regulation.[145] The Court concluded that "[a] State would be allowed, in effect, to put an expiration date on the Takings Clause. This ought not to be the rule." [146] The Court rejected the argument that notice of the enactment of a regulation restricting use at the time the owner acquired the property should prohibit the owner from bringing a takings claim.[147] The Court reasoned that a rule based on such an argument would prejudice the owner and his or her heir and successor, and it would deny the new owner the right to transfer an interest possessed prior to the enactment of the regulation if the original owner had failed to survive the ripening of his or her taking claim.[148] The Court held that a postregulation acquisition takings claim is not barred.[149] Finally, the Court held that petitioner's *Penn Central* claims must

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138. *Id.* at 626.
139. *See id.*
140. *Id.* at 631.
141. *Palazzolo,* 533 U.S. at 626 (citing *Lucas*, 505 U.S. at 1015).
142. *Id.* (citing Palazzolo v. State *ex rel.* Tavares, 746 A.2d 707, 716 (2000)).
143. *Id.* (citing *Penn Central,* 438 U.S. at 174).
144. *See id*. at 630. The Court concluded that the Supreme Court of Rhode Island will not address the *Lucas* claim on remand, but the Court states that the Supreme Court "must address, however, the merits of petitioner's claim under *Penn Central*." *Id.*
145. *Id.* at 625.
146. *Palazzolo,* 533 U.S. at 628.
147. *Id*.
148. *Id.*
149. *Id*. at 630.

be examined by the state court, including the interference with reasonable investment-backed expectations.[150]

The Court agreed with the Supreme Court of Rhode Island's decision that the petitioner was not denied all "economically beneficial use" of the parcel because "the uplands portion of the property can still be improved."[151] The Court noted that the upland portion had a development value of $200,000, according to the Council and trial court findings, under the state wetland regulations.[152] Yet the Court found that the petitioner did not assert a takings claim based on the premise that the Council sidestepped *Lucas* by leaving him a "token interest" of development value.[153] The Court concluded that *Lucas* cannot be evaded so easily under just compensation when a taking occurs and that petitioner's right to develop "a two-acre tract" (build a substantial residence) of an eighteen acre parcel "does not leave the property 'economically idle.'"[154] The Court also held that petitioner's *Lucas* claim fails because the upland portion had a development value of $200,000.[155]

IV. LIABILITY AND COMPENSATION FOR INTERFERENCE WITH ECONOMIC EXPECTATIONS

Justice Scalia and Justice O'Connor's differences regarding takings liability affect the issue of just compensation for an interference with reasonable investment-backed expectations.[156] If courts find that the government unreasonably interferes with reasonable investment-backed expectations, they must determine just compensation under conditions and circumstances that affect

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150. *Id.*

151. *Palazzolo,* 533 U.S. at 630.

152. *Id.*

153. *Id.; see also Suitum*, 520 U.S. at 725 (noting use of transferable development rights to mitigate the impact of environmental regulation).

154. *Palazzolo*, 533 U.S. at 630-32 (citing *Lucas*, 505 U.S. at 1019).

155. *Id.*

156. The issue of just compensation was of interest to one or more Justices during the oral arguments of *Palazzolo*. Several questions lead one to believe that one or more Justices were considering just compensation if the extent of the interference amounted to a taking. One Justice's question posited:

> And so I wondered, on your opinion, would it work to say it [takings claim] does run with the land but no one can recover more than his investment back expectation, that is to say if somebody goes and buys cheap, land with an already existing taking claims, they will not benefit from that because they could not recover more in fairness than what they paid for the land minus the value of the land for all other purposes.

Petitioner's Oral Arguments, Palazzolo v. Rhode Island, 121 S. Ct. 2448 (2001) (No. 99-2047) (Feb. 26, 2001) (reported by Alderson Reporting Co., Inc., Washington, D. C. 20005, *available at* http://a257.g.akamaitech.net/7/257/2422/14mar20010800/www.supremecourtus.gov/oral_arguments/argument_transcripts/99-2047.pdf) [hereinafter Oral Argument].

the financial, regulatory, and other feasibility of the real estate investment. Moreover, where the exercise of investment-backed expectations requires an extensive public investment in social welfare, public facilities, and local infrastructure, the courts will have a perplexing issue.[157] The question raised by these circumstances is whether courts can determine just compensation by using appraisal methods that take into account the public and private costs and risks of development. On one hand, Justice O'Connor's concerns raise such a question because she is willing to begin her investment-backed expectations analysis by weighing the impact of past regulations on an owner's economic motives and abilities during ownership, and she may strongly imply a discounted cash-flow method with an extremely high discount rate to determine just compensation to insure fairness.[158] Clearly, the cost of development greatly affects its feasibility. On the other hand, Justice Scalia's concerns point out such a question because he is willing to begin his analysis in the present by weighing only the financial returns (windfall) that may greatly exceed the original investment expectations.[159] The landowner's economic intent and expected returns are not necessarily synonymous with the fair market value of just compensation. Consequently, the ultimate issue is what past regulatory circumstances should be included in both the determination of a compensable taking and the measure of damages. Obviously, bonafide expectations of returns would exist in the past.

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157. *See Dolan*, 512 U.S. at 374; *Nollan,* 483 U.S. at 825 (permitting municipalities to impose land dedication conditions and perhaps impact fees to offset public costs or burdens of providing public facilities and infrastructure for private development).

158. *See Palazzolo*, 533 U.S. at 632-35 (O'Connor, J., concurring). A modified market value test may permit the recovery of just compensation for politically degraded land, such as wetlands. Politically degraded land is subject to regulation and suffers a loss of investment potential through market selection for a lesser investment use or class. *Unlike a mere diminution in value in the same land use or investment class*, the remaining productive use could have never been contemplated by landowners at common law, such as infrastructure for natural-based or ecotourism. The question is not whether common law would have permitted this use but whether the landowner would have contemplated such an investment use or class under *past circumstances, such as an abundance of trees and wildlife.* An unexpected but lesser productive use that reasonably indicates a lesser investment return and greater investment risk, preferably during the long-term, justifies a *payment of just compensation under present circumstances. See A. A. Profiles*, 253 F.3d at 576 (applying a modified market value test to compensate for land that was no longer in the owner's possession).

159. *See Palazzolo*, 533 U.S. at 635-37 (Scalia, J., concurring).

A. Justice Scalia and Justice O'Connor's Differences on Liability and Compensation

Justice O'Connor wants courts to consider the regulatory circumstances in existence when an owner takes title and makes an effort to develop the property under the *Penn Central* analysis when determining the extent of interference with reasonable investment-backed expectations.[160] Justice Scalia takes an entirely different approach that emphasizes the timing of the regulation and recognizes the economics of the land investment.[161] Justices Scalia and O'Connor offer contrasting approaches, but they show a reconcilable difference on one or more issues in regulatory takings jurisprudence.[162]

Justice O'Connor broadens the *Penn Central* analysis to include the "timing of the regulation's enactment relative to the acquisition of title" and thus accords it importance but not exclusive consideration in the *Penn Central* analysis.[163] Her approach recognizes that the interference with reasonable investment-backed expectations is affected by the regulatory regime in place at the time the claimant acquired the property.[164] Justice O'Connor's approach recognizes the "concept of fairness and justice" that is best achieved by examining "the particular circumstances [in that] case."[165] Consequently, the *Penn Central* analysis is primarily a factual assessment with its factors serving as guideposts.

Justice O'Connor lists a few analytical guideposts in determining a regulatory taking involving the extent of interference with reasonable investment-backed expectations. Justice O'Connor states that the Supreme Court of Rhode Island erred in rejecting petitioner's claim for interference with reasonable investment-backed expectations based solely on acquisition of the title after enactment of the regulation.[166] Justice O'Connor notes that the extent of interference with reasonable investment-backed

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160. *Id.* at 633-35 (O'Connor, J., concurring). *See also* Dist. Intown Prop. Ltd. P'ship v. Dist. of Columbia, 198 F.3d 874, 877-80 (D.C. Cir. 1998), *cert. denied*, 531 U.S. 812 (2000) (concluding the landowners had no reasonable investment-backed expectation under the regulatory structure at the time of subdivision because mere purchase does not establish reasonable investment-backed expectations if intended use is greatly inconsistent with past use of the property).

161. *Palazzolo*, 533 U.S. at 635-37 (Scalia, J., concurring).

162. *See id.* at 632-35 (O'Connor, J., concurring); *see also infra* Part V.A. and accompanying notes (identifying reconcilable circumstances in Justices Scalia and O'Connor's approaches to an inert *Penn Central* inquiry).

163. *Palazzolo*, 533 U.S. at 632 (O'Connor, J., concurring).

164. *Id.* at 633 (O'Connor, J., concurring).

165. *Id.* (citing *Penn Central*, 438 U.S. at 121 (quoting United States v. Central Eureka Mining Co., 357 U.S. 155, 168 (1958)).

166. *Id.* (O'Connor, J., concurring).

expectations is only one factor and is not determinative of the outcome of the *Penn Central* analysis.[167] Justice O'Connor's approach for an analysis of the existence and extensiveness of a regulatory interference would include circumstances relying more on the policy environment and less on the finance and real estate environments.[168] The first of these circumstances is the "state of regulatory affairs at the time of acquisition."[169] The second is the "nature and extent of permitted development under the regulatory regime."[170] She recognizes that the actions of landowners under some regulatory schemes may create vested rights in development property and thus may preclude government interference.[171] The third circumstance is that the Takings Clause does not require a financial investment in development property by post-enactment acquirers of the property, such as a donee, heir, or devisee.[172] These circumstances require that courts "must attend to those circumstances which are probative of what fairness requires in a given case."[173]

Although Justice O'Conner's policy-based approach does not permit investment-backed expectations to be the determinative factor in the *Penn Central* analysis and does not permit the state to define property rights on passage of title, it uses the past regulatory regime to determine the existence and interference with a landowner's expectations.[174] This approach provides more fairness by requiring broader consideration of past regulation in the *Penn Central* analysis. Her approach imposes limits on states' powers, but may not permit land owners to acquire large returns at the government's expense, and thus it curtails the existence or extensiveness of interference with expectations of land investors.[175] Justice O'Connor concludes that the Court maintains and adds balance to the "regulatory backdrop against which an owner takes title" [176] under the *Penn Central* analysis[177] by examining the "effect[s] of existing regulations under the rubric of investment-

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167. *Id.*
168. *Palazzolo*, 533 U.S. at 632.
169. *Id.*
170. *Id.* at 633-36 (O'Connor, J., concurring).
171. *Id.* at 636 (O'Connor, J., concurring).
172. *Id.* (O'Connor, J., concurring) (citing Hodel v. Irving, 481 U.S. 704, 714-18 (1987)).
173. *Palazzolo*, 533 U.S. at 636 (O'Connor, J., concurring).
174. *Id.* (O'Connor, J., concurring).
175. *Id.* (O'Connor, J., concurring). On this issue, Justice O'Connor disagrees with Justice Scalia, who would not permit past regulation to affect the determination of a diminution in value or interference with investment-backed expectations, and thus would permit a windfall by the landowner for a *post-regulation taking*. *Id.*
176. *Id.*
177. *Palazzolo*, 533 U.S. at 636.

backed expectations in determining whether a compensable taking has occurred." [178]

Justice Scalia states that, based on his understanding, the Court's opinion that must be considered on remand is not Justice O'Connor's.[179] He notes that she finds it unfair to acquire a windfall under some circumstances if a later purchaser establishes a partial taking by the government.[180] Justice Scalia's economic-based approach to the *Penn Central* analysis does not consider past policy, regulatory, or economic circumstances. His approach analyzes the existing regulatory scheme to determine whether it amounts to a taking, validating circumstances that Justice O'Connor would most likely find unfair. He illustrates this validation by stating that a real estate developer could acquire a piece of property that is subject to use and other restrictions and successfully challenge these restrictions and develop the property.[181] Justice Scalia refers to the developer's success as a windfall. His approach recognizes an economic reality: windfalls can be everyday occurrences in American markets.[182] He states that fairness does not require the return of the windfall to the "naïve original owner" and thus, in a transaction involving land that was subject to an unconstitutional taking wrongfully committed by the government, the windfall should not be returned to the government.[183] Justice Scalia considers the government's role to be analogous to "a thief clothed with the indicia of title,"[184] where the thief was to receive from the purchaser any windfall accrued from the purchase of property.[185] Justice Scalia points out that the existence of a regulation at the time the purchaser took title has no effect on whether this regulation is a compensable taking.[186] Specifically, he notes that the extent of interference with reasonable investment-backed expectations does not take into consideration the existence of a regulation that reduces the value of the property so much that it

178. *Id.* Justice O'Connor's policy-based approach focuses primarily on takings liability, but she strongly implicates an unusual just compensation concern where takings liability exists and unrealized compensable expectations may have been highly risky or just not foreseeable. Such risky development could include a physically or financially infeasible development project or a lack of real estate product demand. She recognizes that the present market value of an earlier investment could be affected by recent changes in local real estate markets or could have resulted from newly created government policies and programs. *Id.*

179. *Id.* (Scalia, J., concurring).

180. *Id.* (Scalia, J., concurring).

181. *Id.* (Scalia, J., concurring).

182. *Palazzolo*, 533 U.S. at 636.

183. *Id.* at 635-36 (Scalia, J., concurring).

184. *Id.* at 637 (Scalia, J., concurring).

185. *Id.* (Scalia, J., concurring).

186. *Id.* (Scalia, J., concurring).

amounts to a taking.[187] Finally, Justice Scalia states that since a regulatory taking is not absolved by the transfer of title, the economic effects must be considered under the *Penn Central* analysis, but that does not include weighing the circumstances surrounding an unconstitutional regulation.[188]

Justice Scalia and Justice O'Connor's differences on the weight of the regulatory backdrop in the determination of the existence of expectations and the extensiveness of the regulatory interference with expectations are a two-pronged question that the Court has not resolved with any analytical certainty. Obviously, Justice Scalia's economic- based approach implies the more immediate existence of expectations and leaves markets and investors to recognize investment expectations that are questions of risk and return analysis.[189] Looking at the present point to determine expectations is looking at the future and may not address the risk of long term land investors whose expectations were limited by past political uncertainty, legal restraints, and financial market risk in a highly regulated society. Finding the existence of expectations under the circumstances at the time of the taking increases the likelihood of shifting investment risk to the government when a regulation is declared an unconstitutional taking in a well-regulated field, such as wetlands or prime farmland. Ignoring investment risk for the sake of a policy that permits the consideration of past circumstances with no relevance to any risk-return analysis under Justice O'Connor's *Penn Central* analysis may be as flawed as an approach that only considers the most immediate expectations or value, without regard to any risk. The Court is unable to define either reasonable investment-backed expectations or an extensive interference to be a taking; and thus leaves the Takings Clause's impact on risk and return in land investments at the mercy of shifting policies.[190]

B. The Existence of Expectations and the Extent of Interference

Shifts in local and state policies that result in land use, environmental, and other regulations make financial returns on real

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187. *Palazzolo*, 533 U.S. at 637 (Scalia, J., concurring).

188. *Id.* (Scalia, J., concurring).

189. *Id.* at 635-37 (Scalia, J., concurring).

190. *See Monsanto,* 467 U.S. at 986; *Penn Central*, 438 U.S. at 104. *See also* Meriden Trust & Safe Deposit Co. v. FDIC, 62 F.3d 449 (2d Cir. 1995) ("[W]ithdrawal liability provisions … was not out of line with owner's investment-backed expectations."); Rith Energy, Inc. v. United States, 247 F.3d 1355 (Fed. Cir. 2001) (asserting a "notice requirement" based on the acquisition of the property after the enactment of environmental regulations to cutoff reasonable-investment-backed expectations).

estate investments uncertain or risky, and thus some landowners and real estate investors find that these regulations greatly interfere with their financial incentives and economic expectations for development. The Court has yet to share their concerns on economic expectations, and the extent of interference with investment-backed expectations in cases reaching the Court has not amounted to regulatory takings.[191] In *Penn Central*,[192] the Court concluded that denying the owners of the Grand Central Terminal (Terminal) the right to an expansion that would generate greater profits did not interfere with the owner's reasonable investment-backed expectations.[193] The Court concluded that takings jurisprudence would not permit the severance of air rights from the parcel of land on which the Terminal is located.[194] The Court took into consideration that the owners of the Terminal had anticipated future expansion when it initially constructed the Terminal by building a foundation to support a twenty-story structure.[195] Although Penn Central clearly planned for a more profitable use of its site, the Court did not find that the extent of interference with

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191. *See Monsanto,* 467 U.S. at 986; *Penn Central,* 438 U.S. at 104. The Court has not defined investment-backed expectations, and commentators and scholars have yet to settle on whether the Court means property interests, financial interests, or both. *See* Mandelker, *supra* note 47, at 249. In *Palazzolo*, Justices O'Connor and Scalia agree that investment-backed expectations are an essential factor of the *Penn Central* analysis. *Palazzolo,* 533 U.S. at 606. Assuming they can ever find the existence of reasonable investment-backed expectations, they still may disagree on the determination of the *extent of interference* and *measure of damages*. Both Justices appear to be beyond any conceptual questions about the nature and existence of investment-backed expectations in the American private property regime. *Id.* They are clearly engaged in finding the extent of interference, though they are not close. *Id.* at 631-37. (Scalia, J. and O'Connor, J., concurring). They appear to agree not to permit constructive notice created by regulatory programs to invalidate investment-backed expectations. *See id*. at 627. However, Justice O'Connor appears willing to use past regulatory programs to affect a taking in other ways, such as to affect the finding of the existence or interference with investment-backed expectations or their valuation. *See id*. at 633 (O'Connor, J., concurring).

Justices O'Connor and Scalia appear to be arguing about growth or maturity of investment-backed expectations under a regulatory program that has been valid for a number of years, but now could be held to be a taking. *See id*. at 631-37 (Scalia, J. and O'Connor, J., concurring). Justice Scalia's market-sensitive approach under the *Penn Central* analysis simply does not weigh the past impact of invalid regulations on the value of the land or present harm to investment-backed expectations. *See id.* at 637 (Scalia, J., concurring). Justice O'Connor's policy-based approach under the *Penn Central* analysis would weigh the impact of past circumstances on the ability to meet investment-backed expectations. *See id*. at 633 (O'Connor, J., concurring). Justice O'Connor seems willing to weigh risks and uncertainty affecting the decision to develop the land, though her approach may include past market risks and political uncertainties that are no longer relevant in any present risk-return analysis. In fact, Professor Mandelker proposes a regulatory risk theory that would not reward landowners for taking unnecessary risk. Mandelker, *supra* note 47, at 249.

192. 438 U.S. 104 (1978).

193. *Id.* at 136.

194. *Id.* at 136-37.

195. *Id.* at 115, n.15.

investment-backed expectations on the site amounted to a regulatory taking.[196] Even if investment-backed expectations exist, an unreasonable interference with these expectations requires more than an interference with the profit-making potential of the property.

In another case, the Court took a step back by not finding the existence of reasonable investment-backed expectations in proprietary information. In *Ruckelshaus v. Monsanto Co.*,[197] the Court concluded that Monsanto did not have a reasonable investment-backed expectation in the trade secrets of its pesticide product if it knew that the Environmental Protection Agency (EPA) required disclosure of its formula for approval of this pesticide.[198] Again, it is safe to assume that Monsanto had a strategic market plan for the most profitable use of its trade secret, which could have easily included licensing to other manufacturers.[199] The Court has yet to conclude that a government regulation unconstitutionally interferes with reasonable investment-backed expectations, though *Penn Central* recognizes the existence of a reasonable investment-backed expectation in real estate development.[200]

Although landowners and developers have expectations of greater returns from land investments, they should expect some regulatory and political risks in owning or acquiring property for development.[201] The impact of these risks on financial returns from development is affected by local, state, and federal policy-making, such as land use planning. Imposing more planning requirements interferes with investments in land already subject to use restrictions and other requirements. These interferences do not

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196. *Id*. at 136-37. The Court notes the law does not interfere with the present use, which has been the use for 65 years. *Id*. at 136. It states that "the law does not interfere with what must be regarded as *Penn Central*'s primary expectation concerning the use of the parcel." *Id*. Finally, the Court notes that the landowner may be able to make some economic use of the land. *Id*. at 137.

197. *Monsanto,* 467 U.S. at 986.

198. *Id*. at 1006. *But see* Phillip Morris v. Harshbarger, 159 F.3d 670 (1st Cir. 1998) (disclosing ingredient information could affect a taking of private property by interfering with investment-backed expectations, and thus the district court did not abuse its discretion by issuing a preliminary injunction to enjoin the state from disclosing this information).

199. *See Monsanto*, 467 U.S. at 997-98. "Monsanto Company (Monsanto) is an inventor, developer, and producer of various kinds of chemical products, including pesticides. Monsanto, headquartered in St. Louis County, Mo., sells [its products] in both domestic and foreign markets. It is one of a relatively small group of companies that invent and develop new active ingredients for pesticides and conduct most of the research and testing with respect to those ingredients." *Id*.

200. *See Penn Central*, 438 U.S. at 136-37.

201. In *Concrete Pipe and Products of Cal., Inc. v. Construction Laborers Pension Trust for S. Cal.*, 508 U.S. 606, 646 (1993), Justice Souter, writing for the majority, states that "legislation readjusting rights and burdens is not unlawful solely because it upsets otherwise settled expectations . . . .".

mean that the greater extent of interference with expected returns on investments violates the Takings Clause.[202] Developers and landowners often need to comply with new planning elements and regulatory requirements, such as zoning and growth management regulations, that may affect takings claims involving the extent of interference with reasonable investment-backed expectations.[203] These regulations are often necessary to provide orderly growth and development, conserve natural resources, and improve the quality of life.[204] Protecting the public interests necessarily requires a reasonable interference with financial expectations or returns, which can be offset with transferable development rights (TDRs) and other financial incentives.[205]

In both *Penn Central* and *Monsanto*, the Court weighed well-settled financial expectations but was not persuaded by plans, strategies, or markets as evidence of the existence of, or extensive interference with, reasonable investment-backed expectations.[206] The model for market analysis in real estate and other businesses includes a political, legal, and regulatory assessment of the business environment and markets,[207] so *windfalls and wipeouts* that occur as a result of regulation and deregulation should not be surprising to students of real estate.[208] *Monsanto* and *Penn Central* represent business life in a regulated society: long-term corporate plans need to include the political uncertainty and legal risk that governments might eventually restrict or prohibit the implementation of future strategies.[209] It is safe to assume that the Court knows the

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202. *See Penn Central*, 438 U.S. at 136-37.

203. *See* Holloway & Guy, *supra* note 72, at 246-51. Land use, growth management, and other smart growth regulations may raise takings claims involving the extent of interference with reasonable investment-backed expectations. *Id.*

204. *See* AMERICAN PLANNING ASSOCIATION, PLANNING COMMUNITIES FOR THE 21ST CENTURY 5-6 (Dec. 1999).

205. *See generally* James E. Holloway & Donald C. Guy, Suitum v. Tahoe Reg'l Planning Agency*: Its Impact on the Final Decision Requirement and Its Potential Implications for* Lucas' *Per Se Rule and The Role of TDRs in Taking Analysis*, 20 ZONING AND PLANNING L. REP. 65, 70-71 (Oct. 1997) (discussing the impact of the use of TDRs as an economic incentive under *Lucas*).

206. *See Monsanto*, 467 U.S. at 1006-07; *Penn Central*, 438 U.S. at 136.

207. *See* BOYKIN & RING, *supra* note 10, at 60-95; GRISSOM & DIAZ, *supra* note 62, at 66-93; SIRMANS & JAFFE, *supra* note 62, at 45-98.

208. *See* BOYKIN & RING, *supra* note 10, at 60-95; GRISSOM & DIAZ, *supra* note 62, at 66-93; SIRMANS & JAFFE, *supra* note 62, at 45-98.

209. *See, e.g.,* BOYKIN & RING, *supra* note 10, at 61-62. The Court concluded that Monsanto was aware of the long-term investment risk to its trade secrets. *Monsanto*, 467 U.S. at 1006-07. It states that:

> If, despite the data-consideration and data-disclosure provisions in the statute, Monsanto chose to submit the requisite data in order to receive a registration, it can hardly argue that its reasonable investment-backed expectations are disturbed when EPA acts to use or disclose the data in

difference between market risks and political uncertainty. In *Monsanto* and *Penn Central*, the Court gave shifts in politics and public policy the same effect as market risks, and thus the Court concluded the resulting regulation did not rise to the level of an unreasonable interference with investment-backed expectations. *Penn Central* and *Monsanto* can, and often may, frustrate land developers who do not properly weigh political uncertainty, such as regulations, on the amount of growth in a community.[210] Political uncertainty that eventually results in land use or other regulations can totally annihilate future plans and strategies for market growth and expansion. Simply, the Court seems to be looking for more than future preparation, market potential, and strategic vision to establish the existence of constitutionally protected financial expectations of regulated industries and markets.[211]

C. Developing an Expectations Analysis on Fairness and Economics

Justice O'Connor's expectations analysis to determine "the extent to which the regulation has interfered with distinct investment-backed expectations"[212] would "entail complex factual assessments of the purposes and economic effects of government actions"[213] under the *Penn Central* analysis which "provides important guideposts" to determine a regulatory taking.[214] Her analysis does not reveal the weight given to financial and economic

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a manner that was authorized by law at the time of the submission.

Id. at 1006-07.

210. *See Palazollo*, 533 U.S. at 606. One does not need to look far to find an example of limits placed on development. In *Palazollo*, the landowner wanted to develop but was denied because there were changes to public policy and thus new regulation. *Id.*

211. *See, e.g.,* Price v. City of Junction, 711 F.2d 582, 591 (5th Cir. 1983) ("[I]noperable junk vehicles do not embody reasonable, investment-backed expectations."); Western Fuels-Utah, Inc. v. Lujan, 895 F.2d 780, 788-89 (D.C. Cir. 1990) (A "12.5% royalty on all leases [does not] substantially interfere with their investment-backed expectation in an individualized determination by the Secretary."); *Meriden Trust*, 62 F.3d at 454-55 ("[W]ithdrawal liability provisions . . . was not out of line with owner's investment-backed expectations."); *Rith Energy v. U.S.*, 247 F.3d 1355 (Fed. Cir. 2001) (asserting a "notice requirement" based on the acquisition of the property after the enactment of environmental regulations to cutoff reasonable-investment-backed expectations); Carolina Water Serv. v. City of Winston-Salem, 161 F.3d 1 (4th Cir. 1998) ("A party with . . . [non-exclusive franchise] rights does not enjoy a reasonable investment-backed expectation that government will not disturb them."); *Dist. Intown Prop. v. Dist. of Columbia*, 198 F.3d 874 (D.C. Cir. 1999) (concluding that the landowners had no reasonable investment-backed expectation under the regulatory structure at the time of subdivision because mere purchase does not establish a reasonable investment-backed expectations if the intended use is greatly inconsistent with past use of the land).

212. *Palazollo*, 533 U.S. at 633 (citing *Penn Central*, 438 U.S. at 124) (O'Connor, J., concurring).

213. *Id.* (citing Yee v. City of Escondido, 503 U.S. 519, 523 (1992)) (O'Connor, J., concurring).

214. *Id.* (O'Connor, J., concurring).

investments, but only provides that the lack of financial investment does not defeat a takings claim.[215] Justice O'Connor concludes that courts must provide fairness in each situation.[216]

Justice O'Connor wants courts to provide justice and fairness to the public in an investment-backed expectations analysis under *Penn Central*. Regulatory takings doctrine includes two economic effects factors: the economic impact of the regulation, and the extent of interference with reasonable investment-backed expectations. The Court seems unwilling to define economic effects beyond diminution in value and total economic deprivation.[217] Justice O'Connor's efforts to broaden the *Penn Central* analysis increase its inquiry of political and policy circumstances, but weighs few market or economic circumstances that show economic effects. Moreover, it may actually encourage landowners to give less weight to political and social environments in considering future investment expectations, and consequently engage in risky real estate transactions.[218] If real estate analysis means little in determining an unconstitutional economic effect or interference with financial expectations, then land developers might not weigh its significance in assessing legal risks and political uncertainty in making real estate investments. Instead, Justice O'Connor's expectations analysis includes the "state of regulatory affairs at the time of acquisition," [219] "the nature and extent of permitted development," [220] and the "development sought by the claimant... [under the lack of] vesting [of] any kind of development right…."[221] She recognizes that an actual investment in the land is not required by the Takings Clause.[222] Her reliance on past regulatory affairs

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215. *See Palazzolo*, 533 U.S. at 633 (O'Connor, J., concurring).

216. *See id*. (O'Connor, J., concurring).

217. *See Village of Euclid*, 272 U.S. at 365 (holding that diminution in value by land use and other regulation is not regulatory takings); *Lucas*, 505 U.S. at 1003 (Denying all economically viable or beneficial use by land use or other regulation is a regulatory taking.).

218. *See Palazzolo,* 533 U.S. at 635 (O'Connor, J., concurring) (finding a role for past regulatory circumstances in an investment-backed expectations analysis). Expectation means looking to the future; thus, any determination of an expectation would necessitate a degree of looking backward. Logically, you could not find a taking for a future investment-backed expectation that had yet to come into existence. Declaring a regulation to be a regulatory taking does not guarantee a reasonable investment-backed expectation that would necessarily permit development of the land under present market conditions, regulatory circumstances, and political conditions. The *Penn Central* inquiry for the extent of interference with investment-backed expectations *should include enough* circumstances to test the validity of past expectations.

219. *Id.* at 633 (O'Connor, J., concurring).

220. *Id*. (O'Connor, J., concurring).

221. *Id.* at 633-36 (O'Connor, J., concurring).

222. *Id*. (O'Connor, J., concurring).

and the state of development may run counter to real estate and other business theories in determining just compensation.[223]

The Court should not impose an expanded factual assessment to insure justice and fairness where the government should have weighed market and economic circumstances resulting in just compensation. It cannot completely save the government from maturing expectations where it imposed unconstitutional land use, growth management, and other regulations.[224] Justice Scalia's economic-based approach begs for the consideration of only economic value when government regulation imposes an unreasonable interference with investment-backed expectations.[225] Justice

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223. *See generally* SIRMANS & JAFFE, *supra* note 62, at 208-09. Real estate investment analysis can affect the value of a real estate development project by assigning a high market risk to the investment and consequently produces a low value for the land development project. *Id*. at 209. One could argue that Justice O'Connor's regulatory, policy, timing, and other circumstances may create a high risk over the duration of the investment, and thus the expected value of the investment would be low — perhaps closer to original price at the time of taking title. Risketurn analysis and other real estate and finance theories show how time, price, interest rate, and other factors affect the value of an investment and thus cannot be ignored in determining the value of an investment under the *Penn Central* inquiry. *See* William W. Wade, *Economic Backbone of the* Penn Central *Test Post* Florida Rock V*,* K&K *and* Palazzolo, 32 ENVTL. L. REP. 11, 221 (2002); William W. Wade, Penn Central's *Economic Failings Confounded Takings Jurisprudence*, 31 URB. LAW. 2, 277-308 (1999).

The *Penn Central* inquiry can ill afford neither too little nor too much weight on market risks and investment returns or cash-flows from real estate investment projects when the force of land use and other government regulation relies heavily on balancing competing public and private interests. Whether capitalizing a future stream of income to determine value or discounting the future value of an asset to determine return on capital, the common factor is the time period or time-related circumstances used in the *Penn Central* analysis to determine relevant risks and returns in legal and political environments and real estate and capital markets. Including circumstances of too long a duration makes the *Penn Cental* analysis overinclusive. The *Penn Central* analysis need not include unnecessary circumstances that would render the *risk-return analysis* of finance and real estate ineffective or useless in assessing the investments potential of real estate development. Yet, making the *Penn Central* analysis *underinclusive* has some serious consequences. Ignoring market or legal risks may allow an infeasible development project to rise to the level of a highly *leveraged* takings claim where local communities may have only marginal use for the product of this development. Next, ignoring political uncertainty is tantamount to expanding background principles of common law by making public policy and regulation a constant with little impact on development near the time of the taking. Therefore, although the *Penn Central* inquiry is an ad hoc test based on the circumstances, the beginning point to examine the regulatory structure, market risk, legal restraints, and political uncertainty should be within a few years of the time of the taking and then move either forward or backward, depending on the past changes in ownership, legality of restrictions, level of enforcement, and constitutional pervasiveness of the regulation in a field or industry. Obviously, a family of prohibitive and pervasive regulation whose regulatory structure had survived constitutional scrutiny under the Takings Clause would create less risk and uncertainty, *and if there ever was a taking under this regulatory regime, there would only be a need for a risk-return analysis at the time of the taking*.

224. *See Suitum*, 520 U.S. at 742 (providing that the risk of regulatory pioneering remains with government under some circumstances).

225. *See Palazzolo*, 533 U.S. at 637 (Scalia, J., concurring).

Scalia's approach may entice landowners and developers to avoid understanding constitutional, scientific, and political thinking and thus takes unnecessary political, social, and policy risks where societal, environmental and other conditions indicate a change may likely take place, albeit slowly, in regulation and public policy.[226] His reliance on common law and economics includes circumstances that may not fit our notions of public justice and fairness. Justice Scalia's reliance on background principles to stay the total deprivation of development rights is no better than Justice O'Connor's reliance on past regulatory conditions to determine the extensiveness of interference with investment-backed expectations. Both Justices are relying on past facts rather than financial, scientific, or economic principles to define the circumstances and conditions of economic effects of regulation on sensitive lands. The science and economics of wetlands inform the circumstances of the *Penn Central* inquiry. Justice Scalia's economic approach points to an analytical deficit in takings jurisprudence regarding liability and compensation. This analytical deficit permits past regulatory regimes and states of development to affect the existence of reasonable investment-backed expectations in the determination of an unconstitutional interference under present regulations. Fairness and justice cannot ignore the fact that the maturation of financial expectations includes financial risks and political uncertainty for both government and landowners, and the government must share the risk of an unconstitutional regulation imposed on land development.

V. VALUATION UNDER EMERGING LINES OF INVESTMENT-BACKED EXPECTATIONS ANALYSIS

Obviously, fair market value looks to the present and does not involve consideration of past events which no longer affect the use or condition of the land.[227] The Court has concluded that an owner of a parcel of land is not entitled to the highest and best use under government regulation.[228] Moreover, the Court has concluded that "[w]hen a taking has occurred, under accepted condemnation

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226. *Id.* (Scalia, J., concurring).

227. *But see* Oral Argument, *supra* note 156, at 50, lines 11-16. At the oral arguments for *Palazzolo,* one Justice asked a question that leads us to think that the Court would consider the historical or original value of a land investment in measuring just compensation. One Justice asked the following: "[S]upposing I bought an acre of land out in Tysons Corner for $15,000 in 1959. Now it's appraised at a million dollars and the Government comes on and says, well, look, you only paid [$]15,000 for that, we ought to take that into consideration deciding whether it's been what's been taken." *Id.*

228. *See, e.g., Village of Euclid*, 272 U.S. at 365; *Penn Central*, 438 U.S. at 104.

principles the owner's damages will be based upon the property's fair market value."[229] The Court has recognized that a state cannot create regulations, such as limiting challenges to regulation, that would "secure a windfall for itself."[230] Finally, the Court has acknowledged that states bear economic risks in imposing regulations, such as use restrictions, in conjunction with TDR programs that could effect a taking of private property and payment of just compensation.[231] Yet, the determination of fair market value, which may be an unintended windfall,[232] is a fact-based question that is greatly affected by real estate, finance, and perhaps accounting theories.

A. Weighing Past Regulatory Conditions in Takings Jurisprudence

Justice O'Connor's policy-based approach complicates the determination of fair market value by using regulatory and other historical circumstances to determine liability and compensation for a regulatory taking. Assuming in *Palazzolo* that $3.1 million is the fair market value of the petitioner's tract of land in a developable state, a historical element of an investment-backed expectations analysis that considers past regulatory restrictions may actually take the fair market value at some point in the past and therefore apply a discount rate to reduce the market value for the lack of marketability under past regulation.[233] Normally, appraisal

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229. .Palazzolo, 533 U.S. at 626 (citing *Olson*, 292 U.S. at 255; SACKMAN, *supra* note 21.

230. *Palazzolo,* 533 U.S. at 628 (citing Webb's Fabulous Pharmacies, Inc. v. Beckwith, 449 U.S. 155, 164 (1980) ("[A] State, by *ipse dixit*, may not transform private property into public property without compensation."). *Cf.* Robert C. Ellickson, *Property in Land*, 102 YALE L. J. 1315, 1368-69 (1993) (defining characteristic of the fee simple estate is right to transfer interest in land).

231. *See Suitum,* 520 U.S. at 742 ("In fact, the reason for the agency's objection is probably a concern that without much market experience in sales of TDR's, their market values will get low estimates. But this is simply one of the risks of regulation pioneering, and the pioneer here is the agency, not Suitum.").

232. *Palazzolo*, 533 U.S. at 626-28 (citing SACKMAN, *supra* note 21) ("[A]n inquiry will turn, in part, on restrictions on use imposed by legitimate zoning or other regulatory limitations.").

233. *See generally,* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, THE APPRAISAL OF REAL ESTATE 414 (9th ed. 1987) (explaining the use of discount rate in real estate appraisal and investment). "A discount rate is a rate of return on capital used to convert future payments or receipts into present value." *Id.*

Brown does not affect our arguments on just compensation or damages. 538 U.S. at 216. *Brown* involved a just compensation issue regarding the availability of just compensation for interest earned and then taken for public use by government for the purpose of providing legal services. Both the majority and dissent agree that fair market value is the measure of damages for losses to property owners under just compensation. *See id.* at 238 ("The fair market value of a right to receive $ .55 by spending perhaps $ 5.00 to receive it would be nothing."); *Id.* at 242 (Scalia, J., dissenting) ("In so holding the Court creates a novel exception to our oft-repeated rule that the just compensation owed to former owners of confiscated

methodology does not discount the market value for past regulatory conditions affecting the landowners' motivation to invest if such conditions are not present restrictions or conditions on the land.[234] When regulatory takings liability involves an interference with investment-backed expectations arising from the invalidation of a regulation that totally prohibits land development, incorporating a policy approach into measuring damages for a taking creates an entirely new remedial analysis for just compensation. Thus, a policy-based analysis raises valuation or compensation questions.

One question raised by Justice O'Connor's policy-based analysis is whether the acquisition value of the property could ever be considered the fair market value.[235] When one or more policy or

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property is the fair market value of the property taken."). Our article relies on fair market value as a measure of damages for a regulatory taking under the Takings Clause, and thus *Brown* would not be fatal or undermine the article's arguments on just compensation. The article seeks only to bridge the gap between Justices Scalia and O'Connor's approaches to the *Penn Central* analysis and their effects on just compensation for the taking of wetlands and other sensitive lands. It relies on real estate finance principles, such as discount rate, capitalization rate, risk-return analysis, and other concepts. Yet, we do not assign risks to policy and regulatory circumstances that would justify giving a zero return or giving a huge return when these risks are associated with past circumstances that do not affect present fair market value.

234. *See generally* BOYKIN & RING, *supra* note 10, at 44-57 (discussing the principles of real estate valuation). *But see id.* at 70-2 (recognizing limitations imposed by government).

235. *See* Oral Argument, *supra* note 156, at 42 lines 19-23. In the oral arguments of *Palazzolo*, one Justice asked a question showing some concern about just compensation. One Justice asked "if somebody goes and buys cheap land with an already existing takings claim, they will not benefit from that because they could not recover more in fairness than what they paid for the land minus the value of the land for all other purposes." *Id.*. *See also Dist. Intown Prop.*, 198 F.3d at 874 (providing that a mere purchase does not establish reasonable investment-backed expectations if intended use is greatly inconsistent with past use of the property).

Using the windfall value or acquisition cost entails "[d]etermining the value of a single sum either at beginning or at the end of a given period." BOYKIN & RING, *supra* note 10, at 315 . Determining the value of the land using its acquisition cost and other regulatory circumstances is the determination of the value of the original investment over a number of decades. *See id.* It is determining the value at the beginning of the period. *Id.* The *limited* treatment of a few regulatory circumstances in the *Penn Central* analysis may be enough to affect land value by incorporating a discount effect that weighs the risk to the investment by legal and political conditions occurring a few years before the regulatory taking. *See* SIRMANS & JAFFE, *supra* note 62, at 209 ("[T]he measurement of expected changes in [expected] risk is best handled [through a] discounted cash flow approach."). It is noted that "the higher the discount rate, the lower the present value." *Id.* at 219.

In contrast, determining the value of land based on its ability to generate a stream of income may be closer to the windfall value. This value would include the ability of the land to produce a marketable product, such as residential dwellings. Here, the determination of the value is anticipated or expected at the end of the period. This determination may be closer to the capitalization approach, assuming that an estimate of operating or other income is used as an income stream. The *limited* treatment of a few regulatory circumstances in the *Penn Central* analysis may be enough to effect land value by incorporating an income capitalizing effect that takes into account the risk to the investment under legal and political conditions immediately preceding the regulatory takings. *See* SIRMANS & JAFFE, *supra* note

regulatory circumstances includes past regulatory actions that limit the level of development, just compensation begs to apply an appraisal or investment technique that yields a fair market value with the least modest return on the acquisition cost[236] at the time of imposition of regulation.[237] Land is recorded on the balance sheet at its acquisition or historical cost if the owner planned to develop the property in its own operations.[238] If the petitioner was holding the property for an investment, it would not be treated as a tangible asset under accounting principles, and thus the treatment of the costs for taxes, insurance, and interest would be different.[239] Assuming that the petitioner was engaged in the business of land development, the wetlands would be tangible assets recorded at historical cost.[240] The acquisition or historical cost is not the current fair market value of the property.[241] Yet, corporations rarely sell land for its historical or acquisition value and may use the current fair market value in selling the property.[242] In *Palazzolo*, the SGI would have recorded the tract of land at its historical or acquisition value, and thus the transfer value to the petitioner would, we assume, have been at the fair market value of the tract in 1978.[243]

62, at 209.

236. *See* LOREN V. NIKOLAI & JOHN D. BAZLEY, INTERMEDIATE ACCOUNTING 342-43 (6th ed. 1994). Petitioner and associates formed the Shore Gardens, Inc. (SGI) to purchase and hold the property. Later, petitioner bought his associates' interest and became the sole shareholder. Petitioner acquired the property from SGI when the state revoked the corporate character of SGI for a failure to pay taxes. *Palazzolo*, 533 U.S. at 612. We assume that the cost of the land at the transfer was its historical or acquisition cost.

Another issue is whether petitioner held the land as a personal investment or as tangible asset for a land development business. The resolution of this issue affects the intent to develop. If petitioner was engaged in the business of developing this tract of land, then clearly his application for permits to fill and improve the property shows an intent to develop. However, the extent of development beyond the application for a permit are greatly limited, perhaps inquiries about financing and construction would be permissible.

237. Real estate investments consider both risks and returns. *See* SIRMANS & JAFFE, *supra* note 62, at 208. In purchasing land or investment, Professors Sirmans and Jaffe state that "[r]eal estate investment is basically a capitalization process: investors give up a known, certain amount in exchange for an expected, but uncertain, stream of future cash flows." *Id*.

238. NIKOLAI & BAZLEY, *supra* note 236, at 342-43.

239. *Id*. at 344.

240. *See id*. (assuming that petitioner is engaged in the business of developing land for sale as residential products).

241. *See id*. at 342-43.

242. *Id*. at 343. *See Palazzolo*, 533 U.S. at 614 ("He sought damages in the amount of $3,150,000, a figure derived from an appraiser's estimate as to the value of a 74-lot residential subdivision."). There is appraisal methodology for valuing developable land converted to a new use, such as residential. *Id.*

243. EPHRAIM P. SMITH ET AL., 2001 CCH FEDERAL TAXATION: COMPREHENSIVE TOPICS ¶ 16,061, 769 (2000); PRENTICE HALL'S FEDERAL TAXATION 2003: CORPORATIONS, PARTNERSHIPS, ESTATES, AND TRUSTS 6-5 (Kenneth E. Anderson et al. eds., 2002) (IRS Code Section 331(a) provides that a shareholder treats the property received in liquidation of a corporation as proceeds obtained from the exchange of stock. The shareholder's gain or loss is determined

Using the most recent historical or acquisition cost as the measure of damages for just compensation discounts the future value due over some future period, which could be 30 years.[244] On prime farmland or other highly suitable land, such a discount would be hard to justify because these lands are most suitable for residential, commercial, and other development under many regulatory requirements and real estate needs.[245] Discounting the present value to account for past regulatory restraints, but still providing an equitable return on invested capital is more supportable when past regulations severely limited development, the landowner never sought to develop, or a modified market value representing lesser return on invested capital may have been anticipated on any investment. Discounting the present value of a sum due in the future recognizes that executable investment-backed expectations would have been difficult to foresee under environmental, land use, and other regulatory programs.[246] Thus,

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by deducting the adjusted basis of the shareholder's stock from the fair market value of the property received).

244. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 482. An approach used to determine the value of land for investment is to determine financial and market risks and other circumstances affecting future receipts or returns on the use of wetlands, assuming that wetlands will produce periodic income. *Id.* "A discount rate is a rate of return on capital used to convert future payments or receipts into present value." *Id*. at 414. The discount rate is a yield rate that "is applied to a series of individual incomes to obtain the present value of each." *Id*. at 412. The yield or discount rate is "influenced by many factors, including the degree of apparent risk, market attitudes toward future inflation, the prospective rates of return for alternative investments, the rates of return earned by comparable properties in the past, the supply and demand of mortgage funds, and the availability of tax shelters." *Id*. at 415.

"Periodic income or reversions are converted into present value through discounting, a procedure based on the assumption that benefits received in the future are worth less than the same benefits received today." *Id*. at 489. "Moreover [b]ecause an investor seeks a total return that exceeds the amount invested, the present value of a prospective benefit must be less than its expected future value. . . . The standard formula for discounting future value to present value is Present Value [equals] Future Value/(1+i)n where *i* is the rate of return on capital per period that will satisfy the investor and *n* is the number of periods that the payment will be deferred." *Id*. The present value of $1,000.00 *due* in three years discounted at 10% per year equals $1,000/1.103 or $715.31 today. *Id*. *Note that the present value due increases as the discount rate decreases, and thus a high discount rate means the present value due is equal or close to the acquisition or original cost, and the investment was extremely risky or not expected to generate much of a return.* If Justice O'Connor's approach affects a factor that causes the discount rate to increase, then the value of the property subject to wetland regulation might decrease significantly.

245. *See generally* BOYKIN & RING, *supra* note 10, at 135 (discussing factors that influence the value of wetlands).

246. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 412. Another approach used to determine the value of land for investment is to capitalize the political and regulatory circumstances by using capitalization to determine the value of wetlands, assuming that wetlands will produce periodic income. Capitalization is the "[t]he procedure for the determination of a market rate of capitalization through which estimated future net operating income is converted into an estimate of present value. The capitalization rate acts

fair market value that does not consider financial risks and other influences on investment may not be full and fair compensation under a few natural conditions and regulatory circumstances.[247]

Using the present value of a future stream of cash-flow from a tract of wetlands to determine just compensation is more defensible when courts find the regulatory takings was caused by an extensive interference with reasonable investment-backed expectations, and thus a yield or income from the investment in the land is appropriate as just compensation.[248] The legal and political risks associated with developing wetlands are great, and the costs of preparation of wetlands for development are greater than costs for the most suitable land, such as prime farmland.[249] Actually,

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as a conversion mechanism to convert periodic income into an estimate of present value." BOYKIN & RING, *supra* note 10, at 292. The capitalization rate is an income rate that "is the ratio of one year's income, or an annual average of several years' income . . . ." AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 413. The discount and capitalization rates may yield the same result under some circumstances but they are not the same. *See id*. at 412-13; SIRMANS & JAFFE, *supra* note 62, at 208.

The income or capitalization rate is "influenced by many factors, including the degree of apparent risk, market attitudes toward future inflation, the prospective rates of return for alternative investments, the rates of return earned by comparable properties in the past, the supply and demand of mortgage funds, and the availability of tax shelters." AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415.

There are several ways of computing the value using a capitalization approach. *Id*. at 414. The direct capitalization approach does not distinguish between the return on and return of an investor's capital. *Id*. at 471. "The direct capitalization formula is Value [V] equals Net Operating Income [NOI] divided by the Overall Capitalization Rate [R]." *Id*. at 472. Real estate appraisers can use comparable sales and other techniques to determine the overall capitalization rate. To illustrate, if the NOI is $85,000 and *R* is 0.0850 (which is 8.5%), the V equals $85,000/0.850 or $1,000,000. *Id*. at 473. The capitalization approach uses an income stream to determine the present value of the property. *Note that the Value increases as the Overall Capitalization Rate decreases, and thus a windfall value would mean that the capitalization rate was relatively low and thus the investment was not risky and the landowner would expect a high value.* Justice Scalia's approach that willingly pays a windfall as just compensation recognizes a high capitalization rate.

247. *See generally* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415 (noting the discount and capitalization rates are "influenced by many factors, including the degree of apparent risk, market attitudes toward future inflation, the prospective rates of return for alternative investments, the rates of return earned by comparable properties in the past, the supply and demand of mortgage funds, and the availability of tax shelters.").

Brown offers new insight into how a costly economic or administrative transaction by government affects fair market value under just compensation. 538 U.S. at 216. The Court concluded that property owners were not entitled to just compensation for a taking because earnings or interest-earned was less than administrative expenses of returning the earnings to the property owners. *Id*. at 239. Thus, the transaction cost of returning any earnings to the owners reduced the fair market value to zero or a net loss of zero. *Id*. at 235-37.

248. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 412 (discussing investment or appraisal methods for determining the value of the income and yield from an investment in land).

249. *See generally* BOYKIN & RING, *supra* note 10, at 135 (discussing factors that influence the value of wetlands). Boykin and Ring state that "[t]he best appraisal method of appraising wetlands is the comparable sales analysis." *Id*. "Other factors that might be considered are

unsuitable land increases costs of development and includes special legal and political risks, such as regulatory permits and conditions.[250] Applying a capitalization or discount rate to the future value takes into consideration the inherent political risks and uncertain financial returns of using wetlands and other unsuitable land for development during the last three decades.[251] Under present environmental regulation of wetlands, new wetland owners should not be disappointed at receiving returns that may be less than the fair market value and exceed the rate of inflation, as long as the returns are reasonable.[252]

Numerous circumstances may influence the valuation of wetlands in the determination of just compensation. If courts find that a regulatory interference with investment-backed expectations amounts to a taking, they must consider several circumstances in determining both liability and compensation. These circumstances include the feasibility of financing, cost of development, expected cost of capital, availability of product markets, severity of zoning and use restrictions, costs to the community, current economic conditions, and potential impact on investment quality for holding the land.[253] In addition, the remedy or compensation for takings of wetlands may need to consider the burdensome involuntary allocation of public funds by communities for new or improved public facilities, services, and infrastructure to support

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the cost of mitigation, extension of the development period by an owner having to deal with government agencies, and the risk of whether any development will be permitted by governmental bodies." *Id*. at 135 (citing Richard S. Hawrylak, *What You Should Know About Wetlands*, THE PRAC. REAL ESTATE LAW 60, 60-61 (Jan. 1991).

250. *See id.*

251. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415. The discount rate is "influenced by many factors, including the degree of apparent risk, market attitudes toward future inflation, the prospective rates of return for alternative investments, the rates of return earned by comparable properties in the past, the supply and demand of mortgage funds, and the availability of tax shelters." *Id*. at 415.

252. Moreover, courts have not found that investment-backed expectations are greatly reduced in highly regulated fields. *See* Branch *ex rel*. Maine Nat'l Bank v. United States, 69 F.3d 1571, 1581 (Fed. Cir. 1995). "The Court's third point in *Connolly* [v. Pension Benefit Guaranty Corp., 475 U.S. 211 (1986)] and *Concrete Pipe* [*v. Construction Laborers Pension Trust*, 508 U.S. 602, 606 (1993)] — that reasonable investment-backed expectations are greatly reduced in a highly regulated field — applies with special force to rules governing the liability of national banks." Whether wetland conservation is a highly regulated field of natural resource conservation after forty years of regulation is a debatable issue.

In some instances, the landowner may not be entitled to any returns. *See Rith Energy*, 247 F.3d at 1355 (asserting a "notice requirement" based on the acquisition of the property after the enactment of environmental regulations to cutoff reasonable investment-backed expectations). At such a disadvantage, some landowners should consider working with the local, state, or federal government to preserve the use of natural resources but still seek some compensation and limited use where it is possible.

253. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415.

development.[254] The Takings Clause must not permit a few profit-driven landowners to allocate more than a fair share of the burden of development onto the public.[255] Still, the government cannot use these circumstances to acquire wetlands without consideration of the financial expectations of landowners holding wetlands with distinct expectations of a return under judicial and legislative decisions. Consequently, courts will look to real estate and finance methodologies to weigh circumstances that affect valuation and return on capital issues that are directly related to Justice O'Connor's fairness and Justice Scalia's windfall concerns.[256]

Finance and real estate principles that apply to Justices Scalia and O'Connor's analytical differences shed much light on the nature of the differences. Both Justices appear willing to find the existence of reasonable investment-backed expectations. They must also agree to apply only past regulatory circumstances of a reasonable duration before, and at the time of, the taking under the *Penn Central* inquiry. If they find this existence and use a short duration, Justices Scalia and O'Connor may differ only on the value of a capitalization rate[257] or discount rate[258] in the takings equation.[259]

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254. *See Dolan*, 512 U.S. at 374.

255. *See id*. (scrutinizing the relationship between the regulation and the justification for regulation); *Nollan*, 483 U.S. at 825 (scrutinizing the relationship between the regulation and its ability to further its declared purpose).

256. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415. The discount and capitalization rates are influenced by economic conditions, market risks, and other forces. *Id*.

257. *See id*. at 412; SIRMANS & JAFFE, *supra* note 62, at 203-04. The capitalization rate is an income rate that converts an expected income stream to a present value of the land. *See* SIRMANS & JAFFE, *supra* note 62, at 203-04. The capitalization or cap rate will determine the value that the investor is willing to pay for the land. *Id.* The higher the cap rate, the lower the value. *Id*. at 203.

258. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 414; SIRMANS & JAFFE, *supra* note 62, at 205-06. The discounted cash flow approach uses a discount rate to determine the return on capital by converting future cash-flow(s) into the present value. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 414. This approach relies on the time value of money and recognizes that "a future amount of money is worth less than the same amount to be received in the present." SIRMANS & JAFFE, *supra* note 62, at 214. This approach also accounts for the market risk of investing in the land and investment effects of an increasing risk of receiving the return on the investment during the holding period. *Id.* at 209.

259. *See* SIRMANS & JAFFE, *supra* note 62, at 208-09. Real estate investment analysis can be applied to determine the value of an investment under market risk, political uncertainty, and numerous other circumstances over the duration of the investment. Increases in market risk and changes in other circumstances affect future income from, and return on, the investment. *Id*. at 209. Professors Sirmans and Jaffe state that the discounted-cash flow approach is better for handling changes in market risk brought on by circumstances surrounding the investment. *Id*. However, these professors recognize that others find that adjustments to the cap rate can reflect changes in risk. *Id*. In short, Justices O'Connor and Scalia are weighing circumstances that are evidence of a risk return or income analysis of land valuation, though the underdeveloped state of the *Penn Central* inquiry lacks any real

A few past regulatory circumstances improve the likelihood of a court not finding an extensive interference or takings liability, and operate similar to a high discount rate that causes compensation to be extremely low.[260] Therefore, when a court finds takings liability and uses a modified market value based on a high discount rate or low capitalization rate based primarily on past regulatory risks or circumstances, the court must make certain that full and fair compensation is not based entirely on a few past regulatory circumstances.[261] It does not seem fair to discount (mitigate) liability and compensation in the application of the same takings equation by including the same or similar regulatory circumstances on both sides of the equation. Notwithstanding a strong public desire, just compensation may need to take into account economic and other forces that increase the likelihood of a recession or prosperity.[262] Courts must recognize that the existence of a few circumstances in finding takings liability could cause the remedy or compensation to be a modified market value determined by applying a capitalization or discount rate to take into consideration the extreme risk of a profitable use.[263] For example, severe use restrictions on flood-prone land without access to public water, sewer, and roads would be subject to a rate that includes the public costs of health and safety. Justices Scalia and O'Connor may find it as difficult to effect liability and compensation based on past regulatory circumstances as land developers and investors find it to use regulatory, legal, market, and other risks to select discount and capitalization rates for real estate projects and investments.[264] Moreover, in some instances, the comparable sales approach may not capture the risks and other influences that affect the value of developable land under some natural and business circumstances.

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estate investment analysis.

260. *See generally id*. at 209 (providing that a high discount rate means the present value of income or cash flows will be low, and the investment would be extremely risky with little return).

261. *See generally* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415 (listing a few factors affecting the level of the discount and capitalization rates).

262. *See Suitum*, 520 U.S. at 742 (recognizing and assigning the risk of regulatory pioneering and its affect on land markets to government).

263. *See* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 415. A few factors affecting the level of the discount and capitalization rates are as follows: "degree of apparent risk, . . . the prospective rates of return for alternative investments, the rates of return earned by comparable properties in the past, [and] the supply and demand of mortgage funds." *Id.* These factors determine the income or return on the investment. *Id.*

264. *See generally* SIRMANS & JAFFE, *supra* note 62, at 46-45 (stating that real estate investors must analyze business risks that are related to legal restrictions, economic conditions, social forces, and other factors).

B. Land Development Approach to Valuation of Land with Investment-Backed Expectations

Other appraisal methods are available to value wetlands and other undeveloped land held for residential and commercial development.[265] One method, the land or subdivision development method, considers risk and return by discounting future revenues. Some courts apply this method to value land held for development by landowners.[266] In *City of Harlingen v. Sharboneau*,[267] the Supreme Court of Texas (Supreme Court) examined the use of the land or subdivision development method to determine the value of land in a condemnation proceeding.[268] The City of Harlingen (City) condemned a tract of land to expand its local park.[269] Both parties agreed that the highest and best use of the land was a residential subdivision.[270] The landowner's appraiser used the subdivision development method to value the condemned property[271] and found a fair market value of $413,770.[272] The City's appraiser used the comparison sales approach and found a value of $98,500.[273] The trial court permitted evidence of value based on the subdivision development method, and the intermediate appellate court affirmed the trial court's decision.[274] The Supreme Court reversed the appellate court.[275]

In the *City of Harlingen*, the Supreme Court stated that "[the subdivision development] method values an undeveloped tract by calculating what a developer could expect to realize from sales of individual lots, taking into account the costs of development and discounting future revenues to present value."[276] The trial court awarded Sharboneau $232,000, concluding that the subdivision development method of appraising the value of land reflects the

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265. *See* City of Harlingen v. Sharboneau, 48 S.W.3d 177, 181-82 (Tex. 2001); BOYKIN & RING, *supra* note 10, at 157-58.

266. *See id.* (citing City of Wichita v. Eisenring, 7 P.2d 1248, 1255 (Kan. 2000); County of Ramsey v. Miller, 316 N.W.2d 917, 921-22 (Minn. 1982)) (permitting the admission of evidence of the subdivision development method). *But see id.* at 186-87 (citing Contra Costa Water Dist. v. Bar-C Prop., 7 Cal. Rptr. 2d 91, 93-95 (1992); Dept. of Transp. v. Benton, 447 S.E.2d 161 (Ga. App. 1994)) (not permitting the admission of evidence of the subdivision development method).

267. 48 S.W.3d 177 (Tex. 2001).

268. *Id.* at 180-86; *see* BOYKIN & RING, *supra* note 10, at 157-58.

269. *Id.*

270. *City of Harlingen*, 48 S.W.3d at 180.

271. *Id.* at 180-81.

272. *Id.* at 180.

273. *Id.* at 180-81.

274. *See* City of Harlingen v. Estate of Sharboneau, 1 S.W.3d 282 (Tex. App. 1999), *rev'd*, 48 S.W.3d 177 (Tex. 2001).

275. *City of Harlingen*, 48 S.W.3d at 180.

276. *Id.* at 180.

highest and best use.[277] The Supreme Court rejected the subdivision development method because under these circumstances it did not provide "relevant and reliable evidence of market value."[278] The Supreme Court found that this method involved several steps that required assumptions and estimates that could affect the accuracy of the appraisal.[279] Further, the Supreme Court found it is not a valid method under ordinary circumstances for valuing undeveloped land, and according to other courts, it may be "speculative and conjectural."[280] Specifically, the Supreme Court found that the subdivision development method failed to "account [for] … characteristics of the relevant marketplace that would affect what price a willing buyer would pay to a willing seller."[281] Moreover, the Supreme Court noted that this method did not consider the failure of the subdivision and it "oversimplifies the problem of finding market value in one crucial respect: it assumes that a willing buyer will value the land at the highest price that still allows a reasonable return on the investment." [282] The Supreme Court noted that the market value includes all factors, conditions, and circumstances that a buyer and seller would consider and that could also increase or decrease the value of property.[283] The Supreme Court observed that the subdivision development and other appraisal methods must

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277. *Id*. at 182.

278. *Id*. at 183.

279. *Id*. at 184. *See also* BOYKIN & RING, *supra* note 10, at 158. This method can produce unrealistic value estimates when a particular analysis, estimate or forecast is inaccurate or incorrect. *Id*. (citing James H. Boykin, *Developmental Method of Land Appraisal*, APPRAISAL J. 181 (April 1976)).

280. *City of Harlingen,* 48 S.W.3d at 184. *But see* BOYKIN & RING, supra note 10, at 157. The subdivision development method recognizes the "ability to modify land and thereby produce land values." BOYKIN & RING, *supra* note 10, at 157. It can be used to appraise the value of any land that has subdivision potential. *Id*. Specifically, this method is applicable where there is an anticipation of converting or the conversion of land to higher economic use, such as conversion from farmland to urban land. *Id*.

Boykin and Ring state that the subdivision development method consists of the following suggested steps:

> 1. Create a sound development plan 2. Forecast a realistic pricing schedule 3. Forecast accurately the absorption rate and mix of sites to be sold 4. Accurately estimate the staging and expense of land development and related expenses 5. Forecast marketing and related expenditures 6. Estimate the annual real property taxes during the development and marketing periods 7. Estimate a reasonable overhead and profit allowance 8. Analyze the market to determine the appropriate discount rate expected by investors for this of investment [and] 9. Select a discount rate that properly reflects the timing of the site sales.

BOYKIN & RING, *supra* note 10, at 158-59 (citing James H. Boykin, *Developmental Method of Land Appraisal*, APPRAISAL J. 181 (April 1976)).

281. *City of Harlingen*, 48 S.W.3d at 184.

282. *Id*. at 185.

283. *Id*.

account for the "competitive, risk-filled marketplace of the real world" in determining market value.[284]

In *City of Harlingen*, the Supreme Court recognized that just compensation should not eliminate the risks that landowners would have encountered in the marketplace.[285] It concluded that the subdivision development method would eliminate marketplace risk by determining "the value of ready-to-build lots in successfully completed subdivisions."[286] The Supreme Court also concluded that the subdivision development method could be applied to undeveloped land, but it could not make that determination on the record before it in *City of Harlingen*.[287] The subdivision development method could be applied to undeveloped land where courts find that the extent of interference with reasonable investment-backed expectations amounts to a taking, the comparable sales approach is not available, and the land is unique.[288] Arguably, isolated wetlands that are developable (filled and marketable land) could be appraised under the subdivision development method.[289]

C. Issues in Determining Liability and Compensation for Land with Loss Expectations or Missed Opportunities

Weighing past regulatory circumstances to determine the extent of interference with investment-backed expectations is determining government liability and the remedy for loss expectations or missed opportunities.[290] *Penn Central* and *Monsanto* make the plaintiff's case difficult because the Court has not been willing to find takings liability for any extent of interference with reasonable investment-backed expectations.[291] Because the Court has yet to find takings liability for any extent of interference, the issue of just compensation is novel. *Palazzolo* leaves serious doubt regarding how the Court will use the *Penn Central* inquiry in the determination of takings liability and just compensation issues.[292]

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284. *Id*. at 186.
285. *Id*. at 185.
286. *City of Harlingen*, 48 S.W.3d at 185.
287. *Id.* at 186.
288. *See id*.; GRISSOM & DIAZ, *supra* note 62, at 68 (noting down markets and isolated tracks); BOYKIN & RING, *supra* note 10, at 157 (exploring conversion to a higher economic use).
289. BOYKIN & RING, *supra* note 10, at 157 (discussing particular lands that would be suitable for the application of the subdivision development method).
290. *See Palazzolo*, 533 U.S. at 625; *First English Evangelical Lutheran Church,* 482 U.S. at 321 (stating that landowners might not seek one of three remedies: the value of the land, the value of loss investment-backed expectations, or the invalidation of the regulation and its enforcement).
291. *See Monsanto*, 467 U.S. at 1006; *Penn Central*, 438 U.S. at 139.
292. *See Palazzolo*, 533 U.S. at 632-37 (Scalia, J. and O'Connor, J., concurring).

Plaintiffs' lawyers must find evidence that establishes an intent by the owner to develop the land. Thus, the plaintiffs' lawyer must overcome *Penn Central* and *Monsanto*'s reticence to find liability for interference with, or the existence of, a landowner's reasonable expectations to earn investment income or receive the investment value, where the remaining use does not deny all beneficial use under *Lucas*,[293] but provides little opportunity to make profits under *Penn Central*.[294] *Palazzolo* defines the parameters by adding qualifications to the extensiveness of interference and existence of investment-backed expectations. *Palazzolo* notes that the Takings Clause does not require any financial investment to establish investment-backed expectations.[295] *Palazzolo* adds that past regulation does not create notice of restrictions or prohibitions on development.[296] Yet, *Palazzolo* does not give plaintiff's lawyers much guidance on the essential economic or investment circumstances of the takings analysis that would show an extensive interference with investment-backed expectations. Such a claim is between *Lucas* and *Penn Central*, finding the total loss of productive use and the denial of an opportunity to make reasonable profits or returns.

Presently, weighing past regulatory circumstances to determine the extent of interference with reasonable investment-backed expectations would affect compensation when takings liability is determined under the *Penn Central* inquiry.[297] On the issue of just compensation, defendants' lawyers must consider appraisal methodology that takes into account circumstances affecting the existence of and interference with reasonable investment-backed expectations in developable land. Justice O'Connor's extension of the *Penn Central* analysis is the starting point.[298] Justice O'Connor

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293. *See Lucas*, 505 U.S. at 1015 ("When, however, a regulation that declares 'off-limits' all economically productive or beneficial uses of land goes beyond what the relevant background principles would dictate, compensation must be paid.").

294. *See Penn Central*, 438 U.S. at 139 ("The restrictions imposed . . . also afford appellants opportunities further to enhance not only the Terminal site proper but also other properties.").

295. *See Palazzolo*, 533 U.S. at 632 (O'Connor, J., concurring) (citing *Hodel*, 481 U.S. at 714-18).

296. *See id.* at 629.

297. *See* Oral Arguments, *supra* note 156, at 50, lines 11-16. At least one Justice would consider the value or purchase price at the time of acquiring title as one of the circumstances in determining just compensation. *See id.*

298. *See Palazzolo*, 533 U.S. at 632 (O'Connor, J., concurring). In *Palazzolo*, Justice O'Connor states that:

> On the other hand, if existing regulations do nothing to inform the analysis, then some property owners may reap windfalls and an important indicium of fairness is lost. As I understand it, our decision today does not remove the regulatory backdrop against which an owner takes title to property from the purview of the *Penn Central* inquiry. It

seems willing to discount the present value where landowners did not or could not develop unsuitable land for development.[299] Her strong suggestion would permit defendants' lawyers to argue that just compensation is a modified market value even when the landowner did not try or could not have used the land for development or other economic benefits while the regulation was assumed valid under the Takings Clause.[300] Justice Scalia's approach to finding takings liability for an interference with investment-backed expectations would require defendants' lawyers to focus on the time of the taking and if he or she is successful, then focus on just compensation, which appears to be the fair market value under the present circumstances.[301]

On the issue of takings liability, the differences between Justices Scalia and O'Connor should not be confused with the fact that the

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> simply restores balance to that inquiry. Courts properly consider the effect of existing regulations under the rubric of investment-backed expectations in determining whether a compensable taking has occurred. As before, the salience of these facts cannot be reduced to any 'set formula.'

Penn Central, 438 U.S. at 124 (internal quotation marks omitted).

> The temptation to adopt what amount to per se rules in either direction must be resisted. The Takings Clause requires careful examination and weighing of all the relevant circumstances in this context. The court below therefore must consider on remand the array of relevant factors under *Penn Central* before deciding whether any compensation is due.

299. *See id.* at 632-35 (O'Connor, J., concurring). Justice O'Connor is willing to consider past circumstances that could eventually avoid finding a taking or reducing compensation. *Id.* She would weigh the "state of regulatory affairs" at the time of the acquisition. *Id.* She would also weigh the "nature and extent of development permitted under the regulatory regime." *Id.* at 632-35. Justice O'Connor's approach would not be a traditional fair market value and thus a modified market value (MMV) would be the measure of damages.

300. *See Palazzolo*, 533 U.S. at 632-35 (O'Connor, J., concurring) ("The court below therefore must consider on remand the array of relevant factors under *Penn Central* before deciding whether any compensation is due.").

301. *See id.* at 636 (Scalia, J., concurring). In *Palazzolo*, Justice Scalia states that:

> The polar horrible, presumably, is the situation in which a sharp real estate developer, realizing (or indeed, simply gambling on) the unconstitutional excessiveness of a development restriction that a naive landowner assumes to be valid, purchases property at what it would be worth subject to the restriction, and then develops it to its full value (or resells it at its full value) after getting the unconstitutional restriction invalidated.

Id.

> In my view, the fact that a restriction existed at the time the purchaser took title (other than a restriction forming part of the "background principles of the State's law of property and nuisance," *Lucas,* 505 U.S. at 1029) should have no bearing upon the determination of whether the restriction is so substantial as to constitute a taking. The "investment-backed expectations" that the law will take into account do not include the assumed validity of a restriction that in fact deprives property of so much of its value as to be unconstitutional.

Id. at 636-38.

Court has only once found the existence of reasonable investment-backed expectations. Justice O'Connor's fairness to the public[302] and Justice Scalia's windfall to private landowners[303] can be reconciled by understanding their major constitutional concerns. Plaintiffs' lawyers must address Justice O'Connor's broad *Penn Central* analysis in determining this extent of interference. Foremost, the plaintiffs' lawyers must recognize that the lack of development activity or economic feasibility of the project may indicate the lack of the existence of reasonable investment-backed expectations or cause less extensive interference with these expectations. Other circumstances may also affect the existence of these expectations. Plaintiff and defendants' lawyers must address the financial, legal, political, and market risks in land development where courts must find the existence of distinct, reasonable investment-backed expectations. Plaintiffs' lawyers must remember that the expectation of profits or returns on trade secrets in *Monsanto* was not a reasonable investment-backed expectation.[304]

On the second part of the issue of takings liability, the differences between Justices Scalia and O'Connor should not be confused with the fact that the Court has never found an unconstitutional interference with reasonable investment-backed expectations. Under the *Penn Central* analysis, plaintiffs' lawyers have an uphill battle to establish an extensive interference. They must establish that the government deprived the landowner of at least a minimum profit on the development or use of the land, where the landowner was deprived of all use of the land and could not expect any profit from the land or nearby properties owned by him or her. Weighing past regulatory circumstances to determine the extensiveness of a regulatory interference with reasonable investment-backed expectations may turn on whether these restrictions and other regulatory circumstances are closer to *Lucas* or *Penn Central.*

If a court finds a regulatory taking based on an extensive interference by government regulation, plaintiffs' lawyers should be prepared to defend against the discounting of just compensation where regulatory and natural circumstances precluded or greatly restricted development, such as wetlands. Both plaintiff and defendants' lawyers may need to consider the utility and investment potential of the land, and thus may need to examine financial, political, and business risks. They need to understand how selecting a discount or capitalization rate will affect the value of the

302. *See id.* at 632-35 (O'Connor, J., concurring).
303. *Id.* at 636 (Scalia, J., concurring).
304. *See Monsanto*, 467 U.S. at 998.

land.[305] They need evidence of the cost of the development, feasibility of financing the development, expected cost of capital, availability of product markets, severity of zoning and use restrictions, costs to the community of this development, and existing economic and social conditions restraining development. Plaintiffs' lawyers must understand that the recovery of just compensation for the interference with reasonable investment-backed expectations rests between the Court's conclusions in *Lucas* and *Penn Central*. *Lucas* demands less than total deprivation of beneficial use of developable land,[306] while *Penn Central* demands more than a partial loss of the profit-making potential of developable land.[307] The Court has not clearly defined the existence of an investment-backed expectation and extensiveness of government's interference with this expectation in land markets.[308]

VI. CONCLUSION

Justices Scalia and O'Connor play pivotal roles in the development of regulatory takings jurisprudence in the Rehnquist Court.[309] Their differences on fairness and economics in regulatory

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305. *See generally* AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS, *supra* note 233, at 412-14; BOYKIN & RING, *supra* note 10, at 292; SIRMANS & JAFFE, *supra* note 62, at 208-09 (discussing the use of real estate investment analysis to determine the value of a land investment based on future income or a return).

306. *See Lucas*, 505 U.S. at 1003.

307. *Penn Central*, 438 U.S. at 104.

308. The Court is not alone in reaching such a conclusion. *See, e.g.,* Price v. City of Johnson, 711 F.2d 582 (5th Cir. 1983) ("[I]noperable junk vehicle do not embody reasonable, investment-backed expectations."); Western Fuels-Utah, Inc. v. Lujon, 895 F.2d 780 (D.C. Cir. 1990) (A "12.5% royalty on all leases [does not] substantially interfere with their investment-backed expectation in an individualized determination by the Secretary."); *Meriden Trust*, 62 F.3d at 449 ("[W]ithdrawal liability provisions . . . [were] not out of line with owner's investment-backed expectations."); *Rith Energy*, 247 F.3d at 1355 (asserting a "notice requirement" based on the acquisition of the property after the enactment of environmental regulations to cutoff reasonable-investment-backed expectations.); *Carolina Water Serv.*, 161 F.3d at 1 ("A party with . . . [non-exclusive franchise] rights does not enjoy a reasonable investment-backed expectation that government will not disturb them."); *Dist. Intown Prop.*, 198 F.3d at 874 (concluding that the landowners had no reasonable investment-backed expectation under the regulatory structure at the time of subdivision; mere purchase does not establish a reasonable investment-backed expectations if the intended use is greatly inconsistent with past use of the property).

At least one federal court of appeals has found the existence of investment-backed expectations. *See* Phillip Morris, Inc. v. Harshbarger, 159 F.3d 670 (1st Cir. 1998) (finding a disclosure of ingredient information could affect a taking of private property by interfering with investment-backed expectations, and thus district court did not abuse its discretion by issuing a preliminary injunction to enjoin the state from disclosing this information).

309. *See, e.g., Dolan*, 512 U.S. at 374 (developing a means-ends analysis to scrutinize the nature of government action); *Lucas*, 505 U.S. at 1003 (developing a per se test the prohibit to taking of all developmental use); *Nollan*, 483 U.S. at 825 (developing a means-ends analysis to scrutinize the nature of government action).

takings jurisprudence complicate an already confusing and underdeveloped *Penn Central* analysis. We are left with a plausible doctrine and unworkable rules that further neither fairness nor economics. Lawyers and judges do not need more confusion. The public cannot be trusted to use degradable resources wisely, and the government cannot be trusted to equitably allocate the burden of conservation. Thus, the Court must develop a workable, objective approach to balancing the fairness of government protection and the economics of land use under the *Penn Central* inquiry.

Palazzolo's impact on the extent of interference with reasonable investment-backed expectations eventually may affect both takings liability and just compensation under the *Penn Central* inquiry. This impact touches the use of evidence in litigation and negotiation involving the extent of interference with reasonable investment-backed expectations, namely profits and returns.[310] Resolving issues raised by this impact is complicated by the protection of wetlands and sensitive lands from development and valuation for development.[311] Takings liability must address the level of use and

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310. *See Palazzolo*, 533 U.S. at 631. In *Palazzolo*, the Court did not address the takings liability or remedy issue and remanded the case to the Supreme Court of Rhode Island with explicit instructions to apply the Penn Central inquiry. Justice Kennedy, writing for the majority, states that "[t]he claims under the *Penn Central* analysis were not examined, and for this purpose the case should be remanded." *Id.* at 632.

311. 16 U.S.C. § 1452 (2003); 16 U.S.C. § 3901 (2003). The Coastal Zone Management Act of 1972, Pub. L. No. 89-454, 86 Stat. 1280 (codified as 16 U.S.C. §§ 1451-65 (2003)), sets forth national policy on the protection of wetlands and other coastal resources. It states that:

> The Congress finds and declares that it is the national policy:
>
> . . .
>
> (2) to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development, which programs should at least provide for:
>
> (A) the protection of natural resources, including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat, within the coastal zone . . .
>
> . . .

16 U.S.C. § 1452 (2003). Later, the Emergency Wetlands Resources Act of 1986, Pub. L. No. 99-645, 100 Stat. 3582 (codified as 16 U.S.C. §§ 3901-32 (2003)) gave more explicit protection to wetlands resources. The national policy on wetlands preservation and protection set forth:

> Sec. 3901. Congressional Findings and statement of purpose
>
> (a) Findings. The Congress finds that —
>
> (1) wetlands play an integral role in maintaining the quality of life through material contributions to our national economy, food supply, water supply and quality, flood control, and fish, wildlife, and plant resources, and thus to the health, safety, recreation, and economic well-being of all our citizens of the Nation;
>
> . . . .
>
> (b) Purpose. It is the purpose of this Act to promote, in concert with other

profitability of sensitive land, which includes a determination of the extensiveness of the effects of regulation on profits and returns. Just compensation must address the valuation of sensitive land, including how the timing, legality, and other factors of the regulation affect the value of the land. Obviously, Justices Scalia and O'Connor must reconcile fairness and economics in determining the extent of interference with reasonable investment-based expectations.

We are certain that an examination of the extent of interference with reasonable investment-backed expectations on sensitive lands demands financial and appraisal expertise. The complexity of the determination of how *extensive* may a regulation interfere requires expertise during litigation, negotiation, and compliance. Both appraisal methodology and takings analysis must weigh, among others, the level and kind of interference, quality and suitability of the land, nature and feasibility of the development, timing and severity of the regulation, and costs to the community. These circumstances address the extensiveness, including the nature and level, of interference by regulation. In addition, appraisal methodology and takings analysis will need to determine and weigh the findings of an earlier market analysis and the nature of expectations under real estate investment principles. These market and investment circumstances affect the validity of reasonable investment-backed expectations. These circumstances determine both the existence of distinct investment-backed expectations and the extensiveness of government interference with these expectations. Such circumstances show the need for financial and appraisal expertise to establish takings liability and fashion a remedy that equitably allocates the public burden in risk-filled land markets and an uncertain political system.

> Federal and State statutes and programs, the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and . . .
>
> . . . .

16 U.S.C. § 3901 (2003). The Wetlands Resources Act imposes restrictions on the use of eminent domain power to acquire wetlands for conservation and protection. The pertinent section states that:

> Sec. 3923. Restriction on use of eminent domain in acquisitions
>
> The powers of condemnation or eminent domain shall not be used in the acquisition of wetlands under any provision of this chapter where such wetlands have been constructed for the purpose of farming or ranching, or result from conservation activities associated with farming or ranching.

Id. at 3923. However, this provision does not limit the use of eminent domain or police power to protect wetlands from industrial, commercial, or residential development.

FLORIDA'S IMPAIRED WATERS RULE: IS THERE A "METHOD" TO THE MADNESS?

CYNTHIA D. NORGART*

Table of Contents

I. INTRODUCTION

The Clean Water Act ("CWA") recently celebrated its 30th anniversary. Since the early 1970s, lawmakers have been conscious of the significant threat of pollution in our nation's waters, and have worked with environmentalists and scientists to write legislation with water protection in mind. While the progress has no doubt been successful, the statistics are still somewhat frightening. Oliver Houck notes that "[o]nly 19 percent of the nation's rivers, lakes, and estuaries have been assessed for pollution."[1] Over 40 percent of the nation's waters that have been assessed under the CWA still do not meet water quality standards set by states and the Environmental Protection Agency ("EPA").[2] That means that roughly 300,000 miles

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1. OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION 4 (2d ed. 2002).

2. United States EPA, *Overview of Current Total Maximum Daily Load Program and Regulations, at* http://www.epa.gov/owow/tmdl/overviewfs.html (last visited Mar. 1, 2004).

of rivers and shorelines and approximately 5 million acres of lakes are impaired.[3] Sadly, an overwhelming 218 million people live within 10 miles of impaired waters.[4] And these estimations are only for the small percentage of waters that have been assessed. One can only imagine what shape the rest of the waters are in.

The CWA was written with the intention of protecting our nation's waters. While its task is a great one, its goals are laudable. The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[5] The CWA sets technology-based effluent limitations, which are the minimum amount of pollutant discharges allowed in water bodies from point sources.[6] The CWA also requires states to establish designated uses for their water bodies and then set water quality standards so that each water body is suitable for its designated use.[7] The water quality shall be set at such a standard as "to protect the public health or welfare, enhance the quality of water and serve the purposes of [the CWA]."[8] Water quality standards are used as a back up when technology-based effluent limitations are not enough to attain the water quality goals of the CWA.[9]

The Total Maximum Daily Load ("TMDL") program is one of the tools provided for in the CWA to achieve its water quality goals.[10] Each state is required under section 303 (d)(1)(A) to identify waters where the effluent limitations are not stringent enough to achieve the applicable water quality standards.[11] This section requires states to establish a priority ranking for those waters identified, based on severity of the pollution and the uses.[12] In accordance with the priority ranking, the states are then required to establish the TMDL for pollutants identified under section 304(a)(2).[13] Stated simply, TMDLs establish the maximum levels of pollutants that a water body can take in without exceeding water quality standards.

For the first twenty-five years or so, the CWA focused its regulations and enforcement on point source pollution. Therefore, TMDLs, with their application to both point and nonpoint sources, were not implemented during this time. It was not until the late

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3. *Id*.
4. *Id*.
5. 33 U.S.C. § 1251(a) (2003).
6. *Id*. § 1311(b)(1)(A).
7. *Id*. § 1313(c)(2)(A).
8. *Id*. § 1313(c)(2)(A).
9. *See id*. at § 1313(d).
10. 33 U.S.C. § 1313(d).
11. *Id*. § 1313(d)(1)(A).
12. *Id*.
13. *Id*. § 1314(a)(2).

1980s, when environmental groups began challenging the EPA in court to enforce the TMDL program, that CWA regulation began shifting towards inclusion of nonpoint source pollution and the TMDL program came to the forefront. This was the case in Florida in the late 1990s, when the EPA was compelled, due to court action brought by environmental groups, to establish TMDLs for waters on Florida's 1998 section 303(d) list, if the State failed to do so.[14]

Just prior to this consent decree, concerns over flaws in the 1998 section 303(d) list[15] prompted the Florida Legislature to enact the Watershed Restoration Act which authorized the Florida Department of Environmental Protection ("FDEP") to implement a methodology for listing waters and setting TMDLs.[16] The FDEP followed through by adopting chapter 62-303, *Florida Administrative Code*, in 2001. This rule, entitled "Identification of Impaired Surface Waters" ("IWR" or "Rule"), was enacted to provide a methodology for identifying impaired water bodies for which TMDLs will be established.[17] This Rule was not created to everyone's satisfaction, however. Many concerned citizens and environmental groups have voiced their strong opposition to the Rule arguing among other things that the Florida legislature did not have proper authority to create it; it will fail to adequately list all waters in need of repair; and it unlawfully modifies Florida's water quality standards.[18]

While the rule has held up to several legal challenges by concerned environmental groups,[19] the criticisms raised regarding the methodology behind it poses the question of how can we deal with scientific uncertainty when making important decisions that will affect the health of both humans and the environment. Florida's rule includes a detailed statistical approach that involves discarding some of the data if it falls into certain exceptions. The proponents of this approach hold that this is necessary because

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14. Florida Wildlife Fed'n, Inc. v. Browner, No. 4:98CV356-WS (N.D. Fla., Tallahassee Division, Apr. 22, 1998).

15. These concerns, which were brought to the attention of FDEP by the regulated industries, centered around two main issues: (1) that the list was based on insufficient science, which resulted in the inclusion of too many waters that were not in fact impaired, and (2) that the list did not provide an administrative point of entry under Florida's Administrative Procedures Act, which would allow the interested public to contest agency listing decisions. The FDEP agreed that these issues would best be resolved through legislation. Interview with Jim Alves, Attorney, Hopping Green & Sams (Nov. 17, 2003).

16. *See* FLA. STAT. § 403.067 (2003).

17. *See* FLA. ADMIN. CODE ANN. r. 62-303 (2003).

18. *See* Lane v. Dep't of Envtl. Prot., Fla. Admin. Order, Case Nos. 01-1332RP, 01-1462RP-01-1467RP, and 01-1797RP (May 13, 2003); Lane v. Dep't of Envtl. Prot., 846 So. 2d 511 (Fla. 1st DCA 2003); Florida Pub. Interest Research Group Citizen Lobby, Inc. v. United States Envtl. Prot. Agency, No: 4:02CV408-WS (N.D. Fla., Tallahassee Division, May 29, 2003).

19. *See id*.

statistical outliers should not be considered when deciding whether waters are impaired. On the other hand, critics of the approach argue that this data is important as it is indicative of whether or not a water body is impaired. Much of the controversy surrounding Florida's IWR, while not expressly stated, comes down to one side taking the "better to be safe than sorry" approach, and the other side focusing on the "prove it before you fix it" approach. This is the case for just about all environmental issues. Generally, the environmental activists are the side pushing for the precautionary approach, while the industry groups are analyzing the science to see just how close they can get without crossing the threshold line of actual harm that is defined in federal environmental laws. The precautionary principle[20] embodies the approach taken by environmental groups. Florida's rule is just one more instance where this overarching human and environmental health versus risk and economic efficiency battle plays out.

The purpose of this paper is not only to analyze the issues that have been raised in litigation challenging Florida's new rule, but also to explore the bigger question of how to deal with scientific uncertainty when it comes to environmental issues. Part II of this paper will provide the necessary background in order to thoroughly understand the issues regarding Florida's IWR. I will provide an overview of the CWA and how the TMDL program fits into it. In this background I will also include a brief overview of some of the litigation that has come up in the context of states implementing TMDL programs. In Part III, I will provide a detailed analysis of Florida's IWR, as well as Florida's water quality standards. Understanding what water quality standards are is important to understanding how Florida assesses when they have not been met. I will then discuss the specific issues and controversies surrounding Florida's new rule. The arguments I will focus on are 1) whether the methodology is adequate to list all of the waters actually in need of repair; and 2) whether the rule is a revision to Florida's water quality standards.

In Part IV, I will explain how the precautionary principle plays out in the issues that have risen over Florida's rule. In this section I will discuss first what the precautionary principle is before delving into its connection with the arguments against Florida's listing methodology. Lastly, in Part V, I will offer my conclusion on the rule, including whether the environmental groups are right about

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20. *See* Jonathan B. Wiener, *Whose Precaution After All? A Comment on the Comparison and Evolution of Risk Regulatory Systems*, 13 DUKE J. COMP. & INT'L L. 207, 207 n.11 (2003); John S. Applegate, *The Taming of the Precautionary Principle*, 27 WM. & MARY ENVTL. L. & POL'Y REV. 13 (2003).

it and whether the IWR will meet the goals intended by the CWA and the Florida Legislature.

II. THE CLEAN WATER ACT AND TOTAL MAXIMUM DAILY LOADS

The TMDL program is just one tool utilized under CWA regulation to achieve its goals of cleaner water. The CWA applies a water quality standards approach through TMDLs that allows states to designate specific uses for water bodies and implement a plan for achieving those uses. This section provides a detailed look at the CWA and the TMDL program, which will allow for a better understanding of Florida's methodology rule.

A. Clean Water Act Background

The Federal Water Pollution Control Act Amendments of 1972, which have come to be known as the CWA, came about due to a growing public concern for pollution of our nation's waters.[21] One of the most important goals of this Act is to prohibit "the discharge of pollutants into the navigable waters."[22] The focus of the CWA post-1972 was on effluent limitations.[23] The Act defines "effluent limitation" as "any restriction . . . on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters."[24] As defined in the CWA, a "point source" is "any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged."[25] Point source does not include "agricultural stormwater discharges and return flows from irrigated agriculture."[26] These sources have come to be known as nonpoint sources.[27] Under the CWA, dischargers must limit their pollution to meet nationally established effluent standards which are specified in National Pollution Discharge Elimination System (NPDES) permits.[28]

It was not until a series of citizen suits did enforcement of the CWA return to a focus on ambient-based water quality standards

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21. United States EPA, *Clean Water Act History*, *at* http://www.epa.gov/region5/water/cwa.htm (last visited Mar. 1, 2004).

22. 33 U.S.C. § 1251(a)(1) (2003).

23. NATIONAL RESOURCE COUNCIL, ASSESSING THE TMDL APPROACH TO WATER QUALITY MANAGEMENT 13 (National Academies Press 2001), *at* http://books.nap.edu/books/0309075793/html/index.html (last visited Mar. 1, 2004); *see also* United States EPA, *Water*, *at* http://www.epa.gov/history/topics/fwpca/05.htm (last visited Mar. 1, 2004).

24. 33 U.S.C. § 1362(11) (2003).

25. *Id*. § 1362(14).

26. *Id*.

27. *See* Nat'l Wildlife Fed'n v. Gorsuch, 693 F.2d 156, 166 n.28 (D.C. Cir. 1982).

28. NATIONAL RESOURCE COUNCIL, *supra* note 23, at 13.

which the Act was originally based on prior to 1972.[29] One of the reasons why technology-based effluent limitations, such as NPDES permits, were not achieving the goals of "fishable and swimmable" waters was the fact that they only regulate point source pollution.[30] Water quality standards allow CWA regulation to address nonpoint source pollution,[31] which the interested public has come to see as a significant threat to our waters. The CWA requires states to come up with their own water quality standards which the EPA has the authority to reject.[32] States first set out designated uses for all of their water bodies, e.g., recreation, fishing, and agricultural, and then set the quality of water required to achieve those uses.[33] Water quality standards are to be established taking into consideration "their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and . . . their use and value for navigation."[34] Because the goal of water quality standard regulation is to meet desired water body uses, it does not discriminate against the type of pollution. In other words, whether the pollution came from a point source or a nonpoint source does not matter, instead the focus of water quality standard regulation is ridding waters of any pollutant that is causing it to not achieve its designated uses.

B. What is a Total Maximum Daily Load?

A TMDL is the maximum amount of a pollutant that a water body can absorb and still maintain its designated uses.[35] This includes wasteload allocations from point sources, and load

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29. HOUCK, *supra* note 1, at 34.

30. NATIONAL RESOURCE COUNCIL, *supra* note 23, at 1.

31. While the CWA does not provide any teeth for actually enforcing the cleanup of impaired waters caused by nonpoint source pollution, the 9th Circuit, for example, has concluded that TMDL lists should include waters impaired by both point and nonpoint source pollution, as well as those impaired only by nonpoint source pollution. For a more detailed discussion of this issue, see *Pronsolino v. Nastri*, 291 F.3d 1123 (9th Cir. 2002) (suggesting that perhaps the federal government will enforce this by threatening to take away grant money to states that fail to implement TMDLs for waters impaired by nonpoint source pollution).

32. 33 U.S.C. § 1313.

33. *Id*.

34. *Id*. §1313(c)(2)(A).

35. United States EPA, *Introduction to TMDLs, at* http://www.epa.gov/owow/tmdl /intro.html (last visited Mar. 1, 2004); *see also* NATIONAL RESOURCE COUNCIL, *supra* note 23, at 20. As defined in Florida's Impaired Waters Rule, "designated use" means "the present and future most beneficial use of a body of water as designated by the Environmental Regulation Commission." FLA. ADMIN. CODE ANN. r. 62-302.200(8) (2003). Examples of designated uses include drinking, fishing, swimming, and shellfish harvesting. *See* Florida Department of Environmental Protection, *The Total Maximum Daily Load Program- Overview, at* http://www.dep.state.fl.us/water/tmdl/docs/TMDL_Program_Overview.pdf (last visited Mar. 1, 2004).

allocations from nonpoint sources and natural background conditions.[36] The EPA expects the TMDL program to accomplish the goals of cleaner water, better use of science, better protection for water bodies, and better working relationships among people and organizations.[37] The TMDL program under the CWA contains three key steps. First, states are required to list waters for which "effluent limitations . . . are not stringent enough to implement any water quality standard applicable to such waters."[38] The states must then establish a priority ranking of these waters based on the "severity of the pollution and the uses to be made of such waters."[39] Lastly, the states must identify the TMDL at an amount necessary for impaired waters to meet the applicable water quality standards with seasonal variation and a margin of safety.[40]

Meeting these requirements has shown to be one of the toughest challenges for states regarding water regulation since the CWA first came about.[41] Recent lists of impaired waters submitted to EPA show about 21,000 polluted river segments, lakes, and estuaries.[42] According to the National Research Council ("NRC"), more than 40,000 TMDLs are required for these impaired waters.[43]

C. Recent Litigation over State Implementation of TMDLs

Although TMDLs have been required by the CWA for over thirty years, not until recently have states and the EPA developed any.[44] Oliver Houck explains that section 303(d) provides the structure where states identify impaired waters and establish TMDLs, and if the states do not follow through, then the EPA does it for them.[45] However, neither the states nor the EPA did anything for a long time.[46] It was not until several environmental citizen groups began bringing legal actions against the EPA in recent years did the states and the EPA begin to take the TMDL program more seriously.[47] These challenges have resulted in court orders and consent decrees requiring the EPA to ensure that TMDLs are established.[48]

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36. United States EPA, *supra* note 2; 40 C.F.R. § 130.2(i) (2003).
37. United States EPA, *supra* note 2.
38. 33 U.S.C. § 1313(d)(1)(A).
39. *Id*.
40. *Id*. § 1313(d)(1)(D).
41. NATIONAL RESOURCE COUNCIL, *supra* note 23, at 2.
42. *Id*.
43. *Id*.
44. United States EPA, *supra* note 2.
45. HOUCK, *supra* note 1, at 5.
46. *Id*.
47. *Id*.
48. *Id*.

Recent litigation surrounding TMDLs has raised many issues regarding implementation of the TMDL program and the listing of impaired waters.[49] While this paper focuses on the issues litigated regarding the methodology in Florida's IWR, it is worth mentioning TMDL issues being litigated elsewhere. Some of these include when the EPA must set TMDLs, and whether impaired waters include nonpoint sources.

In deciding when the EPA must step in and set TMDLs, courts consider the doctrine of "constructive submission."[50] Under this theory, a state's lack of submission of TMDLs, either by a lengthy delay or a complete failure to do so, is itself considered a submission.[51] This constructive submission then triggers the EPA to act. The Ninth Circuit in *San Francisco Baykeeper v. Whitman* refused to invoke this doctrine.[52] Agreeing with the Tenth Circuit, the court held that a state must clearly and unambiguously refuse to submit any TMDLs.[53] While California did not submit any TMDLs until fifteen years after the initial deadline, the fact that it had established a TMDL completion schedule and "dedicated substantial resources to the development of its TMDL program," precluded the court from applying the constructive submission doctrine.[54]

The court in *Friends of the Wild Swan, Inc. v. EPA* reached a different conclusion regarding the constructive submission doctrine.[55] It held that while the constructive submission doctrine did not trigger the EPA's duty to prepare TMDLs, the EPA did act arbitrarily and capriciously by failing to disapprove Montana's submission of only 130 TMDLs.[56] According to the court, the CWA required that states develop TMDLs promptly, and that Montana's submission of only 130 TMDLs was inadequate.[57]

Another issue that has been litigated is whether the section 303(d) lists are to include water bodies impaired by nonpoint sources of pollution. The Ninth Circuit has concluded that the section 303(d) list includes waters impaired by both point and

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49. For a review of TMDL litigation over the past few years, see James R. May, *Recent Developments in TMDL Litigation: 1999-2002*, ALI-ABA COURSE OF STUDY 135 (Oct. 23-25, 2002).

50. *See, e.g.*, San Francisco Baykeeper v. Whitman, 297 F.3d 877 (9th Cir. 2002); Northwest Envtl. Advocates v. EPA, 268 F. Supp. 2d 1255 (D.Or. 2003); Am. Littoral Soc'y v. EPA, 199 F. Supp. 2d 217 (D.N.J. 2002).

51. *Id*.

52. 297 F.3d 877 (9th Cir. 2002).

53. *Id.; see also* Hayes v. Whitman, 264 F.3d 1017 (10th Cir. 2001).

54. *San Francisco Baykeeper*, 297 F.3d at 880, 883.

55. 130 F. Supp. 2d 1184 (D. Mont. 1999).

56. *Id*. at 1192, 1195-96.

57. *Id*. at 1195-96.

nonpoint sources.[58] The court in *Pronsolino v. Nastri* upheld a district court's finding that the EPA was correct in identifying a water body under section 303(d), even though it was polluted only by nonpoint sources.[59] If the court reasoned otherwise, "it would be impossible 'to implement the applicable water quality standards'."[60] The court also added that since section 303(d) applies to point and nonpoint sources, by extension it applies equally to blended waters, those impaired by both sources of pollution together.[61]

In response to the large amount of litigation brought by environmental groups urging the EPA to enforce its requirement that states prepare TMDL lists, the EPA has negotiated numerous consent decrees.[62] In many of these orders, the court has established schedules for the state to follow for setting TMDLs. In 1998, several Florida environmental groups filed suit against the EPA for failure to enforce the TMDL program in Florida.[63] In 1999, the Court issued a consent decree compelling the EPA to establish TMDLs for waters on Florida's 1998 section 303(d) list by 2011 if the state of Florida fails to do so.[64] Not long before this consent decree, the Florida legislature enacted the Watershed Restoration Act, providing authority for the FDEP to create a TMDL listing methodology.[65]

III. FLORIDA'S RULE: IDENTIFICATION OF IMPAIRED SURFACE WATERS

The enabling legislation for Florida's IWR is set forth in section 403.067, *Florida Statutes* (2003). The Florida Legislature supported the adoption of a TMDL program, declaring that, "the waters of the

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58. *See* Pronsolino v. Nastri, 291 F.3d 1123 (9th Cir. 2002).

59. *Id.* at 1141. As a side note, a very interesting issue was touched on in this case that is worth noting. That is the fact that while TMDLs can be applied to nonpoint sources of pollution, there are no regulatory tools provided in the CWA to address nonpoint sources. Therefore, what tools are available for a farmer, for example, to lower the amount of agricultural runoff, a nonpoint source of pollution? What legal tools are available to enforce this nonpoint source reduction? The court in *Pronsolino* explains that the CWA leaves it up to the states to figure out how to implement and monitor the reduction of nonpoint source pollution. *Id.* at 1140. The court further suggests that federal grant money may be a mechanism in which the EPA will enforce state implementation plans. *Id.* These are issues that will have to be faced in the near future as states begin implementing their TMDL programs.

60. *Id.* at 1139 (quoting Alaska Ctr. for the Env't v. Browner, 20 F.3d 981, 985 (9th Cir. 1994)).

61. *Id.* at 1132-33, 1140.

62. For a listing of these consent decrees by state, see United States EPA, *TMDL Litigation by State*, *at* http://www.epa.gov/owow/tmdl/lawsuit1.html (last visited Mar. 1, 2004).

63. Florida Wildlife Fed'n, Inc. v. Browner No. 4:98CV356-WS (N.D. Fla., Apr. 22, 1998).

64. *Id.*

65. *See* FLA. STAT. § 403.067 (2003).

state are among its most basic resources and that the development of a total maximum daily load program for state waters . . . will promote improvements in water quality throughout the state through the coordinated control of point and nonpoint sources of pollution."[66] In this Act, the Legislature obligated the FDEP to adopt a rule methodology for determining impaired waters while keeping in consideration water quality standards codified in chapter 62-302, *Florida Administrative Code* (2003).[67] In determining whether water quality standards are being exceeded, FDEP is required to take into account "objective and credible data, studies and reports, including surface water improvement and management plans approved by water management districts [under s. 373.456] and pollutant load reduction goals developed according to [FDEP] rule."[68] FDEP's methodology rule is required to set forth:

> 1. Water quality sample collection and analysis requirements, accounting for ambient background conditions, seasonal and other natural variations;
>
> 2. Approved methodologies;
>
> 3. Quality assurance and quality control protocols;
>
> 4. Data modeling; and
>
> 5. Other appropriate water quality assessment measures.[69]

It is also important to note that TMDLs are not intended to be the sole or primary program to address water quality. Section 403.067(4), *Florida Statutes*, states:

> If the [FDEP] determines, based on the [TMDL] assessment methodology described in subsection (3), that water quality standards are not being achieved and that technology-based effluent limitations and other pollution control programs under local, state, or federal authority . . . are not sufficient to result in attainment of applicable surface water quality standards, it shall confirm that determination by

66. *Id.* § 403.067(1).
67. *Id.* § 403.067(2), (3)(b).
68. *Id.* § 403.067(3)(b).
69. *Id.*

> issuing a subsequent, updated list of those water bodies or segments for which [TMDLs] will be calculated.

Therefore, TMDLs serve as a backup when other pollution control programs fail to restore waters.

A. Florida's Listing Methodology

The IWR uses Florida's water quality standards as a basis for determining whether waters are impaired. Therefore, it is necessary to first explain what they are and what the rule provides before understanding how Florida assesses impaired waters.

1. Water Quality Standards

The enabling legislation for Florida's water quality standards is set forth in section 403.021, *Florida Statutes*. The Legislature authorized the FDEP to establish water quality standards and to take into consideration natural and scientific variability, declaring that:

> It is the intent of the Legislature that water quality standards be reasonably established and applied to take into account the variability occurring in nature. The [FDEP] shall recognize the statistical variability inherent in sampling and testing procedures that are used to express water quality standards. The [FDEP] shall also recognize that some deviations from water quality standards occur as the result of natural background conditions. The [FDEP] shall not consider deviations from water quality standards to be violations when the discharger can demonstrate that the deviations would occur in the absence of any human-induced discharges or alterations to the water body.[70]

Florida's Surface Water Quality Standards are set forth in chapter 62-302, *Florida Administrative Code*. As defined in this chapter, "water quality standards" means "standards composed of designated present and future most beneficial uses (classification of waters), the numerical and narrative criteria applied to the specific water uses or classification, the Florida antidegradation policy, and the

70. *Id.* § 403.021(11).

moderating provisions contained in this rule."[71] The rules regarding water quality standards "are designed to protect the public health or welfare and to enhance the quality of waters of the State."[72] In promulgation of these rules, the FDEP took into consideration "the use and value of waters of the State for public water supplies, propogation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation."[73] The water quality standards rules "are based upon the best scientific knowledge related to the protection of the various designated uses of waters of the State."[74] It is the water quality standards set forth in this chapter upon which Florida's IWR is based. TMDLs must be set for waters where effluent limitations are not stringent enough to meet these water quality standards.

2. Impaired Waters Rule

Florida's IWR is set forth in chapter 62-303, *Florida Administrative Code*, entitled "Identification of Impaired Surface Waters." The intent of the Rule is to establish "a methodology to identify surface waters of the state that will be included on the state's planning list of waters" and "a methodology to identify impaired waters that will be included on the state's verified list of impaired waters, for which the [FDEP] will calculate Total Maximum Daily Loads (TMDLs)."[75] Impaired waters are described as "those not meeting applicable water quality standards."[76] The Rule notes, however, that many waters naturally do not meet water quality standards and the Rule is only intended to apply to waters that are impaired due to point source or nonpoint source pollutant discharges.[77] The IWR specifically states that it is not intended to establish new water quality criteria or standards, rather it is intended "to interpret existing water quality criteria and evaluate attainment of established designated uses as set forth in Chapter 62-302, *Florida Administrative Code*, for the purposes of identifying water bodies or segments for which TMDLs will be established."[78] As required by section 403.067, *Florida Statutes*, the Rule will not list impaired waters on the verified list:

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71. FLA. ADMIN. CODE ANN. r. 62-302.200(30) (2003).
72. *Id*. at r. 62-302.300(10)(a).
73. *Id*.
74. *Id*. at r. 62-302.300(10(b)(1).
75. *Id*. at r. 62-303.100(1).
76. FLA. ADMIN. CODE ANN. r. 62-303.100(2).
77. *Id*.
78. *Id*. at r. 62-303.100(3).

> If reasonable assurance is provided that, as a result of existing or proposed technology-based effluent limitations and other pollution control programs under local, state, or federal authority, they will attain water quality standards in the future and reasonable progress towards attainment of water quality standards will be made by the time the next 303(d) list is schedule to be submitted to EPA.[79]

The methodology used in the IWR to assess exceedances is based on binomial distribution, a statistical approach designed to provide a high amount of certainty that the outcome of the water quality assessment is correct.[80]

Binomial distribution is a statistical method which explains the possible number of times an event will occur in a set of observations.[81] It is defined by a number of observations and the probability of occurrence. Basically, an event is binary, meaning it may occur or may not. An example is the flip of a coin — it will either land on heads or it will not. Therefore, if you toss a coin ten times, the binary distribution is the statistical measurement of how many times the coin will land on heads in that sequence.[82] In relation to water quality measurements, using the binomial method means that a water body is either impaired or it is not. Therefore, if the criterion is 1.0, any measurement above this is viewed as exceeding the standard whether it is 1.1 or 10.[83] Binomial distribution has advantages over the more common statistical method used, the raw score approach.[84] The binomial method takes into account the total number of measurements taken, whereas the raw score approach does not.[85] Six out of 36 measurements above the threshold, for example, makes a stronger case for impairment than one out of six.[86]

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79. *Id*. at r. 62-303.100(5).

80. FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION PROTECTION, DOCUMENTATION FOR THE 2002 UPDATE TO THE STATE OF FLORIDA'S 303(D) LIST, 5 (Bureau of Watershed Management, Div. of Water Resource Management, Oct. 1, 2002), *available at* http://www.dep.state.fl.us/water/tmdl/docs/2002%20Update/SubmittalDoc.pdf (last visited Mar. 1, 2004).

81. *See Binomial Distribution*, *at* http://www.stattucino.com/berrie/binomial.html (last visited Mar. 1, 2004); *Binomial Probability Histogram*, *at* http://stat-www.berkeley.edu/~stark/Java/BinHist.htm (last visited Mar. 1, 2004).

82. *Id*.

83. NATIONAL RESOURCE COUNCIL, *supra* note 23, at 58.

84. *Id*. at 57.

85. *Id*.

86. *Id*.

There are two key terms used in the IWR that set out the basic framework of the listing methodology. These are planning list and verified list. "Planning list" is defined as "the list of surface waters or segments for which assessments will be conducted to evaluate whether the water is impaired and a TMDL is needed."[87] The planning list contains water bodies that fail to meet the minimum criteria for surface waters, any of its designated uses, or applicable water quality criteria.[88] The waters placed on this list are subject to less stringent measurements than those for waters on the verified list.[89] Therefore, the planning list represents waters for which there are initial indications that the water body *may* fail to meet its designated uses.

Part II of the IWR sets out the requirements for including a water body on the planning list.[90] This Part divides water quality criteria into two categories, one addresses aquatic life use support, and the other addresses protection of human health.[91] In order for a water body to be placed on the planning list because of a failure to support aquatic life, it must either 1) exceed the aquatic life-based water quality criteria set forth in 62-303.320, *Florida Administrative Code*; 2) fail to meet biological assessment thresholds for its water body type as required by 62-303.330, *Florida Administrative Code*; 3) be acutely or chronically toxic as set forth in 62-303.340, *Florida Administrative Code*; or 4) exceed the nutrient thresholds of 62-303.350, *Florida Administrative Code*.[92] Part II further sets out when a water body will be placed on the planning list for primary contact and recreation use support, fish and shellfish consumption use support and drinking water use support and protection of human health.[93] Rule 62-303.360 provides exclusions for factors not related to chronic discharges of pollutants, such as red tides, sewage spills.

The IWR utilizes a binomial distribution approach in determining whether a water body exceeds aquatic life-based water

87. FLA. ADMIN. CODE ANN. r. 62-303.200(11) (2003).

88. *Id*. at r. 62-303.300(1). "It should be noted that water quality criteria are designed to protect either aquatic life use support, which is addressed in Rules 62-303.310-.353, F.A.C., or to protect human health, which is addressed in Rules 62-303.360-.380, F.A.C." *Id*. "Water quality criteria" is defined in the IWR as "elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports the present and future most beneficial uses." *Id*. at r. 62-303.200(22).

89. *See* r. 62-303.300.

90. *Id*. at r. 62-303.300-.380.

91. *See id*.

92. FLA. ADMIN. CODE ANN. r. 62-303.300-.380.

93. *Id*. at r. 62-303.360-.380.

quality criteria.[94] It requires a minimum sample size of ten and then determines impairment based upon the number of exceedances relative to the total number of samples.[95] This statistical method is set out in Tables 1 and 2 of the IWR.[96] Table 1 provides the number of exceedances needed for a given sample size to be placed on the planning list with at least an 80 percent confidence that the criteria exceedance rate is greater than or equal to 10 percent. To place a water body on the verified list, Table 2 provides the number of exceedances with at least a 90 percent confidence that the criteria exceedance rate is greater than or equal to 10 percent for the sample size.[97] Rule 62-303.320(7)(a) requires that data used in the IWR assessment be collected and analyzed in accordance with chapter 62-160, *Florida Administrative Code*, FDEP's Quality Assurance Rule, to ensure credibility. The purpose of the Quality Assurance Rule is to ensure that data used by FDEP are "appropriate and reliable, and are collected and analyzed by scientifically sound procedures."[98] The rule applies to all activities conducted by FDEP that involve environmental data or reports.[99] It provides for the "minimum field and laboratory quality assurance, methodological and reporting requirements of the [FDEP]."[100]

"Verified list," on the other hand, means "the list of impaired water bodies or segments for which TMDLs will be calculated."[101] The verified list contains impaired waters that meet the requirements for the planning list and the additional requirements of rules 62-303.420-.480, *Florida Administrative Code*.[102] It is the waters contained in the verified list for which TMDLs will be established. Part III of the IWR provides the requirements for a water body to be placed on the verified list.[103] The structure of these requirements is similar to Part II for the most part, however, the requirements for being placed on the verified list are heightened.

To be placed on the verified list, a water body must first meet the planning list requirements in Part II, and the additional

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94. *Id*. at r. 62-303.320.
95. *Id*.
96. *See id*. at r. 62-303.320(1), Table 1; r. 62-303.420(2), Table 2.
97. *Id*.
98. FLA. ADMIN. CODE ANN. r. 62-160.110(1).
99. *Id*. at r. 62-160.110(2).
100. *Id*. at r. 62-160.110(1).
101. *Id*. at r. 62-303.200(21).
102. *Id*. at r. 62-303.400(1). Rules 62-303.420-.480, *Florida Administrative Code*, include exceedances of aquatic life-based water quality criteria, biological impairment, toxicity, interpretation of narrative nutrient criteria, primary contact and recreation use support, fish and shellfish consumption use support, and drinking water use support and protection of human health.
103. FLA. ADM. CODE ANN. r. 62-303.400-.480.

requirements of Part III.[104] The data used for placing water bodies on the verified list cannot be more than 7.5 years old, whereas the planning list considers data up to 10 years old.[105] The same binomial distribution is used in Part III, but the sample size requirement is twenty.[106] In addition, certain classes of data are excluded from consideration in determining waters that will be placed on the verified list such as permit violations, mixing zones, and major storm events.[107]

There are several other exclusions provided for in the IWR. Water bodies will not be identified as impaired if their impairment is due solely to natural background conditions or results from physical alterations in the water body not related to pollutants.[108] The IWR also does not intend to include on the verified list "waters where designated uses are being met."[109] Moreover, if a water body "is expected to attain water quality standards in the future and is expected to make reasonable progress towards attainment of water quality standards by the time the next 303(d) list is scheduled to be submitted to EPA, the segment shall not be listed on the verified list."[110] The FDEP is directed to determine that based on "whether existing or proposed technology-based effluent limitations and other pollution control programs under local, state, or federal authority are sufficient to result in the attainment of applicable water quality standards."[111] In other words, water bodies will not be placed on the verified list if they can be cleaned up through other programs or if their impairment is due to causes beyond the reach of TMDLs (meaning natural conditions or impairment not related to pollutants).

Once water bodies are placed on the verified list, the IWR requires the FDEP to prioritize the waters, taking into account the severity of the impairment and the designated uses of that water body.[112] According to rule 62-305.500(1), Florida Administrative Code, water bodies are designated as high, medium, or low priority.[113] This provision goes on to set out the criteria for each designation, the highest priority being those waters "where the impairment poses a threat to potable water supplies or to human

104. *Id*. at r. 62-303.400(1).
105. *Id*. at r. 62-303.400(2); r. 62-303.320(3).
106. *Id*. at r. 62-303.420(2).
107. *Id*. at r. 62-303.420(5).
108. FLA. ADM. CODE ANN. r. 62-303.100(2).
109. *Id*.
110. *Id*. at r. 62-303.600(2).
111. *Id*. at r. 62-303.600(1).
112. *Id*. at r. 62-303.500(1).
113. FLA. ADM. CODE ANN. R. 62-303.500(1).

health."[114] It is according to this prioritization that the TMDL development schedule will be set for waters on the verified list.[115]

What is the purpose of a two-list process like this? Essentially, the planning list is a screening mechanism. This type of process helps to, in a sense, weed out water bodies that are not in need of TMDLs even though at first glance they appear to be impaired. While the EPA does not specifically call for a system such as this, the two list process is very effective and improves monitoring and listing decisions. The NRC endorses a two-list approach like this one in its report, *Assessing the TMDL Approach to Water Quality Management*.[116] The two list process "moves forward from a position of limited information to more information; from uncertainty to more certainty; and from inaction to progressively larger and possibly more costly actions."[117] The NRC explains that states have placed too many water bodies on their current 303(d) lists without using adequate data.[118] Having a preliminary list (called the planning list in Florida) allows the state to conduct a more complete assessment "that would involve additional monitoring and appropriate analysis of new data to reduce the uncertainty about their condition."[119] It is not until waters have been adequately assessed that they are moved to the verified list for TMDL development.[120] The NRC further explained the importance of having a two list assessment:

> Determining whether there should be some minimum threshold of data available when evaluating waterbodies for attainment of water quality standards is an issue of great concern to states. On the one hand, many call for using only the "best science" in making listing decisions, while others fear that many impaired waters will not be identified in the wait for additional data. The existence of a preliminary list addresses these concerns by focusing attention on waters suspected to be impaired without imposing on stakeholders and the agencies the consequences of TMDL development, until additional information is developed and evaluated.[121]

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114. *Id*. at r. 62-303.500(2)(a).
115. *Id*. at r. 62-303.500.
116. NATIONAL RESOURCE COUNCIL, *supra* note 23, at 5, 50-56.
117. *Id*. at 52.
118. *Id*. at 5, 52.
119. *Id*. at 52.
120. *Id.*
121. *Id*. at 53.

Finally, the IWR provides for a delisting procedure.[122] Pursuant to this part, waters on the planning list that did not make it to the verified list are removed from the State's planning list.[123] The data used to place that water body on the planning list cannot be used as the sole basis for listing that particular water body on future planning lists.[124] Water bodies on the verified list will only be removed after completion of a TMDL for all pollutants causing the impairment or upon a showing that the water body now meets its established water quality standard.[125]

B. Arguments against Florida's Rule

Not everyone has been pleased with Florida's new Rule. From the time the FDEP proposed the IWR, many environmental protection groups and activists voiced their opposition. The opposition included, among others, environmental organizations such as Santa Rosa Sound Coalition, Clean Water Network, Sierra Club and Florida Public Interest Research Group ("PIRG"). In a public comment letter to FDEP, one member of the Santa Rosa Sound Coalition noted;

> After the lengthy delay in establishing a "total maximum daily load" (TMDL) program in Florida, it is a great disappointment that the Florida Department of Environmental Protection's first step is a blatant rejection of the excellent principles of the Clean Water Act. The long anticipated TMDL process was supposed to put deteriorating U.S. waterbodies on an effective course toward restoration. Instead, DEP has devised a system to perpetuate the damage.[126]

Linda Young of the Clean Water Network, who has also been vocal about her opposition to Florida's IWR, expressed more disappointment. In her public comment letter to the FDEP she urged it "to abandon [its] efforts to undermine the Clean Water Act."[127] She went on to say;

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122. FLA. ADMIN. CODE ANN. r. 62-303.720 (2003).
123. *Id*. at r. 62-303.720(1).
124. *Id*.
125. *Id*. at r. 62-303.720(2).
126. Public Comment Letter from Frances Dunham, Santa Rosa Sound Coalition, to Daryll Joyner, FDEP (Dec. 4, 2000) (on file with FDEP).
127. Public Comment Letter from Linda Young, Clean Water Network, to Daryll Joyner, FDEP (Dec. 29, 2000) (on file with FDEP).

> It is unfortunate that apparently some of our legislators, our Governor and some of his agency employees are more concerned with protecting the economic interests of favored polluters across the state, than in protecting the right of millions of Floridians to have clean water for drinking, fishing, swimming and other recreational activities.[128]

The Sierra Club expressed its disagreement with Florida's new rule succinctly when it said, "[t]he very foundation of the proposed rule creates the genesis for a failed TMDL program for Florida."[129] Florida PIRG issued a report concerning the proposed IWR entitled, *Cleaning Up Florida's Waters: The Case for a Stronger Impaired Waters Rule*.[130] In its policy recommendations it states that "Florida's proposed Impaired Waters Rule is riddled with shortcomings and loopholes."[131]

In 2001, several environmental groups challenged the proposed IWR in the Division of Administrative Hearings (DOAH).[132] They argued that the Rule is an "invalid exercise of delegated legislative authority," within the meaning of chapter 120, *Florida Statutes*.[133] Among their reasons were that the IWR creates a two-list methodology not provided for in the enabling statute, and that it improperly excludes data from consideration, also not provided for in the enabling statute.[134] In his Final Order, the Administrative Law Judge ("ALJ") disagreed and concluded that Florida's IWR is not an "invalid exercise of delegated legislative authority."[135] The petitioners subsequently appealed this decision. The First District Court of Appeals affirmed the ALJ's decision in 2003.[136] The environmental groups' final challenge (to date) was against the EPA in federal court.[137] There they argued that the IWR was, in effect, a change to Florida's water quality standards. That challenge also

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128. *Id*.

129. Public Comment Letter from Maurice Coman, Florida Chapter, Sierra Club, to Daryll Joyner, FDEP (October 12, 2000) (on file with FDEP).

130. FLORIDA PIRG EDUCATION FUND, CLEANING UP FLORIDA'S WATER: THE CASE FOR A STRONGER IMPAIRED WATERS RULE (Feb. 2002).

131. *Id*. at 34.

132. *See* Lane v. Dep't of Envtl. Prot., Fla. Admin. Order, Case Nos. 01-1332RP, 01-1462RP-01-1467RP, and 01-1797RP (May 13, 2002).

133. *Id*. at 3.

134. *See* Lane, Fla. Admin. Order, Case Nos. 01-1332RP, 01-1462RP-01-1467RP, and 01-1797RP.

135. *Id*. at 405.

136. Lane v. Dep't of Envtl. Prot., 846 So. 2d 511 (Fla. 1st DCA 2003).

137. Florida Pub. Interest Research Group Citizen Lobby, Inc. v. United States EPA, No. 4:02CV408-WS (N.D. Fla., Tallahassee Division, May 29, 2003) (order granting summary judgment).

failed when the Court disagreed and granted Defendant's Motion for Summary Judgment.[138]

While there have been several arguments in opposition to the IWR, the two that this paper focuses on are the flaws in the methodology and that the Rule is a revision to Florida's water quality standards.

1. Methodology

Since the IWR was proposed, environmental groups have expressed disagreement with the methodology used for assessing impaired waters. Most importantly, they argue that because of the methodology's strict statistical methods, its effect will be to neglect waters that are actually polluted and in need of remediation. Florida PIRG argues that the Rule has a "hesitant mentality of doing nothing until it is absolutely certain that a waterway is excessively contaminated."[139] PIRG suggests correcting this by 1) listing a water whenever its exceedance rate is above 10 percent, regardless of the number of samples; 2) considering data more than 7.5 years old when no recent data exists; and 3) not requiring seasonal variety, rather use any data that points to impairment regardless of what season it came from.[140]

Several environmental groups argued in their petitions before DOAH in 2001,[141] that the methodology of the IWR was flawed. They argued mainly that several provisions of the IWR serve to limit the consideration of relevant data and therefore directly violate the CWA and 40 C.F.R. section 130.7(b)(5), which requires that all credible data be considered.[142] They set forth several arguments explaining how Florida's IWR limits the consideration of relevant data. First, they argued that several provisions of the Rule limit the number of samples that can be considered for TMDL assessment, either temporally or by number.[143] Among these provisions are those that exclude older data, set requirements on how the samples are to be collected, and exclude statistical

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138. *See id.*

139. FLORIDA PIRG EDUCATION FUND, *supra* note 130, at 34.

140. *Id.*

141. Petition for an Administrative Determination that DEP Proposed New Rule 62-303 Violates Section 403.067, Florida Statutes, and 33 USC 1252 Et Seq., and Otherwise Constitutes an Invalid Abuse of Delegated Legislative Authority, Case Nos: 01-1462RP-01-1467RP (DOAH April 13, 2001).

142. *Id.*

143. Save Our Bay, Air, and Canals, Inc., Petition For an Administrative Determination that DEP Proposed New Rule 62-303 Violates Section 403.067, Florida Statutes and 33 U.S.C. 1251 Et. Seq., and Otherwise Constitutes an Invalid Abuse of Delegated Legislative Authority, Case No. 01-1463RP, 7 (DOAH April 13, 2001).

outliers.[144] They also claimed that the binomial distribution method in Florida's IWR is not a valid scientific way of determining impairment because it does not "account for the severity of exceedances of water quality criterion, past history of exceedances, and nature of pollutants."[145]

Further, they argued that rule 62-303.100(2), which explains that Florida's rule does not intend to include waters that are impaired by pollution due to natural causes, is inconsistent with rule 62-303.360(3).[146] The latter provision provides that sewage spills and medical wastes will not be included in assessment of recreation use support. According to the environmental groups, because sewage spills and medical wastes are not natural causes, they should not be excluded.[147] Moreover, advisories, warnings, and closures, also mentioned in rule 62-303.360(3), should be included in assessments because they are credible data that, at the very least, can be corroborative of other data.[148]

The environmental advocates also had contention with rule 62-303.600, *Florida Adminstrative Code*. This rule provides that if a water body is expected to achieve water quality standards in the future because of existing pollution control mechanisms then it should not be placed on the verified list. The petitioners argued that this does not provide realistic protection for impaired waters because "[i]f pollution control mechanisms are already in effect, and the water segment is still impaired, it is clear that those mechanisms have not provided the needed protection."[149] Further, the provision does not provide any standard for determining the meaning of "reasonable progress."[150]

While the environmentalists and concerned citizens disagree with the methodology used in the IWR, the state and many regulated industries find it is a fair and objective way to assess impairment. According to Daryll Joyner, the FDEP official who wrote most of the IWR, "[t]he new methodology is more accurate and more protective than the informal methodology that was in place."[151] The IWR uses "better science and more reliable sampling and

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144. Petitioners specifically noted rules 62-303.320(3)(b), (4), (6), 62-303.340, 62-303.350(c), 62-303.351(1)(b), 62-303.352(1)(b), (1)(c), 62-303.351(1), 62-303.380, 62-303.400(2), 62-303.420(1), (2), (5), 62-303.430(2), 62-303.440(1)(b), (3), 62-303.450(1), 62-303.480, and 62-303.720(1). *Id*.

145. *Id*. at 9, 17.

146. *Id*. at 13-14.

147. *Id*.

148. *Id*. at 14.

149. *Id*. at 26.

150. *Id*.

151. John M. Dunn, *Environment: Defining "Dirty,"* FLORIDA TREND, (Aug. 2003), *available at* http://www.floridatrend.com/issue/default.asp?a=5015&s=2&d=8/1/2003.

monitoring methods," according to Joyner and other FDEP officials.[152] Jim Alves, a Tallahassee attorney who represents industry groups, says, "[y]ou shouldn't spend the resources of regulated industries, cities, counties, and states to clean up water unless you can validate the data. It's bad environmental policy to spend money on a problem that doesn't exist."[153] The ALJ, in *Lane et al. v. Department of Environmental Protection*, also stated his opinion on the methodology set forth in the IWR:

> It is not feasible, due to limited resources, to examine a water body at every point to determine its true overall condition. Rather, samples must be taken over time and inferences drawn from the sampling results, taking into consideration the "variability [of water quality] occurring in nature" and "that some deviations from water quality standards occur as the result of natural background conditions" (as the Legislature observed in Subsection (11) of Section 403.021, Florida Statutes). The process is, necessarily, characterized by a lack of certainty and the possibility of error.[154]
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> * * *
>
> Identifying impaired surface waters is an inexact science. Complete accuracy and precision cannot be guaranteed. As pointed out in the NRC Publication, there is always "the possibility of both Type I error (a false conclusion that an unimpaired water is impaired) and Type II error (a false conclusion that an impaired water is not impaired)." Consequently, there is no one correct methodology for identifying impaired surface waters.[155]

The ALJ thus concluded that the methodology used in Florida's IWR is not an invalid exercise of delegated legislative authority.[156] He pointed out that any methodology is going to have inaccuracies.

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152. *Id*.
153. *Id*.
154. Lane v. Dep't of Envtl. Protection., Fla. Admin. Order, Case Nos. 01-1332RP, 01-1462RP- 01-1467RP, and 01-1797RP, 102 (May 13, 2002).
155. *Id*. at 343; *see also* Elizabeth Mishalanie & Charles Ramsey, *Obtaining Trustworthy Environmental Data: Sampling and Analysis Issues*, 13 NAT. RESOURCES AND ENV'T 522 (Spring 1999).
156. Lane, Fla. Admin. Order, Case Nos. 01-1332RP, 01-1462RP- 01-1467RP, and 01-1797RP, at 432.

There is no perfect science. However, these inaccuracies do not amount to unlawfulness.

After analyzing these arguments, it is my conclusion that those set forth by the environmental groups challenging the IWR do not take into consideration the fact that there can never be complete accuracy when measuring water quality. Science is inexact, therefore, to argue that one measurement showing evidence of impairment is enough to list a water body does not follow common sense. Elizabeth Mishalanie and Charles Ramsey, in their article regarding sampling issues, explain that all measurements are actually estimates which are affected by the errors of bias and variability.[157] They go on to explain that, "[a]ccuracy is difficult to assess and impossible to prove. To prove accuracy, a true value must be known to compare to an estimated value; but if the true value is known, then there is no need to make any measurements."[158] The methodology set up in Florida's IWR is meant to take into account the fallibility of scientific measurements. In this way, the state can be more accurate and more confident that the water bodies it is fixing in fact are in need of repair.

2. Revision to Water Quality Standards

In *Florida Public Interest Research Group Citizen Lobby, Inc., et al. v. EPA*, the Plaintiffs claimed that certain provisions of the IWR constitute revisions of Florida's water quality standards, and that the EPA failed to review those provisions to determine their consistency with the CWA.[159] Section 303 of the CWA requires states to submit new or revised water quality standards to the EPA for its review,[160] and the EPA has a nondiscretionary duty to determine if the water quality standards are consistent with the CWA.[161]

Rule 62-302.530 of Florida's water quality standards states that the criteria set for aquatic life, primary contact and recreation, fish and shellfish consumption, and drinking water uses, unless otherwise stated, are "not to be exceeded at any time."[162] Plaintiffs argue, though, that certain provisions of the IWR modify Florida's water quality standards rule by allowing more than one exceedance before identifying a water body as impaired.[163] The specific

157. Mishalanie & Ramsey, *supra* note 155, at 522.
158. *Id*.
159. No. 4:02CV408-WS (N.D. Fla., Tallahassee Division, May 29, 2003).
160. *See* 33 U.S.C. § 1313(c) (2003).
161. *Florida Pub. Interest Research Group Citizen Lobby, Inc.*, No. 4:02CV408-WS.
162. FLA. ADMIN. CODE ANN. r. 62-302.530 (2003).
163. Florida Pub. Interest Research Group Citizen Lobby, Inc., Brief in Support of Plaintiffs'

provisions they refer to are binomial distribution, exclusion of data/minimum sample size, toxicity and biological impairment.[164] Plaintiffs argued that binomial distribution is a revision to Florida's water quality standards because it is a statistical method that allows a certain number of exceedances of water quality criteria depending on the number of samples before a water body is considered impaired.[165] Plaintiffs next claimed that certain provisions of the IWR "exclude the use of data collected during certain events such as 'upsets or bypasses from permitted facilities' or 'rain in excess of the 25-year, 24-hour storm'."[166] In addition, they argued the minimum sample size required by the IWR revised Florida's water quality standards.[167]

The Plaintiffs further argued that rules 62-303.340 and 62-303.440 on toxicity were also a change to Florida's water quality standards because they require two samples indicating toxicity before a water is determined to be impaired.[168] They also claimed that the provisions on biological criteria are a revision to Florida's water quality standards because they require two failed bioassessments before determining that a water body is impaired.[169] Lastly, Plaintiffs claimed that provisions in the IWR revise the narrative standard set forth in Florida's water quality standards rule by establishing a maximum chlorophyll, a concentration, and a minimum TSI level.[170]

In response, the EPA argued that the IWR is not a revision to Florida's water quality standards.[171] The EPA explained that in order to revise those standards, the FDEP is required by Florida's Administrative Procedure Act ("APA") to follow certain rulemaking procedures.[172] Instead, the FDEP specifically stated in the IWR that it does not intend to modify its water quality standards.[173] Moreover, the EPA noted that the IWR cannot be a revision to Florida's water quality standards because the EPA has not approved

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Motion for Summary Judgment, Case no: 4:02CV408-WS, 6 (N.D. Fla., Tallahassee Division, Mar. 14, 2003).

164. *Id.*

165. *Id.*

166. *Id*. at 8.

167. *Id*.

168. *See id*. at 9.

169. *Id*.; *see* FLA. ADMIN. CODE ANN. r. 62-303.430 (2003).

170. *Id*. at 11-12; *see also* r. 62-302.530(48)(b); 62-303.350; 62-303.450; 62-303.351; 62-303.353.

171. United States Envtl. Prot. Agency Reply Memorandum in Support of Defendant's Motion for Summary Judgment, Case no: 4:02CV408-WS (N.D. Fla, Tallahassee Division, May 28, 2003).

172. *Id*. at 12; *see also* FLA. STAT. § 120.54(3)(a)(1) (2003).

173. *Id*.; *see also* r. 62-303.100(3).

it as such.[174] Finally, the EPA argues, even if the IWR were inconsistent with Florida's water quality standards it would not matter because the EPA approves states' 303(d) lists by considering their existing, EPA approved, water quality standards.[175]

The FDEP, as Defendant Intervenor, argued that Plaintiffs' arguments were based on erroneous theories: the "one exceedance" theory and the "screening measures equal standards" theory.[176] Based upon Plaintiffs' "one exceedance" theory, the FDEP claimed that a single exceedance of a water quality criterion would be enough to determine a water body is impaired.[177] FDEP argues that it is absurd to believe such a conclusion.[178] Common sense tells us that one bad sample is not enough to identify an entire water body as impaired.[179] The FDEP further argues that this theory conflicts with state law which requires the FDEP to "take into account the variability occurring in nature," and "recognize the statistical variability inherent in sampling and testing procedures."[180]

According to the FDEP, Plaintiffs also based their argument on a "screening measures equal standards" attack on Florida's biological integrity standard and narrative nutrient criterion.[181] This theory plays out in the Plaintiffs' argument that the FDEP "cannot use any sort of screening measure or indicator to determine attainment with its biological integrity standard or narrative nutrient criterion, without those screening measures morphing into standards themselves."[182] The FDEP countered by explaining that "the various screening mechanisms or indicators found in the [IWR] are just that and were not established to be the specific levels or concentrations designed to protect the designated use of a waterbody as is required of a water quality standard."[183] The FDEP argued that water quality standards are required to protect designated uses,[184] and since the screening mechanisms provided for in the IWR are not designed to protect designated uses, they are not revisions to water quality standards.[185]

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174. *Id*. at 13; *see also* 40 C.F.R. 131.21(c)(2)(table).
175. *Id*. at 13-14.
176. Florida Dep't of Envtl. Prot. Memorandum in Support of Its Motion for Summary Judgment, No: 4:02CV408-WS, 2 (N.D. Fla., Tallahassee Division, April 2003) [hereinafter FDEP Memorandum].
177. *Id*. at 7.
178. *Id*. at 7-8.
179. *Id*.
180. *Id*. at 9; FLA. STAT. § 403.021(11) (2003);;*see also* § 403.067(3)(b).
181. FDEP Memorandum, s*upra* note 176, at 2-3, 17-20.
182. *Id*. at 3.
183. *Id*. at 19.
184. FLA. ADMIN. CODE ANN. r. 62-302.300(3) (2003).
185. FDEP Memorandum, s*upra* note 176, at 2-3, 19-20.

The Court in *Florida Public Interest Research Group Citizen Lobby, Inc. v. EPA* held that "the State of Florida, through the IWR, has neither formally, nor in effect, established new or modified water quality standards or policies generally affecting those water quality standards."[186] The Court explained that according to 40 C.F.R. section 130.7(d)(2):

> If Florida's listing methodology has resulted in a section 303(d) list that is inconsistent with the state's existing, EPA-approved water quality standards codified in chapter 62-302, the EPA would be required to disapprove the list, in whole or in part, and make its own listing decisions as appropriate.[187]

Therefore, "[t]he listing methodology set forth in the IWR . . . cannot possibly have the effect of revising Florida's water quality standards or policies affecting those standards, provided that the EPA complies — as it must — with the requirements of the CWA."[188]

In other words, Florida did not make any changes to its existing water quality standards because it did not formally follow the required procedure for making such changes. Moreover, if the effect of Florida's methodology is to modify its existing water quality standards, the EPA would not approve its resulting impaired waters list. The EPA is required to base its approval of 303(d) lists on states' existing water quality standards that have previously been approved by the EPA. If Florida had revised these standards through the IWR, then the 303(d) list would not be consistent with the "old" standards, which the EPA would look to in making its decision. Furthermore, the EPA has expressed its approval of a listing methodology that stands apart and separate from a state's water quality standards. The EPA document entitled *Consolidated Assessment and Listing Methodology- Toward a Compendium of Best Practices* ("CALM Document"), provides guidance on monitoring and assessment methodologies relative to TMDLs.[189] The EPA's guidance on how a state should describe how it assesses attainment of its water quality standards provides, "[t]he description may be included in the approved [water quality standards] or in other implementing regulations or policies and

186. No: 4:02CV408-WS, 13 (N.D. Fla., Tallahassee Division, May 29, 2003).
187. *Id*. at 12.
188. *Id*.
189. United States EPA, *CALM Document*, 3-2, *available at* http://www.epa.gov/owow/monitoring/calm.html (last visited Mar. 1, 2004).

procedures such as the state . . . listing methodology."[190] Therefore, the FDEP did not violate EPA policy by creating a listing methodology separate from its water quality standards rule.

It is my view that the listing methodology and water quality standards are separate and distinct. Water quality standards are just that — standards. They describe what the quality of water should be. A listing methodology is just that — a scientific method for determining waters that are impaired. The methodology, in other words, is a way of measuring waters in order to determine if they are meeting the standards. Revising the actual method of measuring impairment does not in any way change the standards set for water quality.

IV. THE PRECAUTIONARY PRINCIPLE

The precautionary principle is not expressly mentioned in Florida's IWR, nor the litigation surrounding it. However, it certainly is a subtle, underlying theme apparent in the controversy over Florida's methodology. Therefore, it is worth bringing to the forefront to examine it a little more.

A. What is the Precautionary Principle?

There are many definitions of the precautionary principle. In fact, the principle is often criticized for its indefiniteness and its lack of explicit direction.[191] The precautionary approach does, however, boil down to one theme: it is better to be safe than sorry. In relation to environmental issues, this means that when something poses a risk to human and environmental health, it is better to take action even if the scientific support is lacking. This principle has been cited many times in international environmental issues. In 1992, the Rio Declaration stated:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[192]

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190. *Id.* at 3-2.

191. *See* Applegate, *supra* note 20, at 16-17.

192. United Nations Conference on Environment and Development: Rio Declaration On Environment and Development, U.N. Doc. A/CONF.151/5/Rev.1, Principle 15 (June 13, 1992), reproduced at 31 I.L.M. 874, 879.

In his article, *The Taming of the Precautionary Principle*, John Applegate explains that two fundamental regulatory principles are embodied by the precautionary principle:

> 1) anthropogenic harm to human health and the environment should be avoided or minimized through anticipatory, preventive regulatory controls; and to accomplish this,
>
> 2) activities and technologies whose environmental consequences are uncertain but potentially serious should be restricted until the uncertainty is largely resolved.[193]

These policies reflect "the value judgment that protection of human and environmental health trumps quantitative measures of risk and economic efficiency."[194]

It is hard not to agree with this principle, especially when considering the harm that pollution can cause to humans and the environment. Where the issue gets sticky is when someone (a corporation or the government, for example) is stuck paying for the precaution. Most people would not want to spend money and resources on something if they cannot prove it will have any effect. Similarly, industries and the government, the entities most often charged with the bill for ridding the world of environmental harms, would much rather analyze the situation and gather concrete evidence before spending their money and resources on an environmental risk. It is this risk assessment that forms the basis of many environmental decisions in this country.[195] According to some, risk assessment "has often stood in the way of protecting human health and the environment," yet to others (again, the government and industry types) it is the "sound science" approach.[196]

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193. Applegate, *supra* note 20, at 13.

194. *Id*.

195. Much of the environmental regulation in the U.S., though, is consistent with the theory of the precautionary principle. *See* Wiener, *supra* note 20, at 220-21; Applegate, *supra* note 20, at 13-15, 68-69, 71-72; Joel Tickner, Carolyn Raffensperger & Nancy Myers, *The Precautionary Principle in Action: A Handbook, Written for the Science and Environmental Health Network*, 3, *available at* http://www.biotech-info.net/handbook.pdf (last visited Mar. 1, 2004).

196. Tickner, Raffensperger & Myers, *supra* note 195, at 14.

B. False Positives and False Negatives

Where the precautionary principle shows up in the context of Florida's IWR, is with the problem of false positives and false negatives. Florida's methodology undoubtedly runs the risk of excluding water bodies from the verified list that are in fact impaired. The reason this would happen is because of the uncertainties and inexactness of science.[197] Due to the variability of scientific measurements, it is entirely possible that data samples could miss a water body that is actually impaired. This problem is viewed as a false negative, "risks thought to be minor that turn out to be serious."[198] False positives, on the other hand, are "risks thought to be serious that turn out to be minor."[199]

The NRC describes these in the context of TMDLs as Type I error, "a false conclusion that an unimpaired water is impaired," and Type II error, "a f alse conclusion that an impaired water is not impaired."[200] The choice on which type of mistake is preferable "will depend on the consequences of the resulting actions (more monitoring, costs to do a TMDL plan, costs to implement controls, possible health risk) and who bears the cost (public budget, private parties, etc.)."[201] As seen in arguments over Florida's methodology, the environmental groups would rather err on the side of false positives because they view one measurement of impairment as one too many, whereas the state and industry groups prefer to err on the side of false negatives because the costs of repairing an unimpaired water body are too great.

It seems to me that the best approach is to err on the side of false negatives for several reasons. First of all, it is more cost effective to implement TMDLs for waters which we are certain are actually in need of them. Taking the precautionary approach and erring on the side of false positives would be wasting time and resources by cleaning up waters that are not impaired, and that could easily and effectively be identified as such with a sound scientific methodology as the one in Florida's IWR. Moreover, it is unlikely that the false negatives would go unnoticed forever. The TMDL program continues to measure waters — just because a water body is determined to be unimpaired does not mean that it will be assumed to be unimpaired forever. Because the IWR is based on a valid scientific approach, it is not likely that a mistake

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197. *See* Mishalanie & Ramsey, *supra* note 155.
198. Wiener, *supra* note 20, at 223.
199. *Id*.
200. NATIONAL RESOURCE COUNCIL, *supra* note 23, at 56.
201. *Id*. at 57, n.8.

will never be uncovered. At some point, a water body that is actually impaired will be identified as such.

V. CONCLUSION

In Part II.B. of this paper I mentioned some expectations that the EPA has for the TMDL program. Those included accomplishing cleaner water, better use of science, better protection for water bodies, and better working relationships among people and organizations.[202] Does Florida's IWR meet those goals? My answer is yes. While the true answer remains to be seen in the years to come as the methodology is put to use, it has certainly stood up in the face of criticism and legal challenge. Not only have the courts approved it, but the EPA and NRC support the methodology that Florida has created. Moreover, since the new Rule has been in effect, no one has complained about waters not being listed that are in fact polluted.[203] It is quite possible that the frightening statistics presented by Oliver Houck are frightening because they are based on flawed data. It may be that, were those statistics based on a sound methodology like Florida's, they might not be so frightening after all.

While the inexactness of science may lead to some impaired waters getting overlooked, I believe that Florida has created a rule based on a sound statistical approach, which will result in a better overall assessment of water quality than the previous method did. This approach will allow better protection for water bodies because resources will not be dispensed on unnecessary action. The risk of a small number of false negatives is more acceptable than the risk of a large number of false positives. I believe that the approach desired by environmental groups would result in the latter. While I commend the precautionary principle in theory, it does not always reach the best result in reality. If action were taken on every possible threat that is not backed up by sound evidence, it only takes away resources that could be spent on threats that are in fact real. Therefore, it is better to focus on waters that are listed using a consistent, sound statistical method. I believe that this type of list will actually present reality much better than the old approach did.

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202. *See* United States EPA, *supra* note 2.
203. Interview with Jim Alves, Attorney, Hopping Green & Sams (Nov. 17, 2003).

URBAN SPRAWL: FLORIDA'S AND MARYLAND'S APPROACHES

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Table of Contents

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I. INTRODUCTION

Sprawl is "low-density development on the edges of cities and towns that is poorly planned, land-consumptive, automobile-dependent, [and] designed without regard to its surroundings."[1] The effects of metropolitan expansion impact almost every person on a daily basis. The five-mile commute to work that takes an hour is a result of insufficient infrastructure to accommodate the traffic volume. Students attend schools in trailers because state funding for institutional expansion cannot maintain pace with development. Conversely, expansion is alleged to possess many positive aspects, such as reducing unemployment, increasing productivity, and improving economic outputs. States have enacted various approaches to accommodate the competing positive and negative factors. In the 1980s, the policies became known as "growth management." The premise is to promote growth in controlled or guided patterns. Growth management plans are constantly amended to adapt to evolving environments and reacting to the unintended consequences created by their unforeseen loopholes. Currently, "smart growth" is the response to deficiencies in previously existing planning strategies.

Akin to other states' programs, Florida's Growth Management Act of 1985 is blemished with shortcomings. The legislature must contemplate alternative planning options to amend these problems and prevent their reoccurrence in the undeveloped areas of Florida, such as the Panhandle and the outlying areas of major metropolitan centers. The original intent was for the state to oversee adoption and implementation of the local government comprehensive plans; however, oversight has become a 'rubberstamping' process. In 1997, by contrast, Maryland enacted an innovative smart growth plan that ties funding for growth related projects directly to the State's budget. The focus of this paper is whether Maryland's plan is successful, and if so, whether it can be applied to remedy some of the shortcomings of Florida's legislation.

Part I will summarize the general background information about characteristics, causes, and negative impacts of urban sprawl. A few of the problems associated with urban sprawl include consuming agricultural land, increasing cost of metropolitan infrastructure, creating traffic problems, increasing property taxes

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1. Robert H. Freilich, *To Sprawl or Not to Sprawl: Solutions for Dealing with America's Most Lethal Disease in Urbanized, Urbanizing, and Rural/Agricultural Area*, *in* INSTITUTE ON PLANNING, ZONING, AND EMINENT DOMAIN 4-3 (Carol J. Holgren ed., 1999) (quoting Richard Moe, President of National Trust for Historic Preservation) [hereinafter Freilich, *Sprawl*]; *see also* FLA. ADMIN. CODE R. 9J-5.003(134) (2003).

for older development to pay for the new construction, and generating additional arrears for cities and counties to fund infrastructure.[2] Transportation is a main factor contributing to sprawl because highways and interstates create a web that must be traveled to get from the suburbs to employment within the urban city center.[3]

Part II will discuss the history and progression of land use techniques, including the Standard Zoning Enabling Act (hereinafter "SZEA"), growth management, and smart growth. Traditional zoning emerged in the late nineteenth century but did not gain nationwide acceptance until the early twentieth century with the passage of the SZEA and the validation of zoning by the United State Supreme Court. Over the past century, people's concerns over balancing development with environmental and social concerns have mutated. In the 1950s, environmental awareness and protection concerns began an upward trend that peaked in the 1970s. It was this movement that fostered the development of modern growth management programs. Initial growth management programs did not address the development system as a whole, but as separate entities. The current land use label, "smart growth," emerged during the past decade to accommodate citizens and politicians who were concerned with balancing the complete spectrum ranging from environmental concerns to funding infrastructure improvement to accommodating affordable housing.

Part III will examine Florida's current growth management plan and its deficiencies. If promulgated today, Florida's Growth Management Act of 1985 (hereinafter "GMA") would be labeled "smart growth."[4] The goals, plans, policies, and rules were designed to accommodate and manage anticipated growth and development and "to manage it in an environmentally responsible manner."[5] GMA requires that adequate public facilities and services are in place when new development obtains its certificate of occupancy.[6] Although the GMA was a groundbreaking piece of legislation, it contains several loopholes and inconsistencies that render it ineffective. The transportation concurrency management system (hereinafter "TCMS") fails to reduce sprawl because the comprehensive planning process lacks vertical, horizontal, and

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2. *See* Freilich, *supra* note 1, at 4-4 - 4-5; http://www.sierraclub.org/sprawl/report99 (last visited Feb. 1, 2004).

3. *See* Freilich, *supra* note 1, at 4-4.

4. James C. Nicholas & Ruth L. Steiner, *Growth Management and Smart Growth in Florida*, 35 WAKE FOREST L. REV. 645, 658 (2000).

5. *Id*.

6. FL. STAT. § 163.3180(1)(a) (2003).

internal consistency.[7] Vertical consistency (local, regional, and state agencies) is deficient because the plan has not been updated significantly for a seventeen year period, state agencies continue to develop inconsistently with planning goals of reducing sprawl, and the State fails to fund infrastructure backlog. Horizontal consistency is wanting because of a lack of regional coordination and enforcement.[8] Furthermore, funding for the state plan is inadequate.[9]

Part IV will explore Maryland's newest legislation, its purposes and goals, and how effective the legislation has been at achieving its goals. The crux of the Maryland's gubernatorial administration's 1997 legislation package was the Smart Growth and Neighborhood Conservation Initiative (hereinafter "Maryland Smart Growth").[10] The government's intent is to curb destructive growth patterns "by limiting public investment to projects consistent with sound growth management."[11] The underlying theme is that the remedy to stay the progress of urban sprawl is to influence development decisions with economic incentives, rather than regulations.[12] The goals of Maryland's Smart Growth are: to preserve the state's natural resources; to direct resources to support existing communities and neighborhoods; and to save taxpayers money by avoiding unnecessary costs of building duplicate infrastructure.[13]

Maryland's planning framework utilizes state programs to influence local actions and provides tools to local governments.[14] The main component of the initiative is the Priority Funding Area (hereinafter "PFA"). The only growth related projects eligible for state funding are ones within a PFA designated by the legislature or a county, or that satisfy the stringent statutory requirements for an exception and are approved by the Board of Public Works.[15] Beyond subsidy incentives, other programs include the Rural

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7. Ruth L. Steiner, *Florida's Transportation Concurrency: Are the Current Tools Adequate to Meet the Need for Coordinated Land Use and Transportation Planning*?, 12. J.L. & PUB. POL'Y 269, 270-71 (2001).

8. *Id*. at 271.

9. *See* Nicholas, *supra* note 4, at 658.

10. Parris N. Glendening, *Smart Growth: Maryland's Innovative Answer to Sprawl*, 10 B.U. PUB. INT. L.J. 416, 418 (2001) [hereinafter Glendening, *Smart Growth*].

11. *Id*.

12. *Id*. at 420.

13. *Id*. at 421.

14. Brian W. Ohm, *Reforming Land Planning Legislation at the Dawn of the 21st Century: The Emerging Influence of Smart Growth and Livable Communities*, 32 URB. LAW. 181, 192-93 (2000).

15. MD. CODE ANN., [STATE FIN. & PROC.] § 5-7B-04(a) (2003).

Legacy Program,[16] the Brownfields Program,[17] the Creation Tax Credit Act,[18] and the Live Near Your Work Program.[19]

The theoretical concepts of Maryland's Smart Growth have earned it accolades in the public sector. Harvard University's John F. Kennedy School of Government and Ford Foundation awarded Maryland's program the Innovations in American Government Award.[20] The plan appears to adequately address one of the major problems encountered by other growth management/smart growth plans: funding. This section will evaluate its actual effectiveness as applied to real situations and unforeseen or unaddressed issues that have arisen.

Part V will consider the application of Maryland's strategy to replace existing Florida planning guidelines and will make possible recommendations for Florida's future planning. First, the foundation for applying Maryland's PFA system to Florida's transportation decisions will be laid by exploring the similarities between the states' government structures and oversight of land use decisions. Next, the effect of the proposal of Florida's transportation budget decisions will be assessed since Maryland's program revolves around budget allocations. Finally, the section will appraise the impediments to implementation.

Part VI will conclude with a discussion of whether Florida should consider adopting the PFA system. Generally, the success or failure of the Maryland Smart Growth Initiatives is unsubstantiated. Although in theory the program appears promising, without empirical data, investing in an alternative land use program appears rash at this point in time.

II. URBAN SPRAWL

Sprawl is identified as a land use pattern of sporadic, inconsistent development that occurs away from the center of a metropolis. Although there is not an agreed upon definition, the land use pattern and its causes are well known. Two factions exist: persons that desire and attempt to regulate and reduce it, and persons that assert it is not a reason for concern.

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16. MD. CODE ANN., [NAT. RES.] § 5-9A-01 (2003).
17. MD. ANN. CODE art. 41, § 14-805 (2003).
18. MD. ANN. CODE art. 83, § 5-1101 (2003).
19. This program is implemented by the Maryland Housing and Community Development. *See* MD ANN. CODE art. 83A, § 5-1101 (2003).
20. Innovations in American Government Awards, *at* http://www.innovations.harvard.edu (last visited Feb. 1, 2004).

A. Description

For the past half-century, sprawl has constituted the dominate growth pattern for nearly all metropolitan areas in the United States and consumed land at a more rapid pace than the population growth in many cities in the country.[21] Suburban populations today represent more than 60 percent of metropolitan populations and are expected to continue to increase.[22] Generally, sprawl is the relocation of resources from a well-developed and concentrated area in a city center and its immediately surrounding region to a scattered area of traditionally undeveloped or scarcely developed land.[23] Although the definition of sprawl is not uniformly established,[24] it is described as:

> A term of art employed to describe the uncontrolled development of land situated on the outskirts of America's major cities. It refers to unfettered form of urban expansion which is characterized by the initial nonuniform [sic] improvement of isolated and scattered parcels of land located on the fringes of suburbia, followed by gradual urbanization of the intervening developed areas.[25]

Sprawl includes both residential and nonresidential land use development that expands outward in a noncontiguous pattern.[26] Residential development includes primarily single-family housing and a significant number of units scattered randomly in outlying areas beyond the reaches of urban infrastructure. Non-residential development consists of shopping centers, strip-malls along arterial roads, industrial and office parks, free standing industrial and office buildings, schools, and other public buildings.[27] A car-dependent citizenry develops because public transportation is inadequate to access the suburban developments.[28]

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21. Robert D. Bullard et al., *The Costs and Consequences of Suburban Sprawl,* 17 GA. ST. U. L. REV. 935, 937 (2001) (describing characteristics, causes, and costs of sprawl).

22. Francesca Ortiz, *Biodiversity, the City, and Sprawl*, 82 B.U. L. REV. 145, 146 (2003) (elaborating on land consumption caused by sprawl and its effect on biodiversity).

23. Rose A. Kob, *Riding the Momentum of Smart Growth: The Promise of Eco-Development and Environmental Democracy*, 14 TUL. ENVTL. L.J. 139, 145 (2000).

24. *See* Bullard, *supra* note 21, at 936.

25. DAVID L. CALLIES ET AL., LAND USE 597 (3d ed. 1999).

26. Janet Kealy, Comment, *The Hudson River Valley: A Natural Resource Threatened by Sprawl*, 7 ALB. L. ENVTL. OUTLOOK 154, 163 (2002). Noncontiguous development is also called leapfrogging; Bullard, *supra* note 21, at 937.

27. The Costs of Sprawl — Revisited, TCRP Report 39, Transportation Research Board, National Research Council (1998).

28. Bullard, *supra* note 21, at 937.

B. Causes of Sprawl

The causes of American sprawl derive from "a complex result of market and economic forces, social factors . . . and government policies."[29] There are seven main causes of sprawl:

> 1) The American Dream of desiring less expensive housing on larger lots, improved schools, and less crime on the streets;
>
> 2) Companies in quest of lower taxes, skilled workers, and developable tracts of land that are less expensive;
>
> 3) Workers moving where the jobs are located and changing job locations more often;
>
> 4) Wholesale entry of women into the workforce and spouses traveling in different directions;
>
> 5) Local zoning and [the] federal interstate highway system;
>
> 6) Americans' increasing love affair[s] with their cars; and
>
> 7) Americans' dislike of density.[30]

The largest relocation movement to the suburbs occurred concomitantly with the post-World War II baby boom.[31] Increased city populations and availability of federally backed government mortgages aided the ability to seek the American dream and relocate.[32] Highway expansion granted access to inexpensive land and reduced commuting time to inner city and neighboring suburb employment.[33] Lastly, developing lands for low-density, single-family residential use that was strictly separated from

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29. Gus Bauman, *Smart Growth — Development, Environment, and Land Use*, 2 ALI-ABA Course of Study Materials SF08, 597 (2000). For a general discussion of sprawl, see Freilich, *Sprawl*, *supra* note 1.

30. *See id*. at 598.

31. Ortiz, *supra* note 22, at 146.

32. *See id*. For further discussion of people migrating out of metropolitan areas, see Jason C. Rylander, *The Emerging Federal Role in Growth Management*, 15 J. LAND USE & ENVTL. L. 277, 280-82 (2000).

33. *See* Ortiz, *supra* note 22, at 146.

nonresidential uses became easier with favorable zoning laws and subdivision regulations in outlying lands.[34]

New municipalities in the suburbs developed in a fragmented manner because of the existing land use policies that lacked relevance to modern development.[35] The populations that relocated to suburbs were governed by a land use policy that consisted of: tax law that originated in Colonial times, nineteenth century municipal incorporation law, and zoning laws enacted at the turn of the century in response to industrialization.[36] Nineteenth century incorporation laws allowed small, fiscally weak, inefficient municipalities to surround the main metropolitan by the dozens, and sometimes hundreds. The Colonial property tax system designed to finance public services in a predominantly agrarian system left twentieth century municipalities with a financial structure that depended on real estate values that could be easily increased by converting open land to development. In addition to the aforementioned weak zoning laws, the government sponsored fringe biased subsidy programs that promoted growth far from the center of the municipality.[37]

The drafters of incorporation laws in the nineteenth century did not, and probably could not, foresee the future use of the laws. New cities were formed "by proposing city boundaries, collecting signatures on petitions, and arranging incorporation elections."[38] Cities were formed to avert central cities from annexing and taxing the unincorporated areas, subjecting the landowners to high costs and high tax rates, and zoning at their whim. By 1990, the typical metropolitan area consisted of a central metropolis surrounded by several rings of suburban government and seemingly countless municipal governments.[39]

Once sprawl relocated significant fractions of the tax base, the metropolitan fragments that remained became financially weak and unable to efficiently provide public services. These municipalities were left with a "Catch 22" per se: by leaving tax rates at their current level, the quality of services deteriorated and encouraged

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34. *See id*. (discussing highway expansion as a factor that contributes to suburban living and urban sprawl).

35. Henry R. Richmond, *2001 Gallican Conference: Sprawl and Its Enemies: Why the Enemies are Losing*, 34 CONN. L. REV. 539, 554 (2002).

36. *Id*. (identifying outdated land use policies as impediments to reducing sprawl).

37. *Id*. at 554-60 (explaining how social changes were conducive to sprawling development); *see also* Timothy J. Dowling, *Point/Counterpoint: Reflections on Urban Sprawl, Smart Growth, and the Fifth Amendment*, 148 U. PA. L. REV. 873, 880-81 (2000).

38. *See* Richmond, *supra* note 35, at 555.

39. *See id.* at 555-58 (discussing how incorporation laws fragmented the United States and providing a description of the population distribution in the 1910s and in the 1990s).

businesses to relocate **or** by raising taxes to improve services, which also repels investment and encourages relocation. In other words, "higher" rates push private investments out to fringe jurisdictions, just as low rates at the fringe pull benefits out. [40]

Additionally, federal and state expenditures subsidize the very highways and other main roadways that connect the sprawling development pattern.[41] By decreasing the cost of highway construction and repair, federal and state expenditures promote increased infrastructure expansion and extend the pool of property that is accessible to develop.[42] Substantial transportation funding is derived from state and local taxes and federal funds.[43]

Furthermore, municipalities are able to zone broadly without regard to administrative, judicial, or political accountability because of the 1920s legislatures, which gave municipalities *carte blanche* zoning power.[44] Traditional zoning techniques are conducive to sprawling development patterns and are easily manipulated to zone fiscally.[45] Local land use and zoning practices tend to isolate types of land uses, particularly industrial and commercial uses; the concept of creating a new purely residential development isolated from all other uses is not consistent with traditional Euclidean zoning techniques that isolated land uses.[46] Furthermore, as America became more metropolitan and fragmented, municipal government became more suburban, inefficient, and costly.[47]

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40. *See id.* at 556 (describing the financial position that many municipalities and suburban areas encountered); *see also* Lee R. Epstein, *Where Yards Are Wide: Have Land Use Planning and Law Gone Astray?*, 21 WM. & MARY ENVT'L L. & POLY. REV. 345, 345-55 (discussing present day reliance on property taxes to finance local services).

41. William W. Buzbee, *Urban Sprawl, Federalism, and the Problem of Institutional Complexity*, 68 FORDHAM L. REV. 57, 68-69 (1999). For example, the Highway Trust Fund has fostered construction of various interstate and intrastate road segments. Highway Revenue Act of 1956, ch. 462, § 209, 70 Stat. 387, 390-4-1 (1956) (codified as amended at I.R.C. § 9503 (1994 & Supp. I 1995)). Other subsidies include: support for home mortgages, single family mortgages insurable in a government-backed securities market, accelerated depreciation, five-year amortization, and deductibility of passive real estate losses. Epstein, *supra* note 40, at 354-55. *See also General Accounting Office, GAO/RCED-99-87, Community Development: Extent of Federal Influence on "Urban Sprawl" is Unclear, at* 10, 41-44 (Apr. 1999) (discussing federal policies' and programs' influence on sprawling patterns of development and concluding that extent of influence is uncertain).

42. *See* Buzbee, *supra* note 41, at 68.

43. *Id*. at 69. For an in-depth discussion of transportation subsidies, see TIM LYNCH, FLORIDA HIGH SPEED GROUND TRANSPORTATION ECONOMIC BENEFIT AND COST IMPACT RESTUDY & PUBLIC TRANSPORTATION FINANCING AND SUBSIDIES BY MODE IN THE UNITED STATES (2002).

44. *See* Richmond, *supra* note 35, at 559-60 (discussing pressures that compelled suburban municipalities to adopt flexible zoning ordinances, describing the relaxed standard of review applied to local zoning decisions that are appealed to circuit courts).

45. *See id*. at 557.

46. *See* Buzbee, *supra* note 41, at 69.

47. *See* Richmond, *supra* note 35, at 557 (discussing increasing costs associated with

Municipalities became dependent on the property tax because they removed themselves from the central business district tax bases. To compensate for lost revenue, municipalities zoned open land for development to create assets the city could immediately tax.[48]

C. Negative Impacts of Sprawl

"[A]s the population grows, the amount of land that is developed to meet that demand increases by five to ten times the rate of population growth."[49] In other words, to accommodate a ten percent increase in population, the surface area covered by development under sprawl patterns in metropolitan areas increases by 70-100 percent.[50] This translates into grid-locked roads, neglected and impoverished cities, suburban communities losing their identity, insufficient revenue to fund public services, and disappearing farmland, open space, and historic sites.[51]

Abandonment of the inner core is a descriptive phrase to describe some of the ills that impact the urban area that lost its resources to sprawl.[52] Older significant buildings that characterized neighborhoods are either destroyed or replaced with multiple unit housing to increase their revenue stream or left to decay and deteriorate while new lots are developed, destroying open space and increasing the demand on infrastructure.[53] The immediate result of developers choosing to divest, or invest elsewhere, impacts central city residents with deteriorating neighborhoods, thus driving property values drastically downward.[54] Decreased property values lead to a decreased tax base and therefore taxes are increased to pay for decreased revenue and social services. Concurrently with deteriorating housing, local employers and industries depart and open new manufacturing or service sector facilities, which results in unused or underutilized facilities. Frequently, facilities are never reoccupied because the previous owner caused contamination and

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sprawl).

48. *Id*. (describing the causes of dependence on property taxes).

49. Kealy, *supra* note 26, at 166.

50. *Id*. The statistics cited in Ms. Kealy's article are derived from John R. Nolon's book, *Well Grounded: Using Local Land Use Authority to Achieve Smart Growth*, published by the Environmental Law Institute in 2001.

51. *Id*. (discussing general repercussions of sprawl).

52. *See* Buzbee, *supra* note 41, at 69-71 (illustrating the negative effects of sprawl on the metropolitan urban area that it surrounds).

53. Kealy, *supra* note 26, at 166-67.

54. Buzbee, *supra* note 41, at 69-70 (summarizing the chain of causation that results in decreasing property values).

the cost to clean the site overruns the benefit of redeveloping the site.[55]

The poor and minority communities that generally comprise the majority of urban city centers are egregiously affected by the local government development system.[56] Sprawl wastes infrastructure, land, people, and location advantages. Cities have deteriorated naturally with age and instead of developers seizing sites that need to be cleaned up, developers choose regions where they begin from nothing because it is less expensive and the liability risk is lower.[57] In addition, sprawl almost never includes plans for public transportation.[58] Minorities are twice denied disproportionately: first, with the removal of resources to rebuild their home and work communities and second with the denial of access to public transportation to obtain the resources that are now located far from the city center.[59]

Traffic congestion is an adverse impact of sprawl that nearly all persons on the road suffer. People who relocated to the suburbs commuted farther distances to go to work, shopping, run errands, visit friends and relatives, and similar activities. Although stores and businesses followed the massive amounts of the relocating population, distances between home and work and home and shopping increased. Furthermore, around the same time that the growth trend began to worsen traffic, the addition of women to the workforce doubled the quantity of automobiles on the roads. Additionally, congestion on the roads increased because the power and strength of the American economy reduced the unemployment rate, thereby increasing the number of persons commuting to work.[60]

Air pollution is inextricably linked to traffic congestion.[61] Although federal emission standards have decreased the pollutants created by automobiles, the increased mileage driven by the average American substantially outweighs the decrease.[62] The Federal Clean Air Act classifies cities as either "attainment" or "nonattainment" for ozone.[63] Many metropolitan areas are classified

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55. *Id*. at 70.

56. Kob, *supra* note 23, at 145-46 (expressing the plight of the residents that remain in the metropolitan core).

57. *Id*. Developers can seize upon lower property costs in outlying areas and avoid having to risk paying liability costs for contaminated lands. *See id*.

58. *Id*. at 146.

59. *Id*.

60. *See generally* Bauman, *supra* note 29.

61. Buzbee, *supra* note 41, at 71.

62. *Id*. at 71-72.

63. *Id*. at 72-73.

as nonattainment, meaning that the levels of ozone are too high for the applicable standards, and must follow stringent federal measures to seek attainment status. Automobiles are often the most significant contributor to the Clean Air Act's ozone attainment problem because automobiles produce carbon monoxide, which through a chemical process generates excess ozone and particulate matter. Beyond the issue of exceeding federal regulation requirements for air quality and risking federal moratoriums on construction, high levels of ozone and particulate matter pollution create substantial respiratory risks, especially to the elderly, young, and those suffering from respiratory illnesses.[64]

Traditional environmental harms are also caused by sprawl. As residential and business development overtakes the existing agricultural and green spaces, the aesthetic, environmental, and biodiversity benefits linked to undeveloped green space are lost forever. Water quality in nearby water sources is degraded as runoff from clearing, construction, and impervious surfaces increases polluted flow into natural streams, rivers, and lakes. The Clean Water Act requires federal or state governments to regulate "point sources" of permitted pollution, such as factories and publicly owned sewage treatment works, to maintain or stay below the total maximum daily load of pollution a river segment can environmentally endure without becoming impaired. Therefore, as development increases, producers of point source pollution must modify production or purchase other sources of pollution to keep the level within specified limits. [65]

The entire public sphere is declining due to urban sprawl, and Americans are reducing their involvement in the public life of their country.[66] Americans are moving into the suburbs and the private sphere that is "typically composed of gated communities, office parks, malls with private security, and high-speed highways."[67] "Most middle- and upper-class Americans have never…play[ed] in a public park, walk[ed] down a public street, or even join[ed] a public organization." [68] The lack of public space is a known cause of the degradation of the country's political culture and society.

64. Buzbee, *supra* note 41, at 73.
65. *Id*. at 75.
66. Kob, *supra* note 23, at 147.
67. *Id.*
68. *Id.* (describing the general decline of the public sphere due to urban sprawl).

D. Opposing Arguments

"Objections to sprawl are not universally shared."[69] Defenders of sprawl argue that government regulation will infringe property rights, threaten economic development, and curtail cherished freedoms.[70] The most prevalent argument is that "urban sprawl is the product of freely made choices and personal preferences."[71] Any attempt by the government to curb growth and alter people's behavior is an infringement on property rights and freedom. Americans have a right to choose where they want to live and travel. By choosing to live in large single-family homes away from neighbors and by choosing to travel by automobiles over mass transit, Americans have expressed their "vote in the marketplace."[72]

Peter Gordon and Harry Richardson argue that concerns about threatened farmland, escalating traffic congestion, and decreasing public transportation are an illusion.[73] Land used for farmland has been decreasing since the 1930s.[74] The commentators allege that traffic congestion is not increasing and even though commuters are traveling longer distances, they are driving at a higher speed. [75] Lastly, mass transit is in less demand because people prefer to drive cars out of convenience rather than necessity.[76]

Skeptics of land use controls directed at curbing sprawl assert that the United States Constitution, through the Takings Clause, will protect them where politics fail.[77] Property rights advocates maintain that the Fifth Amendment proscribes against takings without just compensation and that land belongs to the landowner

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69. Kob, *supra* note 23, at 149.

70. Hank Savitch, *Dreams and Realities: Coping with Urban Sprawl*, 19 VA. ENVTL. L.J. 333, 345 (2000).

71. Kob, *supra* note 23, at 149. Another argument suggests that sprawl is actually increasing air quality because levels of carbon monoxide, lead, and other pollutants have fallen as sprawl increased. *See* SAMUEL R. STALEY, THE SPRAWLING OF AMERICA: IN DEFENSE OF THE DYNAMIC CITY 14-17 (Reason Public Policy Institute Study No. 251, 1999).

72. Kob, *supra* note 23, at 148-49.

73. *Id*. at 149. *But see* Dowling, *supra* note 37, at 877-78 (2000) (arguing that the macro statistics referred to by opponents of sprawl controls dismiss the distinctions between quality of land being lost).

74. *Id.*

75. Peter Gordon & Harry W. Richardson, *Prove It: The Costs and Benefits of Urban Sprawl*, 16 BROOKINGS REV. 23, 23 (1998).

76. *Id*. at 24. For an in-depth discussion of people's preference for suburban living and therefore need for highway infrastructure, see generally Peter Samuel, *Transportation*, *in* MARYLAND 2002-2003: A GUIDE TO THE ISSUES 43 (2003).

77. Clint Bolick, *Subverting the American Dream: Government Dictated "Smart Growth" is Unwise and Unconstitutional*, 148 U. PA. L. REV. 859, 867-72 (discussing the author's point of view that land use controls that control sprawl are a taking). *Contra* Dowling, *supra* note 37, at 881-87 (arguing that smart growth is not a taking and that Supreme Court decisions support this viewpoint).

and not the government.[78] According to the property rights advocates, land use controls that hinder the use of land violate the Fifth Amendment because either (1) the regulation does not "substantially advance [a] legitimate state interest,"[79] (2) it eliminates all economically viable use of the landowner's property,[80] or (3) there is not a "rough proportionality between the regulatory burden and the project impact."[81]

III. BACKGROUND OF LAND USE LAW

Traditional land use planning emerged in the early 1900s with the passage of the Standard Zoning Enabling Act (hereinafter "SZEA") and the United State Supreme Court's decision in *Village of Euclid v. Amber Realty*, where the Court held zoning constitutional.[82] The authority to regulate and restrict land is derived from the state's police power to protect the public health, safety, and general welfare. Since state governments delegated their police power and authority to plan to municipalities and counties through state enabling legislation,[83] local governments determined the restrictions and regulations on land uses within their boundaries.[84] State legislatures have criticized the abdication of zoning power to local governments and either adopted SZEA with modifications or have amended their state enabling ordinance through trial and error.[85] The most recent trends in land use regulations are "Growth Management" and "Smart Growth."

A. Traditional Land Use Planning — Standard Zoning Enabling Act

For most of the twentieth century, regulation of land use was limited to local ordinances set forth by local governments that

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78. Paul J. Boudreaux, *Looking the Ogre in the Eye: Ten Tough Questions for the Antisprawl Movement*, 14 TUL. ENVTL. L.J. 171, 182-83 (2000) (elaborating on the point of views that are both pro and anti sprawl).

79. Nollan v. Cal. Coastal Comm'n, 483 U.S. 825, 834 (1987) (holding that regulation that does not advance a legitimate state interest is a taking).

80. Lucas v. S. C. Coastal Council, 505 U.S. 1003, 1020 (1992).

81. Dolan v. City of Tigard, 512 U.S. 374, 390-91 (1994).

82. *See* Village of Euclid v. Amber Realty, 272 U.S. 365 (1926). For a history of the development of land use controls, see Cribbet, *Changing Concepts in the Law of Land Use*, 50 IOWA L. REV. 245 (1965).

83. Amanda Siek, Comment, *Smart Cities: A Detailed Look at Land Use Planning Techniques that are Aimed at Promoting Both Energy and Environmental Conservation*, 7 ALB. L. ENVTL. OUTLOOK 45, 47-48 (2002).

84. ROBERT H. FREILICH, FROM SPRAWL TO SMART GROWTH: SUCCESSFUL LEGAL, PLANNING, AND ENVIRONMENTAL SYSTEMS 3 (ABA 1999) [hereinafter FREILICH, SMART GROWTH].

85. *Id*.

restricted the type of land use and density on a particular parcel.[86] Municipalities would delineate land as residential, commercial, and industrial zones to control the development of specific regions within the city boundaries. However, variances to change the original zoning of land uses were common and generally simple to acquire. Local governments regulated density "through requirements such as minimum lot sizes, building heights, and building setbacks from lot lines."[87]

The United States Department of Commerce promulgated the SZEA in the 1920s and the states rapidly adopted it.[88] The SZEA envisioned and set forth guidelines for the grant of power to the legislative body of local governments, the division of districts and standards, the procedural method for adopting regulations and restrictions, and processes for amendment and appeals.[89] Regulations and restrictions of land are to be made in accordance with a comprehensive plan and designed to:

> [L]essen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements.[90]

The zoning ordinance envisioned by SZEA includes a blueprint for the organization of a local government to regulate and restrict the land within its boundaries.[91] The SZEA includes a legislative body that establishes a procedure for adopting regulations, restrictions, and boundaries of districts.[92] Districts are divisions of the municipality in which the local legislative body can regulate construction, alterations, and use of the land.[93] The legislative body shall appoint (1) a commission to recommend boundaries,

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86. Oliver A. Pollard III, *Smart Growth: The Promise, Politics, and Potential Pitfalls of Emerging Growth Management Strategies*, 19 VA. ENVTL. L.J. 247, 254 (2000).

87. *Id*.

88. CALLIES, *supra* note 25, at 39. The Act was drafted in 1922 and finalized in 1926. *Id*.

89. U.S. Department of Commerce, A State Zoning Enabling Act (1926) [hereinafter "SZEA"].

90. *Id*. at § 3.

91. *Id*. at § 4.

92. *Id*.

93. *Id*. at § 2.

regulations, and restrictions[94] and (2) a board of adjustment to make exceptions to the terms of the ordinance.[95]

Problems with the SZEA structure include its failure not to define a comprehensive plan and the process for developing a successful one.[96] Due to this vagueness, some jurisdictions have held that a comprehensive plan existed by the presence of a zoning ordinance itself.[97] Therefore, in some jurisdictions, local governments have the ability to regulate land use and circumvent the comprehensive plan requirement.[98] A typical comprehensive plan includes a statement of goals, needs, and objectives; detailed planning supported by studies and information; and plan implementation.[99]

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94. *Id*. at § 6.

95. *Id*. at § 7.

96. *See id*. For detailed discussion of the weaknesses of SZEA, see Michael Lewyn, *Twenty-First Century Planning and the Constitution*, 74 U. COLO. L. REV. 651, 659-61 (2003).

> [T]hese 1920s model statutes:
>
> 1. Fail to discuss the states' role in land use regulation because at that time land use planning was generally a local, rather than a state, activity. By contrast, state legislatures now take an active role in land use regulation in order to ensure uniformity and to address issues spilling across jurisdictional boundaries;
>
> 2. Do not address environmental issues such as the value of preserving vacant, developable land or the environmental consequences of the form and relative compactness of metropolitan areas;
>
> 3. Provide inadequate opportunities for citizen participation in the zoning process; and
>
> 4. Fail to consider the courts' increased scrutiny of land use regulation in recent decades. The Guidebook contains fifteen chapters, covering the topics addressed in the earlier editions and adding detailed discussion of zoning, subdivision regulation, smart growth legislation, state biodiversity conservation plans, environmental protection, procedures for siting controversial state facilities, development oriented towards public transit, development moratoria, judicial review, public records of plans and regulations, and a wide variety of other issues. Accompanying the Guidebook is a User Manual that, by means of checklists and case studies, seeks to help government officials use the Guidebook and in particular, "to tailor a program of statutory reform that will meet the unique needs of their state." The User Manual also instructs readers that each chapter in the Guidebook follows the following format: first a chapter outline identifying the major topics in the chapter, then an introduction setting forth a general discussion of the subject matter covering and summarizing its contents, then commentary to individual model statutes, and finally draft statutory language and alternatives.

Id.

97. *E.g.*, Iowa Coal Mining Co. v. Monroe County, 494 N.W.2d 664, 669-70 (Iowa 1993) (holding that planning may be evidenced by the ordinance itself); Kozesnik v. Township of Montgomery, 131 A.2d 1, 7 (N.J. 1957) ("A plan may readily be revealed in an end-product[—]and no more is required by statute."). For more background information, see Charles M. Haar, *In Accordance with a Comprehensive Plan*, 68 HARV. L. REV. 1154 (1955).

98. *See* Iowa Coal Mining Co., 494 N.W.2d at 669-70.

99. RUTHERFORD H. PLATT, LAND USE AND SOCIETY 234 (Island Press 1996).

State enabling legislation does not require local governments to adopt zoning; however, it does require local governments who choose zoning to follow the state procedures.[100] Since local processes must abide by the state established procedures, the resulting zoning is dependent upon the specificity delegated by the state government.[101] Furthermore, by delegating zoning power to the local level, local governments are able to develop their community in their own self-interest, which creates regional problems.[102] Problems include balkanization, incompatible uses on municipal borders, and duplication of public facilities.[103] Once problems are created, the system allows local governments to attempt to solve their problems without regard to the general wants and needs of the region.[104] Unless Adam Smith's invisible hand theory[105] resolves the conflict, the situation will perpetuate indefinitely until the doors of communication between local governments, regions, and state level are opened effectively.

B. Growth Management

Growth management is "a commitment to plan carefully for growth that comes to an area so as to achieve a responsible balance between the protection of natural systems — land, air, and water — and the development required to support growth in the residential, commercial and retail areas."[106] Growth management was initially associated with slow growth or no-growth by a series of state initiatives in the 1980s and 1990s associated growth management with a commitment to plan carefully for growth.

The movement began in the 1970s as environmentalists reached their peak strength and demanded natural-systems orientation programming. Some states developed comprehensive programs that applied uniformly across the state (Oregon) and others enacted programs that were limited to certain kinds of development or geographic areas (Florida). All programs shared a common

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100. *Id*.
101. *Id.*
102. FREILICH, SMART GROWTH, *supra* note 84, at n. 3.
103. NATIONAL COMMISSION ON URBAN PROBLEMS, BUILDING THE AMERICAN CITY 19 (1968).
104. FREILICH, SMART GROWTH, *supra* 84, at 3.
105. The theory is used to explain the process by which the desired outcome is produced in a decentralized method by the acting agents only intending to better themselves. In the sprawling-land-use-decision-making context, this would mean that each local government would make individual decisions to better their own communities and the byproduct would be a non-sprawling nation. For an example of the theory that the market is self-correcting, see STALEY, *supra* note 71, at 14-17.
106. JOHN M. DEGROVE, PLANNING AND GROWTH MANAGEMENT IN THE STATES 1 (1992). The series of states include: Florida, New Jersey, Maine, Vermont, and Rhode Island. *Id*. at 1-2.

characteristic: transfer of some land use authority from the local government and some responsibilities therefore applied at the state level.[107] Goals of comprehensive growth management efforts include:

> [B]alanc[ing] economic development and limit[ing] sprawl by channeling growth to areas that have already been developed; to revitalize and prevent the decline of existing urban and suburban areas; to promote more compact urban form; to protect open space, farmland, forests, and environmentally sensitive areas from suburban encroachment; to reduce the public cost of providing infrastructure and services to new development by making more efficient use of existing resources; to protect the natural environment; and to provide affordable housing.[108]

The growth management movement expanded in the 1980s to encompass broader concerns and "quality of life values." Concerns include: protecting the environment, farmland, forests, green space, open spaces, keeping abreast of infrastructure needs, balancing environmental protection and development, promoting economic development, affordable housing, mandated plans, and urban growth patterns. Although each state's legislative plan is different, six substantive requirements have been identified as composing a growth management plan: (1) concurrency (specified infrastructure is constructed at the time the impact of development occurs); (2) compact urban growth patterns (strategies that discourage urban sprawl and encourage infill, redevelopment, and revitalization of central cities); (3) affordable housing; (4) economic development; (5) policies to protect rural areas, environmentally sensitive areas, and open space; and (6) urban form requirements (requirements that aim to foster aesthetically pleasant urban areas that combine moderate densities with people and environmentally-friendly places).[109]

In order for the legislation to successfully impact local governments, the states mandated comprehensive growth management plans. To assist in effectuating the development and implementation of enacting local plans, states developed incentive zoning, cluster zoning, exactions, and transferable development

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107. *Id*. at 2 (describing the growth management movement in the late 1970s and 1980s).
108. Pollard, *supra* note 86, at 255-56.
109. DEGROVE, *supra* note 106, at 2-4.

rights.[110] These programs supplemented funding and discouraged undesired growth patterns because success of early plans was dependent upon adequate funding.[111]

Problems with the growth management strategy are voluminous. The techniques to supplement statewide finances are controversial and have limited success in curbing inefficient, scattered development and encouraging desired growth patterns.[112] For example, the effectiveness of local growth management approaches are limited because sprawling development extends across multiple political boundaries, but a particular planning and zoning scheme typically applies only within the boundaries of a single locality. Even if a local government successfully controls the rate of growth within its boundaries, it may foster sprawling growth in neighboring communities, thereby worsening regional sprawl.[113] Regardless, many local governments lack the expertise to respond to the effects of major new construction in their own jurisdiction and / or neighboring localities.[114] Another shortcoming of local zoning controls is that localities often overzone land for suburban development because local governments compete to entice new development in pursuit of a larger tax base.[115] Since the supply of land that is zoned suburban exceeds the future anticipated demand, the pace and development of location is forfeited to developers.[116] Also, many growth management plans inadequately address "the impact of land use planning on transportation," and only analyze "the impact of projects on automobile congestion."[117]

C. Smart Growth

The impetuses for smart growth were a combination of societal, economic, and political factors. Since the 1920s, the intergovernmental dimension of planning has become more complex and involved various governmental levels because high growth rates prompted concerns over costs of services, adverse environmental

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110. *Id*. at 5-6. Ortiz, *supra* note 22, at 177-81 (describing the listed zoning techniques).
111. Pollard, *supra* note 86, at 257.
112. *Id*. at 255.
113. *See* James A. Kushner, *Growth Management and the City*, 12 YALE L. & POL'Y REV. 68, 73 (1994) (discussing reasons that local government attempts to control sprawl are ineffective).
114. *See* James H. Wickersham, *The Quiet Revolution Continues: The Emerging New Model for State Growth Management Statutes*, 18 HARV. ENVTL L. REV. 489, 503 (1994).
115. *See, e.g.*, MYRON ORFIELD, METROPOLITICS: A REGIONAL AGENDA FOR COMMUNITY AND STABILITY (1997).
116. *Id*. For a discussion of political impediments and government fragmentation, see Savitch, *supra* note 70, at 345.
117. Pollard, *supra* note 86, at n. 32.

and quality of life impacts. Also, the balance between housing and jobs created a need for a different structure of land use planning. Some state governments seized an active role managing land use planning to ensure uniformity, fairness, and direction of the state growth patterns. Additionally, people now view land as a resource instead of a commodity, and have attached competing social values to it: development or protection of the environment. With the general rise of citizen participation in government planning, citizens elevated the expectations of planning. Now, consultants draft plans for citizens who participate in the community planning process and expect to see fruition. Lastly, the focus of land use planning has shifted from protecting the public from nuisances (1920s) to securing public benefits, such as environmental protection, maintaining open space, exactions for public infrastructure, and school improvements. The shift of land use planning has created a more complex legal environment, and courts now require governments to compensate for taking of private property, whether temporary or permanent, and for regulations that exceed protecting the public, health, safety, and welfare.[118]

Smart growth is a product of growth management, or managed growth, combined with good marketing; "everything else . . . must be dumb growth."[119] Smart growth is an approach to development that focuses on managing how growth occurs to promote economic development, environmental protection, and a better quality of life.[120] The fundamental idea is that growth itself is not inherently harmful, rather uncontrolled, haphazard development causes adverse side-effects; smart growth seeks to accommodate positive growth. Smart growth focuses less on the need to regulate land development and more on incentives. Planners, governments, and politicians realize that "public investments, regulatory polices, and tax policies influence the pace, scale and location of development."[121]

Smart growth is a planning and environmentalist movement that is based on the goals of environmental protection and sustainable development. [122] Specifically, the objectives of smart growth include:

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118. American Planning Ass'n, *Background on Growing Smart*, *at* http://www.planning.org/growingsmart/background.htm (last visited Feb. 1, 2004). Previously, in some jurisdictions, consultants drafted plans for groups who did not necessarily desire to implement the plans but were only seeking to maintain political peace. *See id*.

119. Robert I. McMurry, *Update: Smart Growth — Is it Working?*, 2 ALI-ABA (2000).

120. Ohm, *supra* note 14, at 189.

121. Pollard, *supra* note 86, at 258.

122. Norman B. Rice, *Smart Growth: A Catalyst for Public-Interest Investment*, 26 FORDHAM URB. L.J. 1417, 1417-18 (1999).

> (1) mix[ed] land uses; (2) tak[ing] advantage of compact building design; (3) creat[ing] housing opportunities and choices; (4) creat[ing] walkable communities; (5) foster[ing] distinctive, attractive communities with a strong sense of place; (6) preserve[ing] open space, farmland, natural beauty, and critical environmental areas; (7) strengthen[ing] and direct[ing] development toward existing communities; (8) provid[ing] a variety of transportation choices; (9) mak[ing] development decisions predictable, fair, and cost-effective; and (10) encourage[ing] community and stakeholder collaboration in development decisions.[123]

There is not a one-size-fits-all solution to each state's problems. State and local governments utilize various techniques to attempt to achieve these objectives.[124]

Although smart growth does not have a precise definition, it is a general acknowledgement that current programs have not disentangled sprawl and its associated calamities.[125] Smart growth obtained national recognition in 1994 with an initiative called "Growing Smart"[126] by the American Planning Association (hereinafter "APA") with participation from public organizations and private sponsors.[127] The APA determined that the current land use tools were outdated and did not meet contemporary needs.[128] The model planning statutes from which most state statutes were derived were drafted in the 1920s by an advisory committee of the U.S. Department of Commerce.[129]

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123. Ohm, *supra* note 14, at 191.

124. Some of the techniques include: creation of super agencies that are not hampered by government bureaucracy, money incentives or disincentives, redevelopment of older urban areas, imposing different clean-up standards of brownfields depending on the site's future use, abandoning typical zoning models, Tradeable Development Rights, and the Habitat Transaction Method. *See* Ortiz, *supra* note 22, at 177-81. For background information regarding the previously mentioned techniques of smart growth, see id. *See also* Patricia E. Salkin, *The Smart Growth Agenda: A Snapshot of State Activity at the Turn of the Century*, 21 ST. LOUIS U. PUB. L. REV. 271, 273-310 (summarizing the smart growth activities in thirty-six states).

125. Ohm, *supra* note 14, at 190-91 (describing smart growth in overview, general terms).

126. American Planning Ass'n, *Growing Smart*, *at* http://www.planning.org/growingsmart (last visited Feb. 1, 2004).

127. McMurry, *supra* note 119.

128. American Planning Ass'n, *Background on Growing Smart, at* http://www.planning.org/growingsmart/background.htm (last visited Feb. 1, 2004) (summarizing the APA's evaluation of current growth management techniques).

129. *Id*. The two model acts are SZEA and SPEA (SZEA, *supra* note 89; U.S. Department of Commerce, A Standard City Planning Enabling Act (1926)).

IV. FLORIDA

Florida is one of eleven growth management states[130] and is second only to Oregon in length of experience with a comprehensive growth management system.[131] The goal of Florida's system is to balance protection of the state's natural resource systems (land, air, and water) with the demand to provide for the influx of populace relocating into the state. In the 1950s economic prosperity flourished and the negative impacts of unplanned and haphazard growth were ignored. Florida's love affair with growth began to end in the 1960s with realized negative impacts of unplanned growth such as the destruction of wetland, beach, dune and drinking water systems. Although land use is generally local, Florida legislature found that certain areas affect the state as a whole.[132] The current plan addresses such regional problems as the restoration of the Everglades, Florida's future water supply, loss of agricultural lands, and the need to preserve and restore Florida's environmental systems.[133]

A. Evolution of Florida's Growth Management System

1. Phase One

Through the Environmental Land Management Study Commission (hereinafter "ELMS I"), Florida promulgated its first major legislation to address negative growth issues in 1972. The legislation included the Environmental Land and Water Management Act (hereinafter "ELWMA"),[134] the Water Resources Act,[135] the State Comprehensive Planning Act,[136] and the Land Conservation Act.[137] These Acts required that state and regional issues be taken into account in matters involving the use and development of Florida's land.

ELWMA established the Area of Critical State Concern (hereinafter "ACSC") and the Development of Regional Impact

130. A.C. Nelson & Terry Moore, *Assessing Growth Management Policy Implementation: Case Study of the United States' Leading Growth Management State*, 12 LAND USE POL'Y 241-59 (1996).

131. DEGROVE, *supra* note 106, at 7. For a detailed overview of Florida's growth management history, see Reid Ewing, *Florida's Growth Management Curve*, 19 VA. ENVTL. L.J. 375 (2000).

132. ERIC DAMIAN KELLY, MANAGING COMMUNITY GROWTH 113 (1994).

133. Freilich, *supra* note 1, at 236.

134. FLA. STAT. ch. 380 (1972).

135. *Id.* at ch. 373 (1972).

136. *Id.* at ch. 23 (1972).

137. *Id.* at ch. 259 (1972).

(hereinafter "DRI").[138] The core of both designations is that the "[s]tates must take specific action in order to modify local government authority over land development within their jurisdictions."[139] An ACSC is an area designated by the state administration that requires special regulatory awareness and consideration because the areas were not receiving *any* attention.[140] The purpose of the ACSC designation was to foster the types of developmental regulations required to provide the desired protections.[141] A DRI is "any development which, because of its character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one county."[142] The DRI concept contained provisions that guided design and allowed for adequate infrastructure for projects that qualified as developments of regional impact.[143] Certain developments can also be presumed to be DRIs based solely on their magnitude, i.e. total developed square footage, acreage, or dwelling units.[144] Other highlights of the ELWMA legislation included advanced, forward thinking water resource law and the nation's most extensive public land acquisition program.[145]

2. Phase Two

ELMS I conducted in-depth research that led to the drafting of the Local Government Comprehensive Planning Act (hereinafter "LGCPA") in 1975.[146] The LGCPA required all local governments to plan for future growth by adopting and implementing comprehensive plans.[147] Additionally, the LGCPA provided a definition for a comprehensive plan and procedures for adoption and implementation.[148] Land development regulation remained in the jurisdiction of the local government, except for ACSCs and DRIs.[149] The "purpose of this act [is] to utilize and strengthen the existing

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138. *Id.* § 380.0651 (2003).
139. James C. Nicholas, *The Ups and Downs of Growth Management in Florida*, 12 J. LAW & PUB. POL'Y 213, 214 (2000) (discussing the progression of growth management laws in Florida).
140. *See* FLA. STAT. § 380.05 (2003).
141. *Id.*
142. FLA. STAT. § 380.06(1) (2003).
143. *See id.;* DeGrove, *supra* note 106, at 10 (providing an overview of the DRI and ACSC programs).
144. FLA. ADMIN. CODE R. 9J-2.025 (2003).
145. DEGROVE, *supra* note 106, at 10.
146. The act is set forth in FLA. STAT. § 163.3161 (2003). Nicholas, *supra* note 139, at 215-16.
147. FLA. STAT. § 163.3167(1) (2003).
148. *Id.* § 163.3164(4).
149. *See id.* § 163.2511 et seq.

role, processes, and powers of local governments in the establishment and implementation of comprehensive planning programs to guide and control future development."[150]

The legislation was regarded as "toothless"[151] and seen as "too little, too late." [152] The major shortcomings were inadequate funding and a lack of accountability. Although the law required each local government to enact a comprehensive plan, the state failed to abide by its commitment to fund plan preparation by local governments. Thus, commissions altered plans frequently and allowed zoning to drive the plan versus the plan to frame zoning and other implementation mechanisms. Moreover, the state and regional levels had a duty only to review plans;[153] therefore, the approval process was left to the individual determinations of local jurisdictions that would overlook the greater needs of the state comprehensive plan.

3. Phase Three

Governor Bob Graham appointed a resource management task force in the late 1970s to strengthen and correct inadequacies of the previous legislation. Modifications were adopted to improve some areas of previous legislation. The final report called for legislatively approved goals and policies at the state level, strong comprehensive regional policy plans to further articulate state goals and policies at the regional level, and a much stronger local government comprehensive planning system with state and regional review and approval to assure quality programs sufficient to meet the needs of the state.[154] The report led the legislature to appoint ELMS II, which found that many local jurisdictions exploited loopholes of the LGCPA, including frequent plan amendments caused by requests for development approval, adoption of loosely worded "policy" plans that provided little to no direction for decision making, and a lack of consideration of state and regional planning concerns.[155]

ELMS II's final report led to Phase III of Florida's growth management system including the State and Regional Planning Act of 1984 (hereinafter "SRPA," Chapter 186), Comprehensive State

150. *Id.* § 163.3161(2).
151. Nicholas, *supra* note 139, at 216.
152. DEGROVE, *supra* note 106, at 9.
153. FLA. STAT. § 380.06(10) (2003).
154. *Id.* (summarizing report of resource management task force).
155. *See* Daniel W. O'Connell, New Directions in State Legislation: The Florida Growth Management Act and State Comprehensive Plan, in *Perspectives on Florida's Growth Management Act of 1985*, at 26-27 (John M. DeGrove and Julian Conrad Juergensmeyer eds., 1986).

Plan (Chapter 187), and the Omnibus Growth Management Act of 1985 (hereinafter "OGMA") which amended Chapters 163, 161, and 380. The policy framework involved vertical integration of goals, policies, and implementation strategies, and horizontal compatibility with and among plans at the state, regional, and local levels. The system was structured to protect important state resources while retaining local government control.[156]

Chapter 186 required the governor's office to prepare a state plan and present it to the 1985 legislature, reasserted a mandate for regional planning councils, and allocated funds to support preparation of the plans. The 1984 legislative session also allocated funds to strengthen the State Land Planning Agency of the Department of Community Affairs. The OGMA aimed at strengthening the growth management system by requiring local governments to prepare or revise their comprehensive plans to ensure consistency with the state and regional comprehensive plans.[157]

The state plan mandates local comprehensive planning,[158] consistency,[159] county membership in a Regional Planning Council,[160] and an adequate public facilities provision that is concurrent with development.[161] The State plan not only mandates that local governments adopt comprehensive plans but that they also adopt specific elements within said plans.[162] The elements must be in agreement with the state plan, regional plans, and internally consistent to ensure a lack of conflict between elements locally, regionally, and statewide. The main growth management techniques include concurrency management for adequate public facilities, impact analysis for developments of regional impact, and projects proposed in areas of critical state concern.[163]

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156. Nicholas, *supra* note 139, at 217.
157. DEGROVE, *supra* note 106, at 12.
158. FLA. STAT. § 163.3167(2) (2003).
159. *Id*. § 163.3177.
160. *Id*. § 186.504(2)(a).
161. *Id*. § 163.3202(2)(g).
162. These elements include: capital improvements; land use; traffic circulation; sanitary sewer; solid waste, drainage, potable water, and natural ground aquifer recharge; conservation; recreation and open space; housing; implementation; and intergovernmental coordination. *Id*. § 163.3177.
163. FREILICH, SMART GROWTH, *supra* note 84, at 236.

B. Transportation Concurrency: Cause or Cure for Sprawl

1. *General Overview*

Florida is purported to be the nation's leader in developing and implementing concurrency,[164] which is the requirement that every comprehensive plan include the availability of adequate public facilities when a development order is issued, and that the requirement be enforced at the development order stage.[165] The purpose of the requirement is to ensure that public infrastructure is available at the time of occupancy and as such, timelines for development can be modulated to meet population growth. Concurrency is labeled as the "teeth" of the growth management act[166] and transportation concurrency is the eyetooth.[167] Concurrency is deemed satisfied if "public facilities and services for a development are phased, or the development is phased, so that the public facilities and those related services which are deemed necessary by the local government to operate the facilities necessitated by that development are available concurrent with the impacts of the development."[168] In theory, local governments can control the timing and location of development to ensure the availability of adequate public facilities.[169]

The appearance of concurrency as simple is illusory. The concept is that "the public facilities and services to support growth should be [available] concurrently with the impact of development."[170] Florida's legislature envisioned that concurrency would be an aspect of the local comprehensive plans.[171] It also sought that local government comprehensive plans would be consistent with and cognizant of state and regional comprehensive plans.[172] Where the statute leaves off, Rule 9J-5 of the Florida Administrative Code commences.[173] Rule 9J-5 requires each local government to adopt a "concurrency management" system, which is "the procedures and/or processes that the local government will utilize to assure that development orders and permits are not issued

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164. DEGROVE, *supra* note 106, at 7.

165. FLA. STAT. § 163.3180 (2003); *see also* H. Glenn Boggs & Robert C. Apgar, *Concurrency and Growth Management: Lawyer's Primer*, 7 J. LAND USE & ENVTL. L. 1, 1 (1991).

166. Boggs & Apgar, *supra* note 165, at 1; Nicolas & Steiner, *supra* note 4, at 662.

167. Nicholas & Steiner, *supra* note 4, at 662.

168. FLA. STAT. § 163.3177(10)(h) (2003).

169. Thomas G. Pelham, *Restructuring Florida's Growth Management System: Alternative Approaches to Plan Implementation and Concurrency*, 12 J. LAW & PUB. POLY. 299, 299-300 (2001).

170. Nicholas & Steiner, *supra* note 4, at 666.

171. FLA. STAT. § 163.3177(10)(h) (2003).

172. *See id*. § 163.

173. *See* FLA. ADMIN. CODE R. 9J-5 (2003).

unless the necessary facilities and services are available concurrent with the impacts of development."[174] Furthermore, Rule 9J-5 also stipulates that "[e]ach local government shall establish a level of service standard for each public facility located within the boundary for which the local government has authority to issue development orders or development permits."[175] The level of service criterion (hereinafter "LOS"), which must be maintained in its entirety, reflects "the capacity per unit of demand for each public facility."[176] The LOS requirements are developed and detailed within each appropriate plan element.[177]

Rule 9J-5.0055 sets forth the standards to satisfy the concurrency requirement.[178] A local government shall have the necessary facilities and services in place or under construction at the time a development order or permit is issued; be a condition to the issuance of a development order or permit and must be in place or under construction within three years of certificate of occupancy; be the subject of a binding executed agreement in place or under construction within three years of certificate of occupancy; or be guaranteed in an enforceable development agreement or an agreement or development order and be in place or under construction within three years of certificate of occupancy.[179]

2. Difficulties and Hindrances Regarding Implementation

The State has failed to provide sustained leadership in directing, supporting, or addressing Florida's growth problems.[180] Since the State Plan was a "compromised product" that failed to provide adequate and specific guidance, the Department of Community Affairs (hereinafter "DCA"), the State Land Planning Agency, has decreased its emphasis upon the State Plan in reviewing local plans for compliance.[181] The statutory requirement that contains annual evaluations and recommended changes by the Executive Office of the Governor has been disregarded. The result of this action leaves the original comprehensive plan substantially unaltered since its inception in 1985.[182] As a result of the inattention to the State Plan, neither the Florida Legislature nor the Office of the Governor utilize

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174. *Id*. at 9J-5.003(20).
175. *Id*. at 9J-5.005(3).
176. *Id*. at 9J-5.003(45).
177. *Id*. at 9J-5.008; *see, e.g.*, *id*. at 9J-003(45).
178. *Id*. at 9J-5.0055(3)(c).
179. *Id*.
180. Pelham, *supra* note 169, at 303-04.
181. *Id*.; FLA. STAT. ANN. § 186.505(21) (2003).
182. Pelham, *supra* note 169, at 304; FLA. STAT. ANN. § 186.007 (2003).

the State Plan as it was designed and base their decisions relating to growth on more modern, yet inconsistent standards.[183] Additionally, the Regional Planning Councils' intent to draft and enact Regional Plans was "defanged" by the legislature in 1993 pursuant to a recommendation of the ELMS III Committee.[184] Lastly, the State lacks an effective review process concerning local comprehensive plan amendments. Over ninety percent of local comprehensive plan amendments are approved by the DCA; this suggests that the State may be failing to effectively monitor and enforce implementation of the State's growth policies.[185]

Implementation of the concurrency requirement raised issues of concern even before the legislation was promulgated. The State failed to provide adequate state or local funding sources on a consistent basis.[186] For example, efforts by the State to effectuate a sales tax on services was enacted and almost immediately repealed.[187] Concerns surfaced regarding: the establishment of LOS standards on state highways, standards used for roadway concurrency, the long lead time for road construction, the backlog of transportation projects, vagueness within the verbiage, such as the meaning of "facilities [must] be 'available concurrent with development'," how to measure roadway concurrency, and the perception that transportation was causing sprawl.[188] Providing transportation in tandem with growth requires various assumptions about the interaction between new development with its supporting services and facilities.[189] The assumptions include "sufficient funding for the planned transportation improvements to support new development"; and that "development commitments can be tracked to specific roadway segments and to specific transportation projects." [190]

3. *Softening the Rigidity of Transportation Concurrency*

Certain specific projects and geographical areas (projects within an Existing Urban Service Area (hereinafter "EUSA"), *de minimis*

183. Pelham, *supra* note 169, at 306.
184. *Id.* at 305. The Comprehensive Regional Policy Plans were replaced with Regional Strategic Policy Plans that addressed narrower issues. The DCA was absolved of its power to find a local plan amendment not in compliance with the State Plan on the basis of inconsistency with the Regional Plan. Lastly, RPCs were stripped of their authority to adopt binding LOS standards for facilities provided or regulated by local governments. *Id.*
185. *Id.* at 306.
186. *Id.*
187. FLA. STAT. ANN. § 212.059 (repealed 1987).
188. Nicholas & Steiner, *supra* note 4, at 662.
189. *Id.* at 666.
190. *Id.*

impact projects, Long Term Concurrency Management Systems (hereinafter "LTCMS"), and Transportation Concurrency Exemption Areas (hereinafter "TCEA")), may be exempt from transportation concurrency or have extended deadlines beyond the issuance of a certificate of occupancy or functional equivalent. Exceptions are made to the straight line rule to promote other policies of the GMA.[191] A project located within an EUSA is exempt "for up to 110 percent of the transportation impact generated by previously existing development."[192] A project that has a *de minimis* impact, as defined by Florida Statutes section 163.3164(29), is exempt from concurrency requirements.[193] Local governments are authorized to adopt LTCMS with a planning period up to ten years to "set priorities for reducing the backlog on transportation facilities."[194] Local governments may also designate Transportation Concurrency Management Areas (hereinafter "TCMA") "to promote infill development or redevelopment . . . in a manner that supports the provision of more efficient mobility alternatives, including public transit."[195] Lastly, local governments may designate TCEAs "to reduce the adverse impact transportation concurrency may have on urban infill development and redevelopment and the achievement of other goals and policies of the state comprehensive plan."[196] TCEAs were created because urban cores already had congested roadways and since transportation concurrency could not be met within the urban core, developers relocated to less developed areas and fostered sprawl.[197]

The effect of softening the rigidity of transportation concurrency is to sacrifice traffic congestion for policies preferred by the current local government. Exemptions and reductions in timelines by which the development must have transportation infrastructure in place create increased traffic on the roadway and decreased quality of the existing roads. Instead of enforcing the original strict GMA and requiring public infrastructure, the legislature created exemptions and exceptions that allow local governments to either procrastinate or avoid expanding and improving roadways.

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191. FLA. ADMIN. CODE R. 9J-5.0055(6) (2003).
192. *Id*. at 9J-5.0055(3)(c).
193. *Id*.
194. *Id*. at 9J-5.0055(4).
195. *Id*. at 9J-5.0055(5).
196. *Id*. at 9J-5.0055(6).
197. Debbie M. Orshefsky, *Florida's Current Efforts to Redevelop its Urban Core*, 1997 LAND USE INST. 345, 351 (1997).

4. *Case Study: Orlando, Florida*

The Orlando Metropolitan Area[198] is well known for its traffic congestion or, more appropriately, traffic stagnation. If traveling in or even through the area, it is best to stay off the main highways during peak traffic flow times. The solution set forth by the local governments, and approved by the state, was essentially for state government to abdicate its oversight role and to allow traffic to fester and worsen. Most of Orlando is designated as a TCEA, which means that development within the TCEA is not subject to transportation concurrency requirements. Since developers can proceed with construction without regard to the impacts of increased population on the transportation system, roads are progressively becoming more crowded and their condition is deteriorating.

The Orlando area was first settled in the mid-1800s with an economy based primarily on agriculture. In 1950, technology entered the arena in the form of the Martin Co.[199] and constructed a missile research facility in southwest Orange County. With the introduction of a different economic system, both population and highway systems began to swell, which led to Walt Disney's attraction in the 1960s. Within the past 30 years, Orlando has grown to be a major city in the State of Florida, consisting of both major tourist attractions and full-fledged professional industries. [200]

Transportation statistics indicate that the primary mode of transportation in the Orlando Metropolitan area is the single occupant vehicle (hereinafter "SOV").[201] Florida Interstate Four (hereinafter "I-4"), the main commuting route in the area, has been operating over its capacity design limits for a number of years. The average daily number of trips on I-4 increased from 120,600 in 1996 to 134,600 in 2000, an increase of nearly twelve percent.[202] Traffic volumes on the toll expressways[203] has increased at a more rapid rate than I-4: traffic volume increased from 30,460 to 43,870, an increase of forty-four percent.[204] Further evidence of increased traffic includes a fifteen percent increase in registered vehicles from

198. The Orlando Metropolitan Area consists of Orange, Seminole, and Osceola counties.

199. Martin Co. is now Lockheed Martin.

200. Keith Caskey, *Impacts of Rapid Growth on the Orlando Area Transportation System*, 72 ITE J. 36 (Aug. 2002).

201. *Id*.

202. Florida Department of Transportation. District Five 2000 Average Annual Daily Traffic. DeLand, FL, USA, 2001.

203. SR 528/Bee Line Expressway, SR 408/ East-West Expressway, SR 417/Eastern Beltway, Florida's Turnpike, and Osceola Parkway.

204. For more information on traffic volume on the Orlando area toll roads, see http://www.ooceao.com under Traffic Statistics.

1996-2000, the same increase in population for the time period;[205] an increase in vehicle miles traveled (hereinafter "VMT") of nineteen percent;[206] and a gasoline consumption increase of eighteen percent.[207] These statistics evidence the reality that growth is causing not only farther commutes, but also an increase in population as new development draws people into the sprawl areas.[208] The Texas Transportation Institute at Texas A&M University developed a congestion index to evaluate whether a roadway system is carrying more traffic than its capacity.[209] If the index is greater than one, that roadway is over capacity. Conversely, an index less than one indicates it is under capacity.[210] The Orlando area's congestion index increased from 0.86 in 1994 to 1.05 in 2001, an increase of twenty-two percent.[211] This statistic shows that in order to keep traffic flow moving fluidly, the network will require additional road improvements and alternative modes of transportation.[212] The institute concluded that 190 additional miles of roadway are needed each year to keep pace with population increases.[213] However, based on historical construction data, only ninety-seven miles are added each year to supplement growth.[214] The cost of needed highway improvements greatly exceeds the amount of available local, state, and federal funds.[215]

Although transit is becoming increasingly more important in the Orlando Metropolitan Area, people are opposed to public transportation. The vast majority of regular transit riders only utilize the system out of necessity; commuters consider the transit system inconvenient. LYNX, the local transportation provider, has seen some increased use of its services; however, less than one percent of commuters currently use the transit service.[216] Recommendations to increase operations include an expansion of

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205. Florida Department of Highway Safety and Motor Vehicles. *Revenue Report*, July 1, 1999-June 30, 2002. Tallahassee, FL, USA 2001; Caskey, *supra* note 200, at 36.

206. Florida Department of Transportation. *Public Road Mileage and Miles Traveled, 2000*. Tallahassee, FL, USA, 2001.

207. Florida Department of Community Affairs. *2000 Motor Gasoline and Diesel Fuel Report*. Tallahassee, FL, USA, 2001.

208. Caskey, *supra* note 200, at 36.

209. Texas Transportation Institute. *2001 Mobility Report*. College Station, TX, USA 2001. The index is defined as the ration of the area-wide estimates of VMT to the number of lane-miles of roadway in each urban area. *Id*.

210. Caskey, *supra* note 200, at 36.

211. *Id*.

212. *Id*.

213. Press Release, Metroplan Orlando, Study Confirms What We Already Know: Traffic in Central Florida is Bad, and Getting Worse (Jan. 25, 2000).

214. *Id*.

215. Caskey, *supra* note 200, at 36.

216. *See id*.

the bus fleet and route system to augment convenience and accessibility of service. However, for the expansion to become a reality, there are two main requirements: (1) funding from the state level, and (2) the establishment of high density land uses within the range of proposed transit system to increase the efficiency of the network. Extensive funding is required for the actual expansion costs, such as engineering and construction, but possibly more importantly, marketing public awareness of alternative transportation and benefits.[217]

Metroplan Orlando's solutions to traffic congestion thus far include the use of intelligent transportation systems (hereinafter "ITS") and automated toll-collection systems. ITS is a passive traffic control system that was implemented to "improve traffic flow on existing roadways without adding lanes or building new highways."[218] Examples of ITS technologies include surveillance cameras and messaging signs to alert drivers of traffic incidents and alternative routes, computerized signal systems, and an automated transit vehicle location system.[219]

The TCEA's effect on Orlando area residents is unfortunate. Each year, drivers lose forty-one hours due to extensive traffic delays as driving at peak times takes twenty percent longer than the same trip at non-peak times. As those drivers sit idling in traffic, nearly fifty million gallons of fuel are wasted each year. This waste begins to add quickly in the pocketbooks of the Orlando driver, as the annual cost due to traffic delays is approximately $670.[220]

V. MARYLAND

The crux of Maryland's gubernatorial administration's 1997 legislation package was the Smart Growth and Neighborhood Conservation Initiative (hereinafter "Maryland Smart Growth"). The government's intent is to curb destructive growth patterns by limiting public investment to projects which are consistent with sound growth management. The underlying theme is that the remedy to stay the progress of urban sprawl is to influence development decisions with economic incentives, rather than regulations. The goals of Maryland Smart Growth are: to preserve the state's natural resources, to direct resources to support existing

217. *Id*.
218. *Id*.
219. For full description of each ITS technology, see *id*.
220. *Id*.

communities and neighborhoods, and to save taxpayers money by avoiding unnecessary costs of building duplicate infrastructure. [221]

A. The Historical Context of Maryland's Smart Growth

Preceding Maryland's 1997 Smart Growth Initiatives were a sequence of three decades of land use laws.[222] Maryland's anti-sprawl programs are primarily contoured to three factors: a pervasive desire to preserve the health of the Chesapeake Bay, resistance to State intervention in local land use planning, and political tension between densely and less populated jurisdictions.[223]

The State's first legislation was promulgated by the General Assembly in 1974[224] after Governor Marvin Mandel called for land use reform in his State of the State speech. According to Mandel, "[t]he character of Maryland will be shaped by what we do with our human resources as well as with our natural resources" and the State should curb improper and excessive development.[225] Since 1973, land use reforms have become a prominent issue for politicians and concerned citizens.[226]

The Maryland Economic Growth, Resource Protection and Planning Act of 1992 (hereinafter "1992 Planning Act") followed an alarming report on the declining health and ecology of the Chesapeake Bay published by the U.S. Environmental Protection Agency (hereinafter "EPA") in 1983.[227] Thereafter, Maryland, Virginia, Pennsylvania, the District of Columbia, and the EPA signed the Chesapeake Bay Agreement, which charged a panel of experts (hereinafter "2020 Commission") with the task of reporting upon "growth management regulations, environmental programs, and infrastructure requirements necessary to protect the [Chesapeake] Bay while still accommodating projected population growth in the Bay region through the year 2020."[228] Governor William Donald Schaefer appointed the Governor's Commission of Growth in the Chesapeake Bay Region in 1989 to review the

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221. Glendening, *Smart Growth*, *supra* note 10, at 421.

222. James R. Cohen, *Maryland's "Smart Growth": Using Incentives to Combat Sprawl*, *in* URBAN SPRAWL: CAUSES, CONSEQUENCES, AND POLICY RESPONSES 3 (Urban Institute Press 2002).

223. *Id*.

224. MD.ANN. CODE art. 88C, repealed by Acts 1985, ch. 11, §1 (1985).

225. Glendening, *Smart Growth*, *supra* note 10, at 419.

226. For an overview of major land use and environmental legislation in Maryland since 1969, see Cohen, *supra* note 222, at 4.

227. The Chesapeake Bay is North America's largest and most productive estuary, 195 miles long and from four to thirty miles wide, bordered on either side by Maryland and Virginia, and its watershed encompasses parts of Maryland, Virginia, New York, Pennsylvania, Delaware, and West Virginia. *Id*.

228. *Id*. at 4 (providing further detail of 2020 commission's origination and responsibilities).

findings of the 2020 Commission, analyze their application to Maryland, and identify growth issues particular to Maryland by the year 2020.[229] Finally, eight years after the EPA's initial findings, the Maryland legislature responded with the 1992 Planning Act.

The 1992 Planning Act requires local governments to adopt comprehensive plans consistent with seven "visions":

> 1. [D]evelopment is concentrated in suitable areas;
>
> 2. [S]ensitive areas are protected;
>
> 3. [I]n rural areas, growth is to be directed to existing population centers and resource areas are protected;
>
> 4. [S]tewardship of the Chesapeake Bay and the land is a universal ethic;
>
> 5. [C]onservation of resources, including a reduction in resource consumption, is practiced; . . .
>
> 6. [F]unding mechanisms are addressed to achieve these visions; [and]
>
> 7. [E]ncouraging economic growth and streamlining regulatory mechanisms . . .[230]

To assist local governments with preparing comprehensive plans and implementing programs to achieve the "visions," the Maryland Department of Planning (hereinafter "MDP") publishes models and guidelines. Additionally, local governments submit their sensitive area elements to the MDP. Although the MDP's critical commentary must be considered, there is no legislative requirement that the State's recommendations are incorporated into the final plan. Also of importance, the 1992 Planning Act established the Economic Growth, Resource Protection and Planning Commission (hereinafter "Growth Commission") to evaluate and advise the governor regarding the progress of the visions and policies.[231]

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229. *Id*. at 5 (describing the historical context of Maryland Smart Growth).
230. MD. ANN. CODE art. 66B, § 1.01 (2003).
231. Cohen, *supra* note 222, at 6 (describing general information regarding 1992 Planning Act).

In 1996, the Growth Commission reported concerns that the terms in the visions were not adequately defined, visions were disparately and inconsistently applied, growth was not being adequately directed, and older neighborhoods were not being sufficiently revitalized. Governor Parris Glendening responded to widespread concerns regarding the inadequacies of the 1992 Planning Act by implementing the "[w]e listened, you recommended campaign" to solicit citizen and stakeholder group participation. The product of the campaign was the Smart Growth and Neighborhood Conservation Initiative of 1997.[232]

B. Overview of Smart Growth and Neighborhood Conservation Initiative of 1997

Governor Glendening proposed to utilize the gubernatorial powers over the State's budget as an incentive to alter growth patterns and to utilize fiscal and programmatic initiatives to reverse the sprawl development pattern.[233] The approach is incentive, rather than regulatory, based.[234] Governor Glendening stated that the solution to sprawl is to control the areas where development occurs with a "carrot and a stick."[235] The State's budget ($21 billion in 2002) is an incentive for growth within locally designated areas.[236] Maryland's Smart Growth Initiative and Neighborhood Conservation Initiative of 1997 is designed to encourage compact development and direct capital facilities financing to local governments.[237] The purpose of Smart Growth is to create "flourishing cities and towns where families and children thrive, downtowns that are alive with activity; preserved parks, farmlands, and forests for all to enjoy; and clean air and water for our children and our grandchildren."[238] The program is intended to discourage development outside the designated growth areas.[239]

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232. *Id*. at 7.

233. Glendening, *Smart Growth*, *supra* note 10, at 420.

234. Parris N. Glendening, *New Urbanism & Smart Growth: Maryland's Smart Growth Initiative: The Next Steps,* 29 FORDHAM URB. L.J. 1493, 1494 (2002) [hereinafter Glendening, *Next Steps*].

235. Smart Growth in Maryland *at* http:www.op.state.me.us/smartgrowth/ (last visited Aug. 1, 2003) (quoting Governor Parris Glendening).

236. Glendening, *Next Steps*, *supra* note 234.

237. *See* Hon. David L. Winstead, Secretary of Transportation — Maryland, *Smart Growth, Smart Transportation: A New Program to Manage Growth in Maryland*, Presentation to U.S. German-Marshall Workshop on Sustainable Transportation in Metropolitan Areas (Oct. 29-30, 1997) (providing an overview of general implementation problems in achieving smart growth visions).

238. Smart Growth Network, *Governors on Smart Growth – 2000*, *at* http:// www.smartgrowth.org/library/governors2000.html (last visited Aug. 1, 2003).

239. *See* Glendening, *Next Steps*, *supra* note 234, at 1494.

Smart Growth consists of five core initiatives: 1997 Smart Growth Areas Act,[240] 1997 Rural Legacy Act,[241] Brownfields Voluntary Cleanup and Revitalization Incentive Programs,[242] Job Creation Tax Credit Program, [243] and Live Near Your Work Program. [244] The 1997 Smart Growth Areas Act is discussed in detail in the next section. Generally speaking, the Act's intent is to discourage sprawl by disallowing state subsidies for transportation, housing, economic development, and environmental projects for areas not designated as Smart Growth Areas.[245] The 1997 Rural Legacy Act established a grant program that enables local governments and private land trusts to purchase easements and development rights in designated areas "to protect regions with agriculture, forestry, natural and cultural resources to promote resource-based economies, provide greenbelts around developed areas and maintain the character of rural communities."[246] The Brownfields Voluntary Cleanup and Revitalization Incentive Programs is an effort to stimulate the use of contaminated properties by relieving current owners from retroactive liability, offering loans and grants for site cleanup, and providing a tax break on the increased assessment resulting from property improvements.[247] The Job Creation Tax Credit Program entices businesses to relocate or expand by providing tax credits for each new, full-time qualified job created.[248] Lastly, the Live Where You Work Program seeks to stabilize targeted neighborhoods by increasing homeownership and reducing employee-commuting time by creating incentives for employees to buy homes near their workplace.[249]

Smart Growth is a hybrid government approach, which weds local and state governments,[250] to effectively eliminate local governments solving their own problems without regard to the

240. Cohen, *supra* note 222, at 2-3.
241. MD. ANN CODE, [NAT. RES.] § 5-9A-01 (2003).
242. *Id*. at art. 41, § 14-805.
243. *Id*. at art. 83, § 5-1101.
244. *Id*. at art 83A, § 5-1101. This program is implemented by the Maryland Housing and Community Development.
245. *See* Part V(C).
246. MD. CODE ANN., [NAT. RES.] § 5-9A-01 (2003). For a general overview of the program, see Cohen, *supra* note 222, at 11-13.
247. MD. ANN. CODE art. 83, § 5-1101 (2003). For a general overview of the program, see Cohen, *supra* note 222, at 13-16.
248. MD. ANN. CODE art. 83A, § 5-1101 (2003). For a general overview of the program, see Cohen, *supra* note 222, at 16-18.
249. MD. ANN. CODE art. 83A, § 5-1101 (2003). For a general overview of the program, see Cohen, *supra* note 222, at 18-19.
250. *See* MD. CODE ANN., [ST. FIN. & PROC.] § 5-7A02 (2003).

region's needs.[251] Smart Growth Areas will be designated, including existing towns and areas within the Urbanized Tier.[252] Smart Growth is unique in that it allows the state to make investments in efficient uses of land. If the state builds schools, roads, libraries, and sewage treatment plants, it is able to limit those plans to the "smartest" locations, which are areas capable of supporting growth.[253] The eight guidelines that guide Maryland's program are:

> (1) Development shall be concentrated in suitable areas; (2) sensitive areas shall be protected; (3) in rural areas, growth shall be directed to existing population centers and resource areas shall be protected; (4) stewardship of the Chesapeake Bay and the land shall be a universal ethic; (5) conversation of resources, including a reduction in resource consumption, shall be practiced; (6) to encourage the achievement of paragraphs (1) through (5) of this subsection, economic growth shall be encouraged and regulatory mechanisms shall be streamlined; (7) adequate public facilities and infrastructure are available or planned in areas where growth is to occur; and (8) funding mechanisms shall be addressed to achieve this policy.[254]

C. Priority Funding Areas

The cornerstone of the program is the Smart Growth Areas Act, which "targets state funding for growth-related projects to designated growth areas known as Priority Funding Areas" (hereinafter "PFA").[255] States shall only permit or fund projects that are within a designated PFA.[256] The areas include Baltimore, the state's 156 municipalities, and the heavily developed areas inside the Baltimore and Washington beltways.[257] Each county can designate additional areas that meet minimum state criteria for the provision of public water and sewer service, minimum residential

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251. Christopher M. Corchiarino, Comment, *Educating Smart Growth: One Size Fits All Growth Initiatives Are Lacking Sound Environmental Guidance*, 9 U. BALT. J. ENVTL. L. 1, 4 (2001).

252. *See* MD. CODE ANN., [ST. FIN. & PROC.] §§ 5-7BA-01 - 5-7B-03 (2003).

253. *See* Winstead *supra* note 237, at 540.

254. *See* MD. CODE ANN., [ST. FIN. & PROC.] § 5-7A-01 (2003).

255. 2000 Md. Laws 303. For an overview of the PFA structure, see John W. Frece, *Smart Growth Prioritizing State Investments*, 1 NAT'L RES. & ENV'T 236, 276 (2003).

256. MD. CODE ANN., [ST. FIN. & PROC.] § 5-7B-02 (2003). For an analysis of the smart growth initiative, see Cohen, *supra* note 222, at 2-3.

257. MD. CODE ANN., [ST. FIN. & PROC.] § 5-7B-02 (2003).

density, and consistency with twenty-year population growth projections.[258] The statute includes two caveats to allow flexibility when granting state funding where the area is not designated as a PFA: exemptions that the Board of Public Works (hereinafter "BPW") has to approve and exemptions that the BPW does not approve.[259] PFAs became more prominent when Governor Glendening issued an Executive Order in 1998 that both expanded the scope of Smart Growth and ordered state agencies to adhere to a statewide Smart Growth policy when making discretionary decisions that PFA law does not otherwise cover.[260]

In accordance with Smart Growth policy, state agencies conduct business according to a new process of analysis that is best explained through examples.[261] Smart Growth principles are utilized by the Maryland Department of Transportation (hereinafter "MDOT") to decide which projects receive construction funding.[262] MDOT works in conjunction with Maryland Department of Planning (hereinafter "MDOP") to determine "whether a proposed project is within a PFA or connects two PFAs."[263] If the answer to both questions is negative, MDOT "must determine whether there is a reasonable alternative for the project that is within a PFA, whether there is a demonstrated safety need for the project, or whether the project serves a commercial or industrial activity that by its nature must be located away from a PFA."[264]

"Think Beyond the Pavement" is the new philosophy of the State Highway Administration.[265] From 1995-2001, funding to support MDOT's Neighborhood Conservation Initiative increased from $50 million to more than $200 million.[266] The program utilizes funds traditionally allocated to highway construction for aesthetic uses that make older downtown business districts more attractive to live, work, or shop. Some of the uses include landscaping, sidewalk construction, ornamental lighting, and park benches.[267]

Also in an effort to reduce road congestion, the Governor's office set a goal of doubling transit usage in Maryland by 2020.[268] In 2000,

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258. *Id*. § 5-7B-03.
259. *See id.*
260. Exec. Order No. 01.01.1998.04, 1 MD. REGS. CODE (1998).
261. Glendening, *Smart Growth, supra* note 10, at 422.
262. *See* Md. Dep't of Transp. Strategic Plan, *at* http://www.marylandtransportation.com/ (last visited Feb. 27, 2004).
263. Glendening, *Smart Growth*, *supra* note 10, at 422.
264. *Id*. at 422-23.
265. Lori Montgomery, *Maryland Going 'Beyond the Pavement'; State Shifting Focus From Roads to Pedestrians and Transit*, WASH. POST, Sept. 15, 2000, at A1.
266. *See* http://www.sha.state.md.us.
267. *See id*.
268. Press Release, Office of the Governor of Maryland (Oct. 2, 1998), *available at*

Maryland increased funding for new construction and operating funds to improve the quality of mass transit to $1.75 billion.[269] Governor Glendening's goal is to "develop a balanced transportation system that is concerned with moving people, not just moving cars."[270] Funding will be applied to new commuter bus routes, more neighborhood shuttles, new buses and rails, and universal "Smart Card" technology so riders can easily transfer networks.[271] The transportation system is additionally assisted by two new programs, an Office of Bicycle and Pedestrian Programs within MDOT[272] and a Transit-Oriented Development Task Force.[273]

The last major incentive of the PFA is the "Live Near Your Work Program."[274] Maryland partners with private and public employers and the local government to provide incentives for employees to buy homes within biking or walking distance of their place of employment. Homebuyers are offered up to $3000 towards their down payment or closing costs.[275] The homeowner program attracted at least forty employers and more than 360 employees purchased homes by the end of 2000.[276] Along the same lines as the Live Near Your Work Program, the Department of Housing and Community Development offers low-interest mortgages to new teachers in the public school system that purchase within a PFA.[277]

D. Limitations to Effectiveness of Priority Funding Areas

There are four main limitations to the effectiveness of PFAs.[278] First, the legislation limits state funding but does not prevent sprawling development that is funded by the local government and /or private entities.[279] Second, critics contend that the density requirement is too low.[280] Third, smart growth's effectiveness is

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www.gov.state.md.us/gov/press/1998.

269. Press Release, Office of the Governor of Maryland (Dec. 7, 2000), *available at* www.gov.state.md.us/gov/press/2000; *see also* www.mdot.state.md.us/news/TransitVision (outlining mass transit initiatives and identifying funding sources).

270. Glendening, *Smart Growth, supra* note 10, at 423.

271. *See* Press Release, *supra* note 269.

272. MD. CODE. ANN., [TRANSP.] §2-603 (2003) (creating the Office and directing that it report to the Legislature measurable performance goals for bicycle and pedestrian transportation).

273. Exec. Order No. 01.01.2000.20, 1 MD. REGS. CODE (2000) (charging the Task Force with making recommendations to encourage development around the State's transit systems).

274. MD. REGS. CODE § 05.03.07.01 (2003).

275. Robert Nusgart, *Homeowner Program Gets More Popular*, BALT. SUN, Dec. 10, 2000, at L1.

276. *Id.*

277. MD. ANN. CODE art. 83B, § 2-201 (2003).

278. Cohen, *supra* note 222, at 9.

279. *See id.*

280. *Id.*

dependent upon the dedication and preferences of future governors and state agency directors.[281] Lastly, PFAs allow for exceptions that weaken the program.[282]

Even though the state refuses to subsidize developments outside PFAs, development will continue to sprawl and drain the state's resources.[283] Not all developers will seek to obtain the "carrot" (financial support) and will choose to privately fund their projects. Others will "piggyback" on projects within a PFA.[284] Wal-Mart is an example of an undeterred company.[285] In Kent County, Wal-Mart proposed a store to be built outside a PFA that requires state-funded expansion of the local water treatment plant.[286] The state will not discontinue the expansion because a development within the PFA is also served by the plant.[287]

The definition of a PFA and its criteria are controversial. PFA criteria and thresholds that focus on density were the "result of political compromise rather than concrete analysis of density and service efficiency."[288] Additionally, state funding in certain PFAs may not be as cost-efficient as anticipated or effective at discouraging sprawl because state funding of infrastructure is based on both actual and permitted uses.[289] 1000 Friends of Maryland, a coalition of environmental groups, observed that developments in many counties fail to reach the permitted densities.[290] Lastly, 1000 Friends of Maryland is also critical that the criteria are almost wholly directed on density and does little to address development quality, such as efficient land use, mixed uses, minimized dependency on the automobile, housing choices to provide socioeconomic diversity, or projects with regional impact.[291]

The last two limitations to the effectiveness of PFAs (discretion in designation and exceptions to the program) are interwoven.[292] Since the designation of a PFA is affixed by the State governor and agency officials, the decision to entitle an area a PFA will obviously be dependent upon the subjective judgment of those currently holding these high government positions.[293] To deter skewed

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281. *Id.* at 10.
282. *Id.*
283. Cohen, *supra* note 222, at 9.
284. *Id.*
285. *Id.*
286. *Id.*
287. *Id.*
288. *Id.*
289. Cohen, *supra* note 222, at 9.
290. *Id.*
291. *Id.* at 10
292. *Id.*
293. *Id.*

interpretation and application of the act, when a request is made to the BPW for a project that is outside a PFA, the BPW may request an advisory opinion from the State Growth Commission, and if the BPW seeks advisory review, the public may request a public meeting.[294] Of course, the decision to seek review rests with the BPW and members of the State Growth Commission may have personal interpretations and slants.[295] Regardless of these downsides, the legislature attempted to protect against biases.

E. Evaluation of Smart Growth[296]

The success of Smart Growth legislation is not empirically supported by studies conducted by the State of Maryland or any other known source.[297] In discussing the accomplishments of Smart Growth, academics and state employees refer to isolated decisions[298] but in reality MDOT is still in the process of developing the criteria that it will use to assess the impact.[299] Nonetheless, the legislation has earned accolades in the public sector from the director of a land use institute in Michigan and "was named as one of [the] ten winners [of] the annual 'Innovations in American Government' program sponsored by the Ford Foundation and Harvard's John F. Kennedy School of Government."[300] So why is an empirically unsupported new land use reform piece of legislation being discussed by academics across the world? John Frece, a special assistant for Smart Growth, Office of the Governor of Maryland, states:

> Maryland's Smart Growth efforts have received national acclaim for several reasons. It focuses on both urban and rural issues. From the outset, the

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294. *Id*. at 10.

295. Cohen, *supra* note 222, at 10.

296. For specific information regarding necessary factors for smart growth to succeed, see Cohen, *supra* note 222.

297. This statement is made after intensive research and confirmation by the Maryland State Department of Planning. The only available assessment is preliminary only and is intended to be the baseline quantification of indicators. The indicators for this report were developed by academics at the Maryland Institute for Policy Analysis Research, Royce Hanson, Jason Freihage, and Kevin Armstrong. Their report, *Is Maryland Growing Smart? A Growth Indicators and Reporting System for Measuring Achievement of the Goals of Maryland's Smart Growth Policy*, is available at http://www.umbc.edu/mipar.

298. *See generally* Glendening, *Next Steps*, *supra* note 234; Frece, *supra* note 255, at 276.

299. For an explanation of the difficulties in quantifying the impact of smart growth, see Emily Talen, *Measurement Issues in Smart Growth Research*, paper presented at the Smart Growth and New Urbanism Conference at the University of Maryland (May 4, 2002), *available at* http://www.smartgrowth.umd.edu/publications/talenpaper.pdf.

300. Cohen, *supra* note 222, at 1.

> program recognized the connection between the decline in many of our urban areas and the sprawl that spilled into our rural areas, and attempted to address both problems simultaneously. In addition, the Smart Growth initiative in general, and the Rural Legacy Program in particular, were designed to support rural lifestyles and rural economies as a balance to the program's urban incentives.[301]

Some of the isolated decisions include: removal of four highway bypass projects from the long-range MDOT plans because they would have promoted sprawl; construction of two new court buildings within the downtowns of both Easton and Hagerstown to help the downtown remain vibrant, reduce automotive dependence, support transit, and save virgin land from development; and the Governor's intervention in the decision of the Worcester County commissioner to build a new building on the outskirts of town by offering state financial assistance to build next to the existing downtown courthouse.[302]

VI. APPLICATION OF A PFA TO THE ORLANDO METROPOLITAN AREA

The Orlando Metropolitan Area is a dire situation in need of desperate aid so, albeit empirical evidence of success of Maryland's Smart Growth Program is lacking, other options should be considered to reform land use legislation in the State of Florida. To reiterate the previous discussion regarding Orlando's status as a TCEA, there is neither state oversight of local government land use decisions in Orlando nor any concurrency requirements.

A. Effect of Applying the PFA System to Florida's Transportation Decisions

1. Background Similarities of Maryland and Florida

To theoretically apply Maryland's PFA program to Orlando, certain similarities must exist between the government structure and state oversight of land use decisions. Comparable configurations must exist, otherwise the application of a potential new program to Florida's current scheme would be tenuous at best.

Both states are home-rule states, which means decision-making authority is delegated to the local governments. Typical of human nature and the propensity to protect one's own interests over

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301. Frece, *supra* note 255, at 276.
302. *Id*. at 273-74.

another person's, local governments tend to pass local rules and ordinances that focus on achieving their own goals without regard to external affects. For example, by Local Government "X" placing a landfill at a location most convenient for itself, the landfill may abut a multi-million dollar residential development across the county line in Local Government "Y." Although Florida attempts to resolve this situation with the DRI program, (discussed in Part IV(A)(1)) the program is ridden with loopholes.[303] Local governments and those involved in the development business tend to view state oversight as a "bumbling bureaucracy improperly interfering in local governments' decision-making . . . . [S]ome local governments have done everything they can to sabotage or conduct end-runs of state requirements."[304] The sentiment is applicable to both states.[305]

They also have similar land use planning structures to shape their state's growth by statutorily requiring local governments to adopt both comprehensive plans with specified elements or visions and zoning ordinances.[306] This requirement empowers local governments with, what amounts in practice the sole authority of land use decisions. State governments are superficially involved with local decisions. Although Florida enacted a state comprehensive plan and the DCA allegedly reviews local government plans for compliance, the process has become one of 'rubberstamping,' as discussed in Part IV(B)(2). Maryland outright acknowledges that the power to make local decisions rests with the local governments.

2. *Effect On Florida's Transportation Budget Distribution*

If Florida were to adopt a PFA-like system and only subsidize projects in designated areas, the state's entire budget would be altered. Florida's long-standing transportation policy promotes

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303. A developer can mitigate the proposed development's impact by paying for another improvement that the state desires. For example, if a developer's plans will increase the population, and therefore LOS on a road designated for hurricane evacuation beyond the established thresholds, the developer can mitigate by improving another road on the other side of town that is unaffected by the development. Additionally, only projects that exceed a certain threshold are DRIs and, therefore, a developer can avoid DRI review by maintaining calculations just below the threshold: one additional acre or one additional parking space saves the developer exorbitant amounts of money by avoiding review however the impact is essentially the same.

304. Doug Porter, *Rethinking Florida's Growth Management System: Prospects for Devolution*, *at* http://www.realtor.org (last visited Aug. 1, 2003). For a discussion of local governments in Maryland opposing state oversight, see *Maryland Smart Growth Laws Having Impact*, *at* http://newurbannews.com/maryland.html (last visited Aug. 1, 2003).

305. *See id*.

306. Winstead, *supra* note 237, at 539.

highway expansion over rail and other forms of transportation. In 2000, Governor Bush promoted Mobility 2000 and succeeded in convincing the legislature to approve a $6 billion "smorgasbord of road widening projects."[307] The following year, during the economic downturn and agency budget cuts, the Governor proposed a package to stimulate the economy by expediting $665 million worth of highway expansion projects and less than $2 million worth of alternate modes of transportation, such as bicycle paths and pedestrian improvements, and $0 to public transit. [308]

Public transit struggles to survive while the state highway system steadily adds lanes each year.[309] FDOT estimates approximately a $9 billion deficit for the long-range plans of half the state transportation agencies.[310] Furthermore, funding streams may not even be able to maintain the existing LOS.[311] After passage of a constitutional amendment in 2000, the State finally committed to constructing a high-speed rail system. [312]

The application of a PFA to Orlando would refocus the state budget to transportation projects that promote "smart growth." Instead of closing its eyes and pouring state funds into highway expansion projects that hastily consume open space, Florida can reallocate its budget to research and implement "smarter" growth patterns and more efficient transportation systems. Neither expanding highways, improving road conditions, nor investing in public transportation can remedy the traffic congestion problems alone. In fact, public transportation is not necessarily the cure, per se, because residents will be reluctant to accept such an abrupt change in their life. The focus of the PFA program is to lure growth where the state government desires to expand. Therefore, Florida can lessen traffic congestion by focusing on the underlying problem of unrestrained, random growth. Instead of pockets of development haphazardly blossoming along the I-4 corridor, the State can influence and attract businesses to smart locations where Florida desires to promote growth.

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307. Tony Dutzik & Mark Ferrulo, *Sprawl in Florida: A Conversation with the Experts*, FLA. PIRG EDUC. FUND 23 (Feb. 2002).
308. *Id.*
309. *Id.* at 24.
310. *Id.*
311. *Id.*
312. *Id.* at 23.

B. Impediments to Successful Implementation of PFAs to Reduce Transportation Congestion

Wherever Maryland's Smart Growth principles are enacted, implementation challenges will arise. Some main challenges include: factors driving sprawl are slow to change; location specific transportation plans are necessary; transportation projects have downstream effects; local tendencies to redirect development proposals to the town outskirts until congestion is remedied; transportation investments single-handedly cannot overcome the economics of sprawl nor can individual agencies; balancing the need to accommodate through traffic and long distance trips; and cooperation between agencies.[313]

Factors driving sprawl, such as demands for housing choices, dispersion of employment, flight from older areas due to perception about crime and quality of schools, and conflicts among level of government regarding the development process, will require time to reverse.[314]

FDOT must integrate new planning ideas into its capital program development because a one-size-fits-all response is not sufficient.[315] Additional capacity alone cannot decrease road congestion and resolve Florida's long-term transportation needs and therefore FDOT would have to work closely with local governments to concentrate growth in designated areas.[316] Elected officials and citizens will be opposed to alternate forms of transportation beyond single occupant vehicles and waiting while FDOT and local officials and agencies develop appropriate plans per location.[317]

Increasing capacity is not the only answer to resolve congestion because transportation projects have a downstream effect. Since roadways form an interconnected network, improvements in one area can cause entire traffic patterns to shift and create problems in previously satisfactory locations, such as adjacent rural roads that become "back roads" and "shortcuts."

As a location gets closer to becoming a "smart town," traffic congestion will inevitably increase slightly to accommodate the new residents and employees. Local government and citizens may first

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313. Winstead, *supra* note 237, at 541-44 (describing impediments to successful implementation of smart growth from a transportation perspective).

314. *Id*. at 541. *See* Part II(B) and *supra* notes 29-48, and accompanying text.

315. *See* Winstead, *supra* note 237, at 543.

316. *Id.*

317. *Id*. at 541. MDOT publishes multiple reports each year to assess the progress towards achieving and developing future goals and develop future ones. *E.g.*, Md. Dep't of Transp., 2002 Maryland Transportation Plan, *available at* http://www.smarttransportation.com; Md. Dep't of Transp, Strategic Plan, *available at* http://www.smarttransportation.com.

react with a desire to build and expand more roads; however, if this is permitted the sprawl will begin anew.[318]

Although traffic congestion is a sprawl impact most readily observed by the typical American, recall from Part II(B) that transportation is only one factor that influences sprawl. A complex, powerful mixture of social and economic dynamics motivates sprawl.[319] Just as transportation cannot resolve sprawling development patterns, MDOT alone cannot achieve Smart Growth.[320] Agencies must collaborate in order to designate growth areas and provide all necessary services to the local development.[321]

State highways are generally oriented to through traffic, such as trips from North Carolina to Maryland or Daytona to Tampa. However local residents also utilize them. On the interstate highways in both Maryland and Orlando, a large number of trips originate and terminate outside the state and city borders, respectively, and improvements are, and will continue to be, necessary to accommodate these trips.[322] However, by improving roads for through trips, commuters can also sprawl further away from the city center. [323]

VII. CONCLUSION

If the Governor and State Legislature do not acknowledge that unrestrained expansion of highways equates to increased sprawl and congestion, the condition of transportation, particularly in Orlando and other TCEAs in Florida, will only worsen. The State cannot abdicate its authority to mandate transportation concurrency in urban cores purely because the urban core is already congested and transportation concurrency cannot be met. Both transportation concurrency and infill development and redevelopment are important state concerns that must be addressed; one cannot be disregarded to correct the other but rather both must be balanced.

Maryland's innovative strategy may or may not be the solution. The concept, in a vacuum, appears promising: the state selects areas in which it wants to designate growth and only subsidizes projects within that area. Money is the motivation for many

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318. Winstead, *supra* note 237, at 542-43. This initial response is due partly to the social dependency on single occupancy vehicles.

319. *Id*. at 543; *see* Part II(B) and *supra* notes 29-48, and accompanying text.

320. *Id.* at 544.

321. *Id*. Recall that Maryland's Smart Growth Initiative consists of five programs that function concomitantly to achieve sprawl reduction.

322. *See* Winstead, *supra* note 237, at 543.

323. *See id*. at 543-44.

decisions, ranging from the brand of groceries that a person purchases to the source of their livelihood. Frequently developers are motivated to build on the outskirts of the metropolitan core because property costs are lower. Cheaper land comes with a cost: distance from one's target market. If the government is willing to subsidize a project which is built within the metropolitan, your target market, and the price to construct and operate your project in both locations is near even, why would one choose a remote location? Strategically, the answer is that the developer would seize the opportunity to be closer to his clientele.

Unlike previous land use planning techniques of the twentieth and twenty-first centuries,[324] Maryland's PFA system avoids controversy with the property rights activists that all too frequently allege that a taking without just compensation has occurred whenever the government attempts to manage growth. Government regulation is alleged to "take" one of the "sticks" from a landowner's bundle of property rights because the government restricts the permissible uses of land and defines what one can and cannot do with one's property. Regardless of the validity of this argument, a PFA does not restrict the uses of land or define what a landowner can construct on his or her land. Through a PFA, the government merely promotes growth in designated areas by enticing developers with a carrot. Essentially, the government is acting as a player in the market and not a regulator of the market. Developers are not restricted in where they choose to develop but can lessen their financial burden by selecting one location over another.

The PFA system would add a requisite layer of state persuasion to the land use and growth pattern decision-making process without regulating or restricting property uses. Recall that both Maryland and Florida are home rule states and have little actual state involvement in local land use decisions. Local governments are autonomous bodies and are only required to independently adopt a comprehensive plan with specific visions or elements. The PFA system could facilitate state involvement in decisions without creating a paternalistic, overpowering structure; the authority of local and state entities would remain balanced.

Theoretical enthusiasm and justification may be insufficient for Florida to allocate funds to research and explore the application of a PFA system to the state's transportation system. In the near future, MDOP will be publishing an evaluation of Maryland's Smart Growth initiatives, which will provide the empirical data necessary to evaluate the success or failure of the 1997 legislation. After

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324. *See* Part II, *supra* notes 82-129.

quantifiable evidence of the effects of Maryland's legislation are released, Florida legislators, planners, developers, and all other interested parties should further develop the PFA concept and consider its application to manage growth in Florida.

PROCEEDINGS OF THE 10TH ANNIVERSARY PUBLIC INTEREST ENVIRONMENTAL CONFERENCE:*

"Shaping Florida's Future: A Decade of Protecting an Eternity"

The University of Florida Fredric G. Levin College of Law celebrated its 10th annual student-run Public Interest Environmental Conference February 19th through February 21st, 2004. Over 300 attendees, including students, attorneys, senators, scientists, citizens from around the state, conference alumni, and representatives from non-governmental and governmental agencies participated in the three days of events that focused on some of Florida's most pressing environmental issues.

The conference events kicked off Thursday evening with an inspiring speech by Ollie Houck, preeminent environmental law scholar from Tulane University School of Law. Mr Houck returned to the conference in commemoration of its 10 years of success, as he was the keynote speaker at the first-ever PIEC. Houck told an attentive audience about his experiences with the natural beauty of Florida and how he has seen it change over the years.

Concurrent panel discussions ran throughout the day on Friday and Saturday, organized into four main tracks: Florida's Waters, Land & Development, Marine & Coastal, and Cutting Edge. On Friday morning, the tracks were introduced by leading experts in each area: Sonny Vergara, former Director of the Southwest Florida Water Management District, introduced the Florida's Waters track, followed by Michael Bean, Ecosystem Restoration Chair of the Wildlife Program at Environmental Defense, who spoke to the Land & Development topic. The Marine & Coastal track was introduced by Dr. David Guggenheim, Vice-President for Conservation Policy at the Ocean Conservancy. Eric Dannenmaier, Director of the Tulane Institute for Environmental Law and Policy, represented the Cutting Edge track by introducing conference attendees to the ideas of environmental democracy and environmental security and their important role in a post 9/11 society.

Throughout both days, panel discussions were lively and brought together experts to discuss the current state of these hot issues. The Florida's Waters track explored topics of water supply, water funding sources, springs protection, and water quality. During the

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* The individual authors of the articles in these proceedings accept responsibility for the accuracy of their information, quotations, and citations.

Land & Development track, panels focused on population carrying capacities, the Florida Home Town Democracy amendment, and code enforcement. Topics of ocean governance, working waterfronts, aquaculture, and the legal issues of living on Florida's coast were explored in the Marine & Coastal track. The Cutting Edge panels addressed at the conference spanned topics including indoor air pollution and toxic molds, genetically modified organisms and agriculture, clean energy, and green design.

On Saturday, there were also two special sessions. In the first, the important subject of Environmental Justice and bringing citizens' claims was addressed, including perspectives from both an attorney and an academic working in the field, as well as a citizen who is actually fighting such injustices through organizing with his community to form Citizens Against Toxic Exposure. In the afternoon, a workshop familiarized attendees with the process for citizen initiatives to amend the constitution and updates on reforms of the process.

The highlight of the conference was the keynote address at the Friday evening banquet by best-selling author and columnist, Carl Hiaasen. His unique blend of humor and passion for Florida's environment was the perfect compliment to three days devoted to Florida's environmental future. Hiaasen spoke to a packed house of 220 conference attendees and praised the important work of all those present who he recognized as the ones committed to preserving the natural beauty of Florida.

The following articles are contributions by several conference presenters as well as University of Florida students who worked on organizing the panel discussions.

The 11th Annual PIEC is scheduled to take place February 24th through February 26th, 2005. We hope that you will be able to attend. For more information about the conference, please visit our website at http://grove.ufl.edu/~els.

Erika Zimmerman & Ryan Osborne,
10th PIEC Conference Co-Chairs

MARINE RESERVES, THE PUBLIC TRUST DOCTRINE AND INTERGENERATIONAL EQUITY

DONNA R. CHRISTIE*

The history of fisheries management chronicles how species by species and crisis by crisis approaches to fisheries management has, with few exceptions, failed to create sustainable fisheries or healthily functioning ecosystems.[1] We have instead created the situation where the depletion and restriction of catch of one regulated species, has often led to the overfishing of the next unregulated species that may have flourished in the ecosystem deprived of its primary preditor. This fishing down the food web in many cases caused a "domino effect" of overfishing.[2] But worse, this pattern of fishing can have cascading effects that permanently alter the ecosystem balance, so that the first commercially or recreationally important fish stock may never recover despite protection of that species by regulation.[3]

The effects of overfishing are not simply the direct population effects on the target species. Many fisheries produce a large amount of bycatch of non-targeted species, most of which is discarded dead.[4] In addition, many types of fishing gear are destructive to marine habitat. Fishing can lead to changes in the composition of ecological communities and resulting changes in the structure of marine food webs.[5] A report for the Pew Oceans Commission entitled *Ecological Effects of Fishing in Marine Ecosystems of the United States*[6]

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1. NOAA Fisheries reports that eighty-six stocks are currently overfished and sixty-six stocks are experiencing overfishing. The overfished status of 695 stocks remains classified as "unknown or not defined," and whether overfishing is occurring cannot be determined in the case of 658 stocks because the harvest rate is not known or the threshold for overfishing has not been defined. *See* NOAA Fisheries, *Sustaining and Rebuilding, 2002 Report to Congress, The Status of Fisheries* 25, 9 (April 2003)

2. *See* Pew Oceans Commission, *America's Living Oceans: Charting a Course for Sea Change* 40 (May 2003) [hereinafter Pew Oceans Commission Report].

3. *Id.*

4. Bycatch is the term used for incidental take in fisheries and refers to "[d]iscarded catch of any living marine resource plus retained incidental catch and unobserved mortality due to a direct encounter with fishing gear." *See* NOAA Fisheries, Bycatch, http://www.nmfs.noaa.gov/bycatch.htm#def , *quoting* Managing the Nation's Bycatch (1998).

5. Pew Oceans Commission Report, *supra* note 2, at 40.

6. Paul K. Dayton, Simon Thrush, and Felicia C. Coleman, *Ecological Effects of Fishing in Marine Ecosystems of the United States* (Pew Ocean Commission 2002) [hereinafter *Ecological Effects of Fishing*] .

surveyed the direct and indirect effects of overfishing, bycatch, habitat degradation, and fishing-induced food web changes. The consequences of these current fishing practices that have been observed include:

> "changes in the structure of marine habitats that ultimately influence the diversity, biomass, and productivity of the associated biota;"[7]
>
> "removal of predators, which disrupts and truncates trophic relationships;"[8]
>
> and "endangerment of marine mammals, sea turtles, some seabirds, and even some fish."[9]

The report found that the combined effects of current fishing practices alter the composition of ecological communities and the "structure, function, productivity, and resilience of marine ecosystems. . . ."[10] Loss of biodiversity leads to decreased functional diversity as well as an increase in the inherent unpredictability of ecosystems and a reduction in overall biological productivity.[11] The report's conclusion was that "the weight of evidence overwhelmingly indicates that the unintended consequences of fishing on marine ecosystems are severe, dramatic, and in some cases irreversible."[12]

Single species models cannot take account of the effects of fishery-induced food web shifts and cascading effects in the ecosystem. The health of the ecosystem is inextricably linked to the health and resilience of the fishery and vice versa. Because of this, ecosystem-based management is being recommended by many commentators[13] as an alternative to the current fisheries management regimes which generally focus on a single species or a

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7. *Id.* at 1. (Citations omitted).
8. *Id.* (Citations omitted).
9. *Id.* (Citations omitted).
10. *Id.* (Citations omitted).
11. *Id.*
12. *Id.*
13. *See generally, e.g.,* Martin H. Belsky, *The Ecosystem Model Mandate for a Comprehensive United States Ocean Policy and Law of the Sea*, 26 SAN DIEGO L. REV. 417, 461 (1989); *Symposium: The Ecosystem Approach: New Departures for Land and Water: Fisheries Management*, 24 ECOLOGY L. Q. 619 (1997); W.M. von Zharen, *Ocean Ecosystem Stewardship*,23 WM. & MARY ENVTL. L. & POL'Y REV. 1 (1998); Marion McPherson, *Integrating Ecosystem Management Approaches into Federal Fishery Management through the Magnuson-Stevens Fishery Conservation and Management Act*, 6 OCEAN & COASTAL L. J. 1 (2001); Stephen R. Palumbi, *Marine Reserves, A Tool for Ecosystem Management and Conservation* (Pew Commission Report 2002).

closely related group of species as problems arise in the fishery. Ecosystem management would require consideration of:

> all interactions that a target fish stock has with predators, competitors, and prey species; the effects of weather and climate on fisheries biology and ecology; the complex interactions between fishes and their habitat; and the effects of fishing on fish stocks and their habitat.[14]

While arguments for ecosystem management are persuasive, implementing ecosystem-based management can be overwhelming. Having enough information to consider and understand the complex interactions in an ecosystem seems to be impossible, and attempting to manage species taking all this into account might be an interminable exercise. The 1999 report to Congress by the Ecosystem Principles Advisory Panel,[15] however, concludes that "the approach need not be endlessly complicated."[16] The Panel emphasized that "[e]cosystem-based fisheries management does not require that we understand all things about all components of the ecosystem."[17] The Panel emphasized that "[e]cosystem-based fisheries management does not require that we understand all things about all components of the ecosystem."[18]

The Panel recommends that an ecosystem-based approach be incrementally incorporated into the management process as data are gathered, training is carried out and guidelines are developed to ensure compliance with ecosystem principles, goals and policies.[19] A framework of principles, incremental steps toward integrating ecosystem principles into fisheries management, and recommendations and guidelines for developing and implementing Fishery Ecosystem Plans were developed by the Panel.[20] Fishery Ecosystem Plans are intended "to integrate FMPs and include . . . ecosystem Principles, Goals, and Policies in a way that will be meaningful."[21]

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14. Ecosystems Principles Advisory Panel, Ecosystem Based Fisheries Management, A Report to Congress 1 (1999) [hereinafter Ecosystem Management Report].

15. The Panel was directed by Congress to assess the extent to which ecosystem principles are used in fisheries management and to recommend how such principles can be further implemented to improve living marine resource management. For its charter, *see* Ecosystems Management Report, *supra* note 14, at Appendix A (1999).

16. *Id.* at 1.

17. *Id.* at 105.

18. *Id.* at 10.

19. *Id.* at 33-34.

20. *See generally*, *id.* at 1-5.

21. *Id.*

The Ecosystem Principles Advisory Panel[22] and numerous other experts and commentators[23] believe marine protected areas and marine reserves[24] are an important element of an ecosystem-based approach to management. The Pew Oceans Commission, created by the private Pew Foundation to provide an independent report to the nation on recommendations for a new oceans policy, also found marine reserves necessary to assure the long-term health of ocean ecosystems.[25]

Evidence has piled up to support that marine reserves increase biomass of overfished stocks.[26] But marine reserves can also perform other services to complement an ecosystem-based approach to management. Research on many marine reserves is showing a "spillover effect" in abundance of fish in adjacent areas.[27] Designation of marine reserves protects some habitat from the direct effects of fishing[28] and provide areas for recovery and restoration.[29] Marine reserves provide baseline information on habitat to help distinguish natural variability from user impacts.[30] Reserves can serve as experimental sites for ecosystem restoration and studying processes that may be operable throughout an ecosystem or region.[31] Finally, a reserve may provide "insurance"

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22. *Id.* at 29.

23. *See, e.g.,* Jeff Brax , *Zoning the Oceans: Using the National Marine Sanctuaries Act and the Antiquities Act to Establish Marine Protection Areas and Marine Reserves in America*, 29 ECOLOGY L.Q. 71 (2002); Matthew Chapman, *Annual Review of Environmental and Natural Resources Law: The Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve: Ephemeral Protection*, 29 ECOLOGY L.Q. 347 (2002); Robin Kundis Craig, *Taking the Long View of Ocean Ecosystems: Historical Science, Marine Restoration, and the Oceans Act of 2000*, 29 ECOLOGY L.Q. 649, 684-687(2002);Robin Kundis Craig, *Taking Steps Toward Marine Wilderness Protection? Fishing and Coral Reef Marine Reserves in Florida and Hawaii*, 34 MCGEORGE L. REV. 155 (2003); Kristen M. Fletcher, *"National Fisheries Law and Policy" Fix It! Constructing a Recommendation to the Ocean Commission for the Future of Fisheries*, 8 ROGER WILLIAMS U. L. REV. 93 (2002); Suzanne Iudicello and Margaret Lytle, *Marine Biodiversity and International Law: Instruments and Institutions That Can Be Used to Conserve Marine Biological Diversity Internationally*, 8 TUL. ENVTL. L.J. 123 (1994); William J. Ballantine, Networks of "No-Take" Marine Reserves Are Practical and Necessary, in NANCY L. SHACKELL & J.H. MARTIN WILLISON, MARINE PROTECTED AREAS AND SUSTAINABLE FISHERIES (1995); Stephen R. Palumbi*, Marine Reserves: A Tool for Eosystem Management and Conservation* (Pew Oceans Commission 2002).

24. Marine reserves are a type of marine protected area commonly referred to as "no take zones."

25. Pew Oceans Commission Report, *supra* note 2, at 34, 106.

26. *See,* Stephen R. Palumbi*, Marine Reserves: A Tool for Eosystem Management and Conservation* 22-24 (Pew Oceans Commission 2002).

27. *Id.* 25-28.

28. *See Ecological Effects of Fishing*, *supra* note 6, at 26-28 for a discussion of the direct effects of fishing gear on marine habitat and marine ecosystems.

29. *See* PISCO, The Science of Marine Reserves (How Marine Reserves Fit into the Big Picture) *at* http://www.piscoweb.org/outreach/pubs/reserves/ [hereinafter PISCO].

30. *Id.*

31. *See Ecological Effects of Fishing*, *supra* note 6, at 34.

against excessive exploitation in light of scientific indeterminacy and management uncertainty.[32]

There is no shortage of legislation that may provide authority for establishment of marine reserves. A partial list includes:

> state and federal fisheries management legislation,[33]
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> the National Marine Sanctuaries Act,[34]
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> the National Wilderness Preservation System (Wilderness Act),[35]
>
> the National Wildlife Refuge System,[36]
>
> the National Estuarine Research Reserve provisions of the Coastal Zone Management Act,[37]
>
> the National Park Service Organic Act,[38]
>
> the Endangered Species Act,[39] and
>
> state authority to manage sovereignty lands.[40]

Although much authority clearly exists, regulators and managers have a lot of discretion about management tools and in their judgment about what constitutes the best scientific evidence in choosing management tools. Because so much controversy has surrounded the establishment of marine reserves, managers are being quite cautious in the use of marine reserves as a management tool.

One of the most often heard criticisms of the use of marine reserves is that they violate the public trust doctrine. The states own lands below navigable waters in trust for the public.[41] The

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32. *See* Ecosystems Management Report, *supra* note 14, at 29; *Ecological Effects of Fishing*, *supra* note 6, at 34; and PISCO, *supra* note 28.

33. Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801–1882 (2002 & Supp. 2003); *see also, e.g.*, FLA. STAT. chap. 370 (2003).

34. 16 U.S.C. §§ 1431 et. seq. (2000& Supp. 2003).

35. 16 U.S.C. § 1131(2000& Supp. 2003).

36. 16 U.S.C. § 668dd (2002 & Supp. 2003).

37. 16 U.S.C. § 1461 (2000& Supp. 2003).

38. 16 U.S.C. §§ 1,2-4 (2000& Supp. 2003).

39. 16 U.S.C. §§ 1531-1544 (2000& Supp. 2003).

40. *See, e.g.*, FLA. STAT.chap. 253.

41. *See* Pollard's Lessee v. Hagan, 44 U.S. 212 (1845); Shively v. Bowlby, 152 U.S. 1 (1894).

traditional triad of public uses protected by the doctrine were navigation, fishing and commerce.[42] Modern jurisprudence has not, however, limited the purposes of the trust to the traditional public uses of navigable waters. The doctrine has evolved to reflect the public's contemporary interests in navigable waters and tidelands.[43]

Most states recognize recreational use as part of the public trust.[44] State courts have also identified environmental and ecological protection and preservation of scenic beauty as within the trust protections.[45] The public trust has also been extend ed to "preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area."[46]

The biggest problem with application of the public trust doctrine is that many of the protected uses can conflict with each other, and the doctrine creates no specific hierarchy in the uses. Legislatures and agencies generally must balance competing interests based on the appropriateness of the use to the particular area of the ocean.[47] One case suggests, however, that the protection of waters and wildlife is fundamental to the enjoyment of all other public trust uses. In *Weden v. San Juan County*,[48] the Washington Supreme Court addressed the controversial issue of regulating personal water craft (PWC). In determining that a county ordinance prohibiting navigation and recreational use by PWCs is consistent with the state's public trust doctrine, the court found that "it would be an odd use of the public trust doctrine to sanction an activity that actually harms and damages the waters and wildlife of this state."[49]

In Florida, the public trust doctrine is incorporated in the Florida Constitution:

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42. Shively v. Bowlby, 152 U.S. 1 (1894).

43. *See* JACK H. ARCHER, DONALD L. CONNORS, KENNETH LAURENCE, SARAH CHAPIN COLUMBIA, & ROBERT BOWEN, THE PUBLIC TRUST DOCTRINE AND THE MANAGEMENT OF AMERICA'S COASTS 23 (1994) [hereinafter Archer et al.].

44. *See, e.g.,* State v. Superior Court of Lake Co., 615 P.2d 239 (Cal. 1981);White v. Hughes, 190 So. 446, 449 (Fl. 1939); Ryals v. Pigott, 580 So.2d 1140 (Miss. 1990); Gwathmey v. North Carolina, 464 S.E.2d 674 (N.C. 1995).

45. *See, e.g.,* Kootenai Envtl. Alliance, Inc. v. Panhandle Yacht Club, Inc., 6771 P.2d 1085 (1983) (The public trust doctrine protects "navigation, fish and wildlife habitat, aquatic life, recreation, [and] aesthetic beauty."); State v. Trudeau, 408 N.W. 2d 337 (Wis.1987) ("The rights Wisconsin's citizens enjoy with respect to bodies of water held in trust by the state include the enjoyment of natural scenic beauty. . . .").

46. *See, e.g.*, Marks v. Whitney, 491 P.2d 374, 380 (Cal.1971).

47. *See generally* Archer et al., *supra* note 42 ,at 27-29.

48. 958 P.2d 273 (Wash. 1980).

49. *Id.* at 284.

> Art. X, Section 11. Sovereignty lands. – The title to lands under navigable waters, within the boundaries of the state, which have not been alienated, including beaches below the mean high water lines, is held by the state by virtue of its sovereignty, in trust for all the people. Sale of such lands mya be authorized by law, but only when in the public interest. Private use of portions lands may be authorized by law., but only when not contrary to the public interest.[50]

The Florida Supreme Court has specifically expanded the State's trust uses to include swimming and bathing,[51] but the Constitution's general reference to "the public interest," rather than referring to "public trust uses," is an indication that Florida intends the doctrine to be dynamic and reflect the public's contemporary interests in and uses of navigable waters. Another section of the Florida Constitution gives us additional insight into the public trust doctrine in relation to the marine living resources associated with sovereignty lands:

> Art. X, Section 16. Limiting Marine Net Fishing. --
>
> (a) The marine living resources of the State of Florida belong to all of the people of the state and should be conserved and managed for the benefit of the state, its people, and *future generations*. . . .[52]

This inclusion of the concept of intergenerational equity in relation to marine living resources adds an intemporal aspect to Florida's public trust doctrine.[53]

Professor Edith Brown Weiss sets out perhaps the most well known statement of the principles of intergenerational equity.[54] She describes the principles as follows:

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50. FLA. CONST., Art. X, Section 1 (1970).

51. White v. Hughes, 190 So. 446, 449 (1939).

52. FLA. CONST., Art. X, Section 16 (1994).

53. At least one federal statute particularly relevant to Florida also incorporates the concept of intergenerational equity. The legislation establishing Biscayne National Park states: "In order to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty, there is hereby established the Biscayne National Park . . . ." 16 U.S.C. 410gg.

54. *See* Edith Brown Weiss, *Our Rights and Obligations to Future Generations for the Environment*, 84 AM. J. INT'L L. 198, 201-202 (1990); *see also generally,* EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS (1989).

> I. Conservation of Options: Each generation should conserve the diversity of the natural and cultural resource base so that the options of future generations are not unduly restricted.[55]
>
> II. Conservation of Quality: "[E]ach generation should . . . maintain the quality of the planet so that it is passed on in no worse condition than that in which it was received."[56]
>
> III. Conservation of Access: Each generation should provide its members with "equitable rights of access to the legacy of past generations and . . . conserve this access for future generations."[57]

In the context of these principles of intergenerational equity, the importance of marine reserves becomes clear as a means to conserve options, quality and access to marine living resources for future generations. Florida's public trust doctrine is not a limitation on the use of marine reserves; the state must protect a broad array of public interests and uses in navigable waters. The state has the authority to regulate public trust uses to minimize conflicts and assure the protection of waters and wildlife that are fundamental to the enjoyment of all other public trust uses.

The state's public trust doctrine does not establish any apparent priority among conflicting public trust uses. The additional constitutional requirement to preserve the rights of future generations to marine living resources, however, creates an overarching limitation on the exercise of public trust uses. The inherent uncertainty in science and variability in ecosystems necessitates measures to insure the intergenerational rights in regard to the diversity and quality of, and access to, marine living resources. Marine reserves can provide that "insurance policy" for future generations.

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55. *Id.*
56. *Id.*
57. *Id.*

THE MEANING AND RELEVANCE OF FOOD SECURITY IN THE CONTEXT OF CURRENT GLOBALIZATION TRENDS

DAVID FAZZINO*

Table of Contents

I. INTRODUCTION

Food security, a multi-dimensional issue, has gone through several iterations in international policy.[1] Conceptual shifts on which element of food security is most crucial have occurred in recent decades, in order to fully address food security one must consider production, storage and distribution of food.[2] To this trinity I would also add (although not discuss) consumption of food based on (a) cultural considerations, such as food taboos or food allergies, and (b) household considerations, such as timing and distribution of food within the household and ability to purchase food. This paper will briefly explore the meaning and relevance of the dimensions of food security in the context of current trends of

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1. JOHAN POTTIER, ANTHROPOLOGY OF FOOD: THE SOCIAL DYNAMICS OF FOOD SECURITY, 11-18 (1st ed. 1999)

2. *See id.*

globalization, which occurs not only at the economic level but also at the cultural, social and individual levels as well.

II. HISTORICAL BACKGROUND

Before departing on this project it is crucial to develop some historical background on food security in order to demonstrate the current relevance of food security. Globalization of food and food systems occurred since at least as early as the 'Columbian Exchange'[3] of European expansion and even earlier on a hemispheric level with extensive trade routes that had been established throughout Europe, Asia and Africa before 1400 C.E.[4] In the 1400s, the Europeans adopted an expansionist foreign policy[5] to (1) acquire gold, (2) shift population to other temperate climates; (3) produce commodities for export to their home countries and (4) achieve freedom from hunger.[6] This expansionism had dramatic impacts on native North and South American populations — particularly their cuisines and diets,[7] production systems,[8] and population structure as a result of native mortality from the introduction of European diseases.[9] European expansionism and colonialism of Africa also had dramatic impacts on agricultural production systems in Africa by the European establishment of plantations.[10] This forced Africans into the production of cash crops

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3. The "Columbian Exchange" is the exchange of biological resources between the European, African and American continents that began on a massive scale with Columbus's voyage. It was prompted by the desire to seek out new resources by which European leaders could increase the wealth of their countries. Amongst the resource expropriations from the "New World" were living plant and animal materials, which made their way to the "Old World" (Europe). Europeans also introduced several species of plants and animals with which they were familiar into the New World. The effects of these transatlantic food production systems impacted not only food security, but also disrupted the ecological familiarity of the landscape. *See* ALFRED W. CROSBY JR. THE COLUMBIAN EXCHANGE: BIOLOGICAL AND CULTURAL CONSEQUENCES OF 1492 - 30TH ANNIVERSARY EDITION, 1, 64, 165-66 (1st ed 2003).

4. ERIC WOLF, EUROPE AND THE PEOPLE WITHOUT HISTORY, 28 (1st ed. 1982) (mapping "Old World" trade routes in 1400, which connected Africa, Asia and Europe).

5. *See id.* at 129.

6. France, agriculturally the richest nation in Europe, had sixteen general food shortages in the 18th century. ALFRED CROSBY, ECOLOGICAL IMPERIALISM: THE BIOLOGICAL EXPANSION OF EUROPE, 900-1900, 20. (1986)

7. SOPHIE COE, AMERICA'S FIRST CUISINES, 56 (1994).

8. SIDNEY MINTZ, SWEETNESS AND POWER: THE PLACE OF SUGAR IN MODERN HISTORY, 47-51(1985) (explaining that sugar production in the colonial era was the first industrialized production process).

9. JARED DIAMOND GUNS, GERMS AND STEEL: THE FATES OF HUMAN SOCIETIES, 213 (1999).

10. *See* Frances Moore Lappé & Joseph Collins, *Why People Can't Feed Themselves*, *In* GLOBAL BACKLASH: CITIZEN INITIATIVES FOR A JUST WORLD ECONOMY 82 (Robin Board ed., 2002).

for export to the mother country, and policies favoring white settler farmers.[11]

Thus, the politics of food and food security can be seen to be a crucial, if underscored, part of the history of European expansionism. Mintz noted this when he commented on the invisibility of the 'awful' power of food politics, where people in distant lands, such as a member of a corporation's board of directors acting on behalf of shareholders or members of a legislature acting on behalf of citizens, make decisions that lead to food insecurity and death.[12] Mintz's commentary is a call for anthropologists to make food politics as it relates to hunger, and thus food security, relevant.[13]

This analysis of food security's relevance will occupy the first part of this paper, specifically focusing on how food security is undermined by corporate interests operating at national and international levels. The second portion of this paper will address the contributions that globalization has made in the realization of food security both from the perspective of resiliency and adaptability of 'indigenous' food systems as an integral component of food security and the international institutional support from both multi-laterals and civil society organizations that local food production initiatives have received. This paper will use the meaning and relevance of food security as a lens to pierce the corporate veil and look at the difference between the win-win situations envisioned by corporate interests in public-private partnerships and what I call the 'survive-survive relationships' envisioned by civil society organizations in an assortment of partnerships between the private, public and 'third sector.'[14]

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11. *See id.*

12. *See* SIDNEY MINTZ, TASTING FOOD, TASTING FREEDOM: EXCURSIONS INTO EATING, CULTURE AND THE PAST, 11 (1996). Mintz called on anthropologists to establish, "the linkages between such decision-making and its victims, exposing those linkages so that the decision-making itself becomes ethically visible".

13. *See id.*

14. JEREMY RIFKIN, THE END OF WORK: THE DECLINE OF THE GLOBAL LABOR FORCE AND THE DAWN OF THE POST-MARKET ERA, 250 (1996). My argument, while specific to the ramifications of addressing food security, closely parallels Rifkin's call for 'third sector' or community development organizations. In Rifkin's words,

> Making a successful transition to the post-market will depend largely on the ability of an aroused electorate, working through coalitions and movements, to effectively transfer as much of the productive gains as possible from the market sector to the third sector in order to strengthen and deepen community bonds and local infrastructures. Only by building strong, self-sufficient local communities will people in every country be able to withstand the forces of technological displacement and market globalization that are threatening the livelihoods and survival of much of the human family.

See id.

III. GLOBALIZATION'S NEGATIVE IMPACTS ON FOOD SECURITY

This portion of the paper will explore the linkages between distant decision-making regarding food production and its impacts on food security. It is my intent that this paper will expose these linkages so that decision-making to maximize profits becomes ethically visible.[15] The power dimension of food has been discussed extensively throughout the literature of various disciplines, elements of power in food security that have been addressed include: the historical effects of the enclosure acts in England;[16] vertical integration and the power of trans-national corporations to control national and international policy;[17] the lobbying by agribusiness to protect food stamps;[18] US policies and corporate control have historically undermined the ability of smaller farmers to carve a living out of the rich soil of the Great Plains;[19] consumer ignorance and constructed knowledge about food origins;[20] international free-trade supports trans-national corporations and impacts income of US farmers, farm workers and workers;[21] the health effects of the physical and institutional support of the fast food industry in the US;[22] the use of multiple channels by which agribusiness accesses Congress;[23] and most directly by Dahlberg who views transformation of modern structures of power as his point of departure for food systems analysis.[24]

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15. See MINTZ, *supra* note 12.

16. JULES PRETTY, AGRI-CULTURE: RECONNECTING PEOPLE, LAND AND NATURE, 29-30 (2002). During the 18th and 19th centuries there were thousands of enclosure acts in England where lands previously managed as commons were enclosed and privatized by those in positions of political power who viewed the commons as inefficient.

17. BREWSTER KNEEN, INVISIBLE GIANT: CARGILL AND ITS TRANSNATIONAL STRATEGIES, 16 (2d ed. 2002) (explaining the size and power of Cargill, a U.S. company founded in 1865). Kneen further states that Cargill is an "international marketer, processor and distributor of agricultural, food, financial and industrial products with some 79,000 employees in more than 1,000 locations in [seventy two] countries and with business activities in 100 more." *Id.*

18. NOAM CHOMSKY, UNDERSTANDING POWER: THE INDISPENSABLE CHOMSKY, 369-70 (2002).

19. RAYMOND NORTH, NIGHT CAME TO THE FARMS OF THE GREAT PLAINS, 41-42 (1991).

20. DAVID BELL & GILL VALENTINE, CONSUMING GEOGRAPHIES: WE ARE WHERE WE EAT, 5-6 (1997).

21. CHRISTINE AHN, SHAFTED: FREE TRADE AND AMERICA'S WORKING POOR, 3-6 (2003).

22. ERIC SCHLOSSER, FAST FOOD NATION: THE DARK SIDE OF THE ALL-AMERICAN MEAL, 195 (2002) (stating that "Everyday in the United States, roughly 200,000 people are sickened by a foodborne disease, 900 are hospitalized and fourteen die").

23. MARION NESTLE, FOOD POLITICS: HOW THE FOOD INDUSTRY INFLUENCES NUTRITION AND HEALTH, 120(2003).

24. KENNETH A. DAHLBERG, *Democratizing society and food systems: Or how do we transform modern structures of power?*, 18 AGRICULTURE AND HUMAN VALUES: 131, 131 (2001). (explaining that a re-embedding of current disparate conceptualizations is needed in order to develop sustainable institutions of governance and food production). Dahlberg calls for a re-embedding of: culture and society in nature; science, economics and technology in society and nature; as well as governance and politics in society. *Id.*

This paper will assist in advancing Mintz's project[25] by sketching three examples of decision-making at the national and international levels that have relied on the deified neo-liberal paradigm of wealth maximization through 'comparative advantage'[26] and which have either led to food insecurity or threaten to undermine food security in the immediate future. First, this paper will examine the effects of the United States' decision to subsidize its farmers to overproduce grain. Second, this paper will examine the impacts of the introduction of high yield varieties into the third world in the 'Green' and 'Gene Revolutions'. Third, this paper will examine the effects of the imposition of western notions of intellectual property rights on farmers in Africa. Through an analysis of these three issues this paper will demonstrate that the neo-liberal vision of a world of plenty, spearheaded by public-private partnerships,[27] which promises to make the world safe for global trade and capital investment, is at best, a tangled web of inconsistencies and at worst a morally indefensible imperialistic approach to creating and maintaining the chronically food insecure populations throughout the 'Global Souths'[28] through international law mechanisms[29] and development projects[30].

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25. *See* MINTZ, *supra* note 12.

26. PAUL R. KRUGMAN & MAURICE OBSTFELD, INTERNATIONAL ECONOMICS: THEORY AND POLICY 10-12, 16 (6th ed 2003) (explaining the benefits that accrue to the overall global wealth when each country produces those goods or provides those services which it has a comparative advantage). The authors explain that countries engage in international trade for two reasons: (1) they are different from one another and (2) for greater efficiency through economies of scale in production. The authors explain "comparative advantage" for countries engaged in international trade through an analogy to the career of Babe Ruth who was removed as a pitcher so he could exercise his comparative advantage, his skills as a batter. It really all does make perfect sense how Babe Ruth's career can be viewed as a mirror of international trade relations.)

27. KENNY BRUNO AND JOSHUA KARLINER, EARTHSUMMIT.BIZ: THE CORPORATE TAKEOVER OF SUSTAINABLE DEVELOPMENT, 40-45 (2002).

28. 'Global Souths' include not only the 'periphery' areas of the globe, which have been referred to as less (or least) developed countries, third world countries and undeveloped countries but also periphery areas in the 'developed' countries such as the United States. Rather than viewing the life circumstances of those in these 'Global Souths' as an inherent component of systems of economic domination, they have been viewed predominately by the fields of history and anthropology as a "cultural problem" which can only be addressed by changing the backward or 'redneck' ways of 'locals'. *See* PEM DAVIDSON BUCK, WORKED TO THE BONE: RACE, CLASS, POWER, & PRIVILEGE IN KENTUCKY, 7 (2001).

29. *See* Walden Bello, *Building an Iron Cage: The Bretton Woods Institutions, the WTO, and the South, In* VIEWS FROM THE SOUTH: THE EFFECTS OF GLOBALIZATION AND THE WTO ON THIRD WORLD COUNTRIES 89 (Sarah Anderson ed., 2000) (arguing that multilateral structures, such as the World Trade Organization, "entrench the power of the northern superpowers under the guise of creating global rules for all").

30. *See id.* at 11-13.

A. Grain Overproduction

The United States government has, through its price support and subsidizing of grain production, created an international problem of an artificially low market price for grains, which has destabilized grain market.[31] The ramifications for food security of US grain dumping, selling grains below the cost of production, are most strongly felt in countries where grain farmers are unable to continue farming when forced to compete with below-cost grains.[32] For example, Mexican farmers are unable to compete with corn that is imported from the US at thirty percent below the cost of production.[33] Trade liberalization promises profits for a select few trans-national agribusiness corporations, as eighty percent of all US corn exports are from Cargill, Archer Daniels Midland, and Zen Noh.[34] Proponents of free trade would perhaps herald the destruction of Mexico's corn sector as the world realizing greater overall production by the US utilizing its competitive advantage and hence allowing Mexico to determine its competitive advantage. Proponents of this neo-liberal rationalization are blissfully ignorant of the ramifications not only on livelihoods, but also potential loss of genetic diversity, not only with an exodus of corn producers but also with the introduction of genetically modified corn.[35]

Aside from the very real impacts that the overproduction of grain in the United States has on the food security of other countries, the overproduction in itself serves as propaganda for the validation and continued reliance on industrial systems of food production, which rely on the application of ever more technology to overcome the limits of nature.[36] The technology of industrial agricultural has its greatest proving ground in the Great Plains of the United States, where in 1996 a barrage of chemicals was able to yield record harvests in the face of a predicted shortfall in harvest.[37]

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31. Mark Ritchie, Sophia Murphy & Mary Beth Lake, United States Dumping on World Agricultural Markets (2003), *available at* www.tradeobservatory.org. (last visited Nov. 1, 2003).

32. *See id.*

33. Kristin Dawkins, WTO Cancun Series Paper No. 5: The TRIPS Agreement: Who owns and controls knowledge and resources? (2003) *available at* www.iatp.org (last visited Nov. 1, 2003).

34. *See id.*

35. *See id.*

36. Frederick H. Buttel, *Some Observations On Agro-Food Change and the Future of Agricultural Sustainability Movements*, *In* GLOBALISING FOOD: AGRARIAN QUESTIONS AND GLOBAL RESTRUCTURING 350. (D. Goodman & M. Watts eds., 1997) (explaining that "output expansion, which leads to a long-term tendency to declining commodity prices in real terms, will strike citizens, scientists and policy makers as being evidence that sustainability concerns are unwarranted or exaggerated").

37. *See id.*

B. Green and Gene Revolutions

The Malthusian argument that has been advanced in the past regarding the need for high yield varieties fed by high inputs of agrichemicals to stave off mass starvation is being resurrected by proponents of the gene revolution who see agricultural biotechnology, developed through specialized cosmopolitan techniques, as the means to assure food security through both increasing the quantity and quality (vitamin content) of food.[38] One advocate of agricultural biotechnology is U.S. Trade Representative Robert Zoellick, who has used the terms 'immoral' and 'luddite'[39] to describe the European rationalization of its ban on food products that contain genetically modified organisms.[40] This uncritical acceptance of 'high' technology as the only rational and moral means to produce food is based on the underlying theory that technology is value-neutral and induces progress autonomously.[41] Conversely, continued utilization of previously developed technologies is a result not only of stupidity and laziness,[42] but also immoral because 'luddite tendencies' condemn the poor to death as a result of the irrational fears of the privileged.[43] Although the Green Revolution has led to significant increases in some crops (cash crops) with

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38. DENNIS T. AVERY, *Why we need food biotechnology*, 54 FOOD TECHNOLOGY 132, 132. (2000) (arguing that agricultural biotechnology is necessary in order to stave off hunger and that misgivings about the deployment of the technology are a product of 'elitists' unfounded fears); *see also* Martina McGloughlin, Ten reasons why biotechnology will be important to the developing world (1999) *at* http://www.agbioforum.org/vol2no34/mcgloughlin.htm (on file with the author).

39. 'Luddite' has been reduced in common parlance to mean someone who is irrationally against the use of technology. This negative connotation and modern rendition, which Zoellick likely intended, obscures that the definition, which comes to us from English history and means "a member of those groups of workers who deliberately smashed machinery in the industrial centers of East Midlands, Lancashire, and Yorkshire, believing it to be the cause of unemployment [after Ned *Ludd*, a late 18th-c. riot leader]." *See* THE NEW LEXICON WEBSTER'S DICTIONARY OF THE ENGLISH LANGUAGE 590 (2d ed 1989).

40. RAJ BHALA & DAVID A. GANTZ, *WTO Case Review 2002*, 20 ARIZ. J. INT'L & COMP. L. 143, 152 (2003).

41. ARTURO ESCOBAR, *Welcome to Cyberia: Notes on the Anthropology of Cyberculture*, 35 CURRENT ANTHROPOLOGY 211, 211 (1994)(stating that technology is value-neutral and thus cannot be judged for its utilization). The author notes that, "The underlying theory is that science and technology induce progress autonomously – a belief represented by the metaphor of "the arrow of progress." *Id.* The arrow of progress which pervades studies in a variety of disciplines embodies an evolutionary determinism that goes roughly from science to technology to industry to market and finally, to social progress." Law and economics are disciplines that have embraced the notion of the "arrow of progress" through its actors and various iterations, the notion of "comparative advantage" is one concept that immediately comes to my mind. *See id.*

42. David Brokensha, *What African Farmers Know*, *in* CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 310. (Darrell Addison Posey ed., 1999).

43. *See* AVERY, *supra* note 38.

benefits to some farmers,[44] the Green Revolution also led to the decrease in production of other crops,[45] with the net result of increasing rural inequality in Africa,[46] the U.S.[47] and Latin America.[48] Stone has illustrated the weaknesses of the Malthusian justification for increased production, by showing that while India has experienced a crisis of overproduction and subsequently increasing buffer stocks of wheat and rice,[49] it has also seen its population devastated by food security with an estimated quarter of a billion people malnourished and 1.5 million children suffering a malnutrition-related death each year.[50]

The current structure of the agricultural biotechnology industry indicates that research and development efforts will continue to center on the development of varieties that are integral to the continuance of industrial agriculture cash cropping systems, which serve the needs of transnational corporations rather than serving the needs of the poor.[51] Large private firms dominate the commercialization of genetically modified varieties and would likely spearhead efforts of agricultural biotechnology introduction in less industrialized countries.[52] Indeed, agricultural biotechnology companies are currently positioning themselves for market entrance

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44. *See* POTTIER, *supra* note 1, at 97.

45. Devlin Kuyek, Genetically Modified Crops in Africa: Implications for Small Farmers (2002) *available at* http://www.grain.org/docs/africa-gmo-2002-en.pdf (last visited on Nov. 1, 2003).

46. *See* BROKENSHA, *supra* note 42, at 311.

47. *See* BUCK, *supra* note 28, at 196 (noting that increased use of chemicals in agriculture reduced the need for labor on tobacco farms).

48. *See* Miguel Altieri & Peter Rosset, Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world (1999) *at* http://www.agbioforum.org/vol2no34/altieri.htm. (on file with the author); *see also* Miguel Altieri & Peter Rosset, Strengthening the case for why biotechnology will not help the developing world: a response to McGloughlin (1999) *at* http://www.agbioforum.org/vol2no34/altierireply.htm. (on file with the author).

49. GLENN DAVIS STONE, *Both Sides Now: Fallacies in the Genetic-Modification Wars, Implications for Developing Countries, and Anthropological Perspectives*, 43 CURRENT ANTHROPOLOGY 611, 614-15 (2002).

50. *Id.*

51. As currently structured the agricultural biotechnology industry concentrates on the development of herbicide- resistant or pesticide-containing crops, which are designed to fit within an industrial approach to agriculture production (high mechanization, high input, once crop). The majority of research, seventy-four percent, on genetically modified crops has been on herbicide-resistant crops. *See* Rural Advancement Fund International, In Search of Higher Ground: The Intellectual Property Challenge to Public Agricultural Research and Human Rights and 28 Alternative Initiatives (September 2000) *at* www.etcgroup.org (last visited on Nov. 1, 2003).

52. Greg Traxler, Assessing the Prospects for the Transfer of Genetically Modified Crop Varieties to Developing Countries (1999) *at* http://www.agbioforum.org/vol2no34/Traxler.htm (on file with the author).

in Africa by pushing African countries to adopt an 'appropriate' intellectual property framework.[53]

C. Intellectual Propery Rights

The establishment of an 'appropriate' or business friendly intellectual property rights regime is essential for agribusiness reentry into 'Global Souths,' as in the past they are the purveyors of the latest technology that promises to bring 'food, health and hope,'[54] this time in the form of custom packages protected by Intellectual Property Rights (IPRs) which include genetically modified seeds specifically designed for the company's own regiment of chemical inputs. IPRs are becoming increasingly standardized - patents for example, offer protection for: 20-year terms; the first applicant and for inventions in all industries and technologies.[55]

Article 27(3)(b) of the Agreement on Trade-Related Aspects of Intellectual Property (TRIPS) states: "[World Trade Organization] Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof." [56] The 1991 Convention of the International Union for the Protection of New Varieties of Plants (UPOV) is a *sui generis* system, which favors plant breeders over farmers thorough its plant variety protection (PVP) system and is viewed by agribusiness as a step towards assuring that a country will adopt the patent regime of intellectual property rights.[57]

In June 1999 ASSINSEL,[58] a global seed industry association, adopted the Statement on the Development of New Plant Varieties and Protection of Intellectual Property, which noted that developing country members of ASSINSEL consider it too early to develop utility patents for plant varieties in their country.[59] Thus, rather

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53. Devlin Kuyek, Intellectual Property Rights in African Agriculture Implications for Small Farmers. (2002) *available at* http://www.grain.org/docs/africa-ipr-2002-en.pdf (last visited on Nov. 1, 2003).

54. "Food, health and hope" is Monsanto's corporate campaign that was designed to reassure consumers that somehow Monsanto would be able to achieve victory over population growth and its ill effects (hunger) through increasing food supply, despite the fact that "None of Monsanto's transgenic canola, sugar beets, cotton, corn or potatoes is designed to put food in the mouths of hungry children." *See* Bruno and Karliner, *supra* note 27, at 98.

55. GRAHAM DUTFIELD, INTELLECTUAL PROPERTY RIGHTS, TRADE AND BIODIVERSITY, 8 (2000).

56. Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Results of the Uruguay Round 33 I.L.M. 81, Art 28.1 (1994) [hereinafter TRIPs Agreement].

57. *See* KUYEK, *supra* note 53.

58. ASSINSEL is the national seed association in France and Belgium and is part of the European Seed Association. International Seed Federation, Seed Associations *at* http://www.worldseed.org/associations.html (last visited on Nov. 1 2003)

59. *See* KUYEK, *supra* note 53.

than push for utility patents, agribusiness interests are calling on developing countries to adopt PVP, as a step towards the adoption of a patent system of intellectual property rights protection in developing countries.[60] Whereas patents provide for no exemption for unauthorized intellectual property utilization, PVP allows exemptions for breeders, who are allowed to use protected varieties for breeding purposes and for farmers, who are allowed to save seeds.[61] The intellectual property system has been criticized for its inability to adequately address the technologies that have been developed collectively by local communities while at the same time allowing for protection of that same material once it has been slightly altered.[62] Indeed the standardization of patents, which includes that they be capable of industrial applications as well as first to file provisions, favor those corporations or individuals that have greater experience and resources to utilize the legal system over local communities or indigenous peoples who would more than likely lack similar capacity.[63] A recent cases in Canada indicates that a corporation will likely be successful in seeking compensation and an injunction of continued seed saving for farmers in the developing world where the genes owned by a corporation via patent protection are present in the farmer's field.[64] In addition, courts in the U.S. have found the provisions of 'technology agreements' for genetically modified organisms enforceable.[65] Such utilization of IPR would have dire ramifications on food security for the "1.4 billion people who live in farm families that are still largely self-provisioning in terms of seed".[66]

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60. *See id.*

61. *See id.*

62. VANDANA SHIVA, BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE, 15-17 (1997) (challenging the IPRs system). Shiva notes that IPRs, "exploit creativity while killing its very source . . . IPRs are an efficient mechanism for harvesting social creativity. They are an inefficient mechanism for nurturing and nourishing the tree of knowledge." *Id.*

63. *See id.*

64. Percy Schmeiser and Schmeiser Enterprises Ltd v Monsanto Canada, Inc. and Monsanto Company, F.C. A-367-01 (Fed. Ct. 2002) (holding that a Canadian canola farmer was required to compensate Monsanto for the presence of Monsanto's genetically modified canola on his property, despite the farmer's argument that the presence of Monsanto's patented canola was the product of genetic drift and not something that was actively sought out by the farmer).

65. Monsanto Company v Homan McFarling, 302 F.3d 1291, 1291 (Fed. Cir. 2002) (holding that a farmer was held accountable under the terms of the technology agreement specified by Monsanto when purchasing genetically modified seeds).

66. Food and Agriculture Organization of the United Nations International Workshop on Seed Security for Food Security: Contributions for the Development of Seed Security Strategies in Disaster-Prone Regions (Nov. 30, 1997) *at* http://www.fao.org/ag/agp/agps/georgof/Preface.htm#Preface (last visited on Oct. 28, 2003).

IV. GLOBALIZATION'S POSITIVE IMPACTS ON FOOD SECURITY

As demonstrated above, the neo-liberal visions of development can undermine local production systems, which have historically been viewed as primitive or backward by colonial administrations[67] or undeveloped by corporate interests seeking markets for their agricultural production technologies.[68] Despite, historical and institutional biases against systems of food production which incorporate subsistence production, many small-scale production systems remain and are perfectly capable of insuring food security for peasant populations and as a source for assuring food security for all peoples.[69] This section will describe the valuable role that 'traditional' productions systems have had and will continue to have for global and local food security. This section will then discuss international instruments that may be adopted to promote food security as well as those that have assisted in the formation of institutional mechanisms, both of which are made possible by globalization, that work to integrate knowledge systems for the promotion of food security.

A. 'Traditional Production Systems'

Traditional multiple cropping systems (i.e., poly-cultures) provide as much as twenty percent of the world's food supply.[70] These poly-culture food systems have been shown to provide more organic matter for incorporation into the soil, produce greater yield than mono-cultures and have greater soil nutrient cycling and soil nutrient retention.[71] These poly-cultures are a result of trial and error approaches to food production employed by traditional or substance food producers.[72]

Food security may not only be ensured at the local level, but also increased at the global level as a result of the continued existence of these multiple crop food production systems.[73] The genetic diversity contained in these farming systems function as *in situ* repositories of genetic diversity.[74] The genetic diversity may be utilized by plant breeders in a multitude of ways, but has

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67. *See* LAPPÉ & COLLINS, *supra* note 10, at 82.
68. *See* KUYEK, *supra* note 52.
69. Miguel Altieri, *The Agroecological Dimensions of Biodiversity in Traditional Farming Systems*, *in* CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 291 (Darrell Addison Posey ed., 1999).
70. *Id.*
71. *Id.*
72. *Id.* at 293.
73. *Id.* at 295-96.
74. *Id.*

historically been used to integrate resistance characteristics into high yielding varieties, which are planted in mono-cultures across vast landscapes (such as the Great Plains in the United States) and hence highly susceptible to bio-physical constraints.[75]

Many production systems that are labeled as 'indigenous' today, are in fact conglomerations of crops, techniques and technologies which have been specifically adopted to the bio-physical realities of a particular farm.[76] For example, contemporary agriculture in the northern Sierra of Oaxaca, Mexico is a mix of local science and appropriation of technologies and crops.[77] Some local farmers have in Talea, Mexico been able to maintain their subsistence cultivation of corn, beans and squash while at the same time integrating both coffee and sugarcane (both Old World crops) not only into their farming systems, but also into social[78] and spiritual interactions. [79]

At the same time, the diversity that local farmers have and continue to cultivate in their maize fields as well as their intercropping techniques and to some extent their worldview have been incorporated into both environmental and sustainable agriculture farming movements in the United States.[80] Thus, these farmers form identity around local science and local innovations, but these farmers are also a part of globalization and selective adoption of technologies across temporal and spatial borders.[81] The increased linkages between the global and the local as well as between local movements have also served to increase food security throughout the world by enhancing food production of small-scale farmers not only throughout Asia, Africa and Latin America, but also through the US, Europe and Australia.[82]

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75. The valuable contributions of agricultural biodiversity have also been recognized in the U.S. courts. In *National Association of Home Builders v Babbit*, 130 F.3d 1041 (D.C. 1997) the court, in determining that endangered species deserved protection, quoted *amici curiae* that explained "fortifying the genetic diversity of US [sic] crops played a large part in the explosive growth in farm production since the 1930s, accounting for at least one[-]half of the doubling of yields of rice, soybeans, wheat, and sugarcane, and a three fold increase in corn and potatoes. Genetic diversity provided by wild plants also protects domestic crops from disease and pest damage."

76. ROBERTO J. GONZALEZ, ZAPOTEC SCIENCE: FARMING AND FOOD IN THE NORTHERN SIERRA OF OAXACA, 73 (2001).

77. *Id.*

78. *Id.* at 113-17.

79. *Id.* at 108-09.

80. S*ee generally,* CAROL BUCHANAN, BROTHER CROW, SISTER CORN: TRADITIONAL AMERICAN INDIAN GARDENING *passim* (1997) (listing accounts of American Indian gardening techniques that have become popular amongst gardeners in the U.S.); *see also* GILBERT L. WILSON, BUFFALO BIRD WOMAN'S GARDEN: THE CLASSIC ACCOUNT OF HIDASTA AMERICAN INDIAN GARDENING TECHNIQUES *passim* (2d ed. 1987).

81. *See id.; see also* BUCHANAN, *supra* note 80.

82. *See id.; see also* WILSON, *supra note 80*

B. Institutional Linkages Promoting Food Security

One of the impacts of globalization on these systems is that university trained agro-ecologists and promoters of local agriculture have, with the support of the United Nations or other global institutions, engaged local communities in a process that has led to greater distribution of knowledge amongst small farmers.[83] The United Nations Development Program has assisted in the development of the Sustainable Agriculture Network and Extension (SANE) which has established agro-ecological 'lighthouses' in Latin America, Asia and Africa to demonstrate techniques that promote maximum yield with minimal inputs, and thus maximize profit margins for small farmers and assist in ecosystem maintenance.[84] Another example of international linkages is the United Nations University project on People, Land Management and Environmental Change (PLEC).[85] PLEC takes a multi-step approach to promoting agro-ecological innovations by first identifying local expert farmers in terms of their productivity and quality.[86] These local expert farmers become the teachers of other farmers in the region while the university trained agricultural scientists act as facilitators, introducing new ideas and seeds.[87] PLEC has used a number of techniques to solicit participants for demonstration activities, many, such as family reunions, gatherings of friends and neighbors and working groups, rely on the social networks of the expert farmer.[88] PLEC and SANE both evolved in the multi-lateral development context which has addressed goals that are related to the conservation of agro-biodiversity. These goals include those that have been formulated by the Conference of the Parties to the Convention on Biological Diversity (COP3): Conservation and Sustainable Use of Agricultural Biological Diversity.[89]

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83. *See generally* UNITED NATIONS DEVELOPMENT PROGRAMME, URBAN AGRICULTURE: FOOD, JOBS AND SUSTAINABLE CITIES (1996) (documenting examples of the flow of information of urban agriculture techniques across international borders).

84. United Nations Development Programme, Sustainable Agriculture Networking and Extension (2000) *at* http://www.undp.org/seed/food/pages/activities/index.html (last visited on Nov. 1, 2003).

85. Harold Brookfield, Christine Padoch, Helen Parsons and Michael Stocking, *Cultivating Biodiversity: Setting the Scene*, *in* CULTIVATING DIVERSITY: UNDERSTANDING, ANALYZING & USING AGRICULTURAL DIVERSITY 7-8 (Harold Brookfield, Christine Padoch, Helen Parsons & Michael Stocking eds., 2002).

86. *Id*. at 7

87. Miguel Pinedo-Vasquez, Edwin A. Gyasi and Kevin Coffey *PLEC Demonstration Activities: A Review of Procedures and Experiences*, *in* CULTIVATING DIVERSITY: UNDERSTANDING, ANALYZING & USING AGRICULTURAL DIVERSITY 116-18 (Harold Brookfield, Christine Padoch, Helen Parsons and Michael Stocking eds., 2002).

88. *Id.* at 118-22

89. People, Land Management and Environmental Change website (2003) *at*

In addition to the COP3 there are several international instruments and policy statements that can be utilized to make arguments for a shift in international and national policies in order to address food insecurity. In the absence of an internationally recognized right to food, human rights,[90] environmental[91] and indigenous rights[92] arguments have been made at the international governance level for the promotion of local livelihoods and thus food security.

C. The Development of 'Sustainable Agriculture'

Linkages to promote food security need not be facilitated by international governance institutions, but can be accomplished by individuals and civil society organizations. [93] One of the results of this has been mentioned above, agro-ecologists and farmers working together to enhance food security in Latin America, Asia and Africa.[94] But this is only half of the story, as it fails to consider the impacts that 'traditional' agricultural techniques have had on the U.S. Agro-ecology programs are being developed at the university level in the US, which incorporate this 'traditional' knowledge and utilize it to shape agro-ecosystems throughout the US.[95]

Permaculture is a series of design principles that he formulated as a result of witnessing human-environment-organism interactions of indigenous and local peoples.[96] Permaculture has helped shape

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http://www.unu.edu/env/plec/about.html) (last visited on Nov. 1, 2003) (explaining that PLEC is designed to meet Decision III/11 of CPO3). According to the website COP3:

> (1) Invites countries to share case-study experiences addressing the conservation and sustainable use of agricultural biological diversity. (2) Encourage the development of technologies and farming practices that not only increase productivity, but also arrest degradation as well as reclaim, rehabilitate, restore and enhance biological diversity and monitor adverse effects on sustainable agricultural biodiversity. (3) Empower their indigenous and local communities and build their capacity for *in situ* conservation and sustainable use and management of agricultural biological diversity, building on the indigenous knowledge systems.

Id.

90. Universal Declaration of Human Rights, G.A. Res. 217A (III), U.N. GAOR, 3d Sess., Supp. No. 16, U.N. Doc A/8 10 (1948).

91. Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 822, 832 (1992).

92. Draft Declaration on the Rights of Indigenous Peoples, U.N. ESCOR, Commission on Human Rights, 11th Sess., Annex 1, U.N. Doc. E/CN.4/Sub.2 (1993) (Draft Declaration on the Rights of Indigenous Peoples).

93. *See generally,* UNITED NATIONS DEVELOPMENT PROGRAMME, supra note 84.

94. *See id*.

95. *See* University of California Sustainable Agriculture Research and Education Program, Related Web Sites: College Degree Programs and Courses *at* http://www.sarep.ucdavis.edu/events/degree.htm (last visited on Nov. 1, 2003) (listing over twenty universities in the United Stats which have developed agro-ecology programs or courses).

96. BILL MOLLISON, PERMACULTURE *passim* (1990).

the sustainable agriculture movement throughout the U.S.[97] The network of permaculture activists and organizations has spread globally.[98] Eco-villages, designed on permacultural principles, are continuing to be developed.[99] Earthaven in Black Mountain, North Carolina is one such community, which through designing of an intentional community, hosting of workshops and publishing of the *Permaculture Activist,*[100] assists in the reinvention, dissemination and practice of techniques, which ultimately leads to the creation of new 'ecosystem people.'[101]

V. CONCLUSION

This paper has demonstrated that power is a key component in analysis of food security in light of recent trends of development. Food security is best assured through the establishment of an appropriate policy framework, which places the interests of people above that of corporations. Chronic food insecurity, including chronic malnourishment, will continue to occur as a result of the power that the neo-liberal approach to development, global wealth maximization through comparative advantage, has over the economic aspect of globalization. The first portion of this paper addressed how this power is manifested and reinforced through: national strategies and international promotion of grain overproduction, marginalization of local technologies and production systems coupled with deification of the technological manifestations of cosmopolitan scientists, and the imposition of property regimes which favor international trade and hence for the most part, trans-national corporations.

The second portion of the paper argued that recent trends in globalization have allowed for the formation of institutional arrangements and ideologies as well as information networks, which can be utilized by civil society organizations and university trained scientists to promote food security by increasing local food production capacities. Through further work and policy shifts in

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97. *See id.; see also* Earthaven Ecovillage Homepage(Jan. 27, 2004) *at* http://www.earthaven.org/home/intro.htm (last visited Feb. 1, 2004)

98. *See* Permaworld (2003) *at* http://www.permacultureactivist.net/Ecovillages/ecovillages.htm (last visited on Nov. 1 2003).

99. *See id.*

100. *See* Earthaven Ecovillage Homepage, *supra* note 97.

101. Janis B. Alcorn, *Indigenous Resource Management Systems (IRMS)*, *in* CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 203 (Darrell Posey ed., 1999) (explaining that, "People who have derived resource management systems appropriate to their local ecological and social situations are sometimes called 'ecosystem people', as opposed to 'biosphere people' (such as the urbanized citizens of industrialized societies) who depend on resources imported from distant places.)

these domains, both acute and chronic incidence of food insecurity can be mitigated. This will reduce the incidence of mass migrations that occur during acute food insecurity and which lead to higher mortality rates as people are forced to move into concentrated and thus unsanitary living conditions to facilitate the distribution of food aid.[102]

There are alternative approaches to the neo-liberal economic globalization.[103] This paper has shown that an alternative approach is to utilize the channels of economic globalization to promote knowledge exchange and global-local food security based on 'survive-survive' relationships. Through the appropriate policies[104] agro-ecological initiatives can continue to be promoted to build food security in cosmopolitan societies and the 'Global Souths' while at the same time providing "food security for all species."[105] Anthropogenic systems of food production, no matter how suitable and well-ad apted to the local physical, cultural, social and biological conditions, will continue to face the physical and ideological challenges of: neo-liberal promotion of the greed of transnational corporations, who by the very nature of their corporate personhood seek to maximize wealth for themselves,[106] while marginalizing all other interests;[107] and employ armies of *doxosphers*[108] who exert efforts on behalf of corporate persons in the form of media control,[109] accusations of 'junk science'[110] and the creation of a simulacra of 'food, health and hope'.[111]

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102. MARTIN RAVALLION, *Famines and Economies*, 35 JOURNAL OF ECONOMIC LITERATURE 1205, 1210 (1997).

103. *See* MOLLISON, supra note 96; s*ee also* THE INTERNATIONAL FORUM ON GLOBALIZATION ALTERNATIVES TO GLOBALIZATIONS (A BETTER WORLD IS POSSIBLE) *passim* (2002).

104. *See* NEIL D. HAMILTON, *Tending the Seeds: The Emergence of a New Agriculture in the United States*, 7 DRAKE JOURNAL OF AGRICULTURAL LAW (1996); *see also* NEIL D. HAMILTON, *Putting a Face on our Food: How State and Local Food Policies Can Promote the New Agriculture*, DRAKE JOURNAL OF AGRICULTURAL LAW (2002).

105. *See* DAHLBERG, *supra* note 24, at 142 (quoting Vandana Shiva).

106. A.F. ROBERTSON, GREED: GUT FEELINGS, GROWTH AND HISTORY 215 (2001).

107. *See* AHN, *supra* note 21.

108. PIERRE BOURDIEU, ACTS OF RESISTANCE: AGAINST THE TYRANNY OF THE MARKET 7 (Richard Nice, trans., 1998) (defining 'doxosphers' as technicians of opinion who think themselves wise.)

109. *See* CHOMSKY, *supra* note 18, *passim*.

110. SHELDON RAMPTON & JOHN STAUBER, TRUST US, WE'RE EXPERTS! HOW INDUSTRY MANIPULATES SCIENCE AND GAMBLES WITH YOUR FUTURE 152-60 (2001).

111. JEAN BAUDRILLARD, SIMULACRA AND SIMULATION, 1 (Shiela Faria Glaser, trans., 1994) (explaining simulacra as a copy of an idealized image that has in fact never existed).

TOXICOLOGY AND RISK ASSESSMENT OF MYCOTOXINS

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Table of Contents

I. BACKGROUND

The presence of fungi or mold in buildings that are damaged by water is an area attracting public health attention, since it has been shown that some genera of molds are capable of producing a chemically diverse group of potentially toxic metabolites known as "mycotoxins". Molds are ubiquitously found both indoors and outdoors and grow on a plethora of surfaces;[1] however, molds that are capable of producing mycotoxins require specific growth conditions to do so, Table 1.[2] The most commonly implicated genus of mold for producing mycotoxins in water-damaged buildings is *Stachybotrys*.

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1. S. Gravesen et al., *Microfungal Contamination of Damp Buildings-Examples of Risk Constructions and Risk Materials*, 107 ENVIRON. HEALTH PERSPECT. 505, 505-08 (1999).

2. C. Grant et al., *The Moisture Requirements of Moulds Isolated from Domestic Dwellings*, 25 INTL. BIODETERIOR. 259, 259-84 (1989).

A myriad of health problems, ranging from nonspecific indoor air quality complaints in adults to specific cases of pulmonary hemorrhage in infants, have been attributed to mycotoxins.[3] Advocates for mold-induced illnesses in humans point to the identified toxicological data obtained from mycotoxins (mold metabolites) in animal models; however, these studies are based on ingestion or inoculation of large doses of the toxic agents into the test animals, Tables 2, 3, and 4. Moreover, no studies have shown that inhalation of mold spores, and possibly mycotoxins, at levels expected in mold-contaminated indoor environments are responsible for causing measurable health effects.[4] Historically, cases of mycotoxin-induced illnesses (mycotoxicoses) have resulted from mass poisonings of livestock or humans that ingested large quantities of contaminated foodstuffs.

The consumption of foodstuff contaminated with mycotoxins can have deadly outcomes. However, this condition drastically differs from the claims that residing in a building contaminated with mold can cause measurable health problems. The former case results in the internalization of the toxin versus the latter case where there is only the potential for inhalation of minute amounts of mold, and possibly, mycotoxins. At present, the weight-of-evidence in the medical literature indicates that mold exposures occurring in contaminated buildings do not present an overt health hazard. It is advisable, however, that mold be removed from indoor environments, along with other possible irritants, such as dust mites, bacteria, animal dander, pollen, etc.

II. MOLD EXPOSURE AND RISK ASSESSMENT

The production of mycotoxins (e.g. aflatoxin, ergotamine, ochratoxin, patulin, rubratoxin, trichothecenes) is highly dependent on the type of mold and the environmental conditions.[5] In strains implicated in mycotoxicosis, not all produce detectable mycotoxins.[6] Therefore, the presence of molds is not proof of the presence of toxins. A case in point is that of *Stachybotrys chartarum* which is a cellulose-decaying fungus with worldwide distribution. It grows

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3. F. Fung et al., *Stachybotrys, a Mycotoxin-Producing Fungus of Increasing Toxicologic Importance*, 36 CLIN. TOXICOL. 79, 79-86 (1998).

4. C. A. Robbins et al., *Health Effects of Mycotoxins in Indoor Air: A Critical Review*, 15 APPL. OCCUP. ENVIRON. HYG. 773, 773-84 (2000); A. I. Terr, *Stachybotrys: Relevance to Human Disease*, 87 ANN. ALLERGY ASTHMA IMMUNOL. 57, 57-63 (2001).

5. C. Grant et al., *The Moisture Requirements of Moulds Isolated from Domestic Dwellings*, 25 INTL. BIODETERIOR. 259, 259-84 (1989); K. M. Hendry & E. C. Cole, *A Review of Mycotoxins in Indoor Air*, 38 J. TOXICOL. ENVIRON. HEALTH 183, 183-98 (1993).

6. J. A. Chapman, *Stachybotrys Chartarum (Chartarum = Atra = Alternans) and Other Problems Caused by Allergenic Fungi*, 24 ALLERGY ASTHMA PROC. 1, 1-7 (2003).

well at room temperature and with humidity above 93% and can produce different types of macrocyclic trichothecenes, potent inhibitors of protein and DNA synthesis.[7] As noted by Persad,[8] route of exposure plays a key role in the development of disease. Direct administration of a large quantity of *Stachybotrys chartarum* spores into the lungs of rats has been shown to cause pulmonary inflammation and hemorrhage.[9] However, when exposed to surfaces heavily tainted with this mold, and conditions of high airflow, mice did not experience any adverse pulmonary effects.[10] These reports demonstrate the potential for an adverse outcome after receiving a high dose of mold spores versus the lack of effect from even heavy exposure to mold spores, respectively. The latter case is clearly more relevant for establishing risk assessments based on the presence of molds in buildings, since exposure to molds is not likely to result in a dose. Furthermore, mycotoxins are not volatile and when they are identified in samples, it is usually from those obtained from inert dust or building materials.[11] Therefore, the actual exposure may be greatly exaggerated, especially for molds, such as *Stachybotrys*, whose spores are produced in a slimy mass under conditions of high humidity.[12] If inhalation was to occur, it is most probable that mycotoxins would be inhaled with airborne particulates, such as dust or dried out fungal components that have been agitated.[13] However, since mycotoxins are confined to spores, it is doubtful that they frequently reach the lower airways due to

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7. Y. Rosenstein & C. Lafarge-Frayssinet, *Inhibitory Effect of Fusarium T2-Toxin on Lymphoid DNA and Protein Synthesis*, 70 TOXICOL. APPL. PHARMACOL. 283, 283-88 (1983).

8. A. S. Persad et al., *Mold in the Literature: Evaluating Human Health Risks from Mold-Contaminated Buildings*, 2 COLUMNS-MOLD 6, 6-7, 54-55 (2003).

9. C. Y. Rao et al., *Reduction of Pulmonary Toxicity of Stachybotrys Chartarum Spores by Methanol Extraction of Mycotoxins*, 66 APPL. ENVIRON. MICROBIOL. 2817, 2817-21 (2000).

10. C. K. Wilkins et al., *Respiratory Effects in Mice Exposed to Airborne Emissions from Stachybotrys Chartarum and Implications for Risk Assessment*, 83 PHARMACOL. TOXICOL. 112, 112-19 (1998).

11. M. A. Andersson et al., *Bacteria, Molds, and Toxins in Water-Damaged Building Materials*, 63 APPL. ENVIRON. MICROBIOL. 387, 387-93 (1997); W. A. Croft et al., *Airborne Outbreak of Trichothecene Toxicosis*, 20 ATMOS. ENVIRON. 549, 549-52 (1986); K. C. Ehrlich & L. S. Lee, *Mycotoxins in Grain Dust: Method for Analysis of Aflatoxins, Ochratoxin A, Zearalenone, Vomitoxin, and Secalonic Acid D*, 67 J. ASSOC. OFF. ANAL. CHEM. 963, 963-67 (1984); J. D. Miller et al., *Fungi and Fungal Products in Some Canadian Houses*, 24 INT. BIODETERIOR. 103, 103-20 (1988); M. Nikulin et al., *Stachybotrys Atra Growth and Toxin Production in Some Building Materials and Fodder under Different Relative Humidities*, 60 APPL. ENVIRON. MICROBIOL. 3421, 3421-24 (1994).

12. E.-L. Hintikka & M. Nikulin, *Airborne Mycotoxins in Agricultural and Indoor Environments*, Supp. 4 INDOOR AIR 66, 66-70 (1998).

13. M. S. Palmgren & L. S. Lee, *Separation of Mycotoxin-Containing Sources in Grain Dust and Determination of Their Mycotoxin Potential*, 66 ENVIRON. HEALTH PERSPECT. 105, 105-08 (1986); D. T. Wicklow & O. L. Shotwell, *Intrafungal Distribution of Aflatoxins among Conidia and Sclerotia of Aspergillus Flavus and Aspergillus Parasiticus*, 29 CAN. J. MICROBIOL. 1, 1-5 (1983).

size limitations, considering the depth of particle penetration is inversely proportional to size. The upper airways trap particles of 10 – 60 mm, while particles of 2 – 4 mm in diameter can reach the alveoli. As detailed in Table 5, mold spores generally have dimensions that prevent them from being respired into the smaller airways and alveoli.[14]

III. MOLD DETECTION & LEVELS IN AMBIENT AIR

Indoor environments are replete with various microorganisms including bacteria and molds, along with their potentially irritating products, including endotoxins and mycotoxins, respectively.[15] Generally, the presence of bacteria exceeds that of fungal species;[16] however, the majority of building-related health claims implicate only molds as the causative agents. This might be explained, at least partly, by the fact that molds can form visible colonies while other organisms may remain undetectable to the unaided eye. The extent to which molds are responsible for compromising the health of inhabitants is debatable, considering the quantity of substances present, the multitude of health complaints set forth, and the lack of association for buildings that contain mold versus control buildings. In nearly all cases, the complaints voiced are of a symptomatic nature, devoid of any clear, underlying medical explanation.[17] Of these, many have been collectively categorized into syndromes, e.g. sick building syndrome (SBS), indicating that the cause is unknown.

SBS is a commonly applied diagnosis, which is often abused and misinterpreted to denote headaches, dizziness, fatigue, and eye irritation associated with a building.[18] It has been shown that subjective factors, like mental stress, play a strong role in the

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14. D. H. LARONE, MEDICALLY IMPORTANT FUNGI: A GUIDE TO IDENTIFICATION (3rd ed., ASM Press 1995).

15. M. A. Andersson et al., *Bacteria, Molds, and Toxins in Water-Damaged Building Materials*, 63 APPL. ENVIRON. MICROBIOL. 387, 387-93 (1997); E.-L. Hintikka & M. Nikulin, *Airborne Mycotoxins in Agricultural and Indoor Environments*, Supp. 4 INDOOR AIR 66, 66-70 (1998); J. E. Cone & D. Shusterman, *Health Effects of Indoor Odorants*, 95 ENVIRON. HEALTH PERSPECT. 53, 53-59 (1991); R. E. Dales & D. Miller, *Residential Fungal Contamination and Health: Microbial Cohabitants as Covariates*, 107 ENVIRON. HEALTH PERSPECT. 481, 481-83 (1999).

16. E.L. Hintikka & M. Nikulin, *Airborne Mycotoxins in Agricultural and Indoor Environments*, Supp. 4 INDOOR AIR 66, 66-70 (1998); Health and Welfare Canada Working Group on Fungi and Indoor Air, *Significance of Fungi in Indoor Air: Report of a Working Group*, 78 CAN. J. PUBLIC HEALTH S1, S1-S14 (1987).

17. P. Wargocki et al., *Subjective Perceptions, Symptom Intensity and Performance: A Comparison of Two Independent Studies, Both Changing Similarly the Pollution Load in an Office*, 12 INDOOR AIR 74, 74-80 (2002).

18. Y. J. Tsai & M. E. Gershwin, *The Sick Building Syndrome: What Is It When It Is?*, 28 COMPR. THER. 140, 140-44 (2002).

perceived suffering of subjects. In one study, 2,160 subjects in 67 offices were evaluated for psychological stress and building-related symptoms. It was concluded that employees experiencing more physical and mental stress reported a higher prevalence of these symptoms compared to controls.[19]

Additional factors warrant further investigation when identifying causative agents and SBS. For example, the levels of humidity in a building can not only promote mold, bacteria, and dust mite growth, but also affect the rate of off-gassing of formaldehyde from indoor building materials, formation of acids and salts from sulfur and nitrogen dioxide, and the formation of ozone.[20] Many of the upper airway complaints attributed to mold exposure may in fact be due to dust mites, which are notorious allergens, or bacteria, as these are all potential sources of confounding when examining mold and moisture and adverse health effects.[21]

There are no established levels of exposure for which molds can compromise health in humans, as the daily outdoor air spore counts vary considerably both seasonally and geographically in the U.S., Table 6.[22] Most studies typically present a comparison between outdoor and indoor mold counts. Generally, these values are reported as colony forming units per cubic meter of air (CFU/m3). This method entails the collection of air samples (e.g. Andersen sampler), which are then grown on agar media for several days. After the incubation period, the plates are inspected, and the colonies of mold are identified by macroscopic and/or microscopic analysis and expressed as CFU/m3 for each respective genus of mold.[23]

The collection of air samples for the same specimen can result in variations up to 1,000-fold based on the sampler type.[24] Thus, it is very important to utilize a unified protocol when assessing mold levels in ambient air, especially when comparing control and mold-

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19. P. L. Ooi & K. T. Goh, *Sick Building Syndrome: An Emerging Stress-Related Disorder?*, 26 INT. J. EPIDEMIOL. 1243, 1243-49 (1997).

20. A. V. Arundel et al., *Indirect Health Effects of Relative Humidity in Indoor Environments*, 65 ENVIRON. HEALTH PERSPECT. 351, 351-61 (1986).

21. M. A. Andersson et al., *Bacteria, Molds, and Toxins in Water-Damaged Building Materials*, 63 APPL. ENVIRON. MICROBIOL. 387, 387-93 (1997); R. E. Dales & D. Miller, *Residential Fungal Contamination and Health: Microbial Cohabitants as Covariates*, 107 ENVIRON. HEALTH PERSPECT. 481, 481-83 (1999); D. Menzies et al., *Aeroallergens and Work-Related Respiratory Symptoms among Office Workers*, 101 J. ALLERGY CLIN. IMMUNOL. 38, 38-44 (1998).

22. National Allergy Bureau, *NAB: Pollen & Mold Counts*, (2002) *at* http://www.aaaai.org/nab/pollen.stm.

23. A. A. Andersen, *New Sampler for the Collection, Sizing, and Enumeration of Viable Airborne Particles*, 76 J. BACTERIOL. 471, 471-84 (1958).

24. C. A. Hunter et al., *Mould in Buildings: The Air Spora of Domestic Dwellings*, 24 INT. BIODETERIOR. 81, 81-101 (1988).

contaminated buildings. Single samples are typically obtained for the former versus multiple samples for the latter,[25] a situation that will almost assuredly result in an overestimation of the mold counts in contaminated buildings. Other factors that need to be considered when interpreting data of mold spore samples, include the conditions the sampling was performed under, e.g. normal room conditions versus more aggressive measures, such as vacuuming, carpeting type, pets, dust control measures, and humidification.[26] Finally, the dimensions of spores vary considerably and thus may be an important factor when attempting to quantify some species, considering larger spores will settle more quickly than smaller ones.[27]

The largest study performed to date with a unified protocol was completed by Shelton.[28] This study analyzed 9,619 indoor mold samples and 2,407 outdoor mold samples collected across the U.S. over a three-year period. This study found that the most common culturable airborne fungi, both indoors and outdoors and in all seasons and regions of the U.S., were *Cladosporium*, *Penicillium*, and *Aspergillus*.[29] No statistically significant association was observed between any common fungal type and reported health complaints. The most commonly identified genera of mold and the average mold counts from indoor samples are shown in Table 7.

Many studies focus on correlating individual symptoms of an illness from residing or working in buildings with various genera of molds that can potentially produce trichothecenes, including: *Fusarium*, *Stachybotrys,* and *Trichoderma.*[30] Shelton determined that when *Stachybotrys* was present indoors, the average concentration was 12 CFU/m3 [95% confidence interval (CI), 12 – 118 CFU/m3]; however, this genus was only detected in 6% of the

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25. C. Grant et al., *The Moisture Requirements of Moulds Isolated from Domestic Dwellings*, 25 INTL. BIODETERIOR. 259, 259-84 (1989).

26. S. R. Hirsch & J. A. Sosman, *A One-Year Survey of Mold Growth inside Twelve Homes*, 36 ANN. ALLERGY 30, 30-38 (1976); P. P. Kozak, Jr. et al., *Factors of Importance in Determining the Prevalence of Indoor Molds*, 43 ANN. ALLERGY 88, 88-94 (1979); W. R. Solomon, *A Volumetric Study of Winter Fungus Prevalence in the Air of Midwestern Homes*, 57 J. ALLERGY CLIN. IMMUNOL. 46, 46-55 (1976).

27. S. Gravesen et al., *Microfungal Contamination of Damp Buildings-Examples of Risk Constructions and Risk Materials*, 107 ENVIRON. HEALTH PERSPECT. 505, 505-08 (1999); A. Hyvärinen et al., *Comparison of the Indoor Air Quality in Mould Damaged and Reference Buildings in a Subarctic Climate*, 9 CENT. EUR. J. PUBLIC HEALTH 133, 133-39 (2001).

28. B. G. Shelton et al., *Profiles of Airborne Fungi in Buildings and Outdoor Environments in the United States*, 68 APPL. ENVIRON. MICROBIOL. 1743, 1743-53 (2002).

29. *Id.*

30. M. Mahmoudi & M. E. Gershwin, *Sick Building Syndrome. III. Stachybotrys Chartarum*, 37 J. ASTHMA 191, 191-98 (2000); C. M. Scheel et al., *Possible Sources of Sick Building Syndrome in a Tennessee Middle School*, 56 ARCH. ENVIRON. HEALTH 413, 413-17 (2001).

buildings studied.[31] Furthermore, human exposure to *Stachybotrys* species has not resulted in any significant association of health problems in buildings with culturable levels of *Stachybotrys* species and those without.[32]

IV. CONCLUSIONS

At present, the weight-of-evidence in the medical literature indicates that mold exposures occurring in residential and commercial buildings are not likely to result in significant health hazards. It is advisable, however, that mold be removed from indoor environments, along with other possible irritants, such as dust mites, bacteria, animal dander, pollen, etc. The production of mycotoxins is highly dependent on the type of mold and the indoor environmental conditions. Therefore, the presence of molds alone is not proof of the presence of toxins. Indoor environments are replete with various microorganisms including bacteria and molds, along with their potentially irritating products. Generally, the presence of bacteria exceeds that of fungal species; however, the majority of building-related health claims allege only mold as the causative agent. This might be explained, at least partly, by the fact that molds can form visible colonies while other organisms may remain undetectable to the unaided eye. The extent to which molds are responsible for compromising the health of inhabitants is debatable, considering the quantity of other substances present, the diversity of health complaints set forth, and the lack of epidemiological data to validate an association between mold exposure and significant adverse health effects.

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31. B. G. Shelton et al., *Profiles of Airborne Fungi in Buildings and Outdoor Environments in the United States*, 68 APPL. ENVIRON. MICROBIOL. 1743, 1743-53 (2002).

32. *Id.*

LITIGATING MOLD CLAIMS

CRISIS? WHAT CRISIS?

GREGORY J. JOHANSEN*

Table of Contents

I. INTRODUCTION[1]

The April, 2003 edition of *For the Defense*, the monthly magazine of the Defense Research Institute, published an article in which mold litigation was described as "The Perfect Storm."[2] The authors' thesis was that a combination of events outside the courtroom, promoted by a media-savvy, well funded plaintiff's bar, feeds a media machine desperate to fill air time on 24-hour cable channels, trying to break the next "big" story. Just as defense verdicts do not sell newspapers, scientific studies concluding that there is *no* association between the "toxin du jour" and some dread disease are rarely reported. A classic example is the widely reported verdict for $32 million dollars in what is known as the *Ballard* mold case.[3] A significant portion of that judgment was

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1. Thanks to my partner, Thomas Burke, for permission to use material for this article.

2. Borman & McDonald, The Perfect Storm, *For the Defense*, Vol. 45, No.4 Pg. 59, April, 2003.

3. Allison v. Fire Insurance Exchange, 98 S.W. 3d 227 (Tex. App. 2002).

reversed on appeal. The reversal, including a damage reduction to approximate actual losses, wiping out all punitive and mental anguish damages, was barely reported in the media.

The media frenzy has not just been limited to alternative media or the internet. Significant mold stories have appeared in the New York Times, CBS "48 Hours," and the National Law Journal and other "mainstream" media outlets. But the roots of the "mold crisis" go much farther back than current media hype.

II. HISTORICAL BACKGROUND

The controversy surrounding mold has even focused on the Old Testament as evidence of the longstanding potential for mold to induce illness in humans. A quote often cited is Leviticus 14:33-48 in which it is said that God told Moses and Aaron how to decontaminate a house in which mold or mildew had appeared. But even this story may be apocryphal. The entire Chapter 14 of Leviticus, in the traditional King James Version, including the 1611 and 1982 translations, addresses leprosy, and what to do with people and houses found to have it. Only the newer and more modern translations of the original Hebrew have substituted mildew or skin disease for leprosy.

Additionally, the once famous curse of King Tut's tomb has been resurrected, so to speak, to argue that the rash of sudden deaths among those who opened the boy King's tomb were precipitated by the out rush of mold spores when the tomb was breached. There are several references in the vast literature concerning King Tut about mold being discovered when the tomb was opened, but a retrospective cohort study of those present at the opening in 1923 established that there was no relationship between exposure to the tomb's interior and survival[4] and that many lived to ripe old ages. Clearly, it is better left to Biblical scholars to debate what Leviticus really said, and to Egyptologists to study Tut's tomb. But mold is like cockroaches; it has been around forever, has incredible survival skills and has always had the capacity to incite a strong case of revulsion in most people.

The modern history of mold as a toxin capable of causing personal injury arose from a series of reports in 1993 and 1994 that a number of infants in the Cleveland, Ohio area had experienced pulmonary hemorrhage. After initially finding no common causal factors,[5] the investigators concluded that a particular type of mold,

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4. Nelson, Mark R., The mummy's curse: historical cohort study, 325 British Medical Journal 1482, Dec 21-28 2002, (www.bmj.com)

5. CDC. Acute pulmonary hemorrhage/hemosiderosis among infants—Cleveland, January

Stachybotrys Chartarum,[6] played some role in the occurrences to a potentially vulnerable population.[7] Although the CDC and an expert panel reanalyzed and reevaluated the original data to conclude there was no link between *S. Chartarum* and the infants' disease,[8] the retraction came too late, the horse had been out of the barn and has been running amuck in courtrooms ever since.

III. MOLD LITIGATION

There are two general types of mold litigation that have developed over the last few years. Originally, mold litigation was an offshoot of construction defect litigation. A building owner would have water intrusion and resulting mold growth due to some defect in the construction or design of the building. The owner would file a lawsuit against the architect/engineer and constructors of the building for repair/remediation damages plus any relocation costs involved. Mold would simply be another component of that litigation. Additional costs would be required to properly remediate mold contaminated materials but the damages were quantifiable in the sense that repair/remediation costs can be estimated and considered during the litigation to determine the risk of proceeding to trial. Personal injury claims were not part of this type of litigation.

The second type of mold litigation are the personal injury lawsuits which are fueling the current explosion in mold litigation. A building owner/occupant (typically a homeowner, apartment tenant or employee) claims, in addition to repair/ remediation costs, medical injury, plus pain and suffering damages that are not as quantifiable and certainly are more emotional (and more media worthy) than the repair/remediation type of damages in the construction defect litigation. One example of the second type of claim is the Ballard case in Texas where the Ballards sued their homeowners insurance carrier for repair/remediation damages as well as damages for mental anguish and medical injuries. The trial court refused to admit evidence of the medical injuries due to mold

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1993-November 1994. *MMWR Morbidity Mortality Weekly Report*. 1994; 43:881-83.

6. This greenish black mold has been singled out by the media and given the suggestive labels "toxic mold" and "fatal fungus."

7. CDC. Update: pulmonary hemorrhage/hemosiderosis among infants-Cleveland, 1993-1996. *MMWR Morbidity Mortality Weekly Report* 1997; 46:33-5; Montana E, et. al. Environmental risk factors associated with pediatric idiopathic pulmonary hemorrhage and hemosiderosis in a Cleveland community. *Pediatrics* 1997;99:e5; Etzel, RA, et. al. Acute pulmonary hemorrhage in infants associated with exposure to *Stachybotrys atra* and other fungi. *Archives Pediatric Adolescent Medicine*. 1998;152:757-62.

8. CDC. Update: pulmonary hemorrhage/hemosiderosis among infants-Cleveland1993-1996. *MMWR Morbidity Mortality Weekly Report* 2000;49:180-84.

yet awarded the Ballard's $32,000,000 for repair and replacement cost, mental anguish, punitive damages and attorney's fees. A Texas appellate court struck the punitive damage and mental anguish awards reducing the judgment to $4,000,000.[9]

IV. WHAT IS MOLD AND WHY DO WE CARE ABOUT IT

There are numerous sources available to review the properties of molds and fungi, many of them created and/or updated to address issues raised in the media and other public forums. They include the Environmental Protection Agency (EPA), Centers for Disease Control (CDC), American Industrial Hygiene Association (AIHA), American Conference of Governmental Industrial Hygienists (ACGIH) and the American College of Occupational and Environmental Medicine (ACOEM). Given the long standing and ubiquitous nature of molds and fungi, there is little disagreement on the basic characteristics.

Molds and fungi are everywhere, indoors and out. There are literally thousands of species (CDC estimates as many as 300,000 or more discrete species)[10] and all play a vital role in the ecology of the earth by decomposing organic matter. Molds need humid, damp conditions such as the average Florida bathroom between 6 and 9 A.M. most days of the week, to air conditioning equipment and ductwork in buildings of all sizes and shapes.

Molds live in the soil, on plants, and on dead or decaying matter, or on indoor organic material such as wood, ceiling tiles and gypsum board. The terms mold, mildew and fungus are synonymous. Fungi have been described as "the garbagemen of nature". They are found naturally both indoors and outdoors and are carried about by air currents, objects or people and animals. Mold provides benefits: it is used in the baking of bread, fermenting of alcohol, production of cheese and production of medicine, such as penicillin. Mold can also be detrimental. Fungal spores and by-products such as mycotoxin can cause allergic reactions in people as well as hypersensitivity reactions. Molds belong to the kingdom Fungi, and unlike plants, they lack chlorophyll and must survive by digesting plant materials, using plant and other organic materials for food. Without molds, our environment would be overwhelmed with large amounts of dead plant matter.

Molds produce tiny spores to reproduce, just as some plants produce seeds. These mold spores can be found in both indoor and outdoor air, and settled on indoor and outdoor surfaces. When mold spores

9. Allison v. Fire Insurance Exchange, 98 S.W. 3d 227 (Tex. App. 2002).
10. http://www.cdc.gov/nceh/airpollution/mold/moldfacts.htm

land on a damp spot, they may begin growing and digesting whatever they are growing on in order to survive.[11] Three things needed for the development of fungi are: (1) fungal spores; (2) a food source and (3) water. The microscopic spores can spread everywhere indoors and outdoors by air movements, people and animals. It is physically impossible for the average building to be free of fungal spores. A fungus can live on practically anything; therefore the focus on preventing fungal growth is the control of water. Moisture can enter a building through several ways: outside air infiltration, water diffusing through the building envelope, moisture in construction materials, moisture in people, leaks into the building and water damage from burst pipes or from fire extinguishment. Of these possible ways of entry, the more complex to control are humidity problems arising from the intrusion of humid outside air and water diffusing through the building envelope.

Certain molds are water-loving, such as aspergillus, penicillium, stachybotrys, and acremonium, and experts generally agree that excessive growth of these types can cause allergic reactions in mold-allergic individuals. A wide variety of humidity-causing conditions can facilitate indoor mold contamination. Water intrusion, often from defective construction or faulty plumbing, can be the problem. A leaky roof, a burst pipe, or reoccurring water penetration into the building will provide a moist area for mold to grow. Wood, ceiling tiles, gypsum board, and many other standard building materials may provide nutrients for mold growth. It has been found that vinyl siding on the interior side of an exterior wall may permit mold growth if any moisture reaches the inside of the vinyl siding. Building humidifiers, air-conditioning systems, damp storage areas and crawl spaces may also provide a welcome environment for mold growth. Paints, coatings, and lacquers applied to wood products are alleged to cause mold growth when the wood is wet.

Mold growth may be found on drywall, acoustical ceiling tile, carpets, upholstered furniture, and wall coverings. Some obvious signs of mold contamination are musty, earthy odors; peeling of wall coverings or paint; pink or purple areas on wallpaper; and blistering of plaster walls. As previously noted, mold growth requires moisture, a food source, and a relatively warm temperature.[12]

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11. "Mold Remediation In Schools and Commercial Buildings" *at* http://www.epa.gov/iaq/molds. This EPA website is an excellent source of information as well as links to many IAQ organizations and websites.

12. A.-L. Pasanen et al., Occurrence and Moisture Requirements of Microbial Growth in Building Materials, 30 INT'L BIODETERIORATION AND BIODEGRADATION 273 (1992).

Sources of moisture may include improper "drying in" during construction; or improper design, construction, or maintenance of the building envelope, the HVAC system, or both.[13] Sources of moisture for mold growth typically include:

> (1) stagnate water and slime found in drain pans of fan coil units and other elements of the HVAC system; (2) water spray components of HVAC systems; (3) excessive relative humidity within the building or HVAC system; (4) flooding or excessive water or fluid leaks within the building; (5) flooded carpeting; (6) permeable materials such as acoustic dust liners within the HVAC system; (7) external microbial contaminants drawn into the building as a result of improperly located air supply intakes; and (8) other external water leak sources such as roof leaks.[14]

V. BUILDING RELATED HEALTH ISSUES

The scientific and medical literature contain differing opinions regarding the potential health impacts of mold exposure. Many plaintiffs in toxic mold cases say that exposure to mold has either made them sick, caused them to lose their job, or exacerbated pre-existing physical conditions. Others allege that mold growth has damaged and destroyed their property, causing them to move out, or damaged and destroyed their business, causing them to have to sell the business.

"Although the causative role of fungi in individual cases of respiratory allergy and asthma has been known since the eighteenth century, their overall significance in respiratory health is still debated."[15] Medical research has shown a potential link between certain mold growth in buildings and human disease.[16]

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13. Thomas Icard and W. Cary Wright, *Sick Building Syndrome and Building-Related Illness Claims: Defining the Practical and Legal Issues*, 14 CONSTR. LAW. 1 (1994).

14. Gene J. Heady, *Stuck Inside These Four Walls: Recognition of Sick Building Syndrome Has Laid the Foundation to Raise Toxic Tort Litigation to New Heights*, 26 TEXAS TECH L. REV. 1041, 1048 (1995).

15. Comm'n of European Communities, *Biological Particles in Indoor Environments*, *in* INDOOR AIR QUALITY & ITS IMPACT ON MAN (1993).

16. *See generally* Banaszak, *Hypersensitivity Pneumonitis Due to Contamination of an Air Conditioner*, 283 NEW ENG. J. MED. 6 (Aug. 6, 1970); B. P. Ager and J. A. Tickner, *The Control of Microbiological Hazards Associated with Air-Conditioning and Ventilation Systems*, INT'L J. BRITISH OCCUPATIONAL HYGIENE SOC'Y (1983); Robert E. Dales, *Adverse Health Effects Among Adults Exposed to Home Dampness and Molds*, 56 ANNALS ALLERGY 3 (1986); R. Ruotsalainen et al., *Dampness and Molds in Day-Care Centers as An Occupational Health Problem*, 66 OCCUPATIONAL ENVTL. HEALTH 369 (1995).

However, the lack of specific "dose-response" data and the numerous other sources of indoor air pollution (tobacco smoke, chemicals, dust mites, and so forth) present problems in proving that exposure to a specific mold caused specific symptoms.

Much of the media hysteria, plaintiff concern and litigation confusion stems from the nonexistence of scientific and regulatory standards regarding mold. The various agencies and entities (e.g., EPA, CDC, NIOSH, ACGIH) that are charged with determining safe levels of exposure to toxins in the workplace or the environment have not reached a consensus on what level of mold is appropriate and to which of the thousands of molds and fungi any standard should be applicable.[17] Needless to say, the absence of a standard adopted as a regulation leaves a huge void in the approach to any particular case. If no one can say what is/is not a safe or unsafe level of mold in a home, apartment or office building, how can anyone say that a person's illness was/was not caused by a particular exposure? Is toxicology to be reduced to a qualitative exercise in which the experts will opine that a "lot" of mold is bad, and a "little" is OK? And what is a "lot" or a "little?" Paracelsus[18] would not be happy.

Compounding the problem is the fact that a building may have both microbial and chemical contamination with multiple causes for each type. Poor indoor air quality may result from fumes or gases emitted from plastics, fibers, coatings, or chemicals used in building components or furnishings, office operations, or building cleaning. Volatile organic compounds (VOCs) emitted from these substances have been targeted,[19] and at least one commentator has noted that "virtually every office product and piece of furniture emits VOCs."[20] Some fungi also emit VOCs that cause unpleasant odors, including the characteristic moldy smell associated with damp basements.[21] Thus, pinpointing mold as the cause of an individual's health complaints can be difficult where there are multiple materials in that individual's environment.

While the link between a particular illness and the indoor air contaminant may be clear in some cases; e.g., Legionnaire's disease is caused by *Legionella pneumophila* bacteria, it is not so clear with mold. Despite the lack of a direct causal link to disease, the

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17. http://www.cdc.gov/nceh/airpollution/mold/moldfacts.htm

18. The first toxicologist who is said to have voiced the still vital phrase " the dose is the difference."

19. THAD GODISH, SICK BUILDINGS, DEFINITION, DIAGNOSIS AND MITIGATION (1995) at 1.

20. Michael T. Pyle, *Environmental Law in an Office Building: the Sick Building Syndrome*, 9 J. ENVTL. L. & LITIG. 173, 178 (1994).

21. *Fungi, in* BIOAEROSOLS (Harriet A. Burge, ed.), at 90 (Center for Indoor Air Research 1995).

potential health risks from mold cannot be ignored. In suits for costs to repair design and construction conditions that cause mold growth, building owners sometimes may not be required to prove that the building conditions actually made anyone sick in order to establish liability, but may merely need to establish that it was reasonable to incur costs due to the potential health threat.[22]

VI. MEDICAL ASPECTS OF MOLD CONTAMINATION

Although full coverage of the medical aspects of mold contamination is beyond the scope of this material, certain medical issues are important for building professionals whether they are architects, engineers, lawyers, contractors, owners, or suppliers. Over the last ten years there has been a huge increase in lawsuits involving mold.

> Property damage and personal injury against insurers;
>
> Construction defect claims against builders, contractors, and architects;
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> Personal injury claims against building owners and managers;
>
> Workers' compensation claims against employers; and,
>
> Contractual claims between occupants and landlords.

There have been personal injury awards and settlements of millions of dollars to building occupants who claimed adverse health impact due to mold. The issues causing these verdicts are the risks to health caused by the presence of contaminants in indoor air. Those individuals affected by these contaminants may be workers who are present in the building during their work day or they may be temporary occupants.

One additional factor with mold contamination is that of the psychogenic effects of mold. Once an individual complains about health concerns due to mold, other occupants may begin to experience similar symptoms or believe they are suffering similar

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22. Centex-Rooney Constr. Co. v. Martin County, 706 So. 2d 20 (Fla. 4th DCA 1997), rev. denied, 718 So. 2d 1233 (Fla. 1998) ("Centex's claim that the County was required to prove that the construction defects caused an actual health hazard misses the mark.")

symptoms even though these additional individuals may not have been exposed to mold. This reaction has several names, the most common is "Mass Psychogenic Illness." The symptoms may exist but have no physical sign nor laboratory findings of disease.[23]

Regardless of the source of the complaints, building owners/managers, contractors, subcontractors and designers should not ignore them. Complaints related to hot/cold temperatures, excess humidity, unusual odors (chemical or musty) or health complaints of headaches, sinus problems, lethargy, shortness of breath and similar types of health issues must be taken seriously. There may be a pattern to these complaints that indicate a problem with indoor air quality due to mold. If a pattern is shown or the complaints exceed a minimum number, the building owner/operator should hire qualified experts to investigate. The options for investigation will depend on the nature and severity of the symptoms. They may range from isolating the specific area to a large scale epidemiological survey and evacuation of the building. Mold problems can be extremely difficult to pinpoint due to the multiple factors involved. For example, if the evidence indicates that mold is the potential source of the symptoms there are a number of ways to test for and remediate the mold with conflicting theories on the best method.[24]

VII. COMMON INDOOR MOLD SPECIES

Of the numerous species, the CDC believes that only four species of mold occur frequently inside homes and other buildings. These include *Cladosporium*, *Penicillium*, *Aspergillus*, and *Alternaria*. While *S. Chartarum* has received a great deal of media attention, there is no data to suggest that it is more common than the other four molds that are routinely seen indoors.[25] It should be remembered that the mere presence of a type of mold proves nothing but its existence at a date and time.

Cladosporium exists in as many as thirty different species. It is the fungus most commonly isolated from air, both indoors and outdoors. There is medical literature associating it with skin lesions, keratitis (inflammation of the cornea), onychomycosis (fungal infection of the nails), sinusitis and pulmonary infections.[26]

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23. GODISH, *supra* note 19, at 31

24. ACGIH, *Bioaerosols Assessment and Control*, 1999.

25. http://www.cdc.gov/nceh/airpollution/mold/stachy.htm#Q1

26. Collier, L., A. Balows, and M. Sussman. 1998. *Topley & Wilson's Microbiology and Microbial Infections*, 9th ed, vol. 4.; Pritchard, R. C., and D. B. Muir. 1987. Black fungi: a survey of dematiaceous hyphomycetes from clinical specimens identified over a five year period in a reference laboratory. *Pathology*. 19:281-4; Sutton, D. A., A. W. Fothergill, and M.

Penicillium. While there are over two hundred species of penicillium, it may cause the most problems as a common occurrence in food. Because the average consumer cannot differentiate between beneficial and potentially harmful strains, the common practice is to discard foods showing the development of any mold. At the same time, some species of *Penicillium* are used to ripen cheeses such as Roquefort, Brie, Camembert, Stilton, etc. and present no risk with consumption. Additionally, the drug penicillin is produced from *Penicillium chrysogenum*, a mold commonly found in many homes. *Penicillium* has been associated with occasional infection in humans, called penicilliosis. *Penicillium* has also been isolated from patients with post traumatic keratitis,[27] necrotizing esophagitis, pneumonia, endocarditis, peritonitis, and urinary tract infections. Most *Penicillium* infections are encountered in immunosuppressed individuals such as those with HIV infections, those receiving chemotherapy or undergoing bone marrow transplants.

Aspergillus consists of approximately 185 species, 20 of which have been identified as causing opportunistic infections in man and animals.[28] As noted above, the major predisposing factor identified in these infections is immunosuppression.[29] Opportunistic infections have occurred during the use of medical equipment and devices,[30] such as catheters, and a higher risk of infection has been identified in neutropenic (inadequate neutrophils, a type of white blood cell) patients in hospital settings.[31] Some species of *Aspergillus* have been identified as fungal allergens and may initiate allergic bronchopulmonary aspergillosis in an atopic host.[32] Certain *Aspergillus* species can produce mycotoxins including the well known aflatoxin that often appears as a contaminant in peanuts.[33]

G. Rinaldi (ed.). 1998. *Guide to Clinically Significant Fungi, 1st ed.*

27. Deshpande, S. D., and G. V. Koppikar. 1999. A study of mycotic keratitis in Mumbai. *Indian J Pathology and Microbiology*. 42:81-7.

28. http://www.doctorfungus.org/thefungi/Aspergillus_spp.htm

29. Ho, P. L., and K. Y. Yuen. 2000. Aspergillosis in bone marrow transplant recipients. *Crit Rev Oncol Hematol*. 34:55-69.

30. Lucas, G. M., P. Tucker, and W. G. Merz. 1999. Primary cutaneous Aspergillus nidulans infection associated with a Hickman catheter in a patient with neutropenia. *Clin Infect Dis*. 29:1594-1596.

31. Loo, V. G., C. Bertrand, C. Dixon, D. Vitye, B. DeSalid, A. P. H. McLean, A. Bronx, and H. G. Robson. 1996. Control of construction-associated nosocomial aspergillosis in an antiquated hematology unit. *Infect. Control Hosp. Epidemiol*. 17:360-364.

32. Germaud, P., and E. Tuchais. 1995. Allergic bronchopulmonary aspergillosis treated with itraconazole. *Chest*. 107:883; Kurup, V. P., and B. Banerjee. 2000. Fungal allergens and peptide epitopes. *Peptides*. 21:589-599.

33. Mori, T., M. Matsumura, K. Yamada, S. Irie, K. Oshimi, K. Suda, T. Oguri, and M. Ichinoe. 1998. Systemic aspergillosis caused by an aflatoxin-producing strain of Aspergillus

Alterneria appears in approximately 50 species. The most common form isolated from human infections is *Alternaria alternata.* As with *Penicillium* and *Aspergillus*, infections most often occur in immunosuppressed patients and may lead to invasive disease. For patients with functioning immune systems, *Alternaria* has been found to grow in the paranasal sinuses, leading to chronic hypertrophic sinusitis. *Alternaria* has been identified as one of the causes of otitis media (middle ear infection) in agricultural field workers.[34]

Stachybotrys exists in only one well known species, *Stachybotrys chartarum or S. chartarum.* It is known to produce the mycotoxin trichothecene which has been extensively studied since its pathogenicity first appeared in Russia in 1920. Various symptoms, including stomatitis (trench mouth), rhinitis, conjunctivitis, pancytopenia (inadequate blood cells of all types) and neurological disorders developed in animals following ingestion of hay contaminated with *Stachybotrys*. The disease complex was called stachybotrytoxicosis.[35] In laboratory studies in which the effect of the direct injection of trichothecenes into the nasal cavities of mice was studied, significant inflammation of nasal tissues and structures occurred.[36] But when more studies were done to determine if the mycotoxin could be volatized with high air flows over large amounts of stachybotrys, the toxic effects seen with direct injection could not be duplicated, leading to the conclusion that mycotoxins of *Stachybotrys* can be produced or get airborne only under certain limited environmental conditions.[37]

Stachybotrys has also been associated with "sick building syndrome," the media-friendly label given to residential or commercial structures thought to have conditions that adversely impact indoor air quality (IAQ). Stachybotrys has been detected in buildings with problematic ventilation systems, but it is less

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flavus. *Medical Mycology* 36:107-112.

34. Wadhwani, K., and A. K. Srivastava. 1984. Fungi from otitis media of agricultural field workers. *Mycopathologia.* 88:155-9.

35. Fung, F., R. Clark, and S. Williams. 1998. Stachybotrys, a mycotoxin-producing fungus of increasing toxicologic importance. *J Toxicol Clin Toxicol.* 36:629-631; Mahmoudi, M., and M. E. Gershwin. 2000. Sick building syndrome III. Stachybotrys chartarum. *Journal Asthma.* 37:191-198.

36. Nikulin, M., K. Reijula, B. B. Jarvis, and E. L. Hintikka. 1996. Experimental lung mycotoxicosis in mice induced by Stachybotrys atra. *Int J Exp Pathol.* 77:213-8.

37. Sudakin, D. L. February 29, 2000. Stachybotrys chartarum: Current knowledge of its role in disease. Medscape General Medicine; Wilkins, C. K., S. T. Larsen, M. Hammer, O. M. Poulsen, P. Wolkoff, and G. Nielsen. 1998. Respiratory effects in mice exposed to airborne emissions from Stachybotrys chartarum and implications for risk assessment. *Pharmacol Toxicol.* 83.

common and in lesser amounts compared to other molds such as *Aspergillus*, *Penicillium*, *Alternaria*, and *Cladosporium*.[38]

VIII. RECENT STUDIES ON HEALTH EFFECTS OF MOLD

The last few years have seen an explosion of mold claims in the courts and in the media. Due to the lack of scientific evidence supporting these claims there have been conflicting results when evidence of the health effects of mold is offered to a court. Compare the Texas case of *Allison v. Fire Insurance Exchange*, 98 S.W. 3d 227 (Tex. App. 2002), where the trial court, affirmed by the Texas Court of Appeals, barred the admission of medical evidence that mold caused the plaintiff's physical injuries, with the Nebraska case of *Mondelli v. Kendel Homes*, 262 Neb. 263, 631 N.W. 2d 846 (2001), where the Nebraska Supreme Court reversed the exclusion of medical evidence that would support the causation of health effects due to mold.

The Centers for Disease Control is studying the health effects of mold. OSHA has issued a Safety and Health Information Bulletin called a Brief Guide to Mold in the Workplace. Health Canada, the Canadian government health agency, Office of Laboratory Security issued a Material Safety Data Sheet for the Aspergillus species of mold.

Until further studies are done, which could take years, we must rely upon the current information and any new reports that are released. Here is a survey of a few recent reports about the health effects on mold.

In July, 2002, in conjunction with consideration of House Bill 5040, Toxic Mold Safety and Protection Act of 2002 ("the Melina Bill"), the United States House of Representatives Committee on Financial Services, Oversight and Investigation Subcommittee heard testimony from a number of witnesses about the health effects of mold.[39] One of the witnesses was Stephen C. Redd, M.D., Chief, Air Pollution and Respiratory Health Branch National Center for Environmental Health, Centers for Disease Control and Prevention, United States Department of Health and Human Services.

Dr. Redd opened his testimony by stating that: "While there remain many unresolved scientific questions, we do know that

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38. Trout, D., J. Bernstein, K. Martinez, R. Biagini, and K. Wallingford. 2001. Bioaeresol lung damage in a worker with repeated exposure to fungi in a water-damaged building. *Environmental Health Perspectives*. 109:641-644; Cooley, J. D., W. C. Wong, C. A. Jumper, and D. C. Straus. 1998. Correlation between the prevalence of certain fungi and sick building syndrome. *Occupational Environmental Medicine*. 55:579-584.

39. The Melina Bill was reintroduced in Congress in May, 2003 as HR 1268.

exposure to high levels of molds causes some illnesses in susceptible people. Because molds can be harmful, it is important to maintain buildings, prevent water damage and mold growth, and clean up moldy materials."[40]

The doctor testified that studies show mold infections occurring in susceptible people such as immunosupressed individuals in hospitals and that mold is associated with some cancers. There are two mycotoxins produced by mold that are classified as human carcinogens: aflatoxin and ochratoxin A. Ingestion of these toxins has been associated with liver and kidney tumors. Other respiratory infections, such as hypersensitivity pneumonitis, as well as allergic reactions due to mold exposure have been reported.[41]

Dr. Redd cited the 1993 Institute of Medicine study which concluded that there was sufficient evidence of an association between exposure to airborne fungal allergens allergic diseases such as allergic rhinitis, allergic asthma and hypersensitivity pneumonitis. But he also testified that the CDC does not know if molds cause other health effects such as pulmonary hemorrhage, memory loss or lethargy. However, mold growth should be prevented because some people are, or may become, allergic to molds.

Dr. Redd concluded by stating that since there are no accepted standards for mold sampling or for analyzing or interpreting the data in terms of human health, and since it is not known what quantity of indoor mold is acceptable, the studies have focused on environmental data rather than dose response data, "for these reasons, and because individuals have different sensitivities to molds, setting standards and guidelines for mold exposure levels is difficult and <u>may not be practical</u>."[42] [emphasis added] In other words, these may never be standards established for acceptable mold exposure.

In October, 2002, the American College of Occupational and Environmental Medicine issued a report entitled: "Adverse Human Health Effects Associated with Mold in the Indoor Environment." The ACOEM examined three aspects of mold and human health: allergy and other hypersensitivity reactions, infection, and toxicity.[43]

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40. State of the Science on Molds and Human Health, House Financial Services Subcommittees, Statement of Stephen C. Redd, M.D., July 18, 2002.

41. *Id*.

42. *Id*.

43. Adverse Human Health Effects Associated with Molds in the Indoor Environment, American College of Occupational and Environmental Medicine, ACOEM Evidence-based Statement, October 27, 2002.

For allergic reactions, the report estimated that 10% of the population have allergic antibodies to common molds and about half of those, or 5% of the total population, have allergic symptoms from mold exposure. Mold exposure includes outdoor mold exposure which is much more prevalent than exposure to indoor molds. While there are studies that indicate a link between damp buildings and allergic reactions, these studies do not identify mold as the only cause. Damp buildings can result in mold growth but can also cause growth of dust mites and bacteria which also can cause allergic reactions.[44]

As far as mold infections, the report states that while mold infections can occur in certain environments, exposure to molds is not a specific risk factor in office, home or school environments. Only people with immunocompromised conditions should be concerned about fungal infections.[45]

Mold toxicity has become the hot button issue in the media with "toxic mold" screaming from the headlines. Yet there is little known about whether all molds produce mycotoxins or under what conditions toxigenic species produce mycotoxins. Just because a toxigenic species of mold exists indoors doesn't mean that mycotoxins will also be present. Plus, mycotoxins are not particularly "volatile", in other words, they are hard to aerosolize. Inhalation of mycotoxins would require some action to aerosolize the material.[46]

For mycotoxins to adversely effect human health they must be actually present in the building environment, there must be a pathway of exposure from the source of the mold to the person and an absorption by that person of sufficient dose of mycotoxin. There must be a sufficient concentration and duration of exposure for toxicity to occur.[47]

Since there is no standard of human exposure for mycotoxins, the AECOM estimated the potential exposure based on animal studies and concluded that a significant spore count would be necessary to impact human health, far above what surveys have found in moldy buildings.[48]

Their report recommends that the presence of toxigenic mold does not mean that mycotoxins are present or that occupants have been exposed to mycotoxins. The source of moisture that supports

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44. *Id*.
45. *Id*.
46. *Id*.
47. *Id*.
48. Adverse Human Health Effects Associated with Molds in the Indoor Environment, American College of Occupational and Environmental Medicine, ACOEM Evidence-based Statement, October 27, 2002.

mold growth should be removed and the mold growth eliminated, materials contaminated by mold should be cleaned and individuals with health complaints evaluated but "the possibility of a mycotoxicosis as an explanation for specific signs and symptoms in a residential or general office setting should be entertained only after accepted processes that are recognized to occur have been appropriately excluded and when mold exposure is known to be uncommonly high."[49]

The report concludes that molds are common and important allergens and that about 5% of individuals will likely have allergic reactions to mold but molds are not as common in indoor environments as outdoors and most allergic reactions are due to outdoor exposure. Because of potential allergic reactions, mold should not be allowed to grow unchecked indoors but "[c]urrent scientific evidence does not support the proposition that human health has been adversely affected by inhaled mycotoxins in home, school, or office environments."[50]

In October, 2003, the Occupational Safety and Health Administration (OSHA) issued a Safety and Health Information Bulletin entitled: "A Brief Guide to Mold in the Workplace." The bulletin is not a standard or regulation and it creates no new legal obligations. Under the section "Health Effects" the bulletin states that "Most typical indoor air exposures to mold do not present a risk of adverse health effects. Molds can cause adverse effects by producing allergens (substances that can cause allergic reactions). Potential health concerns are important reasons to prevent mold growth and to remediate existing problem areas."[51]

There are other papers and studies that are beyond the scope of this material but a partial list is as follows:

> Commentary on Neuropsychological Performance of Patients Following Mold Exposure, by Paul R. Lees-Haley, Ph.D., Health Education Services, Huntsville, Alabama
>
> Indoor Health Problems in Commercial Municipal and School Buildings: A Sound Process for Resolution, ICTM Electronic Report Vol. 2, No. 1, by Ronald E. Gots, M.D., Ph.D. and Suellen W. Pirages, Ph.D.

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49. *Id*.
50. *Id*.
51. A Brief Guide to Mold in the Workplace, U.S. Dept. of Labor, Occupational Safety and Health Administration, SHIB 03-10-10.

Continuing Perspectives on Indoor Mold and Diseases, ICTM Electronic Report Vol. 2, No. 2, by Ronald E. Gots, M.D., Ph.D. and Suellen W. Pirages, Ph.D.

Material Safety Data Sheet – Infectious Substances, Office of Laboratory Security, Health Canada, 2001

IX. THEORIES OF LIABILITY IN MOLD CASES

A. Design and Construction Claims

When confronted with a mold claim most owners look to the original designer and constructor to recover the cost of repair on the basis that the owner did not contract for a moldy building, the owner did not cause the problems and the owner should not be required to finance correcting the problems.

There are numerous legal theories available to building owners in pursuing such claims: breach of contract, breach of express or implied warranty, negligence, strict liability and insurance claims. Each of these theories has specific benefits and limitations.

1. Contract Claims

Breach of contract claims require proof of a written or an oral contract, failure to perform some aspect of the contract, and damages resulting from the failure to perform, subject to any contractual damage limitations. Since owners usually have contracts with the architect and with the general contractor or construction manager they typically make breach of contract claims against those parties for mold-related problems.

Contract theory's limitations are that, obviously, it is limited to defendants with contractual relationships. This may reduce the number of possible defendants and the possible sources of funds to pay settlements or judgments. In addition, some contracts contain notice requirements for claims and limit the recoverable damages. Contract damages are generally limited to damage that were reasonably foreseeable by the parties at the time the contract was signed so a breach of contract theory may preclude recovery of all costs that the owner incurred.[52] Although mold remediation and relocation costs may be foreseeable damages.[53]

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52. Hadley v. Baxendale, 9 Ex. 341, 156 Eng. Rep. 145 (1854).
53. Centex-Rooney Const. Co. v. Martin County, 706 So. 2d 20 (Fla. 4th DCA 1997).

Some owners may assert claims against the architect's subconsultants, such as the mechanical engineer, as a third-party beneficiary of the architect-consultant contracts. One court rejected such a claim because there was no evidence that the owner was an "intended beneficiary" of the architect's subconsultant agreement.[54] To avoid this result, owners may require architects to include specific language in their subconsultant contracts to designate the owner as an intended third-party beneficiary of these agreements.

If the general contractor provided a performance bond, the owner may be able to make a bond claim in addition to the construction contract claim. However, if the IAQ problems do not arise until after the building is completed, there is a split of authority as to whether such latent defects are covered under the surety bond.[55] California courts have held sureties liable for latent defects even if the contractor is no longer liable due to a statute of repose.[56] In *Federal Insurance Co. v. Southwest Florida Retirement Center, Inc.*,[57] the Florida Supreme Court held that, because the performance bond guaranteed completion of a construction contract according to its terms and conditions, the surety's liability was not dependent upon whether the defect was discovered before or after substantial completion. The Florida Supreme Court rejected a previous Florida appellate court decision holding that the surety was relieved of further responsibility once a construction contract was substantially completed.[58] However, the Florida Supreme Court found that the statute of limitations for the owner's breach of contract action began to run when the owner accepted the project. Consequently, the bond claim was barred by the statute of limitations.[59] Many surety bonds contain provisions requiring suits be brought within one or two years of project completion. Before pursuing a bond claim, the owner's attorney should determine if the contractual statute of limitations is enforceable in the applicable jurisdiction. Under Florida law, a contract provision shortening the time limit to file suit is void.[60]

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54. City of Tampa v. Thornton Tomasetti, P.C., 646 So. 2d 279 (Fla. 2d DCA 1994).

55. Florida Bd. of Regents v. Fidelity & Deposit Co. of Maryland, 416 So.2d 30 (Fla. 5th DCA 1992) (surety not liable for latent defects); School Board of Pinellas County v. St. Paul Fire & Marine Ins. Co., 449 So.2d 872 (Fla. 2d DCA), *rev. denied*, 458 So.2d 274 (Fla. 1984) (surety liable for latent defects).

56. Regents of the University of California V. Hartford Acc. & Indem. Co., 581 P.2d 197 (Cal. 1979).

57. 707 So. 2d 1119 (Fla. 1998).

58. Florida Bd. Of Regents v. Fidelity & Deposit Co. of Maryland, 416 So. 2d 30 (Fla. 5th DCA 1982).

59. *Southwest Florida Retirement Ctr.,* 707 So. 2d at 1121.

60. Florida statute provides that any contractual provision shortening the time period to begin an action on the contract is void. However, other states do not have a statute

An owner considering a surety bond claim should carefully review the bond for notice requirements and should comply with such requirements as soon as possible.

2. Warranty Claims

Many construction contracts contain express warranties for the overall building; subcontractors and manufacturers often warrant specific building components as well. These warranties may provide additional bases for owners' claims. However, warranties may be so limited both in scope and in time as to have little value. Owners considering claims on written warranties should carefully review them for notice provisions and time limits. Notice letters should be sent as soon as possible.

Many states have created implied warranties of fitness for residential construction. Although such implied warranties have generally not been applied to commercial construction, some courts have questioned why there should be such a distinction in the legal remedies available to purchasers of different types of property.[61] Perhaps commercial owners will be able to make such claims in the future; at present, their viability is questionable.

Of course, the presence of mold in an HVAC duct or on a construction surface does not automatically justify an owner's demand for costly cleanup measures. Certain molds are common in the atmosphere, and an owner may have difficulty insisting that indoor mold levels be reduced to a level below the levels that will prevail soon after the building is placed into normal use. To require cleanup by a contractor, an owner may be required to demonstrate that the project is contaminated with molds of a potentially dangerous variety that were caused by construction defects.

Assigning responsibility for mold growth in buildings is more difficult in climates where construction materials are typically exposed to substantial moisture during the construction process. Often project specifications provide special requirements for handling or storing materials. If there are no such specifications, it is unclear whether good building practice requires contractors to anticipate and to protect materials from moisture or from molds with which they may be unfamiliar. For example, it may be difficult or even impossible in some climates to protect large air handling units and duct segments from moisture. Contractors may argue

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prohibiting or shortening statutes of limitations. FLA. STAT. § 95.03 (1998); *see also* ,Board of Education v. Hartford Accident, 504 N.E. 2d 1000 (Ill. App. 3d 1987) (surety bond could impose shorter time limit on claims than that provided by statute).

61. Florida Eastern Properties, Inc. v. Southeast Commercial Developers, Inc., 479 So.2d 793 (Fla. 5th DCA 1985).

that the designer should be responsible for taking environmental conditions into account and specifying any special steps required to avoid unacceptable growths of mold, especially before a building has been enclosed.

3. Negligence Claims

Negligence theories may allow recovery of greater damages than under a contract theory. It is not uncommon to find both theories pursued in the same case. Until recently, the "economic loss rule" defeated negligence claims for purely economic damages (that is, damages other than for personal injuries and property damage).[62] The economic loss rule may also prevent recovery on a negligence theory where the damage is to the product itself. Many courts have agreed that the presence of a defective product within a larger whole, without some attendant damage to the larger structure, does not constitute "property damage."

Application of the economic loss rule may prevent an owner from pursuing claims against a responsible third-party manufacturer, supplier, or subcontractor to recover the cost to remediate and reconstruct the building. In 1999, the Florida Supreme Court receded from strict application of the economic loss rule, allowing a homeowner to pursue a professional malpractice claim against an individual engineer, even though the homeowner had a contract with the engineer's corporate employer.[63] Some jurisdictions have allowed plaintiffs to bring actions based on negligence for indoor pollution claims, finding asbestos contamination sufficient to invoke the property damage exception to the economic loss rule.[64] However, this rule remains a significant bar to negligence claims in these cases.

Negligence claims require proof of four elements: (1) defendant owed plaintiff a duty to act in some way; (2) defendant did not perform its duty; (3) defendant's failure to perform its duty caused plaintiff to suffer some injury; (4) the injury resulted in the plaintiff suffering a loss. Negligence actions can be brought against builders, general contractors, subcontractors, as well as

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62. *See, e.g.* Economic Loss Doctrine and Its Impact Upon Construction Claims, 14 CONST. LAW 3, at 21 (1994).

63. Moransais v. Heathman, 744 So.2d 973 (Fla. 1999). The Florida Supreme Court explained that the primary purpose of the economic loss rule is to limit products liability actions or suits in which the policy considerations are substantially identical to those underlying products liability-type actions. It will be interesting to see if other courts follow this rationale. *See also*, Hewett-Kier Const. v. Lemuel Ramos & Associates, 775 So. 2d 373 (4th DCA 2001).

64. Northridge Co. v. W.R. Grace & Co., 471 N.W.2d 179 (Wis. 1991); 80 South Eighth Street Ltd. Partnership v. Carey-Canada, Inc., 486 N.W.2d 393 (Minn. 1992).

architects/engineers. Potential duties that may have been violated include: the duty to maintain the premises in a safe condition, duty to design, install, operate and maintain the HVAC system; the duty to select, train and supervise contractors or maintenance personnel; the duty to appropriately monitor and respond to mold or other IAQ complaints; and professional malpractice.

Damages under a negligence cause of action include the same type of repair/remediation damages recoverable under a breach of contract/warranty claim, but also may include a claim for punitive damages if the conduct was sufficiently egregious.

4. Strict Liability

Strict liability theory holds a defendant strictly liable for a defective product without proof of negligence, without an intent to guarantee, without privity of contract and without consideration of contractual liability disclaimers.[65] This theory is widely used in products liability cases. The policy considerations underlying such cases are that a seller who places unreasonably dangerous products in the stream of commerce should be liable for physical harm its products cause. Applying these policy considerations to buildings is difficult because buildings are not usually thought of as products. The courts which have held that a building may be a "product" for strict liability purposes have considered mobile homes or mass produced homes, not occasional sales of homes.[66] Some courts have found that portions of structures, such as defective precast panels or facing tiles may be considered products.[67] A Georgia court declined to apply the doctrine of strict liability to an owner's claim against a homebuilder because the builder was not involved in the manufacture of personal property.[68]

Courts have reached differing conclusions regarding whether strict liability can apply to economic losses alone, without physical

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65. Reisman, David, *"Strict Liability and Sick Building Syndrome: Defining a Building as a Product Under Restatement (Second) of Torts, Section 402A*," 10 J. Nat. Resources & Envtl. L. 35 (1995).

66. Blagg v. Fred Hunt Co., Inc., 612 S.W.2d 321 (Ark. 1981); Kaneko v. Hilo Coast Processing, 654 P.2d 343 (Haw. 1982) (holding that buildings may be products); Oliver v. Superior Ct., 259 Cal. Rptr. 160 (Cal.Ct. App. 1989) (holding strict liability not applicable to occasional sales).

67. Chicago Bd. of Educ. v. A,C, & S, Inc., 525 N.E. 2d 950 (Ill. App. Ct. 1988); Trustees of Columbia v. Mitchell/Giurgola Assoc., 109 A.D.2d 449 (N. Y. App. Div 1985); *but see* Casa Clara Condominium Ass'n, Inc. v. Charley Toppino & Sons, Inc.,620 So.2d 1244 (Fla. 1993).

68. Seely v. Loyd H. Johnson Construction Co., Inc., 470 S.E.2d 283 (1996); *See* Golden, Brian M., "*Strict Liability Applied to the Homebuilder: A Defect in the Law of Defective Products*," 14 The Construction Lawyer 11 (October 1994).

injury.[69] Some courts have held where there is a risk or death or personal injury, tort remedies are available.[70]

Strict liability theory may not apply to architects and engineers unless it can be shown that the design or the system was standardized or mass marketed.[71]

5. Consumer Protection Statutes

The Florida Deceptive and Unfair Trade Practices Act is intended to protect consumers and businesses against fraud, unfair methods of competition, and unfair or deceptive acts or practices in the conduct of trade or commerce.[72] The act is to be construed liberally, allows punitive damages and provides for the award of attorneys fees to the prevailing party.[73] Because of the liberal interpretation of the statute, common law elements of fraud are not required as elements of proof. For example, a plaintiff does not need to prove misrepresentation or deceit under the FDUTPA.[74]

No Florida case law has been found that addresses application of FDUTPA to mold contamination but other states have applied their deceptive and unfair trade practices acts to mold.[75] Unlike Texas law in *Ballard*, the FDUTPA specifically exempts insurance companies from application of the statute.[76] Failure to disclose mold contamination against a home developer or seller may be one area for application of FDUTPA.

6. Failure to Comply with Building Code

Chapter 553 of the Florida Statutes governs the building code for the State of Florida. Section 553.84 provides a civil remedy to anyone injured by a violation of the Florida Building Code. However, if proper building permits are obtained, plans approved, and proper inspections conducted, there is no remedy under this section unless there is personal injury or property damage to property other than the permitted work or the responsible party

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69. School Dist. of City of Independence, Missouri v. United States Gypsum Company, 750 S.W. 2d 442 (Mo. App. 1988).

70. United States Gypsum Co. v. Mayor of Baltimore, 647 A.2d 405 (Md. 1994); Council of Co-Owners Atlantis Condominium, Inc. v. Whiting-Turner Contracting Co., 517 A.2d 336 (Md. 1986).

71. Sime v. Tvenge Assoc. Architects & Planners, 488 N.W. 2d 606 (N.D. 1992).

72. FLA. STAT. ch. 501.202 (2002), *et. seq*.

73. FLA. STAT. chs. 501.202 and 501.2105 (2002).

74. Donald Frederick Evans and Associates, Inc. v. Continental Homes, Inc., 785 F.2d 897 (11th Cir. 1986); Latman v. Costa Cruise Lines, N. V., 758 So. 2d 699 (3rd DCA 2000).

75. Allison v. Fire Insurance Exchange, 98 S.W. 3d 227 (Tex. App. 2002); (the *Ballard* case).

76. FLA. STAT. ch. 501.212 (2002).

knew or should have known the violation exited. There is no provision for the recovery of attorneys fees.

7. Insurance Claims

One particular area of significant mold claims and litigation is insurance coverage that may apply to the mold contaminated structure.[77] As a plaintiff it is critical to know what insurance coverage is applicable and make the claim for coverage. There are several types of coverage to look for. If you are a building owner who retained professionals to design and construct the building, the professionals may have Design professional insurance.[78] A constructor may have Contractor's Commercial General Liability Insurance but you must be careful because commercial general liability insurance generally does not cover the cost to repair or to replace defective work or the material itself, but covers consequential damages arising from defective work. If the plaintiff is the homeowner, an examination of the Homeowner's Insurance policy is necessary to determine if a claim should be made. All insurance policies should be read carefully for notice requirements and exclusions and all requirements should be met. Insurance may provide the funds for recovery, attorneys fees and damages but many insurance companies are now excluding mold from their policies.

8. "Bad Faith" Claims

When an insured believes it has a claim for mold damage under an insurance policy and files a claim with the insurance company, the insurer must investigate the claim to see if it is a covered claim. If the insurer denies coverage or unreasonably delays the investigation or settlement of the claim, such actions may constitute "bad faith" under Florida Statutes.[79] Damages in a bad faith action can include punitive damages as well as attorney's fees.[80]

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77. There are several books on construction insurance that provide a thorough discussion of these issues, e.g., Owen J. Shean, *Construction Insurance: Coverages and Disputes* (1994); Scott C. Turner, *Insurance Coverage of Construction Disputes* (1992). *See also,* Patrick J. O'Connor, *Commercial General Liability Coverage*, 19 Constr. Law. 5 (1999); Patrick J. Wielinski, *Selected Coverage Issues in a Construction Defect Claim*, 8 Coverage 1 (1998); Martha C. Coleman, *Construction-Related Exclusions to the Commercial General Liability Policy* (ABA Forum on the Construction Industry/TIPS Fidelity & Surety Law Committee, Jan. 1995).

78. Another section of this seminar will provide details about each of the specific types of insurance.

79. FLA. STAT. ch. 624.155 (2002).

80. FLA. STAT. chs. 624.155(3) and 624.155(4) (2002).

No Florida case has been found addressing a bad faith claim in a mold contamination claim, although with the volume of mold claims now being processed by insurance companies reportable decisions on bad faith and mold should be available within the next year or so. Other states have already faced the bad faith/mold issue. In *Ballard*, the trial court awarded the insured $32 Million for breach of the duty of good faith and fair dealing by the insurer in investigating a mold contamination claim. A Texas Court of Appeals reversed the award for punitive damages against the insurer but affirmed the award of $4 million for actual damages.

In California, a court awarded an insured $18 Million for the insurance company's bad faith in failing to adequately remove and repair mold damage and in failing to reasonably settle the matter. The appellate court reduced the punitive damage award to $2.5 Million.[81] In Arizona, a court awarded an insured $4 Million against its insurance company for delay in remediating mold contamination.[82]

In all of these cases the compensatory damages were a small fraction of the total damages awarded.

B. Personal Injury Claims

The recent surge in personal injury claims has fostered a great deal of media attention and legislation. The primary difference between the traditional building defect mold case and a personal injury case is the burden of proof for the plaintiff and the types of damages available.

1. Theories of Liability in Personal Injury Claims

Personal injury claimants generally use negligence or strict liability theories for their claims. The economic loss rule does not apply to personal injury claims.

The most difficult hurdle in personal injury suits is proving causation. The plaintiff must show that contaminants in the building caused his or her symptoms. "Scientific cause and effect relationships are generally hard to prove and precise diagnosis of certain diseases is possible only with an autopsy."[83] It is difficult to discover which of many possible agents caused illness and to identify the precise cause of that agent. "Proving causation becomes

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81. Anderson v. Allstate Insurance Co., 45 Fed. Appx. 754, 2002 WL 2021617 (9th Cir., Cal., 2002).

82. Hatley v. Century National Insurance Co., CV 2000-0067134 (2001).

83. Gastel, Ruth, "*Occupational Disease: Insurance Issues*," Ins. Info. Inst. Rep., (June 1994).

particularly difficult because a sick building may contain a multiplicity of suspect contaminants. Accordingly, individual contaminants might not be conclusively or exclusively linked to the alleged harm."[84] Also, occupational diseases may take a long time to arise, making it difficult to determine at what point the worker contracted the disease.

Unlike a building defect mold case, a personal injury claim due to mold contamination requires significant proof that the physical symptoms are caused by the mold exposure. Plaintiffs must prove that mold contamination existed, the contamination was the cause of the alleged damage/injury and that actual bodily injury occurred. The most difficult part of the plaintiff's case is proving causation. There is a lack of adequate medical evidence regarding the effect of mold on human health. This lack of scientific backup makes it extremely difficult for plaintiffs to meet their burden of proof.

Toxic tort cases require the plaintiff to prove both general and specific causation. General causation is whether a substance is capable of causing a particular injury or condition in the general population. Specific causation is whether a substance caused the plaintiff's injuries. In *Ballard*, the Texas trial court held that the plaintiff could not prove general causation of the injuries by mold despite testimony of two doctors. On appeal the appellate court affirmed that ruling.

Despite these difficulties, some plaintiffs have been successful in obtaining large verdicts for IAQ-related injuries. In *Bahura v. S.E.W. Investors*, 754 A.2d 928 (D.C., 2000) (the "Waterside Mall" case), five plaintiffs were awarded just under $1 million for injuries allegedly caused by exposure to various airborne toxins.

Damages

Specific elements of damage are described above under each cause of action. Damages in mold injury cases can include recovery for pain and suffering, past, present and future medical care, future medical monitoring, lost wages, loss of earning capacity, wrongful death, loss of companionship, loss of consortium and emotional distress. [85]

For construction defect mold cases, damages can include repair costs, loss of market value, remediation, damage and degradation of building products, additional living expenses, and relocation costs.

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84. Heady, *supra*, note 3.

85. *See Damages Recoverable in Mold Cases*, *available at* http:www.themoldsource.com.

Punitive damages may be available depending on the cause of action and the egregiousness of the conduct.

Attorney's fees are generally not available under any of the theories describe above unless the contract called for the award of attorneys fees or under the FDTPA or a "bad faith" claim.

Experts

The key to succeeding with a plaintiff's case will be selecting the appropriate experts and getting the experts' opinion presented to the factfinder. Any construction defect case requires experts and mold cases are no different; there are just more experts required. Potential experts to be considered include an industrial hygienist, microbiologist, mycologist and a toxicologist. For personal injury lawsuits, appropriate physicians will also be required for the individual injury claims, i.e., a pulmonologist for lung impairment or breathing problems, allergist, dermatologist, gastroenterologist, occupational physician, or a rheumatologist. As the plaintiff, the burden is on you to get these experts qualified and their opinions admitted. Expect an evidentiary challenge to the experts. Florida courts apply the standard set out in *Frye v. U.S.*, 293 F. 1013 (D.C. Cir. 1923) to the admissibility of scientific evidence. The *Frye* standard requires the proponent establish by a preponderance of the evidence the general acceptance of the scientific principle in the particular field of study.[86]

VIII. CONCLUSION

Indoor air quality problems present substantial risk to building owners, design professionals, contractors, subcontractors, and their insurers. When faced with such claims, the parties are better served by focusing on the solution rather than on affixing blame. Because litigating these cases is extremely expensive, parties should look for creative alternative dispute mechanisms to try to resolve the case if possible.

86. Centex Rooney v. Martin County, 706 So. 2d at 26.

GREEN BUILDINGS:

AN OVERVIEW OF PROGRESS

CHARLES J. KIBERT*

Table of Contents

I. INTRODUCTION

A robust high performance buildings movement to rethink the built environment is rapidly emerging and affecting the design, construction, and operation of new buildings; changing the renovation process for existing buildings; and reshaping cities and communities. The terminology used here to describe the new type of facilities resulting from this rethinking is *high performance green buildings*. As is the case in many countries around the world, the movement in the U.S. is growing at an explosive rate and emerging on the radar screens of a wide range of actors, from developers to politicians, from designers to builders, from manufacturers to academics. This paper will provide some background on green buildings and a historical perspective on the international green building movement in general and the U.S. movement more specifically As is the case with any other truly serious effort, the roots of its existence are important to appreciate its evolution and current status.

High performance green buildings are facilities designed, built, operated, renovated, and disposed of using ecological principles for

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the purpose of promoting occupant health and resource efficiency plus minimizing the impacts of the built environment on the natural environment. In the context of green buildings, resource efficiency means high levels of energy and water efficiency, appropriate use of land and landscaping, the use of environmentally friendly materials, and minimizing the life cycle effects of the building's design and operation.

It should be noted at the outset that there is a wide variety of terminology used in the context of green buildings, the label *green* being just one of many possibilities. Perhaps the most complex terminology used is *sustainable construction* which encompasses the notion of green building, but, in the spirit of sustainable development, addresses the social and economic issues of habitat, as well as the community context of buildings. 'Green' buildings are a subset of sustainable construction, representing simply the structures. In effect truly sustainable 'green' commercial buildings that are designed to be sustainable in the sense of renewable energy systems, closed materials loops, and full integration into the landscape are scarce to non-existent. High performance green buildings represent the current state of best practices with respect to attempting to reach the Holy Grail of sustainable building. In the present era, green buildings generally represent incremental change rather than radical rethinking of the built environment. However this is an important first step and the green building landscape is populated with ever more experiments representing the trial and error process of getting to sustainable buildings.

The green building movement has had a major impact on building design, construction, and operation, as well as on the development and real estate markets. Considered just a small fringe activity on the periphery of construction - even in the late 1990's - green building design and construction is quickly becoming mainstream. Detailed knowledge of the process of developing green buildings and the various options for creating a green built environment are important knowledge for any organization procuring construction services. The number of buildings applying to the U.S. Green Building Council USGBC) for green building certification has been doubling each year since its implementation, from a few buildings in 1999 to 407 buildings in 2003. In terms of area, USGBC certified green buildings have grown in area from a few thousand square feet in 1999 to over 133 million square feet in 2003 (see Table 1). The exponential growth in buildings and building area marks the green building effort as an important and potent force in the construction and real estate markets. Federal and state governments, many cities, several universities, and a

growing number of private sector construction owners have declared green buildings to be their standard for procurement.

Year	**1999**	**2000**	**2001**	**2002**	**2003**
New Registered Green Buildings	0	45	267	331	407
Area, million SF	N/a	8.4	51	78	113
USGBC new members	115	309	649	1321	1634
USGBC total members	264	573	1076	2397	3616

Table 1: Growth of Green Building Movement in the U.S. (Source: www.usgbc.org)

II. BUILDINGS AND THE ENVIRONMENT

At the start of the 21st Century we are faced with human activities are having an enormous effect on the environment, ecological systems, and even on humans themselves. More thn any other human endeavor, the built environment has direct, complex, and long-lasting impacts on the biosphere. Materials impacts alone are enormous. Focusing on the U.S., construction and the production and manufacture of building components involves the movement of 6 billion tons of materials annually in the extraction of the basic materials needed for building. Some estimates are that as much as 90% of all materials ever extracted reside in today's buildings and infrastructure. Waste in the construction process is generated at the rate of about 0.5 tons per person each year in the U.S. or about 5-10 lbs per square foot (45-90 Kg per square meter) of new construction. Waste from renovation occurs at the 70-100 lbs per square foot level (318-900 Kg per square meter). The demolition process results in truly staggering quantities of waste with little or no reuse or recycling occurring.

We are literally at a crossroads where we have to make some difficult decisions and choices. There are many issues that threaten the existence of the human species, perhaps none more than global climate change. Energy is a major cause of climate change due to the release of carbon dioxide in the combustion of fossil fuels. The built environment is a major consumer of energy, using on the order of 30% of all primary energy in the U.S. The distribution of the built environment in the U.S. and the consequent need to rely on automobiles for movement between work, home, school, and

shopping result in disproportionate generation of carbon dioxide. Transportation consumes about 40% of primary energy in the U.S., much of linked to the how we distribute the built environment across the landscape.

Some would suggest that rather than a crossroads, a better metaphor would be a precipice. The increase in greenhouse warming gases has already produced temperature increases that are directly traceable to energy consumption of buildings and automobiles. Systems theory shows that the behavior of global systems such as climate are nonlinear. Each increase in carbon dioxide will not necessarily produce a proportional change in global temperature. The dynamic, chaotic character of the earth's climate is such that the climate can suddenly flip states, from one temperature regime to another in a relatively short time. The fossil record indicates that previous flips have occurred, with temperature increasing or decreasing almost 10 degrees Fahrenheit in about a decade. Climate change is just one of several effects that should be worrisome to humanity. Others include loss of biodiversity, loss of topsoil, depletion of major fisheries, toxification of soil, water, and air due to the release of tens of thousands of synthetic chemicals, some of which mimic natural hormones, causing havoc in both animal and human reproductive systems.

A. Conventional Versus High Performance Building Design

High performance green buildings are succeeding in their rapid, exponential penetration of the U.S. construction market for three basic reasons.

First, they are the ethical response to both global and local environmental and resource issues, the 'right' way to approach construction. A typical, code compliant building makes minimal efforts to address energy and water issues and totally ignores materials waste, impacts on the construction site and any other issue not specifically covered in the building codes. As has often been noted, if these buildings were built any cheaper, they would be against the law. Green buildings take a far different approach. Environmental impacts and resource consumption are of primary importance in the design and construction process. The entire life cycle of the building and its constituent components are carefully considered. For materials, architects and other design professional consider the entire life of the product, from resource extraction to use in the building and disposal at the end of its useful life. What happens in the factory producing building products is considered to be as important as its performance in the building. Emphasis is on renewable resources for energy systems; recycling and reuse of

water and materials; integration of native and adapted species for landscaping; passive heating, cooling, and ventilation; and a wide range of other approaches that minimize environmental impacts and resource consumption.

Second, green buildings make economic sense, not always on a capital or first cost basis, but virtually always on a life cycle basis. Sophisticated energy conserving lighting systems and air-conditioning systems with exceptional response to building and outdoor conditions will cost more than their conventional, minimal code-compliant counterparts. Rainwater harvesting systems that collect and store rainwater for non-potable purposes are an additional new system that will cost more money due to the need for additional piping, pumps, controls, storage tanks and filtration components. However most of the key features of a green building will provide a payback on their original investment within a relatively short time. As energy and water prices rise due to increasing demand and diminishing supply, the payback period will become much shorter. Life Cycle Costing (LCC) is an important evaluation technique that provides a consistent framework for evaluating alternative systems to determine their life cycle performance.[1]

Third, green buildings squarely address the spotty performance of conventional buildings with respect to human health. There is ample evidence that on the order of 40% of all illnesses can be traced to buildings and homes where people live, work, or attend school, church or sporting events. Conventional construction, unless forced to by lawsuits, generally ignores issues of Sick Building Syndrome (SBS) or Building Related Illness (BRI). Green buildings meet the challenges of building health directly and provide several layers of consistent approaches that promote occupant health. Some examples are the protection of ductwork during construction, specifying finishes with low to zero volatile organic components, and more attention to the precise sizing of heating and cooling components.

B. Green Building Organizations

The advent of green buildings has been drive by a wide variety of organizations around the world. Some of the key American organizations driving this shift in thinking have been the U.S Green Building Council, the U.S. Department of Energy, the National

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1. Greg Kats, *Cost and Benefits of Green Buildings*, A Report to California's Sustainable Buildings Task Force, October (2003); Greg Kats, *Green Building Costs and Financial Benefits*, Capital E, Inc. A Report for the State of Massachusetts (2003).

Association of Home Builders, the Department of Defense, and other public and non-profit companies. The private sector has been led by several manufacturers, for example Interface Flooring whose Chairman, Ray Anderson, guided its transition from being a conventional carpet tile manufacturer to one that based its corporate philosophy on industrial ecology. The convergence of the work of these organizations over the past decade has resulted in a green building movement with a wide variety of available products. On the international scene, iiSBE (International Institute for a Sustainable Built Environment), has take the lead in the arena of building assessment and trying out new ideas in a reasonably large number of countries. RILEM and CIB are other organizations that have or had had a strong presence in the green building movement. The following paragraphs describe these organizations in more detail.

C. U.S. Experience

In the U.S. there are a wide variety of green building organizations. In the commercial building arena, the prime green building organization is the U.S. Green Building Council (USGBC). Homebuildng and residential development are represented by a proliferation of organizations, many of which preceded the USGBC and which sprang up independently in homebuilding organizations and municipalities around the U.S. The city of Austin, Texas is perhaps best known for its efforts in green building and was the recipient of an award at the first U.N. conference on sustainable development in Rio de Janeiro in 1992. Local residential green building movements rapidly emerged in Denver, Colorado; Kitsap County, Washington; Clark County, Washington; the Baltimore Suburban Builders Association; and more recently the EarthCraft Houses Program in Atlanta. The National Association of Homebuilders took note of this movement and issued guidance available to its 800 state and local associations, informing them on how to create a green building program in their local area.

Local and state government have been highly involved and very effective in the promotion of green building. Boulder, Colorado took an aggressive stance in 1998 with respect to green building by passing an ordinance requiring specific measures. Several U.S. states have made significant efforts to promote green building. For example, Pennsylvania established Governor's Green Government Council (GGGC) in part to address the implementation of green building principles in the state.

The key source of key information and critical analysis for the green building movement in the U.S. is *Environmental Building*

News, a monthly newsletter published by Build Green. Build Green also produces GreenSpec, a directory of products addressed to high performance building needs and the Green Building Advisor, software that assists the decision making process in the design of green buildings.

D. International Efforts

Perhaps the key organization engaged in green building on an international basis is a relatively new one, the International Institute for a Sustainable Built Environment (iisBE). iiSBE main efforts at present is to provide a portal for a wide range of green building information. iiSBE also has take over organization of the biannual Green Building Challenge and Sustainable Building Conference, the most recent recent of which were held in Oslo, Norway in 2002. iiSBE also serves as the center of international activity in efforts related to sustainable building assessment, especially with its main assessment method, Green Building Tool (GBT). GBT is used at these biannual conferences to assess or rate entrants from numerous national exemplar buildings worldwide.

III. HISTORY OF THE GREEN BUILDING MOVEMENT

Prior to addressing the details of green building, it is useful to know about the roots of this movement, both technically and philosophically. Green building in the U.S. has two distinct histories, one that emerged in the 1990s and the roots of the movement that can be traced back to the 19th century.

The U.S. green building movement can be traced to the same seeds as the country's environmental movement. The first Earth Day in 1970 and the creation of the U.S. Environmental Protection Agency in the same year are probably the key events marking the start of a major shift in thinking that has resulted in the current state of affairs. Rachel Carson's book *Silent Spring*, the efforts of a wide range of early environmentalists such as Barry Commoner, Lester Brown, and others laid the foundation for these events. The oil shocks of the early 1970's, a result of the Arab-Israeli conflicts of that era, marked the first serious concern about resources, more specifically American reliance on oil. The result was an explosion of interest in energy efficiency, solar technologies, retrofitting homes and commercial buildings with insulation, and energy recovery systems. The federal government provided tax credits for solar energy investments and innovative technologies as wide-ranging as solar air-conditioning and eutectic salt energy storage batteries were developed and tested. By the late 1970's, many of these efforts became standard practice and were embodied in model energy codes

adopted by the states. However the intense interest in saving energy abated, largely as a result of falling relative energy prices. A renewed interest in resource conservation, including energy, reemerged in the early 1990s as a consequence of a complex array of effects such as the publication of *Our Common Future*, commonly referred to as the Bruntland Report in 1987, the AIA meeting in 1989 and the establishment of its Committee on the Environment (COTE), and the United Nations Conference on Sustainable Development in 1992, commonly known as the Rio Conference. For the first time humans were beginning to seriously wrestle with global environmental issues such as ozone depletion, global climate change, destruction of major fisheries, and others. Energy concerns became more complex. While the 1970's energy movement focused on dwindling supplies of fossil energy, the current response is far more complex due to concerns with global environmental impacts.

The recent history of the American effort can be traced to several events that occurred in the early 1990's, among them the joint meeting of the International Union of Architects (UIA) and the American Institute of Architects (AIA) in Chicago in 1993. One of the outcomes of the UIA/AIA World Congress of Architects was the Declaration of Interdependence for a Sustainable Future.

Subsequently the AIA formed its Committee on the Environment. The USGBC was formed in 1993 in Washington, DC and held its first meeting in March 1994. At about the same time efforts in other countries were emerging and interacting with American efforts. The British green building rating system, BREEAM (the Building Research Establishment Environmental Assessment Method) was developed in 1992. Several task groups within an international construction research networking organization, Conseil International du Batiment (CIB), headquartered in Rotterdam, formed in 1992, most notably Task Group 8 (Building Assessment) and Task Group 16 (Sustainable Construction). In 1994, these Task Groups both held international meetings on this emerging effort in the U.K. and Tampa, Florida respectively. The first efforts at producing the LEED Standard appeared at about this time along with an effort to develop green building standards by the American Society for Testing and Materials (ASTM). The ASTM effort was eventually set aside as the USGBC's effort to create an American Green Building Standard moved to the forefront.

In the U.S., the renovation of Audubon House in New York City in 1992 was one of the first if not the first building that marks the start of the contemporary green building movement. It was not designed using LEED as the guideline for its creation because LEED did not emerge on the scene until the late 1990s.

Consequently, it like many other buildings of this era were designed by architects who were in essence laying the foundation for LEED. Green building in the U.S. has two distinct histories, one that emerged in the 1990s and the roots of the movement that can be traced back to the 19th century.

Supporting disciplines that address the various life cycle stages of the built environment are emerging to support the shift to green building (See Table 2). Planning in a sustainable fashion can use the emerging concepts of New Urbanism (NU), Transit-Oriented Development (TOD) and/or Conservation Subdivision Design. New Urbanism, alternatively referred to as Traditional Neighborhood Development (TND), proposes to replace the typical American suburban dominated urban landscape with urban landscapes that mimic the classic, pedestrian, mixed use, mass transit dominated cities people cherish. These include European cities such as Paris, London, and Rome, to name a few, and American cities such as New York, Boston, and Chicago. Cities such as Atlanta and Los Angeles are cited as the antithesis of the classic city because the automobile becomes the dominant species accompanied by dehumanizing sprawl. Conservation Subdivision Design, proposed by Randall Arendt, directly tackles the issue of suburbs by proposing homes be concentrated on smaller sites and that the land saved as a result be set aside as biological preserve that also has the function of providing environmental amenity.[2]

2. Randall Arendt, *Creating Greener Communities through Conservation Subdivision Design*, In Reshaping the Built Environment, Charles J. Kibert, Ed., Washington, D.C.: Island Press (1999).

Table 2 Conventional Built Environment Life Cycle Stages Compared to Sustainable Construction Stages

Life Cycle Stage	**Conventional Built Environment**	**Sustainable Construction**
Planning	Urban Design	New Urbanism Transit Oriented Development Conservation Subdivision Design Biourbanism Bioregionalism
Design	Conventional Architecture Conventional Landscape Architecture Conventional Interior Design Conventional Engineering	Ecological Design
Construction	Building Construction	'Green' Building Construction
Operation	Facilities Management	'Green' Facilities Management
Renovation/Retrofit	Conventional Design	Ecological Design
Disposal	Demolition	Deconstruction

Incorporating ecosystems into the urban fabric is addressed in Biourbanism while at large scale, Bioregionalism performs much the same role.[3] Ecological Design is the foundation of the design stage of the life cycle, covering architecture, landscape architecture, interior design and engineering (civil, structural, mechanical, and electrical). Ecological design is also applicable to building changes during the operational phase.[4] The construction and operational stages do not specifically have 'green' approaches associated with

3. Daniel Williams, *Biourbanism and Sustainable Urban Design*, In Reshaping the Built Environment, Charles J. Kibert, Ed., Washington, D.C.: Island Press (1999).

4. Van der Ryn, Sim and S. Cowan, Ecological Design, Washington, D.C.: Island Press (1996); Van der Ryn, Sim and Rober Peña, *Ecological Analogues and Architecture*,In Construction Ecology: Nature as the Basis for Green Building, Charles J. Kibert, Jan Sendzimir, and G. Bradley Guy, Eds. London: Spon Press (2002).

them, but these are certain to emerge in the near future. At present it is sufficient to refer to these as Green Building Construction and Green Facilities Management. Renovation and retrofit are again covered by Ecological Design. Building disposal at the end of a building's useful life, in a sustainable senses, can occur using the emerging new approach know as Deconstruction.

IV. SUMMARY AND CONCLUSIONS

The green building movement is growing rapidly in the U.S. and many other countries around the world. The USGBC's LEED building assessment standard has emerged as the document that essentially defines green buildings in the U.S. and also in several other countries around the world. Progress in green building is remarkable, with the number of green buildings doubling each year, with new products and services rapidly growing to meet the demand for ecologically compatible approaches. Despite the progress in creating green buildings, there is still much to be done with respect to understanding the concept of ecological design and the integration of natural systems with the built environment. The key to success in green building and the development of a coherent philosophy will be understanding how to create a synergistic relationship where natural systems perform services for buildings and where the built environment in turn provides support and nutrients for natural systems. In spite of its drawbacks, the green building movement has made substantial progress in the last decade and the effort to create environmentally responsible facilities is showing great progress and gaining momentum.

V. GREEN BUILDING RESOURCES

Building Research Establishment (BRE) www.bre.gov.uk
BRE is the national United Kingdom building research institution and the developer of the Building Research Establishment Energy and Environmental Assessment Method (BREEAM), the first successful tool of this type ever developed. Later building assessment methods such as the USGBC's LEED building assessment method are roughly based on the approach take by the BRE.

Conseil International du Batiment (CIB) www.cibworld.nl
CIB is an international construction research networking organization with members from national building research laboratories, universities, and corporations. Over the past decade it has been a leader in promoting sustainable construction through

its various Working Commissions (W) and Task Groups (TG). CIB TG8 (Building Assessment), later CIB W100, and CIB TG16 (Sustainable Construction) were in the forefront of developing frameworks for sustainability in the built environment and tools for rating buildings. Links to the various CIB groups addressing green building issues are available on the CIB website.

International Initiative for Sustainable Built Environment (iiSBE) www.iiSBE.org

iiSBE is an international non-profit organization whose overall aim is to actively facilitate and promote the adoption of policies, methods and tools to accelerate the movement towards a global sustainable built environment. Its objectives include: (1) Mapping current activities and establishing a forum for information exchange on SBE initiatives, so that gaps and overlaps may be reduced and common standards established; and (2) increasing awareness of existing SBE initiatives and issues amongst the international buildings and construction community. iiSBE also manages the Green Building Challenge process, a biannual international conference in which the best examples of green buildings around the world are displayed and compared to one another using GBTool, a building assessment method developed for this purpose.

U.S. Green Building Council www.usgbc.org

The USGBC is the primary green building organization in the U.S. and promulgates the Leadership in Energy and Environmental Design (LEED) suite of building assessment standards. It is far and away the leading U.S. green building organization and arguably the most successful in the world at mobilizing stakeholders to promote this new building delivery system.

FLORIDA'S HOUSING TRUST FUND — ADDRESSING THE STATE'S AFFORDABLE HOUSING NEEDS

KRISTIN LARSEN*

Table of Contents

I. INTRODUCTION

As Florida's population continues to grow, so too does the need for decent, affordable housing. With a tourist-based, service economy dependent on lower-wage jobs, ensuring an adequate amount of such housing is essential. Limiting growth can exacerbate the gap between need and supply, and such limitations are difficult to equitably maintain. Thus, the question becomes how to accommodate the state's growing, economically diverse population, particularly the lower income population for whom for-profit developers do not typically provide housing. This paper argues that both regulatory and incentive-based approaches are necessary. The focus here will be on one significant incentive-based program, state housing trust funds, specifically Florida's State Housing Initiatives Partnership (SHIP), the largest such program in the nation.

II. HOUSING NEEDS DEFINED

Despite the strength of the housing market during the most recent recession, a variety of sources document the ongoing, and increasing need, for decent affordable housing across the United States. As noted in *The State of the Nation's Housing* (2003), those

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20% in the lowest income bracket continue to struggle to meet housing costs with only 34% of the renters in this group receiving any kind of assistance.[1] At the same time, privately and publicly funded rental units are being lost at an unprecedented rate.[2] While some lower income households have attained homeownership, this success is tempered by the fact that many of these households are at greater risk of default due to a significantly higher housing cost burden and less than favorable terms due to weak credit histories and the subsequent use of subprime loans.[3] Further, with housing prices continuing to rise, fewer households will be able to afford homeownership in the future. Add to this gap the decrease in federal support, and the possibilities of meeting these significant challenges diminish.

A national study conducted in 2001 outlined that fully 59% of Florida households could not afford a median priced home and 40% could not afford the average rent in the state.[4] In their 2003 report *Out of Reach*, the National Low Income Housing Coalition found that no state in the country offers decent, affordable housing to renters earning minimum wage. In Florida, an extremely low income household earning $15,217 (30% of the median income of $50,723) can only afford a rental unit at $380 a month, much less than the Fair Market Rent of $515 for a studio or $605 for a one-bedroom apartment.[5]

Fifteen years earlier, the 1988 Florida Legislature established a goal to meet the state's housing needs by 2010.[6] In assessing progress toward meeting this goal, the 1999 Florida Affordable Housing Study Commission noted that "the additional 22,134 housing units provided with 1998 program funds allowed Florida to keep up with only two-thirds of the growth of cost burdened households during that year, and did not provide for the backlog of 1.35 million cost burdened households" (13). According to the Shimberg Center's *State of Florida's Housing, 2003*, in thirteen of

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1. Harvard University Joint Center for Housing Studies 2003, 4.

2. This loss is attributable to publicly assisted units reaching the end of their affordability periods and being converted to market rate housing, and "mom and pop" landlords, the primary owners of modest rental units that comprise the bulk of the affordable rental market, selling their properties, which are then subsequently converted to market rate units or demolished. Further, as noted in *The State of the Nation's Housing* (2003), the new units being constructed tend to be more expensive than those that are being lost.

3. According to *The State of the Nation's Housing* (2003), owners experiencing severe cost burdens increased from 8.8 percent in 1997 to 10.1 percent in 2001 (26).

4. Center for Community Change 2001, 28.

5. National Low Income Housing Coalition, *Out of Reach 2003*, accessed on 19 January 2004, http://www.nlihc.org/oor2003/data.php?getstate=on&state%5B%5D=FL .

6. Section 420.0003(2), Florida Statutes states "[b]y the year 2010, this state shall ensure that decent and affordable housing is available for all of its residents."

Florida's sixty-seven counties in 2001, the qualifying income needed to purchase a median priced home exceeded the median income for that area.[7] Further, the 2000-2004 statewide consolidated plan projected housing needs across the state among households earning 80% or less of area median income as 614,947 units for renter households (67.4% of this group) and 508,964 units for owner households (45.7% of this group).[8]

A. Right to Housing — The Fair Growth Approach

While some argue that the marketplace can address the majority of housing needs (Salins 1998), housing advocates promote a variety of governmental responses from Downs' (1994) combination of regulatory reform and increased governmental funding for housing to Carr's (1998) call for a broader governmental response to address issues associated with transportation, jobs, and education that will support households so they can eventually work their way out of poverty and afford market rate housing to White (1992), Hartman (1998), and Steiner and Smith's (2002) argument that the only way to bridge this gap will be to consider housing a right rather than simply a privilege.

Whether based on social welfare, community development, or macro-economic perspectives (Hays 1995), a right to housing argument assumes some level of government assistance often framed as incentives or requirements associated with development. Many argue that both are needed. Further, a regional approach is necessary to more effectively address local resistance and connect implementation of housing programs to comprehensive planning for housing needs.

Viewing affordable housing as essential infrastructure — understanding that the economic viability of an area is tied to its workers, including lower income workers who require such housing — Steiner and Smith (2002) maintain that as infrastructure, affordable housing must be available, like adequate roads, sewer, and potable water, to the area's growing population. "Concurrency offers a different approach because it makes provision of affordable housing an explicit responsibility of local governments, with such responsibility tied to a local comprehensive plan prepared under a set of rules and regulations established by the state" (Steiner and Smith 2002, 2). Such a proposal transfers oversight to meet affordable housing needs from the local to state levels while

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7. According to Table 4.1 of *The State of Florida's Housing 2003*.

8. According to Table 4-6 of the Florida Department of Community Affairs *State of Florida Consolidated Plan, Federal Fiscal Years 2000-2004*.

maintaining local responsibility, mandates a connection to comprehensive planning, and requires new development to contribute to meeting local needs.

Treating housing as infrastructure also addresses concerns about Florida's proposed Fiscal Impact Analysis Model (FIAM). In their February 2001 report "A Liveable Florida for Today and Tomorrow," the Florida's Growth Management Study Commission (Commission) recommended "adoption of a uniform fiscal impact analysis tool to assist local governments in determining the full costs and benefits of new development" (20). In 2002, the Florida legislature funded the development of FIAM in seven pilot communities: Orange County, City of Orlando, Sumter County, City of Hollywood, Sarasota County, Panama City Beach, and Palm Beach County. Though the Commission argues that they intend such an assessment tool to function as a guide "not an automatic threshold for approval or denial" (21), analyzing costs associated with affordable housing, including residents' use of local services and infrastructure, against the tax revenue generated by such housing will result in a negative balance and thus the potential to argue against its development (Davis 2003). However, if affordable housing is considered infrastructure, such an argument is not possible; affordable housing becomes an essential resource required to be in place before new development can occur.

Similarly fair growth argues for more equitably accommodating development pressures associated with rapid population increases in states such as Florida. By definition, smart growth focuses on diverting new development from low-density sprawl to higher density mixed-uses that address, among other issues, negative impacts on environmentally sensitive lands and over-burdened transportation systems. Downs (1994); Kalinosky (n.d.); Danielson, Lang, and Fulton (1999); and Calthorpe and Fulton (2001) outline the potential dangers of imposing growth limits without accommodating increased populations, resulting in inadequate land supply, and thus increasing housing prices and gentrification.

By contrast, fair growth recognizes the linkages between jobs, schools, land use, transportation networks, a healthy environment, and affordable housing. Social equity forms a primary component of a fair growth approach. "Fair Growth is a set of land use practices that attempt to curb urban sprawl without endangering housing affordability and access to jobs for minorities and low-income residents" (Fannie Mae Foundation 2000, 1). Requiring all new development of a certain size or larger to include a given percentage of affordable housing allows the realization of fair

growth goals, integrating lower income households throughout the community proximate to schools and jobs (Freeman 2000).

Treating housing as infrastructure subject to concurrency requirements and establishing a fair growth approach to deal with development pressure advance the adoption of inclusionary zoning. While it has garnered significant attention among academics as a tool to address housing needs, in reality inclusionary zoning has not been broadly implemented due to lack of political support in a country that values private property rights and more often than not adopts land use regulations and develops infrastructure that facilitate sprawl. Further, inclusionary zoning would need to be adopted regionally to be effective, otherwise a fragmented development pattern would emerge with new residential development opting to locate in those places that did not have such an ordinance. Such a lack of widespread implementation does not necessitate the elimination of this option, it simply means that adopting such a tool requires broad-based political support to ensure consistent application across the region. Inclusionary zoning then is a desirable, though underutilized tool.

In fact, a variety of approaches, both regulatory and incentive-based, are necessary to flexibly and effectively address the significant gap in affordable housing. In addition to inclusionary zoning, PolicyLink (2002) advocates housing trust funds as a "critical component" of an overall affordable housing strategy. Widespread implementation at the state and local levels, the current proposal for a national housing trust fund, and the lack of any recent significant study of this program type recommend further analysis of state housing trust funds as a viable means to effectively meet local housing goals.

B. The Promise of the SHIP Program

By definition housing trust funds incorporate flexibility, encourage partnerships with the private sector, and provide a dedicated source of funding to assist in meeting local housing needs. As established by the Florida Legislature in 1992, the State Housing Initiatives Partnership (SHIP) program epitomizes these goals. Supported by a broad coalition of home builders, realtors, bankers, housing advocates, county, and city governments, the largest state housing trust fund in the country was established to provide a stable funding source tied to population growth.

Thirty-four states currently maintain state housing trust funds, an increase of over 35% in the last ten years, ostensibly to fill the gap between local housing needs and available resources. In addition, for the past two years, the National Housing Coalition has

spearheaded an effort to establish a national housing trust fund. Defining characteristics of this program type include providing a critical match for federal assistance, maintaining permanency through a dedicated funding source, offering flexibility, facilitating public-private partnerships, and ensuring local administration to more directly link funding with local housing plans (Connerly 1993; Linker, Shay, and Hall 2001; Brooks 1997, 2002). Not surprisingly, housing trust funds have been accepted across the nation as a powerful tool to augment federal programs.

As the largest housing trust fund in the nation with over one billion dollars disbursed since its creation in 1992, Florida's State Housing Initiatives Partnership (SHIP) program is considered by many a model of such adaptive local sources of assistance. While Connerly (1993) noted the potential contributions of housing trust funds, he expressed reservations that they would be adopted on a widespread basis primarily due to political opposition and economic constraints. Despite these justified concerns, their number has increased significantly, including state level initiatives, which Basolo (1999) maintains are becoming a primary source of affordable housing funding. My review of the targeting, distribution strategies, and funding levels of half the state housing trust funds (17 out of 34) finds that Florida has not only the largest and most widely targeted housing trust fund, it is the only one available as a guaranteed block grant to local governments throughout the state. In fact, the Canada Mortgage and Housing Corporation (CMHC), that country's national housing agency, recently reviewed Florida's program to better understand applicability of trust funds to Canada.[9]

The intent of the SHIP program is to augment and leverage federal funds and to do so flexibly. With over $538 million expended and 78,480 units assisted—a minimum of 30% must target very-low and a minimum of 30% must target low- or very-low income households—SHIP clearly makes a vital contribution to the affordable housing supply in Florida.[10] The trust fund also functions as an important match to federal housing programs, adding another layer of assistance and contributing to project viability. The legislation specifically outlines the program's defining

9. Canada Mortgage and Housing Corporation website, State of Florida Overview, accessed on 16 November 2003, http://www.cmhc-schl.gc.ca/en/imquaf/afho/afadv/fite/hotrfu/case1.cfm.

10. At the outset of the program in 1992, the 30% very-low and 30% low income minimums applied to total number of units. Currently these percentages apply to the total funding available to the local governments so that at a minimum 30% of their funding must be spent on very-low and another 30% on low income housing. Local governments can choose to spend 60% of their funding on very-low income housing and still meet the requirement.

characteristics including: to encourage public-private partnerships, to ensure flexibility, to provide a match for federal funds, and to implement the local Housing Element, required by state law as part of the local comprehensive plan (F. S. 420.9072-5).

In fact, SHIP is intended to function as an integral component of housing planning and assistance throughout Florida. Since 1985, Florida has been a model of state-mandated planning, requiring each local government to adopt a Housing Element, consisting of housing objectives and polices based on local needs, as part of its broader Growth Management Plan. The housing trust fund also functions as an essential match to federal assistance, notably the HOME program. Thus SHIP is intended to be a key contributor to efforts that address local housing issues integrating federal funding targets with state planning mandates comprehensively applied at the local level. Further, the state's decision to target SHIP funding as an entitlement to all 67 counties and to the 48 entitlement cities that receive federal Community Development Block Grants (CDBG) reinforces the legislative intent to augment other forms of assistance to implement the local Housing Element.

At several points during its eleven-year history, continued full funding of the program has been threatened, significantly so in the past several legislative sessions. Each time, the diverse bi-partisan coalition of pro-development interests; city, county, and state governmental agencies; and non-profit housing advocacy groups that originally supported the program banded together and successfully preserved the dedicated revenue source that funds the program. Still, the amount of funding designated for SHIP during this fiscal year has been cut in half.

Knowing the constituency that comprises this coalition helps to explain the SHIP program's focus on homeownership (at least 65% of funds must be spent on this activity) and construction/rehabilitation (at least 75% of funds must be spent on this activity). Further, political threats, such as those noted above, attest to the significance of demonstrable results, which explains in part the encumbrance and expenditure deadlines to ensure that disbursed funds result in housing units and households assisted within a timely fashion (Larsen 1998).

Housing trust funds were intended to form part of an integrated and responsive local approach to meet housing needs. In assessing the contributions, challenges, and opportunities for improvement related to Florida's SHIP program, an initial series of more detailed issues emerges regarding the defining characteristics of housing trust funds as outlined in the SHIP legislation — variety of strategies to address local housing needs including homeownership versus rental strategies, developer-based versus

resident-based strategies, incomes targeted, depth of subsidy, and responsiveness to changing conditions such as increased housing costs.

Due to the issues raised regarding SHIP, the methodology uses multiple case studies (Yin 1992) to determine the nature of local implementation strategies within the broader housing planning context. The Florida Housing Finance Corporation distributes the SHIP funds to all 67 counties and 48 CDBG entitlement communities in the state based on a per capita formula. In order to assess how this program is implemented, a random sample of 34 cities and counties — 17 each — were chosen to participate in the study. The sample is also representative of the state's geography and of the range of funding distributions — small, medium and large — based on legislative parameters for amount of assistance. The mandated $350,000 minimum for rural counties establishes the limit for the small category that includes cities that fall at or below this amount; distributions of $1 million or more represent the large cities and counties with medium communities falling in between. These categories recognize the diversity of the population in the state — from rural to urban — and allow a means to assess potential differences in implementation and capacity between smaller and larger communities.

In addition to analyzing program implementation, this study will also examine how local governments have adjusted their strategies and assistance over time to address changing local conditions, such as increased housing costs. The methodology involves analyzing material based on the defining characteristics of trust funds in general and the requirements of the SHIP program in particular for FY 92-93, the first year of the program, and FY 01-02, the most recent year for which information is available.

Based on analysis of the sample data, certain trends appear to be emerging. For instance, all local governments are spending more than the 65% minimum on homeownership activities with over 60% of the sampled local governments targeting all their funding on such strategies in FY 01-02. Overall, 77% of the SHIP funding among the sampled governments benefits homeownership. All fund downpayment or purchase assistance and some form of owner rehabilitation. The emphasis on these two resident-based strategies translates into the majority of SHIP funds (66%) directly benefiting lower income households — providing owners the funding to use for housing costs — as opposed to targeting developers, where the funding serves to lower selling prices or rents *and* to offer an incentive to the developer to provide such housing.

In addition, limiting downpayment assistance to first-time homebuyers is a common strategy used in ten of thirty-four

communities, and in most cases, this assistance can be combined with repairs to existing homes under contract. Further, most local governments (24 of the 34 sampled) offer or require housing counseling. Owner rehabilitation varies from emergency repairs to demolition and reconstruction. In most cases, these downpayment and rehabilitation programs were in place prior to the establishment of the SHIP program, and this funding has served to increase the number of households local governments are able to assist.

Despite the focus on homeownership beyond the minimum required by the program, the number of communities among the random sample targeting rental strategies has practically doubled since FY 92-93 (from 7 to 13). Yet the majority of the communities assisting rental projects spend no more than 20% of their funds on such assistance. While the number of strategies funded has expanded in most areas since FY 92-93, these additional strategies, such as land acquisition, individual rental assistance, rental conversion to homeownership, and foreclosure prevention, are not heavily funded or widely implemented. Still, the variety of downpayment assistance and owner rehabilitation options have increased significantly.

Further, my research indicates that while the legislation allows all the funds to be targeted at very-low and low income households, quite a few target moderate income households — serving those who earn from 80% to 120% of median income. In FY 92-93, 58% of the sampled communities assisted moderate income households; in FY 01-02, that percentage had risen to over 73%. Given the emphasis on homeownership, it is not surprising that targets include those with incomes in this category. Thus, this analysis suggests that within and across programs there does not appear to be a consistent emphasis on addressing the lowest income local housing needs.

A recent study of FY 99-00 and FY 00-01 SHIP assistance conducted by Stan Fitterman and Wight Gregor of the FHC found a similar strong focus on homeownership beyond the minimum requirements outlined in the legislation. Their study specifically focused on one strategy — purchase assistance — and assessed whether a relationship exists between the depth of subsidy for the purchase assistance offered and the affordability index they constructed for that area based on sales price data and median income. Using regression analysis they found that the subsidy amount did *not* vary based on widening gaps between house prices and incomes (Fitterman and Gregor 2003). Similarly, my research indicates that the maximum amount of assistance per unit designated for particular strategies did not change or fell in several

communities when comparing the first year of the program, FY 92-93, and FY 01-02. These findings indicate that local governments have tended not to be responsive to depth of subsidy as housing costs have increased.

Consequently, the program clearly has been effective at meeting local housing needs particularly among lower income households seeking homeowner rehabilitation and/or downpayment assistance. In addition, it is providing a critical match for the HOME program. While the diversity of homeowner rehabilitation and downpayment assistance strategies has increased since FY 92-93, other strategies are rarely implemented, or if they are, funded at minimal rates. Review of the Housing Elements has not yet commenced to determine whether downpayment assistance and owner rehabilitation are the primary needs outlined in these plans. Further, the focus on assisting moderate income households has increased since the inception of the program. Altogether, these initial findings reflect a more narrow local focus than that encouraged by the legislation. Further analysis of housing plans, including the Consolidated Plan, which outlines local governments' federal funding targets, and final Annual Reports for FY 01-02 funds, which will indicate final expenditure information for SHIP funds, will adjust and augment the initial findings discussed here.

III. THE FUTURE: SUSTAINING AND STRENGTHENING SHIP AS A CRITICAL STRATEGY TO MEETING FLORIDA'S AFFORDABLE HOUSING NEEDS

As non-federal funding becomes more essential to addressing an increasing affordable housing need, programs such as SHIP provide a critical source of assistance to local governments. If developers and local governments are assured that they can depend on a consistent source of assistance, then they can more effectively plan — coordinate, leverage, and layer programs — and thus ensure more efficient utilization of scarce resources. Designed to encourage local governments to address current housing needs through implementation of their housing elements and to integrate SHIP with other funding programs and regulatory initiatives, Florida's state housing trust fund offers a means to comprehensively address local housing needs.

Initial findings from this ongoing study indicate that the sampled local governments do not fully appreciate the intent of the housing trust fund as outlined in its defining characteristics including meeting a variety of local housing needs. Deadlines for encumbrance and expenditure of funds potentially encourage adoption of strategies and inclusion of higher income targets that

facilitate meeting these requirements as opposed to addressing critical needs.

Still significant changes to the program could threaten to dissolve the broad political support that has sustained it for over eleven years. Further, as this study shows, local governments could in fact use the existing program much more flexibly to comprehensively respond to local housing needs and adjust the program to address local changes in housing costs and variations in income. Together with the recognition that affordable housing for lower income groups is essential to the continued health of Florida's economy, SHIP offers an essential tool for realizing the state's affordable housing needs.

MYCOTOXINS: MECHANISMS OF TOXICITY AND METHODS OF DETECTION FOR IDENTIFYING EXPOSED INDIVIDUALS

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Table of Contents

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I. INTRODUCTION

The concern over exposure to mold and human disease dates to antiquity. In recent centuries, the majority of mass poisonings attributed to molds have been due to the ingestion of fouled foods that contain secondary metabolites of molds also known as mycotoxins. Nearly 400 mycotoxins have been discovered to date and are generally categorized into groups based on structural similarities.[1] Some of the most common types of mycotoxins that can cause health problems in animals and humans are the aflatoxins, fumonisins, trichothecenes, ochratoxins, and zearalenones.

Molds are ubiquitously found both indoors and outdoors. Currently, there are several regulatory guidelines established for the allowable levels of specific mycotoxins in foods; however, there are no guidelines established for the safe-level of exposure to molds that are present indoors. Part of the ambiguity in determining a safe-level of mold exposure stems from the seasonal and geographic fluctuations that occur in levels of mold spores and the lack of correlation between sampling values and reported health effects.[2] Moreover, a considerable amount of controversy surrounds the relevance of measurable levels of mold from indoor environments and adverse health effects based on exposures that occur from inhalation.[3]

Some genera of fungi are capable of eliciting adverse health outcomes independent of the effect of mycotoxins. Such ailments include aspergilloma by *Aspergillus* species (spp.) and subcutaneous nodules by *Cladosporium* spp. However, these conditions are generally seen in immunocompromised patients, such as individuals infected with the human immunodeficiency virus. Examples of diseases that may result from mold infection are listed in Table 1.

The literature is rife with studies on the adverse health effects of mycotoxins in animals; however, these studies are generally limited to inoculation of the test animal with the toxin or intratracheal instillation of large numbers of spores from genera of mold known to produce mycotoxins. For example, in one study, mice were administered spores from a mycotoxin-producing strain of *Stachybotrys atra* in the amount of 1 x 105 spores via the intratracheal route.[4] All animals exhibited inflammatory changes

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1. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 498 (2003).
2. R. E. Gots et al., *Indoor Health: Background Levels of Fungi*, 64 AIHA J. (FAIRFAX, VA) 427, 429 (2003).
3. *Id.* at 435.
4. M. Nikulin et al., *Effects of Intranasal Exposure to Spores of Stachybotrys Atra in Mice*, 35 FUNDAM. APPL. TOXICOL. 182, 184 (1997).

in the lungs. However, by adjusting this value for a 70-kg adult, Revankar noted the lack of relevance of this exposure (i.e. an inhaled dose of 3.5 x 109 spores) versus ambient levels of mold found indoors.[5] More recently, Sava's findings suggest that neurotoxicity in mice occurs after injecting animals with a hepatotoxic dose of the mycotoxin, rubratoxin B.[6] Although the administered dose (5 mg/kg) has repeatedly been shown to cause severe hemorrhagic necrosis of the liver, the authors failed to present indices of liver viability/toxicity (i.e. serum transaminases), which are paramount in the interpretation of such studies, considering that neurological sequelae are common following compromised liver function.

Mycotoxins have received extensive attention as the possible causative agents in buildings where molds are present because of their established potential to cause adverse health effects when ingested with contaminated foodstuffs. Although the relationship between indoor mold exposure and adverse health outcomes is unclear, thousands of insurance claims have been filed across the country and mold remediation has become a thriving business as a result. Interestingly, the peer-reviewed scientific literature is replete with studies addressing indoor mold and mycotoxins as causative agents in human disease as exemplified with *Stachybotrys* in Table 2; however, in addition to the shortcomings listed in Table 2, sources of confounding (i.e. dust mites, animal dander, off-gassing of volatile compounds, etc.) are routinely not excluded and diagnostic tests to confirm mycotoxins in human tissues are generally lacking.

Because of the level of uncertainty between measurable levels of molds and adverse health outcomes, biotechnology companies have been actively involved in developing sensitive and specific methodologies to detect mycotoxins in human tissues. The present article will provide a brief overview for several clinically relevant mycotoxins and their mechanisms of toxicity, followed by a discussion of the most commonly utilized methodologies for detecting mycotoxins in test samples.

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5. S. G. Revankar, *Clinical Implications of Mycotoxins and Stachybotrys*, 325 AM. J. MED. SCI. 262, 271 (2003).

6. V. Sava et al., *Distribution of Oxidative DNA Damage and Oxyguanosine Glycosylase Activities across Brain Regions of Mice Injected with a Single Dose of Rubratoxin-B*, THE SOCIETY FOR NEUROSCIENCE 33RD ANNUAL MEETING, Program No. 669.4 (2003), http://sfn.scholarone.com/itin2003/.

II. MECHANISMS OF TOXICITY FOR SELECT MYCOTOXINS

An understanding of the mechanism(s) of toxicity provides a more definitive basis for biological plausibility between exposure and outcome, a cornerstone in the establishment of causation. The following mycotoxins have been extensively studied and the pathways that give rise to organ-specific pathologies have been described for many animal species, including humans. However, the damage produced in animals from the administration of high-doses of a particular mycotoxin does not correlate with mycotoxin-induced pathologies in humans, given the small amounts of mycotoxins that are typically present in air or food. Moreover, specific mycotoxins, such as aflatoxins that were suspected of increasing the risk of liver cancer have since been shown to pose no increased risk when consumed at the estimated daily levels.[7] Finally, it is important to keep in mind that the dose determines the poison when reading the following established pathways for mycotoxin-induced tissue damage.

A. Aflatoxins

Aflatoxins were first identified as the probable toxin that destroyed more than 100,000 turkey poults (Turkey X disease) in England in the early 1960s.[8] These compounds consist of over a dozen members with aflatoxin B_1 being the most extensively studied, due to its propensity to bind to DNA upon activation by the cytochrome P450 enzyme family (Figure 1).[9] The four major aflatoxins (aflatoxin B_1, B_2, G_1, and G_2) are named based on their fluorescence under blue or green light and their relative mobility during thin-layer chromatography (TLC).[10] The hydroxylated metabolites of aflatoxins B_1 and B_2 (aflatoxins M_1 and M_2) may be found in milk or milk products from livestock that have ingested contaminated feed.[11] DNA adducts with aflatoxin B_1-8,9-epoxide are generally removed by the nucleotide excision repair pathway; however, if unrepaired, they may cause GC to TA transversions (i.e. a point mutation in which a purine is substituted by a pyrimidine or vice versa) and subsequent cellular changes that may lead to

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7. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 16 (2002).

8. D. M. Kuhn & M. A. Ghannoum, *Indoor Mold, Toxigenic Fungi, and Stachybotrys Chartarum: Infectious Disease Perspective*, 16 CLIN. MICROBIOL. REV. 144, 150-51 (2003).

9. S. G. Revankar, *Clinical Implications of Mycotoxins and Stachybotrys*, 325 AM. J. MED. SCI. 262, 264 (2003).

10. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 500 (2003).

11. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 9 (2002).

cellular transformation.[12] Recent exposures are most reliably detected by measuring the levels of the B_1-N7 adduct in urine.[13] Several analytical methods are available for the detection of aflatoxins, including enzyme-linked immunosorbent assays (ELISAs), TLC, and liquid chromatography, or a combination of immuno-affinity columns and TLC or liquid chromatography.[14] It is estimated that human consumption of aflatoxins ranges from 0 to 30,000 ng/kg/day with an average of 10 to 200 ng/kg/day.[15]

B. Fumonisins

Fumonisins were first discovered in 1988.[16] The most extensively studied member of this class is fumonisin B_1. Fumonisins are rather unique in the world of mycotoxins in that they are water-soluble, which may account for their late discovery in mycotoxin research. In all animal species studied, fumonisins are poorly absorbed from the digestive tract and are rapidly distributed and eliminated.[17] Numerous species-specific pathologies have been attributed to fumonisin-contaminated feed, including: leukoencephalomalacia (hole in the head syndrome) in equine and pulmonary edema and hydrothorax in swine.[18],[19],[20] These compounds have been shown to have carcinogenic potential in animal models and are the only known inhibitors of ceramide kinase, a key enzyme involved in inflammatory cascades (Figure 2). Fumonisins are generally detected by purification with immuno-affinity columns followed by TLC or liquid chromatography; however, rapid screening tests based on TLC and ELISAs have been developed.[21] It has been estimated that consumption of fumonisin B_1 by humans in the U.S. is approximately 80 ng/kg/day.[22]

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12. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 500 (2003).
13. *Id.* at 501
14. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 11 (2002).
15. S. G. Revankar, *Clinical Implications of Mycotoxins and Stachybotrys*, 325 AM. J. MED. SCI. 262, 264 (2003).
16. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 503 (2003).
17. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 19 (2002).
18. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 503 (2003).
19. W. F. Marasas et al., *Leukoencephalomalacia in a Horse Induced by Fumonisin B_1 Isolated from Fusarium Moniliforme*, 55 ONDERSTEPOORT. J. VET. RES. 197, 197-203 (1988).
20. L. R. Harrison et al., *Pulmonary Edema and Hydrothorax in Swine Produced by Fumonisin B_1, a Toxic Metabolite of Fusarium Moniliforme*, 2 J. VET. DIAGN. INVEST. 217, 217-21 (1990).
21. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 23 (2002).
22. *Id.* at 25

C. Trichothecenes

Tricothecenes are one of the most recognized groups of mycotoxins, since they are the primary by-products of the mold species *Stachybotrys atra*. Trichothecenes constitute a family of over sixty compounds. Probably the most well-known member of this family is T-2 toxin because of its historic role in mass poisonings among livestock and humans from the consumption of contaminated food products and its potential use as a biological warfare agent. T-2 toxin is readily metabolized by the gut microflora of mammals to several metabolites. HT-2 toxin is a primary metabolite in the gut and is absorbed into the blood after ingestion of T-2 toxin. Metabolism continues in the liver (with biliary excretion), resulting in a substantial combined first-pass effect in the gut and liver.[23] Trichothecenes are direct acting compounds, unlike aflatoxin B_1 that requires metabolic activation. The mechanism of toxicity is generally by disruption of protein synthesis, more specifically by direct inhibition of peptidyltransferase in the large ribosomal subunit (Figure 3).[24] The primary effects of perturbed protein synthesis from T-2 toxin are seen in the immune system, and include changes in leukocyte counts, delayed hypersensitivity, depletion of selective blood cell progenitors, and depressed antibody formation.[25] TLC and liquid chromatography are the methods of choice for trichothecene detection; however, ELISAs have been developed for many members of this family.[26] The total intake of T-2 toxin and HT-2 toxin from dietary sources has been estimated at 7.6 and 8.7 ng/kg/day, respectively.[27]

D. Ochratoxins

Ochratoxin A was discovered in 1965 and was later isolated from corn stuffs in the U.S.[28] This compound has been shown to induce acute tubular necrosis in all animal species studied.[29] Concern over human exposure stems from the extended half-life of this compound, which is greatest in humans than in other species. For example, the serum half-life of ochratoxin A varies among species, as follows: 24 — 39 hours in mice, 55 — 120 hours in rats, 72 — 120 hours in pigs,

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23. *Id.* at 43
24. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 505 (2003).
25. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 44 (2002).
26. *Id.* at 47
27. *Id.* at 48
28. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 504 (2003).
29. *Id.*

510 hours in one macaque monkey, and 840 hours (35 days) in a human volunteer.[30] Ochratoxin A has been suggested as a causative agent of Balkan Endemic Nephropathy; however, more descriptive studies are needed to exclude other causative agents.[31] Ochratoxin A disrupts several cellular functions, including ATP production; however, its toxicity is generally attributed to its inhibitory effects on the enzyme involved in the synthesis of the aminoacyl-tRNAs containing phenylalanine (Figure 4).[32] Ochratoxin A can be detected in a wide range of products, including coffee beans.[33] Moreover, it has been readily detected in human blood and serum samples from individuals in Canada, Sweden, West Germany, and Yugoslavia.[34] Both TLC and liquid chromatography with fluorescent detection are used to identify ochratoxin A; however, ELISAs are also available.[35] The European Commission's Scientific Committee on Food has recommended that levels of ochratoxin A be reduced to below 5 ng/kg/day.[36] However, the estimated daily consumption of ochratoxin A from foodstuffs is approximately 6 ng/kg.[37]

E. Zearalenones

Zearalenone is categorized as a mycotoxin; however, its toxicity is much lower than the previously mentioned compounds. For instance, the 50% lethal dose in female rats is greater than 10 g/kg.[38] A more appropriate categorization for this compound would be as a nonsteroidal estrogen or mycoestrogen because of its estrogenic-like properties (Figure 5), which have been reported in swine with as little as 1 mg/kg.[39] The levels of zearalenone in foodstuffs are currently not controlled by regulatory agencies; however, it has been estimated that the safe-level of exposure in humans is below 50 ng/kg/day.[40]

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30. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 29 (2002).
31. *Id.* at 30
32. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 504 (2003).
33. *Id.*
34. *Id.*
35. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 31 (2002).
36. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 507 (2003).
37. WHO, *Evaluation of Certain Mycotoxins in Food*, WHO TECHNICAL REPORT SERIES 906 1, 32 (2002).
38. J. W. Bennett & M. Klich, *Mycotoxins*, 16 CLIN. MICROBIOL. REV. 497, 507 (2003).
39. *Id.*
40. *Id.*

III. TECHNIQUES FOR MYCOTOXIN DETECTION

Several chemical and biological detection systems exist for the determination of mycotoxins (Table 3). T-2 toxin is one of the most extensively studied of the trichothecenes and several biological systems have been developed for detecting this toxin and other members of the trichothecene family (Table 4). Although these methods are useful for the determination of mycotoxin quantity, they lack specificity and mycotoxin identification is generally performed with one of the following physicochemical or immunological methods.[41]

A. Thin-Layer Chromatography

TLC is the most commonly utilized physicochemical test because more than one mycotoxin can be detected for each test sample. TLC is based on the separation of compounds by how far they migrate on a specific matrix with a specific solvent. The distance that a compound will travel is a unique identifier for specific compounds, and a retention factor (R_f) has been determined for most mycotoxins. As with any detection system, a positive control containing purified mycotoxins must be ran in parallel to ensure accuracy, since different chemicals can have a similar R_f (Figure 6).

B. Immunological Assays

Small molecules, such as mycotoxins, are not immunogenic and are known as haptens or molecules that will not stimulate antibody production by themselves. However, antibodies can be produced for a specific mycotoxin by conjugating it to a protein carrier, which causes the mycotoxin to become immunogenic.[42] Animals produce several different types of antibodies that will recognize various regions of foreign particles, including antigens (a substance capable of stimulating an immune response) and haptens, when present on a carrier macromolecule. The various forms of antibodies include polyclonal and monoclonal types. Polyclonal antibodies react with multiple antigens or haptens on a foreign compound, whereas monoclonal antibodies react only with specific antigens or haptens.[43] Currently, both polyclonal and monoclonal antibodies have been developed that are available for identifying several types of

41. R. M. Eppley, *Methods for the Detection of Trichothecenes*, 58 J. ASSOC. OFF. ANAL. CHEM. 906, 907 (1975).

42. J. M. Fremy & E. Usleber, *Policy on Characterization of Antibodies Used in Immunochemical Methods of Analysis for Mycotoxins and Phycotoxins*, 86 J. AOAC INT. 868, 868-71 (2003).

43. *Id.*

mycotoxins in test samples by utilizing the ELISA (Figure 7) and immuno-affinity chromatography (IAC) (Figure 8).

IV. CONCLUSIONS

Despite the advances in methodologies for detecting mycotoxins, the problem of determining their causative role in health problems from indoor exposures will still persist, considering that presence of mycotoxins in the blood, serum, urine, etc., does not necessarily reflect inhalation exposure and more often than not represent mycotoxins consumed in foodstuffs. Carefully designed studies and proper assessment of exposure is needed to determine the effects of mycotoxins on human health.

EXTENDED PRODUCER RESPONSIBILITY: A TOOL FOR ACHIEVING SUSTAINABLE DEVELOPMENT

NICOLE C. KIBERT*

Table of Contents

I. INTRODUCTION

"We have to abandon the old standard of mere profitability, productivity, or efficiency and realize that--in the terms of the grant to us of the use of the world--we have other standards to meet . . . We have the right to use--but not use up--the things that we need and are dependent upon."[1]

The major environmental problems that the world currently faces such as deforestation, loss of biodiversity, ozone depletion, global climate change, pollution and over-consumption of natural resources directly impact our ability to develop our economies while at the same time sustaining the health of people as well as plants and animals. Trade, labor and environment are inseparable, critical elements of an equitable international trade system. The development of international trade without due consideration for social and environmental issues forms the basis for most criticisms of globalization.

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1. Jack Jezreel, *Care for the Earth is a Local Call: Jack Jezreel interviews Wendell Berry*, US Catholic (June 1999), http://www.uscatholic.org/1999/06/cov9906.htm.

Scholars have long recognized the interdependence of economic, environmental and social factors as a triangular relationship. The first clear enunciation of this interdependence came as the result of a report commissioned by the United Nations Commission on Economic Development known both as the Brundtland Report and Our Common Future.[2] This report defined the term "Sustainable Development" as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs."[3] This paper examines a policy mechanism known as extended producer responsibility ("EPR") as a method of integrating sustainable development principles into international trade based on an international environmental law principle known as the Polluter Pays Principle. This paper also seeks to explore the different proponents of EPR and how these groups influence each other in the context of international trade. In the United States ("US"), industry is implementing EPR mechanisms while in the European Union ("EU"), the impetus comes from the government. Prior to addressing the EPR case study, a timeline for the history of sustainable development and two major trade regimes, the North American Free Trade Agreement ("NAFTA") and the World Trade Organization ("WTO") will be presented to give the reader a context for understanding how EPR can fit into the current environmental and trade law regime.

II. BACKGROUND

A. Pre-Earth Summit

As early as the 1972 United Nations Conference on the Human Environment held in Stockholm, environmental awareness has been a priority of the international community who recognized that economic security and development are directly tied to the health of the environment. At Stockholm, the Declaration of the United Nations Conference of the Human Environment, which is commonly referred to as the Stockholm Declaration, was adopted.[4] Principle 21, which holds a state responsible for harm originating in that state which harms another state, is the most famous of the Stockholm Declaration principles and has been deemed customary international law.[5] Besides the Stockholm Declaration, the most

2. World Commission on Environment and Development, OUR COMMON FUTURE (Oxford University Press 1987).

3. *Id.*

4. Stockholm Declaration, Adopted by U.N. G.A. Res. 2998 of December 15, 1972, UN Doc A/CONF.48/14 (1972).

5. *Id.* at Principle 21.

important outcome of the Stockholm conference was the formation of the United Nations Environmental Program (UNEP), which still functions today.[6]

In the mid-1980's policy makers determined that though the Stockholm Declaration and the formation of the UNEP had started the path towards addressing economic, environmental, and social issues, many issues still had not been addressed. After the publication and adoption by the UN of the Brundtland Report, the UN General Assembly passed a resolution in 1989 to convene the Earth Summit in 1992 to re-affirm the Stockholm Declaration, to chart a pathway for implementation of sustainable development principles, to address biological diversity issues, climate change problems, and deforestation.[7]

B. Earth Summit — Rio de Janeiro, Brazil

In 1992, the United Nations Conference on Environment and Development, also known as the Earth Summit, was held in Rio de Janeiro on the twentieth anniversary of the Stockholm Declaration. Representatives from 172 nations attended the conference along with many non-governmental groups never before allowed to participate in a UN event of this type. The Rio Declaration, an aspirational, non-binding document was signed at the Earth Summit.

This Declaration reaffirmed the principles of the Stockholm Declaration and added some additional principles to insure the integrity of the global environment. [8] The Rio Declaration contains 27 principles. Principle 3 outlines the principle of sustainable development: "The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations."[9] Also relevant to the topic of this paper is Principle 16, known as the Polluter Pays Principle, which reads: "National authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to

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6. Shanna L. Halpern, *The United Nations Conference on Environment and Development: Process and Documentation*, http://www.ciesin.org/docs/008-585/unced-intro.html.

7. The Decision of the General Assembly to convene the United Nations Conference on Environment and Development (A/RES/44/228-85 of 22 December 1989).

8. Rio Declaration on Environment and Development, June 13, 1992, U.N. Doc.A./CONF.151/26 (1992).

9. *Id*. at Principle 3.

the public interest and without distorting international trade and investment."[10]

Four other instruments were developed at the Earth Summit: the United Nations Convention on Biological Diversity,[11] the United Nations Framework Convention on Climate Change,[12] a non-binding statement regarding Forest Conservation and Agenda 21. Most relevant to this paper, is Agenda 21, which in forty chapters attempted to construct a comprehensive plan for putting sustainable development into place by the inception of the 21st Century. The United Nations General assembly created the Commission on Sustainable Development to implement Agenda 21.

C. Post-Earth Summit

Two major international trade agreements were negotiated following the Earth Summit: NAFTA and WTO. NAFTA created a free trade area for North America between Canada, Mexico and the United States and went into force on January 1, 1994. NAFTA has two side agreements — one addressing environmental issues and the other addressing labor issues. The environmental side agreement has no enforcement power and can only publish decisions.[13] The labor side agreement on the other hand does have enforcement powers through a monetary system if an alternate action plan cannot be agreed upon.[14] Despite these side agreements, NAFTA has not been considered to be effective in protecting environmental or labor rights.[15]

The WTO was created in January 1995 following the Uruguay Round negotiations which were held from 1986-1994. The preamble to the Marrakesh Agreement establishing the World Trade Organization[16] recognized sustainable development as one of the goals of the WTO:

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10. *Id*. at Principle 16.

11. Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 (1992), http://www.biodiv.org.

12. United Nations Framework Convention on Climate Change, May 29, 1992, 31 I.L.M. 849, http://www.unfccc.de/.

13. North American Agreement on Environmental Cooperation between the Government of Canada, The Government of the United Mexican States, and the Government of the United States, 32 I.L.M. 1480 (1993).

14. North American Agreement on Labor Cooperation between the Government of Canada, The Government of the United Mexican States, and the Government of the United States, 32 I.L.M. 1480 (1993).

15. *See* The Public Citizen Website, http://www.citizen.org/trade/nafta/index.cfm.

16. Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994 (LT/UR/A/2), http://www.wto.org.

> Recognizing that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of **sustainable development**, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development.[17]

The WTO has been criticized for failing to fully consider the social, cultural and environmental impacts of the trading regime.[18] Indeed, the WTO does not have an agreement addressing environment or social/labor issues. However, the Dispute Settlement Understanding ("DSU"), which prescribes the procedure for resolving WTO disputes, allows for the panels to consider customary international law in making decisions.[19] In addition, the Agreement on the Application of Sanitary and Phytosanitary Measures ("SPS Agreement") allows Member States to adopt or enforce measures necessary to protect human, animal or plant life or health, subject to the requirement that these measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between Member States where the same conditions prevail or a disguised restriction on international trade.[20] It remains to be seen where the WTO will stand on environmental and social issues but there are indications from the Appellate Body that they will uphold international environmental law principles if applied in a non-restrictive manner.

In addition to NAFTA and WTO, there have been two major UN conferences since the Earth Summit, as well as several local and regional meetings and agreements, to determine how to better implement sustainable development. In 1997, The Earth Summit +5 was held in New York. Prior to the Earth Summit +5 a number of goals proposed in Rio were met including the Global Conference

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17. *Id.*

18. *See* The Public Citizen Website, http://www.citizen.org/trade/wto/index.cfm.

19. Understanding on Rules and Procedures Governing the Settlement of Disputes, Apr. 15, 1994 (LT/UR/A-2/DS/U/1), http://www.wto.org.

20. Agreement on the Application of Sanitary and Phytosanitary Measures, Apr. 15, 1994 (LT/UR/A-1A/12), http://www.wto.org.

on the Sustainable Development of Small Island Developing States (May 1994), the UN Convention on Desertification (which entered into force on 26 December 1996), the UN Agreement on Straddling and Highly Migratory Fish Stocks (opened for signing on 4 December 1995), and a UN Intergovernmental Panel on Forests to promote the sustainable management of forests worldwide. In addition, the two international legal agreements opened for signing in Rio — the Convention on Biological Diversity and the Convention on Climate Change — entered into force.[21]

The Earth Summit +5 did not achieve much in the way of concrete obligations. This lack of consensus was attributed mainly to the North-South differences on how to make sustainable development a reality and more fundamentally who was going to pay for it.[22] A Statement of Commitment, rather than a declaration, was passed which reaffirmed the Rio principles and renewed commitment to Agenda 21.

The World Summit on Sustainable Development (WSSD) was held in Johannesburg, South Africa from August 26-September 4, 2002. Many people are frustrated that ten years after Rio there has been little progress towards achieving sustainable development. This lack of progress was foreshadowed by Earth Summit +5 and the inability of the nations present to agree to any new concrete obligations. The WSSD was touted as an implementation-based conference[23] despite the fact that there were no new agreements or treaties passed at the WSSD.[24] "But some important new targets were established, such as: to halve the proportion of people without access to basic sanitation by 2015; to use and produce chemicals by 2020 in ways that do not lead to significant adverse effects on human health and the environment; to maintain or restore depleted fish stocks to levels that can produce the maximum sustainable yield on an urgent basis and where possible by 2015; and to achieve by 2010 a significant reduction in the current rate of loss of biological diversity."[25] There were many partnerships set up at the WSSD between governments, non-governmental organizations and the private sector. Significantly, Summit Secretary-General Nitin Desai "warned, however, that the partnerships were not a substitute for government responsibilities and commitments and that the

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21. UN Commission on Sustainable Development, Earth Summit +5 Press Release, http://www.un.org/ecosocdev/geninfo/sustdev/es&5broc.htm.

22. UN Commission on Sustainable Development Press Release, Earth Summit Review Ends with Few Commitments, http://www.un.org/ecosocdev/geninfo/sustdev/es5final.htm.

23. WSSD Website, The Johannesburg Summit Test: What Will Change?, http://www.johannesburgsummit.org/html/whats_new/feature_story41.html.

24. *The bubble-and-squeak summit*, The Economist, September 7, 2002, 69-70.

25. WSSD Website, *supra* note 23.

partnerships are solely intended to deepen the quality of implementation."[26] However, these partnerships may have more impact than any new declarations; in fact, some delegates called for this summit to be the end of big world conferences on sustainable development.[27] Rather, "smaller, more focused meetings" should follow this summit.[28]

This emergence of partnerships on the international stage has some worried that corporations will continue to exert power over developing countries. As non-state actors, how can the international law regime hold these corporations responsible for their actions? The simple answer would be through their country of origin but in this age of globalization and multi-national corporations it is sometimes difficult to determine which country is the country of origin. Additionally, if the country of origin turns out to be the United States it may have a chilling effect since the United States has failed to live up to many of the principles set forth in the Rio Declaration, the Convention on Biological Diversity and the Climate Change Convention. It is no wonder that governments of developing nations are looking to non-governmental organizations and private industry to help them fulfill their responsibilities.

There is one saving grace though — as much of the world outside of the United States attempts to bring protocols such as Kyoto into force new world leaders in environmental protection are emerging. For example, the European Union has largely stepped in to fill the leadership gap and is now leading the way in climate change, energy and waste management. In addition several Asian countries, such as Japan and Taiwan, have put EPR programs into place.

The unwillingness of other countries to allow the US to scuttle the development of international environmental law regimes could have a positive impact on the US and international trade by default. As US companies that operate in these countries have to comply with other nations' domestic environmental law regimes, some of these good practices may be imported back into the US. In addition, US companies that want to gain a hold in the global market have realized that though environmental laws may not be all that important in the US under the current administration, they are important outside of the US. If US corporations want to participate fully in the global market, these companies will have to abide by the sense of environmental ethics expressed by other nations. Therefore, many US companies participate in organizations such as the World

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26. *Id.*
27. *The bubble-and-squeak summit*, *supra* note 24.
28. *Id.*

Business Council on Sustainable Development, CERES, the Sustainable Business Network, and adhere to ISO 14001 principles.

There is a legitimate danger of some corporations taking advantage of these organizations when in fact they are really engaging in anti-community and anti-environmental actions.[29] However, there are some very good examples of companies such as Levi-Strauss Co, Patagonia, Dupont, and Ford, which legitimately participate in these organizations and programs. Another problem is when US companies do business with developing nations that do not have good environmental laws in place or cannot enforce such laws. We must ask ourselves, "Do we realize that industry, which has been our good servant, might make a poor master?"[30]

US companies have been known to take advantage of countries with law environmental enforcement and leave a trail of environmental destruction.[31] Therefore, it is necessary to have both an international law regime, and a compatible domestic law regime, to keep multi-national corporations in compliance with environmental laws. Otherwise, these companies may not be accountable to anyone. We cannot vote them out of office. It is the government's responsibility to maintain control over companies that are chartered in their jurisdiction. One example of how a government's environmental regime can influence US companies to take action is through EPR programs.

III. EPR CASE STUDIES

EPR utilizes the Polluter Pays Principle from the Rio Declaration to extend responsibility for a product throughout the product's lifecycle rather than just up to the time of sale when the responsibility would normally transfer to the consumer. In the US, EPR is known as extended product responsibility to emphasize that the responsibility is shared — the producer is not the only responsible party but also the packaging manufacturer, the consumer and the retailer.[32] In this paper, EPR will refer to both extended product and producer responsibility with the understanding that both the EU and US consider the responsibility to be shared.

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29. For more information about "green washing" visit http://www.corpwatch.org.

30. Aldo Leopold, A PLEA FOR WILDERNESS HUNTING GROUNDS (1925).

31. *See Savages* by Joe Kane (Alfred A. Knopf, 1995). This book tells the story of the Huaroni Indians v. Texaco and builds on two articles published in the New Yorker, Joe Kane, "With Spears from All Sides," THE NEW YORKER, Sept. 27, 1993, at 54-79 and Joe Kane, "Moi Goes to Washington," THE NEW YORKER, May 2, 1994, at 74-81.

32. Gary A. Davis, Catherine A. Wilt & Jack N. Barkenbus, *Extended product responsibility: a tool for a sustainable economy*, Environment, Sept 1997at 10.

EPR was first instituted in Germany in 1991 by passage of the Ordinance on Avoidance of Packaging Waste.[33] At first EPR was thought to be an advanced type of recycling program but it is much more than that.[34] Ordinarily producers have no responsibility for their products after sale other than through tort and consumer advocate laws. Municipalities or consumers usually pay for disposal or recycling. Normally, manufacturers have no incentive to reduce their packaging or to insure that their products or packaging are easily recyclable. EPR turns this disincentive into an incentive to be environmentally efficient. EPR encourages producers to package their products in easily recyclable materials, and more importantly, encourages producers to design their products out of materials that can be broken down and recycled without hazardous effect.

There are, of course, criticisms of EPR. In fact the 1991 German law has been criticized in three major ways: (1) It was too expensive because there was not enough recycling capacity in the country so materials were shipped out of the country primarily to Asian countries where it is unknown how they were ultimately disposed of; (2) It was too ambitious because it did not address the side effects of mandatory take–back schemes; and (3) It did not address the fundamental problem of consumption.[35] However, since this early attempt to address producer responsibility, refinements have been made, making the programs much more effective.

A. Government Driven EPR: The European Union & Waste Electrical and Electronic Equipment

The European Commission adopted a proposal for the Directive on Waste Electrical and Electronic Equipment (WEEE) and a proposal for a Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment on June 13, 2000.[36] As of November 8, 2002, a new draft has been made of the WEEE Directive, which will likely be published as part of the EC statutes by March 2003.[37] The Commission found that more than 90% of WEEE products are directly land filled without any pre-treatment.[38]

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33. Nigel Foster, GERMAN LAW AND LEGAL SYSTEM 150 (1993).

34. James Salzman, *Sustainable Consumption and the Law*, 27 ENTL 1243 (1997).

35. *Id.* at 1277.

36. European Commission Press Release, *Commission tackles growing problem of electrical and electronic waste*, June 13, 2000 (IP/00/602) *accessed at* http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/00/602|0|RAPID&lg=EN.

37. Dr Mark Downs, Head, Recycling Policy and Producer Responsibility, UK Department of Trade and Industry, *WEEE Update* Oct. 15, 2002 *accessed at* http://www.dti.gov.uk/support/weee_update.pdf.

38. *Id.*

Based on the Polluter Pays Principle, the WEEE directive will make producers responsible for taking back and recycling their WEEE products at no cost to consumers.[39] Therefore, this directive provides an incentive for producers to design their products taking into consideration the life cycle of their products. The WEEE Directive has been carefully designed over several years to encompass all essential parts for a successful, modern government driven EPR program. Since the WEEE Directive has not gone into force yet, it is impossible to tell how successful this program will be. It is hopeful though, because as described below, the WEEE directive contains essential legal elements and grants enforcement power. In part two of this section, potential impacts on international trade and the global environment will be analyzed.

1. WEEE Directive Legal Elements

The WEEE Directive has several specific articles to make the EPR system functional based on lessons learned from early EPR programs. Specifically the WEEE Directive is holistic in nature addressing each of the following essential areas: product design, collection, treatment, recovery/reuse/recycling, financing, and information. Article 4 addresses product design. [40] Member States shall encourage producers to design products taking into account that the product will be eventually recovered or dismantled. Designs should not defeat this purpose unless there is an overriding health or safety reason.

Article 5, which applies to all WEEE categories, requires the Member State to organize separate collection of WEEE.[41] In addition, if a distributor supplies a new product, they must take back a similar WEEE free of charge provided it is not contaminated. Producers, or their third party designees, are required to arrange WEEE collection for non-private consumers.

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39. *Id.* The objectives of the proposed Directive on Waste Electrical and Electronic Equipment (WEEE) are: 1. the prevention of waste electrical and electronic equipment; 2. to increase re-use, recycling and other forms of recovery thereby contributing to a higher level of environmental protection and encouraging resource efficiency; 3. to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment, particularly those involved in the treatment of WEEE. United Kingdom Department of Trade and Industry, EPR Directive Summary, *accessed at* http:// www.dti.gov.uk/support/summary.htm.

40. Directive of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE), Draft dated November 8, 2002, *accessed at* http:// www.dti.gov.uk /support/weee_text.pdf at Article 4. [Hereinafter WEEE Directive].

41. *Id.* at Article 5.

Treatment for all WEEE categories is addressed in Article 6.[42] Article 6 specifies that producers, or their third party designees, are required to establish systems for WEEE treatment. Treatment procedures must be the best available. Article 6 specifies that if material is exported out of the community that it must be certified to meet the standards under the WEEE directive in order to be counted towards the required quota.

WEEE recovery and reuse is addressed in Article 7.[43] Article 7 outlines specific goals for each WEEE category and also the dates by which the targets should be met. Member States shall encourage the development of new technologies for recovery and reuse.

WEEE financing is addressed in Article 8, "Member States shall ensure that 30 months after the entry into force of this directive that producers are financing the collection, the treatment, recovery and environmentally sound disposal of WEEE from private households deposited at collection facilities."[44] Holders of WEEE from private households must be able to return such waste free of charge. Producers may comply by means of collective or individual systems. For products placed on the market before the producers' financing obligation enters into force, all existing producers must share the costs of financing. Article 9 addresses WEEE from users other than private households. The financing of the costs is the responsibility of the producers, although the Directive does allow for other agreements stipulating other financing methods.[45]

Information requirements are outlined for consumers in Article 10,[46] for treatment facilities in Article 11,[47] and reporting requirements in Article 12.[48] Household consumers must be given certain information such as how to return a WEEE and what type of collection systems exist. Producers must place the specific symbol from the WEEE Directive on their products (a crossed-out garbage can). Producers must also provide certain information to treatment facilities, for example to identify different components and materials in the equipment. Member States must provide information about equipment put on the market, collected and recycled, and information on their implementation of the Directive.

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42. *Id.* at Article 6.
43. *Id.* at Article 7.
44. *Id.* at Article 8.
45. *Id.* at Article 9.
46. WEEE Directive at Article 10.
47. *Id.* at Article 11.
48. *Id.* at Article 12.

2. WEEE Directive Potential Impact on the International Environment, and Trade (and People too)!

> *We travel together, passengers on a little spaceship, dependent upon its vulnerable reserves of air and soil, all committed for our safety to its security and place, preserved from annihilation only by the care, the work and, I will say the love we give our fragile craft.*
>
> *We cannot maintain it half fortunate, half miserable, half confident, half despairing, half slave to the ancient enemies of mankind and half free in a liberation of resources undreamed of until this day. No craft, no crew, can travel safely with such vast contradictions. On their resolution depends the security of us all.*
>
> Adlai Stevenson, July 1965

As usual, the issues of international trade, the environment and human health are inseparable. As the EU gets ready to enact the WEEE Directive, and other countries in Asia have begun to operate "Take-Back" schemes, a global market has developed in dealing with WEEE. As discussed above, the WEEE Directive is a government EPR program that utilizes the Polluter Pays Principle and makes the producer responsible, at no cost to the consumer, for treatment, reuse or recycling of WEEE. On their own initiative, several US companies such as IBM, HP and Dell have started their own "Take-Back" programs for WEEE adding to the global market for WEEE disposal.[49] However, the US programs differ significantly from the government programs because the consumer must pay for disposal. However, what will happen to these US companies once the WEEE directive enters into force? Each company producing EEE that imports into the EU must comply with the WEEE directive. Therefore, these companies will have to pay for this themselves while still requiring US consumers to pay for recycling or treatment before disposal.

Does the WEEE directive violate the GATT? On its face the WEEE directive could be interpreted as violating the GATT because

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49. *Dell offers recycling option to consumers*, ENN News, Oct. 31, 2002, *accessed at* http://enn.com/news/enn-stories/2002/10/10312002/s_48826.asp; HP Planet Partners program *accessed at* http://www.hp.com; IBM to debut Computer Recycling, ENN News, 11/14/2000 *accessed at* http://enn.com/news/wire-stories/2000/11/11142000/ap_ibmrecycle_40178.asp.

requiring the producer to pay for treatment is a tariff. However, the EU has been very careful to ensure that there is valid science to back up the human health and environmental basis for the WEEE Directive. As such, the WEEE Directive will comply with the requirements of the SPS Agreement[50] in addition to Article XX of the GATT.[51] In addition, all producers must meet the WEEE Directive requirements, so there is no violation of the national treatment obligation. Therefore, it is unlikely that US companies will be able to avoid compliance with the WEEE Directive through WTO invalidation. If US companies producing EEE want to engage in the EU market, they will have to comply with the WEEE Directive just like all the European companies.

There is another element to the WEEE issue that was touched upon in Article 6 of the WEEE Directive. Materials that are exported outside of the EU for treatment must meet the standards set out in the WEEE Directive such as use of best available treatment methods if they are to be counted towards the target goals for WEEE recovered. This provision is an important safeguard for ensuring that the health and environment of a foreign country is not negatively impacted by exportation of hazardous waste. There are multiple treaties dealing with the actual cross-boundary transport of hazardous waste but none to date dealing with material that will be recycled or recovered. As a result, several developing nations have begun to see serious health and environmental consequences of improper disposal of WEEE.

China serves as a good example to discuss in this context.[52] China is a popular destination for WEEE because of the significantly lower costs due to cheap labor and lower environmental standards.[53] Consequently, there is illegal importation of "foreign garbage."[54] China's ability to import WEEE for less money has given it a competitive advantage for the small price of environmental

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50. Agreement on the Application of Sanitary and Phytosanitary Measures, GATT Doc. MTN/FA II-A1A-4, (Dec. 15, 1993).

51. GATT 1947 Article XX in The Results of the Uruguay Round of Multilateral Negotiations - The Legal Texts 519 (WTO 1994).

52. Catherine K. Lin, Linan Yan & Andrew N. Davis, *Globalization, Extended Producer Responsibility and the Problem of Discarded Computers in China: An Exploratory Proposal for Environmental Protection*, 14 Geo. Int'l Envtl. L. Rev. 525 (2002).

53. *Id.* at 528. According to a recent study, the cost of recycling a computer is approximately U.S. $ 0.38 per pound in the United States, but only U.S. $ 0.15 to U.S. $ 0.30 per pound overseas, including all costs. One U.S.-based company claims that it can recycle computers in China for U.S. $ 0.05 per pound. Other reports suggest that extracting metals from electronic scraps costs about U.S. $ 2.00 per day per worker in China. *Id.* at 533.

54. *Id.*

degradation and major health risks.[55] This is the materialization of the oft-quoted, "race to the bottom."

> *People preach to China the gospel of globalization when they want to share its huge market, but demonize it when the same process turns China into a formidable competitor. . . . If one embraces globalization, one has to endure the suffering that goes with it.*
>
> Yang Fan, a Chinese economist.[56]

The EU WEEE Directive is designed to address the "race to the bottom" by requiring that exported waste be treated as specified by the WEEE Directive. In order to receive EU WEEE, China will have to meet the EU standards for treatment. This will likely have a positive outcome on the economic, environmental and social elements of international trade. China's economy will benefit because China will be able to raise their prices for enhanced WEEE treatment services in line with the WEEE Directive while continuing to maintain a competitive advantage due to low labor costs. By adhering to EU standards for treatment, China's environment will necessarily benefit because standards will be followed which will enhance protection of natural systems. Consequently, the people of China will benefit because they will not be forced to breath toxic air, drink toxic water and grow their food

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55. *Id.* at 553-54. For example, in Guiyu Township, Guangdong Province where residents and migrant laborers have conducted extensive computer scrapping, water in local rivers and lakes and even groundwater turned brown and became non-drinkable. Residents had to buy drinking water for drinking for the past five out of the six years that Guiyu has been engaged in computer scrapping. Military conscription centers failed to find young people physically qualified for enlistment. Many residents contracted pneumonia. Some female workers were reported to have had dark colored amniotic fluid and had given birth to babies with pitch-black skin. Analysis of sediment samples taken from Guiyu by the advocacy group Basel Action Network ("BAN") showed severe contamination, including as much as: 1,330 parts per million ("ppm") of barium (as compared to the Soil Screening Benchmark established by Region IV of the U.S. EPA of 165 ppm for barium; comparable EPA standards are shown in parentheses after each analytical parameter); 70,000 ppm of chromium (370 ppm); 20, 300 ppm of copper (40 ppm); 49,900 ppm of iron (200 ppm); 23,400 ppm of lead (50 ppm); and 11,400 ppm of zinc (50 ppm). Surface water samples taken by BAN tell the same story: 0.079 ppm of antimony (as compared to the U.S. EPA drinking water standard of 0.006 ppm); 0.01 ppm of cadmium (0.005 ppm); and 1.9 ppm of lead (0.015 ppm). BAN did not sample for the presence of dioxins or PAHs, therefore, the extent of contamination caused by the burning of plastics containing brominated fire retardants remains unquantified at this time. On the other hand, BAN was able to identify among the scrap piles labels identifying the discarded PCs as originally belonging to a number of private companies and government agencies located in the United States. *Id.*

56. *Id.* at 546.

in toxic soil. The EU's WEEE Directive actually implements sustainable development by allowing economic growth within environmental constraints.

Conversely, US companies' voluntary "Take-Back" programs often end up in developing nations in unlined landfills leaching harmful chemicals into the local water supply as described in footnote 55. Specifically, "both Hewlett-Packard's product recycling manager and the National Safety Council have intimated that the waste materials, including CRTs, that are sent to recyclers are eventually sold as mixed scrap to brokers who export in bulk shipments to China."[57] US companies are not held accountable for where their WEEE goes or how it is treated. Disposing of WEEE without any environmental controls is unethical, especially considering that consumers pay for this waste to be safely disposed of, not dumped on the ground of a developing country.

Government run EPR programs, such as the WEEE Directive, have the potential to make sustainable development a reality. First, the WEEE Directive creates an incentive for producers to eliminate hazardous substances from their products and to design them so that they can easily be disassembled or reused. Second, the WEEE Directive sets up mandatory goals for the Member States to reach for WEEE recovery and also requires the Member State to set up a collection system. Third, producers are financially responsible. Fourth, requirements are specified for treatment and recovery encouraging technological and scientific innovation. Finally, there is a provision that requires exported WEEE to meet the same requirements as EU treated WEEE in order to count toward the mandatory recovery goals. As discussed above, this protects developing countries from the "race to the bottom," and instead encourages them to use their comparative advantage without sacrificing the environment or the health of the population.

B. Industry Driven EPR: US Carpet Industry

In the United States, we do not have any federally driven EPR programs. However, we do have a tremendous example of how an industry can independently move towards sustainability through use of a voluntary EPR program. The US carpet industry has several major companies who have revolutionized the way that

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57. *Id.* at 543-44, *Citing* Henry Norr, Drowning in e-Waste: Safe Disposal of Mountains of Old PCs, Monitors is a Snowballing Problem We've only Begun to Face, S. F. CHRON., May 27, 2001. *See also* NATIONAL RECYCLING COALITION, PROPER MANAGEMENT OF CATHODE RAY TUBES (CRTs), ELECTRONICS RECYCLING INITIATIVE, Jan. 13, 2000 at 8-11 (expressing same concern regarding state electronics recycling programs and shipping of CRTs to China for repair and recycling).

carpeting is imagined, designed, produced and reused. In order to understand how this revolution occurred, a case study of the forerunner of these companies, Interface, Inc. will be presented followed by an analysis of how EPR is being extended to other carpet manufacturers through a historic public-private partnership administered through a third party organization, Carpet America Recovery Effort (CARE). Finally, an analysis of how the US government could help facilitate the adoption of EPR in other industries will be discussed.

1. Interface, Inc. Case Study

> *[W]e seem ultimately always thrown back on individual ethics as the basis of conservation policy. It is hard to make a man, by pressure of law or money, do a thing which does not spring naturally from his own personal sense of right and wrong.* [58]

Interface, Inc. is a Georgia based company that manufactures carpeting.[59] They employ 7,000 people and sell over $1.28 billion of products each year.[60] The person behind Interface's mission to become the first sustainable company is the company's founder and CEO, Ray Anderson. Mr. Anderson started asking some questions about his company's operations in 1996, and figured out some disturbing information. Anderson found:

> Of the roughly 1.2 billion pounds (used to make a year's worth of carpets), I learned that about 400 million pounds was relatively abundant inorganic material, mostly mined form the Earth's lithosphere (its crust), and 800 million pounds was petro-based, coming from either oil, coal, or natural gas. Now here's the thing that gagged me the most: roughly two-thirds of that 800 million pounds of irreplaceable, non-renewable, exhaustible, precious natural resources was burned up — two-thirds![61]

Anderson knew that this type of exploitation of resources could not go on forever. He also knew that Interface had paid for those

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58. Aldo Leopold, Conservationist in Mexico, American Forests, March 1937.

59. Interface, Inc. Website, http:///www.interfaceinc.com.

60. Shareholder Value, Interface Inc., http://www.interfaceinc.com/goals/shareholder_value.html.

61. Ray C. Anderson, MID-COURSE CORRECTION TOWARD A SUSTAINABLE ENTERPRISE: THE INTERFACE MODEL 4 (Chelsea Green Pub Co. 1999).

materials but he wondered if the market cost was reflective of what the costs really were to use those materials and burn them up, sending these precious resources into the atmosphere. Mr. Anderson made a decision about how Interface could address these environmental issues by applying industrial ecology principles and approaching all aspects of the company in a systematic manner.

The results are impressive. Interface has a leasing arrangement, where consumers purchase the use of the carpet, while Interface retains ownership. When the lease is up, Interface takes back the carpet and grinds it up to reuse. This arrangement creates a closed-loop EPR program. Initially, Interface technology was limited to using the old carpet as backing. Today, after continuous innovation and re-thinking, Interface has two products that are made from a very high percentage of recycled content. Terratex fabrics are 100% post consumer or post-industrial material while the Sabi product is a total product recycled content of 51% (29% post-industrial and 22% post-consumer).[62]

Interface recognizes that there is still a very long road ahead to reach the goal of being a totally sustainable company by 2020.[63] However by setting up a voluntary EPR program, Interface has taken responsibility for their products throughout their life cycle. Interface takes back their used products from customers, designs their products to be recyclable and reusable at a very efficient rate, and structure their manufacturing process to incorporate recycled material. Most importantly, Interface continually re-evaluates their existing processes and materials to be more efficient and more innovative. It is clear that the impetus behind this company's goal to be an environmentally sustainable company is its founder Ray Anderson. What about companies that are not led by such determined and visionary people?

2. Memorandum of Understanding for Carpet Stewardship

In the absence of individual ethics, Interface has also proven that being sustainable is also lucrative. Therefore other companies are falling in step with sustainability to maintain their competitive edge. As proof, in January 2002, a historic voluntary agreement was signed between the carpet industry, state governments, the U.S. Environmental Protection Agency, and non-governmental organizations (NGOs).[64] This agreement is known as the

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62. Goals, Interface, Inc, http://www.interfaceinc.com/goals/.

63. *Id.*

64. EPA National Carpet Recovery Agreement, http://www.epa.gov/epr/products/cagreement.html.

Memorandum of Understanding for Carpet Stewardship (MOU).[65] MOU sets a national goal of diverting 40 percent of carpet from landfill disposal by 2012.[66] This goal is to be met by a combination of methods including reuse, recycling, cement kilns and waste to energy.[67] The long-term goal is to entirely eliminate landfill disposal of carpets.[68]

To facilitate the MOU goals, a third party organization has been established called the Carpet America Recovery Effort (CARE).[69] CARE is funded by the carpet industry and has several goals:

> Enhance the collection infrastructure for post-consumer carpet.
>
> Serve as a resource for technical, economic and market development opportunities for recovered carpet.
>
> Develop and perform quantitative measurement and reporting on progress toward the national goals for carpet recovery.
>
> Work collectively to seek and provide funding opportunities for activities to support the national goals for carpet recovery. [70]

In addition, CARE is responsible, along with carpet industry members and applicable government entities, "for monitoring, assessing and reporting on the progress toward the national goals for carpet recovery as agreed upon in the MOU."

3. Opportunities for US Government EPR Program Development

The US carpet industry has created for itself what the EU hopes to achieve with the WEEE Directive for the Electronics Industry. If all industries and companies were fortunate enough to have a visionary as a leader, we would not need government intervention. Unfortunately, the reality is that there are not enough visionaries

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65. *Id.* Full text of the Memorandum of Understanding for Carpet Stewardship is accessible at http://www.carpetrecovery.org/about/020108-MOU.pdf.
66. *Id.*
67. *Id.*
68. *Id.*
69. Carpet America Recovery Effort Website, http://www.carpetrecovery.org/.
70. About CARE, http://www.carpetrecovery.org/about/index.asp.

like Ray Anderson in such an influential position in the industrial sector. So what can be done?

The government can give support to the development of more industry based EPR programs. After inspiration from the EU, the EPA is assisting with the development of the National Electronics Product Stewardship Initiative (NEPSI).[71] NEPSI has met several times since its inception in 2001 with "representatives from electronics manufacturers, government agencies, environmental groups, and others."[72] NEPSI is focused on developing a method to finance a system to maximize the reuse and recycling of used TVs and PCs.[73] NEPSI is not scheduled to meet again until 2003.[74]

For example, Senator Jeffords introduced legislation on Earth Day 2002 called the National Beverage Producer Responsibility Act, S. 2220.[75] The Act sets a goal of 80% recovery for the beverage industry that is currently achieved in states with bottle bills.[76] In order to allow maximum room for innovation, the Act allows the industry to determine how to meet those goals rather than dictating a specific methodology.

For an EPR program to be effective and gain public confidence, government involvement is likely needed. This is because an effective EPR program has a plethora of elements many of which would be difficult for an industry group to perform while maintaining public confidence. Required EPR program elements include promulgation of technical standards, provision of incentives to participate as well as to continually reevaluate manufacturing processes and materials, dissemination of information to consumers and treatment facilities, maintain accountability for end products, perform monitoring and program re-evaluation.

For the government to maintain an EPR program with all of these elements would take a systematic commitment to sustainable development. The US has committed itself to sustainable development through many treaties such as the WTO, NAFTA and the Rio Declaration. However, due to the composition of the current administration, it is unlikely that resources will be given to the EPA or any other agency to pursue a government leadership role for developing new EPR programs. Therefore, for now it is probably best for EPA to continue to support industry groups who want to

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71. EPA NEPSI website, http://www.epa.gov/epr/products/nepsi.html. *See also* the NEPSI website http://eerc.ra.utk.edu/clean/nepsi/.

72. *Id.*

73. *Id.*

74. *Id.*

75. EPA Product Stewardship Website, The National Beverage Producer Responsibility Act, http://www.epa.gov/epr/products/pfed.html#bev.

76. National Beverage Deposits, http://www.grrn.org/beverage/jeffords/index.html.

start their own EPR programs. This support can be as simple as assisting with dissemination of consumer information and technical standards. In addition, through RCRA, EPA can help to encourage recycling and reuse by giving incentives to industries that engage in legitimate EPR programs. For example, EPA should maintain information through company self-reporting about where a product destined for recycling actually ends up. This would help instill public confidence in situations such as the WEEE disposal issue in China by US companies who were paid to safely dispose of used computers. EPA could do this by rulemaking under RCRA. Government involvement would definitely lend consumer confidence to EPR programs, in addition to providing valuable industry based incentives. However, until the US is politically able to be the leader in implementation of EPR programs, relevant agencies should, through their existing statutory mandates, assist industry groups who wish to develop their own voluntary EPR programs.

IV. CONCLUSION

Sustainable development has been a guiding principle for the international community since the 1992 Earth Summit. EPR is a valuable tool for achieving sustainable development because it creates economic, environmental and social benefits. In addition, major trade agreements such as NAFTA and WTO contain references to sustainable development.

The EU has developed a WEEE Directive, which seeks to build on the first EPR programs by building in mechanisms for accountability, and transparency, which will ensure that WEEE is disposed of safely regardless of the location of the last resting place. This element will encourage heightened environmental standards in developing nations, such as China, that often become the last stop for WEEE. Heightened environmental standards will positively enhance the health of local populations that have been dealing with the environmental consequences of untreated WEEE. Finally, the economy of developing nations will benefit because they will still maintain their competitive advantage based on low labor costs and available facilities while protecting their environment and human health.

In contrast, the US has no government driven EPR programs. Instead, the carpet industry has developed its own national voluntary EPR agreement. The impetus behind this agreement was Interface, Inc. whose founder Ray Anderson is a visionary dedicated to industrial ecology and becoming the first sustainable company. Interface was able to prove that being sustainable is also economically beneficial. There are some other national EPR

programs in development. An electronics industry group is currently negotiating a potential agreement regarding the financing for improved recycling and recovery of TVs and PCs. In addition, a congressional act has recently been passed which would make the beverage industry responsible for recovering 80% of their bottles.

It is likely that government involvement would speed the development of additional EPR programs. Government involvement can help to ensure that developing nations are not encouraged to engage in the "race to the bottom" while participating in the global waste market. An assurance that developed country recycling and material recovery is not contributing to environmental degradation in the developing world is important to maintaining consumer confidence, and consequently, economic health.

UNKNOWN QUANTITY: THE BOTTLED WATER INDUSTRY AND FLORIDA'S SPRINGS

KELLY SAMEK*

Table of Contents

I. INTRODUCTION

"Springs are bowls of liquid light."[1]

"The springs throughout Florida are numerous, and many are quite remarkable. They form one of the wonders of the State."[2]

In the autumn of 1998, an enterprising St. Petersburg, FL city council member got an idea. Almost six decades previously, the City of St. Petersburg had purchased a 527-acre parcel of land in

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1. Attributed to Marjorie Stoneman Douglas.

2. BILL LEDYARD, A WINTER IN FLORIDA; OR, OBSERVATIONS ON THE SOIL, CLIMATE, AND PRODUCTS OF OUR SEMI-TROPICAL STATE 133 (Wood & Holbrook 1870).

neighboring Hernando County that included Weeki Wachee Springs for $150,000.[3] Since that time, the springs had been leased and developed into a park replete with boat rides and fauna such as bison, birds, and mermaids. Well, attractive, athletic young women dressed as mermaids, at least, deftly breathing from hoses while eating bananas and performing other entertaining feats underwater. But iconic Weeki Wachee, like many other roadside attractions that were staples of family vacations to Florida in the 1950s and 60s, had been outpaced by the gee-whiz amusements of Walt Disney and his imitators, and sleepy Hernando County never became the tourist destination-on-steroids that the greater Orlando area did. Searching for a new way to turn a profit for St. Petersburg, city council member Kathleen Ford proposed capturing some of Weeki Wachee's clear spring water in bottled and selling it to thirsty — and perhaps nostalgic — consumers. Capitalize on the kitschy attraction and call it "Magic Mermaid Water," she thought.[4]

Arguably, St. Petersburg could have found a market for Magic Mermaid Water. Sales of bottled water shot through the roof in the 1990s. An industry group found that in 1998 alone, the demand for bottled water grew by 10%.[5] So maybe the councilwoman's proposal would have had a chance if the springs had been located in Pinellas County along with the city that owned it. But Hernando County residents were loath to see their mermaids' water exported to benefit the citizens of St. Petersburg. In fact, it galvanized many in the community to press for alternatives. Ultimately, a voter referendum held in 1999 empowered the St. Petersburg City Council to sell the attraction's underlying parcel of land to the state. In 2001, the Council agreed to sell the real estate to the Southwest Florida Water Management District (SWFWMD) for some $16.5 million. SWFWMD leased a small portion back to the attraction so that it could continue to operate while the state agency managed the remainder of the property as a nature preserve.[6]

This was neither the first time, nor the last, that citizen reaction would thwart a notion to bottle Florida's clear spring water for sale in the beverage aisles of supermarkets and convenience stores. Often viewed as community treasures—regardless of who might actually hold title to the surrounding property—generations of

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3. *Editorial: A good deal for Weeki Wachee*, ST. PETERSBURG TIMES, May 11, 1998, at 8A.

4. Kelly Ryan, *Weeki Wachee Water: For Sale?*, ST. PETERSBURG TIMES, October 21, 1998, *available at* http://www.sptimes.com/TampaBay/102198/Weeki_Wachee_water__F.html.

5. International Bottled Water Association, *Bottled Water Sales Leaped 10.1% in 1998*, *at* http://www.bottledwater.org/public/pressrel.htm (last visited February 4, 2004).

6. Bryan Gilmer, *Weeki Wachee Land Sale Okayed*, ST. PETERSBURG TIMES, June 22, 2001, *available at* http://www.sptimes.com/News/062201/news_pf/SouthPinellas/Weeki_Wachee_land_sal.shtml.

Floridians have grown up with freshwater springs as their local swimming holes or family vacation destinations. It should not be surprising, then, that use of the springs for private profiteering has met with public outcry. Spring water bottling is emerging in Florida as a new "LULU"—that is, a locally unwanted land use.

The text that follows aims to: (1) acquaint the reader with the resource at the center of this discussion, providing the most cursory background necessary to appreciate the pressures present to exploit the springs; (2) lay forth a basic history of modern water law and management in Florida, concentrating on the policies codified in the state's Water Resources Act, with special attention to the consumptive use permitting process, minimum flows and levels, and, to a lesser extent, other regulatory mechanisms; (3) introduce the bottled water industry and its role in springs resource management; (4) detail the series of controversies around north central Florida springs that demonstrate the potential impact the bottled water industry has in local communities and in the statewide debate over springs protection and water resource management; and finally, (5) examine the possible responses to bottled water industry pressure on springs resources from the points of view of various stakeholders interested in ecological protection.

II. NATURAL HISTORY

Although it is nicknamed the Sunshine State, it is water that defines Florida. Bounded by the Atlantic Ocean and the Gulf of Mexico, and tipped by a River of Grass, Florida is also a state rich in natural freshwater springs, a phenomenon borne of its unique geology. Any lengthy discussion of issues affecting the Florida springs must begin with a basic introduction to the physical characteristics and natural history of the resource. The Tertiary Period (~100-20 million years before the present) left the region with a porous limerock substrate that constructs the Florida aquifer, the major drinking water source for the state's human population today.[7] Topping this is a confining layer of clays established during the Middle and Upper Miocene Epoch, which is in turn overlain with a final stratum of the sandy soils that blanket much of the state.[8]

The predominance of limestone beneath the surface is responsible for the karst topography so prevalent in the state.[9] The

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7. Randall B. Brown et al., *Soils*, *in* ECOSYSTEMS OF FLORIDA 35, 36 (Ronald L. Myers & John J. Ewel eds., University of Central Florida Press 1990).

8. *Id.*

9. *Id.* at 37.

limestone is eaten away by a weak carbonic acid formed by carbon dioxide in rainwater, leaving pits and holes in the rock. Thus, karst landscapes are marked by sinkholes, cavern formations, and springs.[10] The springs result where pressure forces water being stored in underground cavities in the limerock upward to natural openings at the surface.[11]

The density of major springs is highest in the state's Ocala Uplift physiographic district. This uplift is the result of orogenic activity in the Post-Oligocene and is marked by outcroppings of Eocene and Oligocene carbonate rock but minimal Miocene sediment.[12] On the surface, the Ocala Uplift District is a mosaic of mixed hardwood forest, pine flatwoods, and sandhill.[13]

The springs are hotbeds of archaeological and paleontological finds because of their attractiveness to wildlife and humanity throughout the ages and because the oxygen-deprived substrate preserved what fell within. The springs are regarded as "portals to the past" for the finds—from mastodon bones to human remains to cultural artifacts—recovered from their muddy floors.[14]

Springs are commonly characterized on the basis of their water discharge. Springs with an average flow of 100 ft3/s or more (see table 1) are deemed to be 1st magnitude springs. Those with a flow between 10 and 100 ft3/s are 2nd magnitude springs. Third magnitude springs have a discharge rate between one and ten ft3/s, and springs of magnitudes four through eight have flows under one ft3/s.[15] Florida has 27 first magnitude springs and approximately 70 second magnitude springs.[16] With only 78 first magnitude springs within the United States, Florida has by far the most 1st magnitude springs of any state.[17]

Springs are neither a true end nor beginning. Rather, the springs, aquifer, and their associated rivers and streams are a circle of features interdependent on one another to function as they do. Just as the aquifer supplies the springs with their flows that

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10. *Id.* at 38; R.M. SPECHLER & D.M. SHIFER, SPRINGS IN FLORIDA: U.S. GEOLOGICAL SURVEY FACT SHEET Fs-151-95 (1995).

11. R.M. SPECHLER & D.M. SHIFER, SPRINGS IN FLORIDA: U.S. GEOLOGICAL SURVEY FACT SHEET FS-151-95 (1995).

12. Randall B. Brown et al., *Soils*, *in* ECOSYSTEMS OF FLORIDA 36, 37 (Ronald L. Myers & John J. Ewel eds., University of Central Florida Press 1990).

13. *Id.* at 38.

14. Florida Department of Environmental Protection, *Florida Archaeology Month Highlights Springs*, *available at* http://www.dep.state.fl.us/secretary/comm/2002/02-Archaeology%20spot.htm (March 8, 2002).

15. *Id.*

16. *Id.*

17. JACK C. ROSENAU ET AL., SPRINGS OF FLORIDA (U.S. Geological Survey, Bull. No. 31, 1977).

nourish the rivers, many rivers and streams disappear from the surface to become a part of the aquifer. As important as rivers and streams are to the water cycle in Florida, a less obvious means of recharge also affects the springs. The porous karst aquifer of Florida is distinguishable from karst systems in more northern states. Because Florida's karst is so penetrable, water seeps through a micropore system to feed the aquifer, and thus the springs. This realization is changing the way that springs systems are conceptualized and has critical implications for land use in areas previously thought not to be closely connected to the springs.[18]

Florida is internationally known as a tourist mecca, and springs played an important role in the early development of the state's resort areas and attractions. "Springs abound in all portions of the State, in the western as well as the eastern section; and they are all of more or less interest as curiosities, and will well repay the tourist."[19] The difference in relative air and water temperature plays a significant role in drawing visitors to the springs. The majority of the north and central Florida springs hover around the 70-75°F range, making swimmers feel cool in the heat of summer and relatively warm during the chill of winter.[20]

Today the springs are important both ecologically and economically, for in addition to being the source of many rivers and providing habitat for countless species— from tiny invertebrates to one-ton manatees—the springs support a host of recreation-oriented businesses such as canoe and tube rentals, dive shops, boat tours, and all the auxiliary concessions that attend such activity. Florida State Parks are nationally recognized for excellence,[21] and the springs parks are some of the most prized in the park system. These include Ichetucknee Springs, Wakulla Springs, Peacock Springs, Manatee Springs, Rainbow Springs, Homosassa Springs, DeLeon Springs, Blue Spring, Wekiwa Springs, Ponce DeLeon Springs, and the more recently acquired Troy Spring and Fanning Springs.[22]

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18. Aaron Hoover, *UF Research: Underground Rivers, Springs not the "Pipes" They Appear*, *available at* http://www.napa.ufl.edu/99news/sink.htm (last visited August 6, 2002).

19. BILL LEDYARD, A WINTER IN FLORIDA; OR, OBSERVATIONS ON THE SOIL, CLIMATE, AND PRODUCTS OF OUR SEMI-TROPICAL STATE 141 (Wood & Holbrook 1870).

20. JACK C. ROSENAU ET AL., SPRINGS OF FLORIDA (U.S. Geological Survey, Bull. No. 31, 1977).

21. In 1999, the Florida Department of Environmental Protection, Division of Recreation and Parks received the National Recreation and Park Association's Gold Medal Award for State Parks.

22. *See* Florida State Parks, *Online Park Guide*, *at* http://www.floridastateparks.org/ (last visited December 29, 2003).

Proof of the economic contribution of springs parks is evidenced by a study commissioned by the Florida Department of Environmental Protection. Scrutinizing Ichetucknee, Wakulla, Homosassa, and Blue Springs, researchers found that each park generated an average of $17 million in sales annually for their respective counties, with individuals spending an average of $45 per day during a visit to the springs on lodging, admission, food, and shopping.[23]

Just as important as their aid to the economy is the springs' contribution to the natural water supply system that supports the state's burgeoning population. Increasingly, though, the populace receives the water that the springs deliver from the aquifer not from a tap, but from a bottle. Fortunately, concurrent to the boom in bottled water consumption, public and political focus on the springs grew considerably in the late 1990s. This newfound attention comes to Florida's springs after many years of patchwork scientific and cultural study and sporadic public attention.

Threats to the integrity of Florida's natural springs generally arise from poor land use decisions. Those threats include careless use of fertilizer and pesticides for agriculture, landscaping, and golf courses; other pollutants in contaminated stormwater runoff; livestock waste, often associated with the North Florida dairy industry; development in high aquifer recharge areas; leaking septic tanks and underground storage tanks; silt buildup and sedimentation that blocks spring flow; and overpumping of the aquifer for consumptive use of the water.[24] These threats can be divided into those affecting water quality and those affecting water quantity.

Threats to quality have garnered much attention, perhaps because of the potential negative effects on human health. In response to these threats, government agencies and other research bodies have developed various Best Management Practices (BMPs) for many of the activities that degrade water quality.

Unfortunately, however, quantity issues have proven more difficult to resolve. On the whole, Florida has struggled with water supply and use issues since the late 1950s through the present, with no lasting answer in sight. It is only recently, though, that bottled water has become a significant factor in these policy debates. Public

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23. Mark A. Bonn & Frederick W. Bell, *Economic Impact of Selected Florida Springs on Surrounding Local Areas*, *available at* http://www.dep.state.fl.us/springs/reports/EconomicImpactStudy.doc (last visited February 17, 2004).

24. FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION & FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS, PROTECTING FLORIDA'S SPRINGS: LAND USE PLANNING STRATEGIES AND BEST MANAGEMENT PRACTICES (2002); ELIZABETH D. PURDUM, FLORIDA WATERS (Florida's Water Management Districts 2002).

water utilities have historically dominated the arena and will continue to do so as Florida's population builds and older urban centers look to rural communities to provide a quick fix for their increasingly inadequate water supplies. But that makes the question of bottling spring water all the more imperative. Can Florida afford to allow the spring water industry to tap its resources if the state's residents are not securely provided with water for now and tomorrow?

III. WATER LAW AND REGULATION IN FLORIDA

Just as it is important to have some geophysical knowledge of Florida's water, it is critical to have a framework from which to understand the legal ramifications of consumptive spring water use. Florida water law since the time of statehood can be divided into several phases, all of which have brought influence to bear on the current water law system, but it is the statutory system crafted in the 1970s that most directly influences the consumptive use of water in the state. Before examining that system, though, it is important to note that English common law contributed the idea of sovereignty lands embodied in the Florida Constitution today. The state constitution specifically provides for the continuation of the common law notion of the public trust doctrine when it proclaims:

> The title to lands under navigable waters, within the boundaries of the state, which have not been alienated, including beaches below mean high water lines, is held by the state, by virtue of its sovereignty, in trust for all the people. Sale of such lands may be authorized by law, but only when in the public interest. Private use of portions of such lands may be authorized by law, but only when not contrary to the public interest.[25]

This notion that certain property must only be used in a manner not contrary to the public interest is a prominent idea in the policy skirmishes over Florida's water. "It has been applied to restrict the power of the legislature and the executive to alienate submerged lands, to limit the rights of private landowners to develop or adversely affect submerged lands, and to protect public rights to use submerged lands and their overlying waters."[26] Whether permission

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25. FLA. CONST. art X, § 11.

26. Richard Hamann, *Law and Policy in Managing Water Resources*, *in* WATER RESOURCES ATLAS OF FLORIDA 302 (Edward A. Fernald & Donald J. Patton eds., Florida State University

of spring water bottling is a violation of the public trust doctrine, or whether it is in the public interest is the controversy over bottling reduced to its simplest form.

The historical use of water in Florida rests on a system of riparian rights, in contrast to the doctrine of prior appropriation common to the western U.S. This is important because "[t]he doctrine of riparian rights is much more protective of water resources."[27] Florida long enjoyed the relatively flexible riparian rights doctrine by virtue of plentiful stocks of water[28] seemingly untaxed by heavy agriculture or development for decades. It was not until the post-WWII population boom caught up with the state in the 1970s that, for the first time, Florida faced the inevitable reality: its water resources were not infinite.

Thus, the modern statutory phase of Florida water regulation began in 1972 with the adoption of the Water Resources Act, a scheme lifted largely from *A Model Water Code* (MWC), written at the University of Florida by Dean Frank E. Maloney and his associates.[29] The authors of the MWC announced prophetically, "As a nation, the United States is in the early stages of a water crisis. . . . [T]he population explosion, accompanied by great technological advances in industry and agriculture, has resulted in progressively increasing demands on an essentially limited resource. . . . At the same time, as the demand for water for consumptive uses has been burgeoning, the interest of ecologists and recreational users in maintaining streamflows and surface and ground water levels has assumed greater importance in the minds of the public and the state legislatures."[30]

The legacy of the MWC is the constellation of five Water Management Districts (WMDs), divided along hydro-political lines, that oversee the state's water resources. The Water Management Districts—Northwest, South, Southwest, Suwannee River, and St. Johns River—were created by statute in 1976[31] and are governed by rules set forth in the Florida Administrative Code.[32]

1998).

27. *Id.* at 304.

28. William L. Earl & Thomas T. Ankersen, *Slicing the Water Supply Pie: Competing Applications Under Florida's Water Resources Act*, 61 FLA. B. J. 87 (1987).

29. Richard G. Hamann, *Consumptive Water Use Permitting*, *in* 1 FLORIDA ENVIRONMENTAL & LAND USE LAW 10-1 (Florida Bar Environmental and Land Use Law Section, 1997).

30. FRANK E. MALONEY, RICHARD C. AUSNESS, & J. SCOTT MORRIS, A MODEL WATER CODE WITH COMMENTARY V (University of Florida Press 1972).

31. FLA. STAT. ch. 363.069 (2001).

32. FLA. ADMIN. CODE r. 40.

A. Consumptive Use Permitting

Headed by governing boards with members appointed by the Florida governor, the WMDs are responsible for "planning and water resource development,"[33] including the issuance of consumptive use permits (CUPs). Each district has conditions that applicants must meet in order to obtain their permit. In the Southwest Water Management District, for instance, permit applicants must demonstrate that the water use is reasonable and beneficial,[34] is in the public interest, and will not interfere with any existing legal use of water, by providing reasonable assurances, on both an individual and a cumulative basis, that the water use: (a) Is necessary to fulfill a certain reasonable demand; (b) Will not cause quantity or quality changes which adversely impact the water resources, including both surface and ground waters; (c) Will not cause adverse environmental impacts to wetlands, lakes, streams, estuaries, fish and wildlife or other natural resource; (d) Will comply with the provision of 4.3 of the Basis of Review described in Rule 40D-2.091, F.A.C.;[35] (e) Will utilize the lowest water quality the Applicant has the ability to use; (f) Will not significantly induce saline water intrusion; (g) Will not cause pollution of the aquifer; (h) Will not adversely impact offsite land uses existing at the time of application; (i) Will not adversely impact an existing legal withdrawal; (j) Will utilize local water resources to the greatest extent practicable; (k) Will incorporate water conservation measures; (l) Will incorporate reuse measures to the greatest extent practicable; (m) Will not cause water to go to waste; and (n) Will not otherwise be harmful to water resources within the District.[36]

B. Minimum Flows and Levels

Once again drawing from the concepts extolled in *A Model Water Code*, a statute mandating the Water Management Districts to establish minimum flows and levels for each surface water and aquifer within their jurisdiction was also passed into state law in 1972.[37] A minimum flow is the flow for a surface waterbody that is

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33. FLA. STAT. ch. 373.0831 (2001).

34. "Reasonable-beneficial use" is a term of art that F.S. 373.019(13) defines as "the use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest."

35. FLA. ADMIN. CODE r. 40-D-2.091 incorporates by reference the District's "Basis of Review for Water Use Permit Applications" of April 18, 2001 into chapter 40D. The document can be found at http://www.swfwmd.state.fl.us/rules/rules.htm. 4.3 requires buildings to be elevated as a flood protection measure.

36. FLA. ADM. CODE r.. 40D-2.301.

37. FLA. STAT. ch. 373.042 (2003).

the boundary at which any further withdrawals from the waterbody would result in significant harm to the water resources or ecology of the area. A minimum level, for aquifer groundwater and surface water, is the level at which any further withdrawals would result in significant harm to the area's water resources. The "significant harm" standard of the statute is the one notable distinction between it and the original idea contemplated by *A Model Water Code*, which used a lower bar of mere "harm" to mark the minimums.[38]

Unfortunately, despite the 1972 enactment, the statutory mandate went largely unheeded for two decades. One writer has conjectured that this was due to the separation between MFLs and the State Water Use Plan imposed when the state legislature wrote them into law. "[I]t is likely that the drafters of the MWC intended MFLs to be part of a comprehensive water resource protection program."[39] MFLs and water supply planning were reunited in the 1997 legislative revision.[40]

The spur to Water Management District action on MFLs came via a 1993 case in which the Fifth District Court of Appeal of Florida held the legislature intended establishment of MFLs to be mandatory.[41] The court also decided that the lack of a statutory deadline for the establishment of MFLs meant that the WMDs were to "act within a reasonable time."[42]

Various factors for determining MFLs are enumerated in the Florida Administrative Code. These include recreation in and on

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38. Cecile I. Ross, *Minimum Flows and Levels*, *in* 1 FLORIDA ENVIRONMENTAL & LAND USE LAW 13-3 (Florida Bar Environmental and Land Use Law Section, 2001), at 13.3-2.

39. *Id.* at 13.3-3.

40. Note language at FLA. STAT. ch. 373.036: (2) DISTRICT WATER MANAGEMENT PLANS:

> (a) Each governing board shall develop a district water management plan for water resources within its region, which plan addresses water supply, water quality, flood protection and floodplain management, and natural systems. The district water management plan shall be based on at least a 20-year planning period, shall be developed and revised in cooperation with other agencies, regional water supply authorities, units of government, and interested parties, and shall be updated at least once every 5 years. The governing board shall hold a public hearing at least 30 days in advance of completing the development or revision of the district water management plan.
>
> (b) The district water management plan shall include, but not be limited to:
>
> 1. The scientific methodologies for establishing minimum flows and levels under s. 373.042, and all established minimum flows and levels.; and F.S. 373.0361(2)(g), requiring each regional water supply plan to include "The minimum flows and levels established for water resources within the planning region."

41. *Concerned Citizens of Putnam County for Responsive Government, Inc. v. St. Johns River Water Management District*, 622 So.2d 520 (5th Fla. Dist. Ct. App. 1993).

42. *Id.* at 523.

the water; fish and wildlife habitats, including fish passage; estuarine resources; transfer of detrital material; maintenance of freshwater storage and supply; aesthetic and scenic attributes; filtration and absorption of nutrients and other pollutants; sediment loads; water quality; and navigation.[43]

C. Water Reservations

The legislature has granted WMD governing boards and the DEP power to reserve water, in space, time, or quantity, from use by consumptive use permitees. The power to reserve water in this fashion is subject only to "periodic review and revision in the light of changed conditions" and a restriction that protects existing legal water uses that are not contrary to the public interest.[44] Despite its seldom use, this power has nonetheless come under recent attack by lawmakers, who sought to repeal the statute in the 2003 legislative session, but were unsuccessful.[45]

IV. THIRSTING FOR LIQUID LIGHT: THE BOTTLED SPRING WATER INDUSTRY IN FLORIDA

The bottled water industry has witnessed enormous growth in the past few decades, from producing less the 500,000 gallons in 1976 to producing almost 3,500,000 gallons in 1997.[46] The federal government regulates the industry primarily through the Food and Drug Administration. The FDA has established rules on the quality of various bottled waters for health safety purposes. These rules include definitions differentiating bottled water products, such as artesian water, ground water, and spring water. According to the FDA, "water derived from an underground formation from which water flows naturally to the surface of the earth" may be labeled as "spring water."[47] The agency further mandates that:

> Spring water shall be collected only at the spring or through a bore hole tapping the underground formation feeding the spring. There shall be a natural force causing the water to flow to the surface through a natural orifice. . . . Spring water collected

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43. F.A.C. 62-40.473.

44. FLA. STAT. 373.223(4) (2003).

45. H.B. 1005, 2003 Reg. Sess. (Fla. 2003).

46. Natural Resources Defense Council, *Bottled Water: Pure Drink or Pure Hype?*, *available at* http://www.nrdc.org/water/drinking/bw/chap2.asp (last visited December 2, 2001). This figure represents all bottled waters, not solely bottled spring water.

47. 21 C.F.R. § 165.110(2)(vi) (2001).

> with the use of an external force shall be from the same underground stratum as the spring, as shown by a measurable hydraulic connection using a hydrogeologically valid method between the bore hole and the natural spring, and shall have all the physical properties, before treatment, and be of the same composition and quality, as the water that flows naturally to the surface of the earth. If spring water is collected with the use of an external force, water must continue to flow naturally to the surface of the earth through the spring's natural orifice.[48]

Despite the FDA's efforts in the mid-90s, special interest groups continue to accuse the bottled water industry of using packaged water to prey upon the public via misconceptions regarding the health value of the product. One of the most high-profile critics has been the Natural Resources Defense Council, which in its report, *Bottled Water: Pure Drink or Pure Hype?*, stated, "No one should assume that just because water comes from a bottle that it is necessarily any purer or safer than most tap water. Testing commissioned by NRDC and studies by previous investigators show that bottled water is sometimes contaminated." The NRDC study adds that there are "gaping holes in federal regulatory controls for bottled water" and harshly criticizes "the trivial FDA resources dedicated to protecting bottled water." The NRDC ultimately recommends that regulators ensure the safety of the public drinking water supply so that the public will not feel the need to purchase bottled water.[49]

In addition to government regulation, an industry group, the International Bottled Water Association, has promulgated a model code.[50] Unfortunately, like the FDA standards, this model code is overwhelmingly concerned with water quality in terms of product contamination and does not address issues of resource environmental protection and sustainable corporate practices.

As the bottled water industry has grown it has had to find new sources for its spring water products and increase production at sources already in use. The following series of case studies illustrates the impact that the bottled water industry has had on local Florida communities.

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48. *Id.*

49. Natural Resources Defense Council, *Bottled Water: Pure Drink or Pure Hype?*, *available at* http://www.nrdc.org/water/drinking/nbw.asp (last visited June 3, 2001).

50. International Bottled Water Association, *IBWA Model Bottled Water Regulation*, *available at* http://www.bottledwater.org/public/indreg.html (last visited May 25, 2001).

A. Crystal Springs

Crystal Springs is situated off the Hillsborough River in Pasco County, near the towns of Zephyrhills and Crystal Springs. Although privately owned, the springs were for a long time operated as a park for swimming and picnicking. Partially lined in concrete, the bowl of the multi-vented springs measures approximately 400 by 150 feet.[51] Average discharge between the years of 1923 and 1974 equaled 60 ft3/sec with a minimum of 20 ft3/sec recorded on July 1, 1946 and a maximum of 147 ft3/sec recorded on July 19, 1941.[52]

Crystal Springs's modern history as a community resource began in 1911, when A.B. Hawk of Ohio began the Co-operative Homestead Company and marketed the Crystal Springs Colony on 24,000 acres surrounding the springs.[53] As incentive, Hawk guaranteed his buyers "perpetual access to the springs with their purchase . . . which would forever provide homesteaders with clean water to drink and a swimming hole to enjoy."[54] He failed to deliver on his promise, however, and as Hawk became unable to meet his debts with his land sales, he reformed the venture. During the 1920s, the rights to the springs were signed over to the new company and then sold.[55]

After changing hands several times, Crystal Springs was purchased in 1975 by Robert Thomas, who continued to maintain the property as a park open to the general public under the name Crystal Springs Recreational Preserve (CSRP).[56] That arrangement changed in 1996, when access to the springs by the recreating public was barred by gate and lock.[57] Thomas announced various reasons for the closure, including fear of legal liability for accidents (the potential for damages in lawsuits, he contended, could not be covered by the revenue generated by the park's small admission charge,[58] a need to study and preserve the springs, and plans to

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51. JACK C. ROSENAU ET AL., SPRINGS OF FLORIDA (U.S. Geological Survey, Bull. No. 31, 1977).

52. *Id.*

53. Save Our Springs, *Crystal Springs History*, *at* http://www.saveourspringsinc.org/history.htm (last accessed January 13, 2002).

54. *Id.*

55. *Id.*

56. *Id.* It seems that the park under Thomas was run with, at the very least, a modicum of environmental stewardship, as Goggin records the park as having both capacity and erosion control policies at the time of her research. Susan Elizabeth Goggin, A Comparison Analysis of Property Arrangements and Resource Management of Florida Springs 56, 57 (1992) (unpublished M.S. thesis, Florida State University) (on file with the Florida State University Library).

57. *Id.*

58. *Crystal Springs: Public Swimming Area or Preserved Private Land?*, ASSOCIATED

construct a nature center on site. Whatever the motivation, the decision to close the preserve angered many local citizens, who had their own suspicions as to why the park had been locked.

Since the 1980s, Thomas sold water from the springs to a local bottler, the Zephyrhills Spring Water Company.[59] Perrier Group of America, a subsidiary of Nestlé, then bought the Zephyrhills Spring Water Company in 1987. Nestlé Corporation is a European company that produces not only the popular Perrier bottled waters but the European water brands S.Pellegrino, Vittel, Acqua Panna, and the Canadian brand Aberfoyle.[60] In addition to Zephyrhills, Perrier markets the American water brands Arrowhead (source: San Bernadino Mountains), Calistoga (a mineral water from the Napa Valley in California), Deer Park (source: an Allegheny Mountain spring near Deer Park, Maryland), Great Bear, Ice Mountain, Oasis (from Texas), Ozarka (also a Texas water) and Poland Spring (spring water from Maine).[61] In its corporate information, The Perrier Group of America promotes itself as an environmentally-sensitive company, and its corporate website is rife with claims of environmental consciousness on the part of the bottler.[62]

Perrier's demand for water has grown greater over time, and in 1997 CSRP, on behalf of Perrier, applied for an increase in the amount of water that SWFWMD would allow it to pump from the spring—from 300,000 gallons per day (gpd) to a whopping 1.8 million gallons per day (mgpd), ultimately increasing to 2.6 mgpd in the last four years of the ten-year permit. Critics speculated that the preserve was closed in order to protect Perrier's activities from prying eyes. Out of this speculation, Save Our Springs, Inc. (SOS) was born.

PRESS, June 29, 1999, *available at* http://www.polkonline.com/stories/062999/sta_springs.shtml; The admission fee in 1992 was $2.00. Susan Elizabeth Goggin, A Comparison Analysis of Property Arrangements and Resource Management of Florida Springs 54 (1992) (unpublished M.S. thesis, Florida State University) (on file with the Florida State University Library).

59. David Pedreira, *Residents Show Water Company Their Anger*, TAMPA TRIBUNE, March 13, 1997.

60. Perrier Group of America, *Our Imported* Waters, *at* http://www.perriergroup.com/waters/imports/default.asp (last accessed January 13, 2002).

61. Perrier Group of America, *Our Domestic Waters*, *at* http://www.perriergroup.com/waters/us/default.asp (last accessed January 13, 2002).

62. For example, "A Message from the President" quotes Perrier Group of America President and CEO Kim E. Jeffery as stating, "We are very proud of being a spring water company, and of the environmental stewardship we practice at our sources. Every decision about our springs is based on sound science and the result is that we only collect what nature can safely replenish. This ensures that our sources will always be there for future generations."

SOS is a citizens' activist group primarily opposed to the closure of the Crystal Springs park and to the consumptive use of Crystal Springs water by Perrier. Its official policy statement cites environmental concerns as the rationale for its strident efforts to bring down the Perrier enterprise.[63] Among the litany of ills that SOS uses to support its position are decreased spring flow, reduced input to the Hillsborough River (depriving the region of drinking water), the capacity of the borehole technique to remove water faster than natural processes can replace it,[64] harm associated to wildlife and to ecosystems such as wetlands, and increased saltwater intrusion.

To express its opposition, SOS has mounted protests, petitions,[65] and, most expansively, a boycott of Perrier products. The group instructs concerned consumers to "Boycott the water miners!!! And help take back your 'natural right' . . . an unspoiled earth."[66]

In 1997, the Florida Department of Protection (DEP) began investigating the possibility that the state might have a legitimate claim to ownership of the springs based on the navigability of the spring run.[67],[68] By virtue of the public trust doctrine, submerged

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63. The "Policy of Save Our Springs, Inc." reads: "Waters of the Crystal Springs shall be considered to be put to the most reasonable and beneficial use by being allowed to flow freely into the Hillsborough River. Save Our Springs, Inc., contends that the most reasonable and beneficial use of the waters of Crystal Springs is to supply and nourish the Hillsborough River in an unobstructed and undiminished volume, just as they did before civilization appeared. Save Our Springs, Inc. will take any action deemed necessary to inform, educate and encourage any interested party about returning springs around our state to their historical flows. Save Our Springs, Inc. wants all springs open to the public because the magic of the springs can not be appreciated if the people can not visit an enjoy them at their leisure. Save Our Springs, Inc. considers the most reasonable and beneficial use of Crystal Springs waters is to help dilute the phosphate contamination released in the Hillsborough River by the phosphate industry. Save Our Springs, Inc. believes the most unreasonable and non-beneficial use of Crystal Springs is to be bottles, shipped, and sold, never to return to our aquifer again." Save Our Springs, *Policy of Save Our Springs, Inc.*, *at* http://www.saveourspringsinc.org/home.htm (last visited November 29, 2001).

64. It is this technique, particularly offensive to critics such as SOS, which is known as "water mining."

65. Save Our Springs, *Petition Against Pumping Increase*, *available at* http://www.saveourspringsinc. org/email.htm (last visited January 13, 2002).

66. Save Our Springs, *Introduction Page*, *at* http://www.saveourspringsinc.org/ (last visited November 29, 2001).

67. *See* FLA. STAT. ch. 253.12 (2003), "Except submerged lands heretofore conveyed by deed or statute, the title to all sovereignty tidal and submerged bottom lands, including all islands, sandbars, shallow banks, and small islands made by the process of dredging any channel by the United States Government and similar or other islands, sandbars, and shallow banks located in the navigable waters, and including all coastal and intracoastal waters of the state and all submerged lands owned by the state by right of its sovereignty in navigable freshwater lakes, rivers, and streams, is vested in the Board of Trustees of the Internal Improvement Trust Fund." *See also* FLA. STAT. ch. 177.28(1) (2003), "Mean high-water line along the shores of land immediately bordering on navigable waters is recognized and declared to be the boundary between the foreshore owned by the state in its sovereign capacity and upland

lands beneath navigable waters belong to the state to administer in the public interest. Legal navigability in this instance means that, "In general, bodies of water that at the time of statehood in 1845 were used or capable of being used in their ordinary and natural condition for trade or travel by the means common in the local area for waterborne transportation, are deemed navigable."[69] In 1998, the DEP decided that "based on our historic research and field trips, we cannot conclusively state that the river is navigable and therefore state-owned in the vicinity of the spring."[70]

In January of 1999, SWFWMD denied CSRP's request to increase pumping six-fold on the basis that reasonable assurances had not been provided that the greater pumping would comply with conditions for consumptive use permit issuance under F.A.C. 40D-2.[71] SWFWMD staff's primary concern was that increased pumping

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subject to private ownership. However, no provision of this part shall be deemed to constitute a waiver of state ownership of sovereignty submerged lands, nor shall any provision of this part be deemed to impair the title to privately owned submerged lands validly alienated by the State of Florida or its legal predecessors." *See also* 78 Am. Jur. 2d WATERS § 60.

68. In her 1992 M.S. thesis, Susan Goggin almost presciently recognizes the potential for controversy that barriers to the public will bring to the Crystal Springs issue. "Springs are usually located adjacent to major navigable streams which are considered part of the Public Trust . . . . [S]prings with barriers include . . . Crystal Springs (Pasco County). It is not known whether any litigation has ensued over the presence of these barriers; there may be little advantage for an individual to file suit against the private owner when entrance fees are considerably less than the costs of a legal contest." There is no speculation as to what the balance of advantages is when there is no opportunity to simply pay an entrance fee for access. It is interesting to note that Goggin seems to assume navigability of the springs almost as by default and states, "Access to the springs from navigable runs must be ensured—otherwise, there is a net loss of the resource to society, and an advantage to the private landowner." Susan Elizabeth Goggin, A Comparison Analysis of Property Arrangements and Resource Management of Florida Springs 46-49 (1992) (unpublished M.S. thesis, Florida State University) (on file with the Florida State University Library).

69. Richard Hamann & Jeff Wade, *Ordinary High Water Line Determination: Legal Issues*, 42 Fla. L. Rev. 323 (1990).

70. James Thorner, *Perrier Clears Water Rights Hurdle*, ST. PETERSBURG TIMES, October 13, 1998, *available at* http://www.sptimes.com/Pasco/101398/Perrier_clears_ water_.html. SOS disputes this decision, claiming that photos, maps and anecdotal accounts of area old-timers show otherwise. The group also finds fault with the manner in which the DEP conducted its field research into the matter, such as attempting to conduct a boat trip on the water in the middle of the dry season. SOS has since made efforts to get the federal government to step in where the state declined; *Morrill v. Ball*, No. 73-401 (Wakulla County Cir. Ct. June 29, 1973); It appears that this did not quell all claims of state interest in the parcel as in August of 1999, CSRP filed a Motion for Partial Summary Final Order during the proceedings of its DOAH appeal "suggesting that issues raised by the [Southwest Florida Water Management] District as to whether Crystal Springs is within sovereign lands of the State of Florida [were] beyond the jurisdiction of the District and therefore not properly" within the bounds of the hearing. This resulted in a stipulation among the parties that this particular issue would be dropped from the purview of the DOAH proceeding. *Crystal Springs Recreational Preserve, Inc. v. SWFWMD*, 2000 Fla. Div. Adm. Hear. LEXIS 4935, 3 (DOAH 2000).

71. *Id.* at 2.

from a spring feeding the Hillsborough River, an important water source for the City of Tampa, would negatively impact the water supply for the populace.[72] The agency also decided that the application had not demonstrated reasonable assurances that the increase was necessary to fulfill a certain reasonable demand, that the increase would not cause a change in water quality or quantity such that there would be no adverse impact on surface and groundwater resources, that the increase would not adversely impact wetlands, wildlife, and other natural resources, and that the increase would not cause salt water intrusion in the aquifer.[73]

Unhappy with SWFWMD's decision, Thomas appealed to the Florida Department of Administrative Hearings (DOAH), contending that, in fact, the application had included the reasonable assurance necessary for increased pumping approval. In addition to its original argument, CRSP was allowed to add "allegations challenging the manner in which the District applied the applicable statutes and rules to the Application," although its motion to include an amendment attacking the validity of F.A.C. Rule 40D-2.301 itself was denied.[74] Although the administrative judge would ultimately disagree with the agency,[75] SWFWMD was allowed to add to its arguments that CRSP failed to provide reasonable assurances concerning water conservation measures and water waste in addition to the other application deficiencies.[76]

Though SOS is perhaps the most persistently vocal critic of CRSP, it was a Pasco County citizen, Stewart Loeblich, and a regional water supply authority, Tampa Bay Water, that joined the proceeding as intervenors on the side of the water management district.[77]

In early 2000, the administrative law judge issued his recommendation "that the Southwest Florida Water Management District enter a final order determining that Crystal Springs Recreational Preserve, Inc., has failed to satisfy the requirements . . . regarding conditions for issuance of water use permits, and

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72. A SWFWMD report stated that the application requesting the permit modification did "not provide reasonable assurance that the proposed withdrawal . . . will not interfere with the City's existing legal withdrawal by reducing the existing water supply available to the City, or causing the City to increase measures to augment the volume of water in the reservoir." *Swiftmud: Perrier Too Thirsty*, TAMPA TRIBUNE, January 26, 1999, available at http://archive.tampatrib.com/.

73. *Crystal Springs Recreational Preserve, Inc. v. SWFWMD*, 2000 Fla. Div. Adm. Hear. LEXIS 4935, 22 (DOAH 2000).

74. *Id* at 3.

75. *Id.* at 85.

76. *Id.* at 22, 23.

77. *Id.*

deny" the request for permit modification.[78] The judge found that, among other failings, the application for modification had not shown that the increase was necessary to meet a certain reasonable demand,[79] and although it was successful in demonstrating that there would be no changes in quality to water resources, it did not show that the increase would not adversely impact quantity.[80] Perhaps most importantly, the application did not show that the increase would not adversely impact an existing legal withdrawal (i.e., the Tampa water supply).[81]

Not surprisingly, Thomas took advantage of the availability of appeal to the Second District Court of Appeal of Florida. In the midst of these proceedings, Thomas was cited by SWFWMD for overwithdrawal from the springs. The amount of overdraw was relatively small — about 5,000 gpd too much in July of 2000 and 3,000 gpd in August — and the operation swiftly came back into compliance.[82] However, the incident only exacerbated the Zephyrhills Water public relations problem. The president of SOS stated her belief that, despite Thomas's claim, the overdraw was no accident.[83]

In February of 2001, the 2nd DCA returned its decision without a published opinion: a per curiam affirmance of the DOAH recommendation to deny the permit modification.[84] Two months later, SWFWMD gave approval for the Preserve to withdraw up to an additional 30,000 gpd, provided that the operation return an equal amount of water from outside the Hillsborough River basin of comparable quality in order to prevent a net loss.[85]

B. Three Sisters Springs

Three Sisters Springs, also known as Middle Springs, is part of the Crystal River Springs Group, a series of thirty springs in the vicinity of Kings Bay, the origin of the Crystal River. This area is a famous wintering spot for the Florida manatee (*Trichechus manatus*), as the area springs keep the bay warmer than the Gulf of Mexico at that time of year. The density of manatees has made

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78. . at 112.
79. *Id.* at 33.
80. *Id.* at 49.
81. *Id.* at 81.
82. Brady Dennis, *Rancher Lets Too Much Spring Water Be Taken*, ST. PETERSBURG TIMES, October 5, 2000, *available at* http://pqasb.pqarchiver.com/sptimes/.
83. *Id.*
84. *Crystal Springs Recreational Preserve, Inc. v. SWFWMD*, 782 So. 2d 390 (2nd Fla. Dist. Ct. App. 2001).
85. Neil Johnson, *More Pumping at Crystal Springs OK'd*, TAMPA TRIBUNE, April 26, 2001, *available at* http://drought.tbo.com/drought/MGAD3XJKYLC.html.

the area a popular draw with tourists, and the springs have been described by enthusiasts as "a string of blue sapphires, . . . spectacular blue oases of pristine water . . . ."[86]

Beginning in 1998, landowner Harvey Goodman began seeking a permit from SWFWMD to pump 1.2 mgpd from the spring but later revised the request to start at 100,000 gpd in year one and increase over ten years to 426,000 gpd. From early on the state had sought to buy the land but could not come up with a sum competitive to the worth of the parcel as it could be developed. Thus, Mr. Goodman's attorney stressed that water bottling was the environmentally sensitive choice for the parcel, which could otherwise be developed for the real estate market. SWFWMD originally denied the permit and Goodman appealed to DOAH. Save the Manatee Club intervened in the process but the case never reached a hearing. Instead it was dismissed as SWFWMD reached a settlement with Goodman in 2001 to allow pumping from a lake sharing the property with the spring. Predictably, this result met with mixed reaction from the public.

C. Rainbow Springs

Rainbow Springs is located north of Dunnellon in Marion County. Dunnellon is known as the "Boomtown of the 1890s" because of the thriving phosphate industry located there in that era. Because of the interest in the area at that time, Rainbow Springs is distinguished among many of the other Florida springs for its rich human history. The period of record for the springs stretches back to 1898.[87] Rainbow Springs averages a discharge of 763 ft3/sec and a temperature of 73° F.[88] The springs feeds the Rainbow River (sometimes known in the past as Blue Run), a 5.7 mile body that snakes to the Withlacoochee River. Rising from the Green Swamp and flowing north, the Withlacoochee is one of several rivers emptying freshwater into an estuary that reaches from the Anclote Keys off of Pinellas County to the Ochlocknee River in Florida's Big Bend region.[89]

Broadest at the headsprings, the Rainbow River ranges between 150 and 250 feet in width.[90] The headsprings spews remarkably soft

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86. Joe Follman & Richard Buchanan, *Three Sisters Springs*, *at* http://tfn.net/Springs/ThreeSisters.htm (last visited February 18, 2003).

87. JACK C. ROSENAU ET AL., SPRINGS OF FLORIDA (U.S. Geological Survey, Bull. No. 31, 1977).

88. *Id.* The discharge has ranged from a low of 487 to a high of 1230 ft3/sec.

89. Robert J. Livingston., *Inshore Marine Habitats*, *in* ECOSYSTEMS OF FLORIDA 554 (Ronald L. Myers & John J. Ewel eds., University of Central Florida Press 1990).

90. JACK C. ROSENAU ET AL., SPRINGS OF FLORIDA (U.S. Geological Survey, Bull. No. 31,

water compared to other Florida springs, even those present further downstream the Rainbow River. An early study suggests that the spring is recharged by aquifer through rainfall over a 645 mi.2 area generally towards the north/northeast of the springs.[91]

Prominent citizen Albertus Vogt recorded his impressions of the springs and river in 1888:

> Immediately at the head of the springs are beautiful residences, lit by gas, with dancing pavilions, pleasure boats, and post-office stores. Stone terraces encompass the springs.
>
> A railroad track barely keeps out of the beautiful clear waters, so near is its approach, and as we float with the current down the stream we find orange groves and villas on the magnificent bluffs where we used to hunt. We have never passed over this wonderful river but what we've found something along the banks or in the depths more beautiful than anything we'd ever seen before and to us entirely new.[92]

In February 2000, landowner Joe Priest requested a special use zoning permit from Marion County to lease a parcel of Rainbow Riverfront land to the Zephyrhills Water Company for bottled water withdrawal. The County denied the permit and Priest sued in Circuit Court. The Court found for Priest, unconvinced by the county's claims about road impacts from additional truck traffic. On appeal to the 5th District Court of Appeal, the county was successful in having the ruling overturned. The Court was apparently swayed by the concerns of 3 citizens bolstering the county's claims. Priest appealed to the Florida Supreme Court, but the court declined to accept jurisdiction, and so did not review the decision.

Does this mean that Rainbow Springs has been protected? Maybe not. Left without the opportunity to develop the bottling interest, Priest has claimed that he will pursue residential development as an alternative, an alternative that brings with it its own problems and is likely to be more difficult to keep at bay.

1977).

91. *Id.*

92. J. LESTER DINKINS, DUNNELLON: BOOMTOWN OF THE 1890'S 50 (Great Outdoors Pub. Co. 1969) (1997).

D. Silver Springs

"The water is of a high degree of purity, crystal-clear; so clear, indeed, that photographs and motion pictures can be taken under water almost equally as well as in the open air."[93]

"The waters of Silver Springs teem with a great variety of fish, swarms of which are visible at depths of 40 feet or more through the glass bottoms of the boats provided for visitors. The beautiful rock formations and the under-water vegetation add to the interest which everyone displays in this remarkable scenic wonder."[94]

Silver Springs is one of the oldest and best-known Florida springs attractions. Steamboats were introduced to the area in 1860 and glass bottom boats originated at Silver Springs in 1878.[95] In the early era of cinema, Silver Springs became a popular setting for films including the *Tarzan* series of the 30s and 40s, *The Yearling*, and *The Creature from the Black Lagoon*. Silver Springs also shot to fame as the home of herpetologist Ross Allen, whose legacy lives on in reptile shows at the attraction today.[96]

Lying northeast of Ocala in Marion County, Silver Springs is the headwater of the Silver River, a five-mile-long tributary of the Oklawaha River. The headspring is about 250 feet in diameter, around which survives the private Silver Springs attraction, featuring glass bottom boat tours and musical entertainment. A large chunk of the original attraction surrounding the Silver River has been turned over to the state, and is now featured as Silver River State Park. Discharge of the spring has ranged between 539 ft3/s and 1,290 ft3/s during the period on record.[97]

Silver Springs also hosts one of the most recent bottled water controversies. In 2002, the Margaret C. Dickson Trust requested a 20-year consumptive use permit to pump 36.5 million gallons per year from a well within ¼ mile of Silver Springs. The St. Johns River Water Management District approved the permit, but the Marion County Board of County Commissioners, as in the Rainbow

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93. FRANK PARKER STOCKBRIDGE & JOHN HOLLIDAY PERRY, SO THIS IS FLORIDA 204 (Robert M. McBride & Co. 1938).

94. *Id.* at 205.

95. Silver Springs, *Our History*, at http://www.silversprings.com/index-flash.htm (last visited February 17, 2004).

96. Silver Springs, *Attractions: Reptiles of the World*, at http://www.silversprings.com/index-flash.htm (last visited February 17, 2004).

97. JACK C. ROSENAU ET AL., SPRINGS OF FLORIDA (U.S. Geological Survey, Bull. No. 31, 1977).

Springs case, sought to block the venture by claiming that the amount to be pumped required a special use permit from the county that the Trust had not applied for. The Trust believed there was room for argument over whether a special use permit was in fact needed for a well of the size proposed.

The Marion County Board of Commissioners, represented by the County Attorney, was set to oppose the Dickson Trust and the St. Johns Water Management District in an administrative hearing in February of 2003. However, the parties resolved the dispute through settlement a month later that amended the Trust's consumptive use permit application so that the Trust would become a secondary user under the CUP of Silver Springs Regional Water and Sewer, Inc. The agreement also imposed additional responsibilities upon the Trust to improve roads used by its tanker trucks, remove septic tanks, limit the operating time of bottling operations, and buffer its filling facility.

V. PROBLEMS . . . AND SOLUTIONS?

One point is as clear as the water that flows from the springs: quantity must be given as much concern as quality. But how? Each of the case studies described above featured an array of players at various levels resorting to a mosaic of remedies on an ad hoc basis. Citizens form coalitions or speak as individuals before decisionmakers. Local governments block industry development through special use permits, administrative review, and by courting state-funded land acquisition. The Water Management Districts use standards set forth in the Florida Administrative Code to judge the Consumptive Use Permit applications of the industry. But this piecemeal fashion of response deals with only one conflict at a time. That is not necessarily a bad thing — environmental decisionmaking is complex, and sometimes the most sensitive and responsive decisionmaking processes are those undertaken on a case-by-case basis. But this approach is reactive, not proactive, and it has resulted in uneven water resource protection. Improvement will come only when the public and its governmental officials recognize and anticipate the growth of the bottled water industry.

A. Change Needed at Federal and Industry Levels

Big picture changes are necessary to ensure that springs resources in Florida and elsewhere in the nation are being afforded the best protection possible even while being used for commercial purposes. Industry groups and government regulators can take steps to improve stewardship across the multitude of spring water firms. The International Bottled Water Association should similarly

overhaul its model code to reflect a greater consciousness on the part of bottlers concerning the source of their profits. Urging more responsible stewardship for the resources will pay off with greater respect from aware consumers, and with neighbors in the communities the water firms set up shop.

At the federal level, a reconsideration of FDA rules is in order. Why is it important that "spring water" be taken from the spring or from the underground stratum from which the spring flows? If "spring water" is substantially similar to the water in the adjacent river or in the aquifer 6 miles away, why endanger the sensitive spring resource?

B. Maximizing the Mechanisms for Protection in Florida

While the impact of the bottled springwater industry is felt globally and nationally, because of the state's unique resources — the young, porous karst landscape and the incomparable density of powerful springs — it is especially important that Florida policymakers carefully consider the consequences of encouraging the industry to grow within the state. The tools to protect spring water quantity exist, but they must be utilized, even maximized.

A moratorium on CUPs for bottlers should be considered until MFLs are set for the resource being affected. And CUPs should be issued following the highest standards: precautionary principle should be heeded. CUPs must take into account the effect pumping will have during worst-case scenario (drought) situations. A permit for 100 mgpd withdrawal might be fine during average or rainy years, but devastating during the periodic droughts experienced in Florida. As global climate change occurs, this may have increasingly magnified effects.

While minimum flows and levels should be set for a particular water body before a CUP affecting that water body is issued, MFLs can not be relied upon as the sole indicator of the health of a water body. Several commentators have noted the shortcomings of MFLs and urge caution. At the 2nd Florida Springs Conference, Aliki Moncrief of Earthjustice's Tallahassee office reminded the audience that minimums are just that and that we need to aim higher in protecting the state's water resources.[98] Douglas E. Barr, Executive Director of the Northwest Florida Water Management District echoed these concerns at the first Florida Water Congress a year

98. Aliki Moncrief, Protecting Spring Flow, Presentation to the 2nd Florida Springs Conference (February 7, 2003).

later when he encouraged protecting the range of flows, not just the minimum.[99]

Governments and the Water Management Districts are faced, however justly, with the fact that the spring water industry is emerging as a new locally unwanted land use (LULU). State agencies must embrace without hesitation their role as conservation stewards. This means utilizing the tools given them by the legislature boldly and unapologetically. Water reservations should be made as scientific data flows in on the importance of water quantity for healthy Florida ecosystems. This necessitates protecting the legislative authority for creating reservations, even while the power to reserve remains dormant.

C. Land Use Controls

Given the outcry in not only Florida, but in other states where water bottling is a growth industry (notably California, Texas, and Pennsylvania), state regulatory agencies should reevaluate their preparedness to handle present and future controversies. Land use controls are one approach, but are limited in what they can achieve as far as springs protection, especially in regards to quantity. Proposals have been made to introduce a Florida Springs Protection Act into the legislature that would amend the comprehensive planning statutes of Chapter 163 to expressly enable local governments to plan for the protection of springs and springsheds. Suggested language mandates future land use plans to include land use strategies and development controls to protect springs against incompatible land uses and land use activities that may directly or indirectly adversely impact the spring's water quantity and other characteristics. Additionally, the planning firm of Lane Kendig, Inc. submitted a "Proposal to Produce a Model Land Use Code to Protect Florida's Springs" to the Florida Department of Community Affairs in August 2003. However, the question will remain for local governments to decide: is water bottling an incompatible land use in springsheds?

Most governmental entities seem to have recognized that the answer to that question is not black or white, but lies in a vast gray area. Local governments are learning this as their interest in monitoring the consumptive use of water increases. In 2001, the Board of County Commissioners of Alachua County considered its limited ability to regulate water withdrawals. In revising the county's comprehensive plan, the Board struck language stating

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99. Douglas E. Barr, Remarks During State of the Art: A Water Management Update, Florida Water Congress (December 4, 2003).

that "Alachua County shall rely upon the WMDs to permit and monitor large volume withdrawals of ground water" and adopted a policy reading: "The County shall take an active role in participating in water management district review, permitting and maintenance of operations such as bottled water plants and mining activities that use large volumes of ground water on an ongoing basis."[100] This policy language strikes a balance that shies away from condemning local bottled water industry, but indicates the county government's guardedness to wholesale acceptance of the activity.

As William Whipple cautioned in his 1996 book, *Comprehensive Water Planning Regulation: New Approaches for Workable Solutions*, "[G]eneral land use planning is not water resource planning; and it is not easy to see how advanced land use plans could be implemented within our present institutional framework for water resources. . . . It should not be assumed that comprehensive planning is all-inclusive." Whipple did not have his eye on Florida in particular — he was commenting on the state of planning in the nation as a whole — but still the criticism is appropriate in this context: land planning alone will not solve conflicts with the water bottling industry. Enabling local governments to plan for springs protection may be best suited for protecting water quality and for monitoring inputs to the aquifer, but it remains to be seen whether this strategy can guard against the bottled water industry's consumptive use from becoming overuse.

D. Land Acquisition

Acquisition of the sensitive lands surrounding a spring and those contributing to the recharge of the spring's aquifer by state or private conservation organizations is important for the long-term protection of the resource. This is made evident in the case studies presented herein, and by many other acquisition projects not discussed are playing a role in saving the springs: the state's Florida Springs Coastal Greenway project, for example, protects the springs associated with the Homosassa and Crystal Rivers in Citrus County,[101] while the Gulf Coast Conservancy has been instrumental

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100. *Amendments to the Alachua County Comprehensive Plan, Conservation & Open SpaceElement, Policy 4.5.10(3), Adopted April 8, 2002*, *available at* http://growth-management.alachua.fl.us/compplanning/ amended_docs/COSE%20GOPS%204-8-02.pdf (last visited February 5, 2004).

101. Florida Department of Environmental Protection, *Florida Springs Coastal Greenway Expands Boundaries*, *available at* http://www.dep.state.fl.us/secretary/comm/ 2004/feb/0206_greenway.htm (last visited February 9, 2004).

in connecting the Weeki Wachee Preserve to a larger network of conservation lands in the Nature Coast Greenway and Wildlife Corridor.[102]

While the state, through its agencies, the WMDs and DEP, often take the lead, contributions from private land trusts and individuals are important and have the potential to spearhead protection efforts when politics or budget shortfalls prevent state agencies from doing so. In Missouri, for instance, a private individual purchased a 6900 acre parcel surrounding Greer Spring on the Eleven Point River for the express purpose of preventing Anheuser-Busch from bottling and selling the spring's water. "Godfather of Missouri Conservation"[103] Leo Drey "bought the land for 4.5 million dollars, held it until the federal government would authorize a repurchase, then sold it to the federal government in early 1993 for 3.5 million dollars."[104]

To understand the benefit of land acquisition, one need only look to Florida's Fanning Springs, a relatively recent acquisition to the state park system. Once under the state's control, an existing CUP attached to the spring was voluntarily relinquished. Because the state manages lands for the benefit of the public as a whole, has the wherewithal to manage springs as parks open to the general public, and is accountable to the voters and taxpayers in ways that corporations and private trusts could never be, it is less inclined to resort to the corporate activity of mass-production of bottled spring water that many citizens find so objectionable.

With any call for land acquisition programs there is the inevitable question regarding how to pay for it. In this case, the natural answer that has been proposed is to tax bottled water to fund state acquisition and management of sensitive, high recharge lands. Taxes are never universally well-received, and the bottled water industry would likely resist any movement towards such. But given that consumers have willingly shelled out dollars for what they can receive at home for fractions of a penny, it stands to reason that the market can bear a small tax on the sale of what is largely a luxury item.

What is clear is that Florida is a state of vast wealth in terms of natural resources, and water is ever more valued as an asset of that wealth. The state, in its form as both the government and the

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102. The Gulf Coast Conservancy, *Accomplishments*, *at* http://www.gulfcoastconservancy.org (last visited February 17, 2004).

103. Senate of Missouri, *Resolution No. 18, January 12, 1997*, *available at* http:// www.senate.state.mo.us/ 97info/journals/DAY03.htm.

104. John W. Ragsdale, Jr., *The Buffalo River: A Jurisprudence of Preservation*, 21 B.C. Envtl. Aff. L. Rev. 429.

populace, must appreciate the value of the spring water resources now, for it is certain that the bottled water industry has already done so and is planning its future accordingly. For some communities, inviting the bottled water industry in may be a desirable means to prevent the rural landscape that envelops the springs from being platted and paved over. These communities must then set into place solid policies for monitoring this industry and ensuring that it and its resource are sustainable. Other communities, that decide they would rather not share the springs resource with corporate bottlers, must be proactive in protecting the springsheds through careful comprehensive planning and land acquisition. What is apparent is that in either direction, Florida must confront its responsibility to act as steward for the blue jewels set within its forests and river basins. And Florida must confront it now, before it wakes to find its responsibilities abdicated to amoral corporate governance, and disappeared with those responsibilities, Florida's privilege to enjoy these spoils of nature, these bowls of liquid light.

BOOK REVIEW

GREG GOELZHAUSER*

Michael Faure & Goran Skogh, *The Economic Analysis of Environmental Policy and Law: An Introduction* (Edward Elgar Publishing 2003).

Table of Contents

I. INTRODUCTION

The environmental movement of the 1960s and 1970s was shaped by a general interest concern for human health and a conservationist based call for increased levels of environmental protection.[1] Motivated by public pressure, Congress enacted numerous pieces of legislation designed to aid the protection of the environment.[2] Public pressure consumed the Congressional decisionmaking process concerning enactment of this environmental legislation; thus, rather than adequately consider regulatory alternatives or debate the potential impact of various economic and scientific considerations, Congress legislated largely as a reaction in "a quest for public credit and acclaim."[3]

Congress' failure to consider the potential costs of its environmental legislation soon led to a barrage of attacks from regulated industry and the academy deriding the legislation as a failure from a cost-benefit perspective.[4] Since that time, debate has raged in the academic literature and in policymaking circles over whether and the extent to which economic analysis should be used in evaluating environmental regulation. On one side are those who reject entirely the notion that efficiency should serve as even a guiding principle in the pursuit of environmental protection through

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1. *See* FRANK P. GRAD & JOEL A. MINTZ, ENVIRONMENTAL LAW 1-6 (4th ed. 2000).

2. *See* CASS R. SUNSTEIN, RISK AND REASON: SAFETY, LAW, AND THE ENVIRONMENT 15-16 (Cambridge University Press 2002).

3. *Id*. at 11.

4. *See* Lynn E. Blais, *Beyond Cost/Benefit: The Maturation of Economic Analysis of the Law and Its Consequences for Environmental Policymaking*, 2000 U. ILL. L. REV. 237, 240-41.

regulation and legislation.[5] On the other are those who see utility in an approach to evaluating environmental policy that at least considers the efficiency model as derived through cost-benefit balancing in the policy and law making processes.[6]

While the normative debate over the extent to which (if at all) environmental policymaking should consider economic analysis will undoubtedly continue, one thing is already certain: encountering economic analysis is inevitable and confronting it necessary if one wishes to fully comprehend the contours of environmental law. As one commentator put the matter, "[o]ne cannot study environmental law today without encountering economic analyses. Economics is everywhere — in legislative hearings and debates, regulatory documents, judicial opinions, legal casebooks, and academic articles. People interested in working in the environmental field or understanding environmental policy, therefore, need to be fluent in economics."[7]

It is within this briefly laid landscape of modern environmental law that Michael Faure and Goran Skogh present *The Economic Analysis of Environmental Policy and Law*. Written primarily as a textbook–but also having immense utility as a work of general reference for students, scholars, and practitioners — *The Economic Analysis of Environmental Policy and Law* claims for its primary goal an "attempt to fill the gap between environmental economics and environmental law with a study on 'environmental law and economics'."[8] Within this framework, Professors Faure and Skogh employ, as part of their vehicle for fleshing out an economic analysis of environmental law, a comparative case study approach.

II. ORGANIZATION

The book is divided into four parts. Part I — entitled "Rights and the Environment" — begins by introducing some fundamental concepts to the study of environmental law, including, for example, sustainable development, the precautionary principle, and the polluter pays principle.[9] The remainder of Part I extends the rights based analysis to a discussion of property rights. Throughout Part

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5. *See, e.g.*, MARK SAGOFF, THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT (Douglas MacLean ed., Cambridge University Press 1988).

6. *See, e.g.*, DANIEL A. FARBER, ECO-PRAGMATISM: MAKING SENSIBLE ENVIRONMENTAL DECISIONS IN AN UNCERTAIN WORLD (University of Chicago Press 1999).

7. Barton H. Thompson, Jr., *Panel: What Good is Economics?*, 37 U.C. DAVIS L. REV. 175, 176 (2003).

8. MICHAEL FAURE & GORAN SKOGH, THE ECONOMIC ANALYSIS OF ENVIRONMENTAL POLICY AND LAW: AN INTRODUCTION 3 (Edward Elgar Publishing 2003).

9. *Id*. at 19-39.

I, during the course of laying the foundations for the modern study of environmental law, the authors introduce some basic concepts designed to serve as building blocks for the more in-depth economic analysis presented later in the book. Chapter 3, for example, contains a nice introduction to the tragedy of the commons and the free-rider problem.[10]

Part II introduces the fundamental economic concepts necessary for understanding the economic analysis of any area of law. Of essential importance are Chapters 5 and 6, which introduce, among other concepts, the basics of price theory, the operation of competitive markets, and market failures. The remainder of Part II continues to introduce some fundamental economic concepts while beginning to increase the extent to which the environmental and economic discussions become integrated. Chapter 8, for example, addresses the principle of sustainable development in the context of economic growth.[11]

Part III moves away from the price theory based model of economic analysis to examine the economics of property rights and various environmental laws under the framework of an institutional economic analysis. Specifically, the authors adopt a normative theory of transaction costs analysis to determine which environmental rules are efficient. The heart of Part III is Chapter 10, which forms the architecture within which the authors' efficiency seeking norm is analyzed by giving extended treatment to the operation of, and debate surrounding the use of, cost-benefit analysis.[12] Within this construct, the authors examine the regulation of industry (Chapter 11), land law (Chapter 12), and environmental taxes and tradeable permits (Chapter 13).

Part IV closes the book by addressing the concepts of risk and liability. Chapters 14 and 15 employ a traditional discussion of the economics of tort liability. Chapter 16 introduces the economics of environmental crime. Finally, Chapter 17 uses various modes of analyses to address how best to minimize environmental harm.

III. DISCUSSION

The Economic Analysis of Environmental Policy and Law is a lucid and comprehensive treatment of an area that has become of fundamental importance to the study of environmental law. These positives, however, may also correspond to a potential criticism of the book: that it is at times simplistic in its treatment of

10. *Id*. at 40-51.
11. *Id*. at 126-39.
12. *Id*. at 165-87.

fundamental principles of economics and environmental law. This criticism has some merit. But to measure something against the ideal does little good. The book is designed as an introductory text to the study of the economic analysis of environmental law. Both economic and environmental law principles are introduced in a way that assumes no previous knowledge. Considering this objective, the authors have done well to maximize content and sophistication in limited space.

A better criticism, perhaps, is that the authors go too far in neglecting alternative approaches to the study of environmental law. This criticism too, though, has its limits. The title of the book makes clear what it is about; the authors have not attempted to hide their economics driven approach. This criticism, then, must take on a more nuanced nature. While the economic analysis of environmental law is, of course, the theme of the book, perhaps the authors could have focused more on proving the utility of that approach by examining and comparing analyses of particular environmental laws or problems using different methods. This need not take the form of simply advocating the economic analysis of environmental law in the abstract. Rather, a contextual examination of the differing approaches throughout the book may be helpful to the uninitiated reader to whom this book is primarily addressed if for no other reason than to aid conceptualization of the economic approach.

The serious study of modern environmental law requires students to be well versed in basic microeconomics and knowledgeable of how economic principles are used to analyze laws and problems in the field. *The Economic Analysis of Environmental Policy and Law* fills a crucial gap in the literature by focusing on the application of economic principles to the study of environmental law. The use of economics to analyze problems in environmental law need not be exclusively adopted as a normative principle to find utility in this book. The economic approach has secured a seat at the table of debate over how best to analyze and solve important environmental problems. Thus, the economic approach must be understood by students, scholars, and practitioners hoping to make a difference in the field.

With their introduction, Professors Faure and Skogh have provided a readable and concise yet comprehensive examination of the economic analysis of environmental law and policy. Their book will serve as an outstanding starting point and reference for understanding the economic analysis of many of the important issues confronting environmental law today.

ABSTRACTS

A. Dan Tarlock, *Is There a There There in Environmental Law?*, 19 J. LAND USE & ENVTL. LAW 214 (2004).

The main question the author poses is: what have environmentalism and environmental regulation contributed to the law? In other words, is environmental law a legitimate field of law? The author answers these questions by discussing the origins and legal foundations of environmental law. However, he still questions whether environmental law will someday be extinct. In discussing the jurisprudential sources of environmental law he focuses on legal positivism; sociological jurisprudence; and the legal revolution that focuses on ecosystem integrity concerns of future generations. The discussion continues about the birth of environmental law as a way to compel administrative agencies, private industry and local governments to adopt a new process of making decisions. The article next challenges the contention of environmental law that nature will remain in balance if not disturbed. The article ends by the author identifying five principles to guide environmental law decision processes in the future.

Joseph Van Rooy, *The Development of Regional Impact in Florida's Growth Management Scheme: The Changing Role in Regionalism,* 19 J. LAND USE & ENVTL. L. 255 (2004).

This paper examines whether regionalism has been eroded from Florida's DRI program, and whether the DRI program should be replaced with a system of regional governance. This paper will analyze the evolution and development of Florida's growth management legislation generally, and focus on the development of regional impact (DRI) program specifically, through the lenses of the theories of regionalism and localism. Key findings resulting from this analysis include: 1) regionalism has not played an important role in Florida's growth management scheme; 2) regionalism's small role within Florida's growth management scheme has declined; 3) the DRI is duplicitous of other permitting programs as well as comprehensive planning; and 4) the DRI over-regulates the wrong developments — those that are large scale and highly capitalized, while under-regulating undercapitalized incremental growth. Therefore, the DRI program should be terminated in favor of a system of regional governance to address these problems. The regional

governance system that is ultimately proposed is modeled after the regional governance structure found in Portland, Oregon, and utilizes the eleven Regional Planning Councils (RPCs) already existing within Florida. The RPCs, in order to address the failures of the DRI and bring a regionalist perspective to Florida's growth management scheme, must be: 1) empowered with regulatory authority; 2) influential in decisions concerning infrastructure; 3) directly elected; and 4) freed from political influence stemming from funding. While challenges exist to the implementation of this proposal, it would greatly increase the effectiveness of regional planning by reducing the fragmentation within local governments and by addressing all developments, not only large, highly capitalized developments.

Donald C. Guy & James E. Holloway, *Finding the Development Value of Wetlands and Other Environmentally Sensitive Lands under the Extent of Interference with Reasonable Investment-Backed Expectations,* 19 J. LAND USE & ENVTL. L. 298 (2004)

This article takes an in-depth look the Supreme Court's decision in *Palazzolo v. Rhode Island*. The article focuses on the effect the decision has on the determination of liability and the proper remedy for an unconstitutional interference with reasonable investment-backed expectations under the Takings Clause, and it discusses the competing social equity and economics analyses of Justice Scalia and Justice O'Connor. With respect to wetlands and environmentally sensitive lands, the article explains the takings analysis and the issues regarding land valuation methods for such lands. The authors explain that social, business and market principles are important considerations in the analysis, and they demand the use of real estate appraisal and investment expertise to determine market value.

Cynthia Norgart, *Florida's Impaired Waters Rule: Is There a "Method" To The Madness?,* 19 J. Land Use & Envtl. L. 347 (2004).

This article examines Florida's approach to the Total Maximum Daily Load (TMDL) program provided for under the Clean Water Act. In 2001, Florida enacted its methodology for identifying impaired water bodies for which TMDLs will be established. The rule was met with much criticism, including arguments that its methodology was flawed and that it unlawfully modified Florida's existing water quality standards.

The purpose of this paper is not only to analyze the issues that have been raised in litigation challenging Florida's new rule, but also to explore the bigger question of how to deal with scientific uncertainty when it comes to environmental issues.

J. Celeste Sakowicz, *Urban Sprawl: Florida's and Maryland's Approaches,* 19 J. LAND USE & ENVTL. L. 378 (2004)

This note reviews the characteristics, causes and negative impacts created in metropolitan areas plagued by "urban sprawl." Discussed is the history of the changes in land use planning, which reached its zenith in the 1970's, up until today, where urban planners are striving for a balance between urban growth and environmental protection. The Florida Growth Management Act of 1985 ("GMA") is analyzed, particularly with respect to loopholes and lack of cooperation between local and regional entities, which render the GMAs policies ineffective to prevent urban sprawl. Contrasted with the GMA is Maryland's Smart Growth and Neighborhood Conservation Initiative ("Maryland Smart Growth"), which promises to combat urban sprawl through economic incentives for developers, rather than increased regulation. The author discusses whether Maryland's Smart Growth program would be effective, if utilized in Florida, and the possible impediments to its implementation.

Greg Goelzhauser, Book Review: *The Economic Analysis of Environmental Policy and Law: An Introduction*, by Michael Faure & Goran Skogh 19 J. LAND USE & ENVTL. L. 597 (2004).

In "The Economic Analysis of Environmental Policy and Law," Michael Faure and Goran Skogh attempt to fill the gap between environmental economics and environmental law with a study on environmental law and economics. Within this framework, Professors Faure and Skogh employ a comparative case study approach. "The Economic Analysis of Environmental Policy and Law" is a lucid and comprehensive treatment of an area that has become of fundamental importance to the study of environmental law. The book is designed as an introductory text to the study of the economic analysis of environmental law. Both economic and environmental law principles are introduced in a way that assumes no previous knowledge. Considering this objective, the authors have done well to maximize content and sophistication in limited space.