

Chicago-Kent College of Law

Scholarly Commons @ IIT Chicago-Kent College of Law

All Faculty Scholarship

Faculty Scholarship

January 1996

Limitations Inherent in the Title to Wetlands at Common Law

Fred P. Bosselman

IIT Chicago-Kent College of Law, fbosselm@kentlaw.iit.edu

Follow this and additional works at: https://scholarship.kentlaw.iit.edu/fac_schol



Part of the [Environmental Law Commons](#), and the [Land Use Law Commons](#)

Recommended Citation

Fred P. Bosselman, *Limitations Inherent in the Title to Wetlands at Common Law*, 15 Stan. Envtl. L.J. 247 (1996).

Available at: https://scholarship.kentlaw.iit.edu/fac_schol/96

This Article is brought to you for free and open access by the Faculty Scholarship at Scholarly Commons @ IIT Chicago-Kent College of Law. It has been accepted for inclusion in All Faculty Scholarship by an authorized administrator of Scholarly Commons @ IIT Chicago-Kent College of Law. For more information, please contact jwenger@kentlaw.iit.edu, ebarney@kentlaw.iit.edu.

Limitations Inherent in the Title to Wetlands at Common Law

Fred P. Bosselman*.

I. INTRODUCTION.....	248
II. LIMITATIONS INHERENT IN LAND TITLES	253
III. UNDERSTANDING THE NATURE OF WETLANDS— DEFINITIONS, FUNCTIONS AND SOME ENGLISH GEOGRAPHY	257
A. Defining Wetlands and Their Functions.....	257
B. The Wetlands of Medieval England	260
1. Romney Marsh	260
2. Somerset Levels	262
3. The Great Fens	263
IV. THE MEDIEVAL WETLANDS ECONOMY	265
A. Economic Activities in the Wetlands	265
B. The Fen People	270
V. OWNERSHIP, USE AND DEVELOPMENT OF MEDIEVAL WETLANDS	273
A. Patterns of Wetland Ownership	273
B. Land Use in the Wetlands.....	278
1. The Use of Common Land	279

* Professor of Law, Chicago-Kent College of Law. My research on this issue began while I served as a member of the Committee on Wetland Delineation of the National Research Council of the National Academy of Sciences and National Academy of Engineering. I would like to express my appreciation for the comments I received from members of the committee including William Lewis, Margaret Strand and Joy Zedler. A preliminary version of part of this article was presented at a symposium sponsored by the Institute of Land and Natural Resources Law at the University of Colorado at Boulder in June, 1994, and I would like to express my appreciation for the comments I received from other participants including Richard Lazarus and Robert Meltz. My exploration of English historical sources was graciously assisted by Andrew Lewis and Peter Mathias. Throughout I have had the invaluable opportunity to take advantage of Dan Tarlock's encyclopedic knowledge of water law and everything else. I would also like to thank Hope Babcock, Stuart Deutsch, Julian Juergensmeyer, Sheldon Nahmod, Carol Rose and Jim Rossi for their comments on a tentative draft of this article. My research has been greatly assisted by the work of Joshua Aldort, Michael Frazier, Amy Pavlik and Sophia Twichell, and by a grant from the Marshall T. Ewell Fund of the Chicago-Kent College of Law. None of the above are responsible in any way for the conclusions that I have drawn from this material.

2.	Dispute Resolution Procedures	280
3.	Codes of Customary Law	282
C.	Land Development in the Wetlands	288
1.	The Royal Prerogative	289
2.	Medieval Public Works	290
3.	The Writ of <i>Ad Quod Damnum</i>	292
VI.	LEGISLATIVE RENT-SEEKING: DRAINAGE BILLS	297
VII.	NO QUICK AND EASY ANSWERS	303
A.	The Tragedy of the Commons	304
B.	The Survival of the Fittest	311
C.	The Inherent Economic Efficiency of the Common Law	317
D.	Nature Knows Best	325
VIII.	USING THE COMMON LAW OF WETLANDS UNDER <i>LUCAS</i>	327
A.	Land Ownership	330
B.	Land Use	332
C.	Land Development	335
IX.	CONCLUSION	337

I. INTRODUCTION

Wetlands are currently the scene of hard-fought legal¹ and political² battles about the proper scope of government regulation of land. In the United States, wetlands are regulated at the federal,³ state⁴ and local level.⁵ This regulation is controversial; some

1. See *Florida Rock Indus. v. United States*, 18 F.3d 1560 (Fed. Cir. 1994), *cert. denied*, 115 S. Ct. 898 (1995); *Loveladies Harbor, Inc. v. United States*, 28 F.3d 1171 (Fed. Cir. 1994). These two long-running cases will likely be vehicles for more definitive application of takings doctrine to wetlands by the Supreme Court at some stage. For contrasting analyses of the lower court opinions, compare Michael C. Blumm, *The End of Environmental Law? Libertarian Property, Natural Law, and the Just Compensation Clause in the Federal Circuit*, 25 ENVTL. L. 171 (1995), with Richard C. Ausness, *Regulatory Takings and Wetland Protection in the Post-Lucas Era*, 30 LAND & WATER L. REV. 349 (1995).

2. Emily Hartshorne Goodman, *Defining Wetlands for Regulatory Purposes: A Case Study in the Role of Science in Policymaking*, 2 BUFF. ENVTL. L.J. 135, 158 (1994); GREGG EASTERBROOK, *A MOMENT ON EARTH* 436-39 (1995).

3. See generally WILLIAM L. WANT, *LAW OF WETLANDS REGULATION* (Clark Boardmen Envtl. L. Series 1989) (giving a comprehensive treatment of wetlands law and regulation). The history of federal wetland regulation is summarized in NATIONAL RESEARCH COUNCIL, *WETLANDS: CHARACTERISTICS AND BOUNDARIES* 44-58 (1995).

4. See LINDA A. MALONE, *ENVIRONMENTAL REGULATION OF LAND USE* § 4.10 (1990); Ausness, *supra* note 1, at 359.

5. See 5 NORMAN WILLIAMS, JR. & JOHN M. TAYLOR, *AMERICAN LAND PLANNING LAW* §§ 158.30-158.32 (1985 & Supp. 1995).

complain that government regulations restrict their ability to develop their property, while others argue that wetland losses are creating serious ecological and economic damage.⁶ The arguments often are phrased in terms of whether a regulation constitutes a "taking" of property.⁷

Applying the Constitution's taking clause⁸ to wetlands has become more complex with the Supreme Court's recently created test for the use of regulatory powers. In *Lucas v. South Carolina Coastal Council*,⁹ the Court held that if land was subject to "inherent limitations" under the common law, the government could regulate the land without paying compensation, as long as the regulation was no more restrictive than the common law limitation.¹⁰ Thus, the legal status of wetlands at common law becomes an issue of modern relevance.

This article, therefore, explores the status of wetlands under the common law of medieval¹¹ and post-medieval¹² England, a pe-

6. Compare VIRGINIA S. ALBRECHT & BERNARD N. GOODE, WETLAND REGULATION IN THE REAL WORLD 7-9 (1994) with Ted Williams, *The Wetlands-Protection Farce*, AUDUBON, Mar.-Apr. 1995, at 30. For a balanced review of the issues, see THE CONSERVATION FOUNDATION, PROTECTING AMERICA'S WETLANDS: AN ACTION AGENDA, THE FINAL REPORT OF THE NATIONAL WETLANDS POLICY FORUM 1-55 (1988).

7. For recent commentary, see Ausness, *supra* note 1; Hope M. Babcock, *Has the U.S. Supreme Court Finally Drained the Swamp of Takings Jurisprudence?: The Impact of Lucas v. South Carolina Coastal Council on Wetlands and Coastal Barrier Beaches*, 19 HARV. ENVTL. L. REV. 1 (1995); Richard J. Grosso & David J. Russ, *Takings Law in Florida: Ramifications of Lucas and Reahard*, 8 J. LAND USE & ENVTL. L. 431, 456-65 (1993); Stephen M. Johnson, *Defining the Property Interest: A Vital Issue in Wetlands Taking Analysis After Lucas*, 14 J. ENERGY NAT. RESOURCES & ENVTL. L. 41 (1994); Kerry T. Scarlott, Note, *Federal Regulation of Wetlands and the Public Nuisance Exception to the Takings Clause: The Case for Insulating Wetlands Regulations Against Regulatory Takings Challenges*, 54 U. PITT. L. REV. 917 (1993).

8. U.S. CONST. amend. V. The takings clause was made applicable to the states through the Fourteenth Amendment in *Chicago, B. & Q. R.R. v. City of Chicago*, 166 U.S. 226, 241 (1897).

9. 505 U.S. 1003 (1992) [hereinafter *Lucas*].

10. See *infra* text accompanying notes 16-22.

11. The terms "medieval" and "Middle Ages" are used in this article to refer to the period of English history beginning with the fall of the Roman empire and ending with the English adoption of the ideas of the Italian Renaissance. NORMAN F. CANTOR, *INVENTING THE MIDDLE AGES* 17 (1991). The first part of this era, the pre-Anglo-Saxon period of English history, often called the Dark Ages, contains few historical sources of legal interest. See MICHAEL WOOD, *IN SEARCH OF THE DARK AGES* (1987). Because English legal institutions were somewhat belatedly affected by renaissance ideas, it is difficult to establish a fixed termination date for the Middle Ages in England, but the transition can be said to have taken place gradually during the sixteenth century. See JOHN HALE, *THE CIVILIZATION OF EUROPE IN THE RENAISSANCE* 62-63, 343-49 (1994).

12. Wetlands were governed by the common law until Parliament began to adopt legislation bringing them under parliamentary control. Because this process began with isolated private bills relating to individual wetlands, the transition from the common law

riod which ended as Parliament gradually asserted control over wetlands law.¹³ Although modern legal scholarship has extensively documented the history of more recently developed doctrines such as the public trust¹⁴ and riparian rights,¹⁵ the common law of wetlands has not been similarly explored.

Under the common law of this period, ownership, land use and development rights in the English wetlands *were* highly controlled, contrary to what many contemporary legal scholars presume. English common law courts used the doctrine of custom to enforce restrictive local codes, imposing detailed limits on the use and development of the wetlands. In almost every way, regulation of wetlands under the common law was more restrictive than the later English statutory schemes which came to replace the common law of wetlands.

Made relevant by *Lucas*' "limitations inherent in the title to land" doctrine, the English common law of wetlands is more than historically interesting. English common law offers a wealth of jurisprudence to which American courts can and should turn in shaping their own common law of wetlands to help resolve tough wetlands ownership, use and development issues. American courts should follow the English common law and recognize that wetlands involve a complex mixture of land and water rights, private, common and public; without viewing all these rights in context, simply

period to the parliamentary period came gradually, and lasted from the middle of the seventeenth century until almost the end of the eighteenth. The period from the mid-sixteenth century to the end of the common law period will be referred to herein as the post-medieval common law period.

13. See *infra* text accompanying notes 333-367.

14. The impact of the public trust doctrine on wetlands protection after the *Lucas* decision is discussed in Babcock, *supra* note 7, at 36-59; Fred R. Disheroon, *After Lucas: No More Wetland Takings?*, 17 VT. L. REV. 683 (1993); Paul Sarahan, *Wetlands Protection Post-Lucas: Implications of the Public Trust Doctrine on Takings Analysis*, 13 VA. ENVTL. L.J. 537 (1994). For earlier discussion of the public trust doctrine see Joseph L. Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970); Note, *The Public Trust in Tidal Areas: A Sometime Submerged Traditional Doctrine*, 79 YALE L.J. 762 (1970); Joseph L. Sax, *Liberating the Public Trust Doctrine from its Historical Shackles*, 14 U.C. DAVIS L. REV. 185 (1980) [hereinafter *Historical Shackles*]; Daniel R. Coquillette, *Mosses from an Old Manse: Another Look at Some Historic Property Cases About the Environment*, 64 CORNELL L. REV. 761 (1979); Richard J. Lazarus, *Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine*, 71 IOWA L. REV. 631 (1986); Mary Kyle McCurdy, *Public Trust Protection for Wetlands*, 19 ENVTL. L. 683 (1989); Lloyd Cohen, *Public Trust: An Economic Perspective*, 29 CAL. W. L. REV. 239 (1992).

15. See, e.g., MORTON J. HORWITZ, *THE TRANSFORMATION OF AMERICAN LAW 1780-1860*, at 34-42 (1977); Carol M. Rose, *Energy and Efficiency in the Realignment of Common-law Water Rights*, 19 J. LEGAL STUD. 261 (1990); Joseph L. Sax, *The Limits of Private Rights in Public Waters*, 19 ENVTL. L. 473 (1989).

declaring some person the "owner" of these lands does not resolve the difficult and fundamental issues of use and development.

American courts have a tradition of using English common law doctrine to shape modern jurisprudence; a tradition appropriately extended to wetlands law. Indeed, state courts could go further and reinstate judicial procedures similar to the medieval English common law writ of *ad quod damnum*—roughly analogous to a declaratory judgment for anticipatory nuisance—in which various kinds of mitigation, including damages, could be awarded. This approach would assure that American wetlands are used in efficient, sustainable and productive ways.

Part II of this article briefly examines the American court decisions emphasizing the relevance of limitations inherent in title to land at common law that make the historical context of the common law of wetlands relevant. Part III provides a summary of wetlands science, functions and values. This Part then describes some of the more prominent English wetlands that existed during the common law period to explain the complex and subtle interdependencies of these wetland ecosystems, the economies they supported, and the people who populated them.

Part IV explores the role that wetlands played in the medieval English economy. Wetlands in England were the locus of a thriving society that produced sustainable economic benefits for roughly a thousand years. The users of these wetlands comprised a recognized sub-class of the English population known as the fen people who co-evolved as a largely self-governed society over many generations with their fecund wetland environs.

Part V describes the complex rules and procedures the medieval common law employed for determining how and whether wetlands could be owned, used and developed—rules that helped to maintain the sustainability of the wetlands and their society. Ownership of wetlands consisted of a mixture of private rights and rights in common. Land use was governed by detailed codes enforced, not as legislation, but as part of the common law through the doctrine of custom. Development of wetlands was permitted only with a license from the Crown, and the developer was required to seek a writ of *ad quod damnum* to determine whether the development would harm the interests of other people or the nation.

Part VI briefly describes the gradual replacement of the common law of wetlands by Parliamentary control imposed through

private drainage bills. These bills confiscated the property rights of the fen people and enclosed the wetlands for the benefit of the large landowners who controlled Parliament after the English civil war.

Part VII considers whether the long stability of the common law of wetlands, and its ultimate replacement by legislative enclosure and drainage, can be explained by some simple theory. It explores the usefulness of four popular metaphors in explaining the operation of the common law of wetlands. First is the theory that commonly-owned property always is overused (the "tragedy of the commons"). However, the wetlands experience does not support this paradigm. A combination of powerful social norms and practical limits on access by outsiders created a cooperative environment that kept most use of the wetlands within sustainable limits for over a thousand years. Second, the theory of the "inherent efficiency of the common law" receives some support (although perhaps accidentally) from the fact that the common law period produced a stable, productive and sustainable economy that lasted for a millennium, while the Parliamentary drainage programs that followed have all the wasteful earmarks of analogous American "pork-barrel" projects. Third, the metaphor "nature knows best" is of little value in analyzing an area that has been adaptively managed by humans since the stone age. Finally, the Darwinian metaphor—"survival of the fittest"—seems particularly inapplicable to a situation in which long term viability was sacrificed by Parliamentary drainage programs for short term gains subsidized at great public expense. After considering each theory in turn, this Part concludes that there are no quick and easy explanations for the history of the common law of wetlands and the subsequent changes brought by legislative means. Further research into the management of common property resources may, however, shed more light on that history.

Part VIII suggests that the value of the English common law of wetlands is not hampered by a recognition that its history is complex rather than simple. It looks to a number of useful analogues that American courts can explore in developing their own common law of wetlands. First, the English common law demonstrates that property ownership rules in and of themselves never answered questions about how land may be used and developed; the notion that landowners could "do what they want" with wetlands is historically inaccurate. Second, the fact that the common law successfully regulated the use of wetlands through detailed rules that were de-

veloped by the users themselves to protect the long term sustainability of the wetlands' economic productivity offers strong support for the current trend toward more user-inclusive rulemaking processes. Third, through the writ of *ad quod damnum*, the common law provided a procedure by which the courts could play a more useful and flexible role in resolving disputes over land development in the wetlands than is provided under modern American judicial review procedures.

II. LIMITATIONS INHERENT IN LAND TITLES

An action of the government banning a use of land cannot constitute a taking of a property right unless the person claiming the taking owned the right to so use the land in the first place.¹⁶ This elementary proposition assumed new significance when the Supreme Court in *Lucas* stated that "regulations that prohibit all economically beneficial use of land . . . cannot be newly legislated or decreed (without compensation), but must inhere in the title itself, in the restrictions that background principles of the State's law of property and nuisance already place upon land ownership."¹⁷ The Court stated that any law that destroyed all economic value of property could only do so if "the nature of the owner's estate shows that the proscribed use interests were not part of his title to begin with," and if the law did "no more than duplicate" the result that would have been reached at common law.¹⁸

The intent of this article is not to question the merits of the policy behind the Court's distinction between common law and legislative law, but rather to examine how that distinction might be applied in the context of wetlands. To this end, three questions are important. First, before the legislatures started to muck about in the wetlands, what were the rights and responsibilities of the wetlands landowners as established by the common law courts? Second, did the common law of wetlands promote efficiency? Third, to what degree is the English common law of wetlands relevant to modern constitutional decisionmaking?

That this exercise is not purely academic is illustrated by a recent opinion of the Massachusetts Supreme Judicial Court that shows the difficulty of applying the *Lucas* holding to wetlands. In

16. See, e.g., *United States v. Willow River Power Co.*, 324 U.S. 499 (1945) (discussed in Disheroon, *supra* note 14, at 684-86).

17. *Lucas*, 505 U.S. at 1029.

18. *Id.* at 1027-29.

Lopes v. City of Peabody,¹⁹ the court addressed the question of whether the City of Peabody's "wetlands conservancy zoning district" could validly prohibit the filling of Mr. Lopes' quarter-acre lot adjoining Devil's Dishfull Pond. The Supreme Judicial Court remanded the case to the land court with the following instructions:

If the judge concludes that the zoning regulation deprives the parcel of all economically beneficial use, the *Lucas* opinion advises us that there is a categorical regulatory taking, unless under the land use law of the Commonwealth [of Massachusetts] the proposed use would be a nuisance or otherwise impermissible. In that instance, a zoning regulation could validly prohibit in advance any use of the land that State law would bar in any event. It is not for us now to be specific on the subject of restrictions that, for example, the law of nuisance and the law of riparian rights impose on the use of land subject to periodic flooding.²⁰

The court cited several earlier Massachusetts cases and asked the land court to make an initial ruling on the applicability of those cases to Mr. Lopes' land.²¹

The *Lopes* opinion illustrates two important points. First, an understanding of the state common law relating to the permissible use of wetlands will be a crucial issue in determining the extent to which wetlands may be regulated.²² Second, the common law of most states has been heavily influenced by the common law of England.²³ Each of the thirteen original colonies, including Massachusetts, adapted its own common law rules from the English common

19. *Lopes v. City of Peabody*, 629 N.E.2d 1312 (Mass. 1994). This question has also arisen with some frequency in regard to the issue of whether the public has a right to use sandy beaches based on the common law doctrine of custom. See *Babcock*, *supra* note 7, at 30-35. For post-*Lucas* cases applying this test to the common law of beaches, see *Opinion of the Justices (Public Use of Coastal Beaches)*, 649 A.2d 604 (N.H. 1994) (state common law incorporates public trust in tidal lands but not customary public right to use beaches); *Stevens v. City of Cannon Beach*, 854 P.2d 449 (Or. 1993) (public's customary right to use beaches not inconsistent with *Lucas*), *cert. denied*, 114 S. Ct. 1332 (1994). Justice Scalia wrote an opinion dissenting from the denial of certiorari in the case at 114 S. Ct. 1332. See also *Stevens v. City of Cannon Beach*, 893 F. Supp. 944 (D. Or. 1995).

20. 629 N.E.2d at 1316-17 (citations omitted).

21. *Id.* at 1317. See *Ausness*, *supra* note 1, at 390-91. On remand, the trial court avoided the historical issue by finding that the city's wetland definition was too inclusive. The court amended the local regulation so that development of the plaintiff's property could go forward. Misc. Case, No. 139663 (Mass. Land Ct. Mar. 31, 1995) (unpublished opinion on file with the *Stanford Environmental Law Journal*).

22. Jamee Jordan Patterson, *California Land Use Regulation Post Lucas: The History and Evolution of Nuisance and Public Property Laws Portend Little Impact in California*, 11 UCLA J. ENVT'L L. & POL'Y 175 (1993) (surveying California cases).

23. LAWRENCE M. FRIEDMAN, *A HISTORY OF AMERICAN LAW* 107-14 (2d ed. 1985).

law; each colony owed some sort of allegiance to the Crown, and their charters spoke explicitly of the duty to conform their laws to English laws.²⁴

The Ordinance for Virginia and the First Charter of Massachusetts are just two examples of colonial charters that emulated the English standards of law and government. The Ordinance of Virginia stated:

Whereas in all other Things, we require the said General Assembly, as also the said Council of State, to imitate and follow the Policy of the Form of Government—Laws, Customs, and Manner of Trial, and other Administration of Justice, used in the Realm of *England*, as near as may be, even as ourselves, by his Majesty's Letter Patent, are required.²⁵

The First Charter of Massachusetts stated:

[T]o make, ordeine and establishe all Manner of wholesome and reasonable Orders, Lawes, Statutes, and Ordinnces, Direcccons, and Instrucccons, not contrairie to the Lawes of this our Realme of England²⁶

A major reason that the colonies continued to gravitate towards English law despite their geographical separation was their near-exclusive trade with England as a result of restrictions imposed by the English government.²⁷

By the 18th century, the period of wholesale borrowing of English law had largely ended, and incipient nationalism encouraged localization of colonial law. [T]he conditions of settlement and of development within each colony meant that each evolved its own individual legal system, just as each evolved its individual social and political system. Geographical isolation, the date and character of the several settlements, the degree or absence of outside supervision or control—all had their effect in ultimately developing thirteen separate legal systems.²⁸ But English rule and commercial dependence still pulled the laws of the colonies together toward their common legal source.²⁹ When Blackstone's *Commentaries* were published in the 1770s, Americans were the most avid

24. *Id.* at 46.

25. *The Ordinance for Virginia*, July 24, 1621, in DOCUMENTS OF AMERICAN HISTORY 13-14 (Henry Commager ed., 5th ed. 1968).

26. *The First Charter of Massachusetts*, Mar. 4, 1629, in DOCUMENTS IN AMERICAN HISTORY 16, 18 (Henry Commager ed., 5th ed. 1968).

27. FRIEDMAN, *supra* note 23, at 80.

28. GEORGE L. HASKINS, LAW AND AUTHORITY IN EARLY MASSACHUSETTS: A STUDY IN TRADITION AND DESIGN 6 (1960).

29. FRIEDMAN, *supra* note 23, at 112-13.

customers.³⁰

English common law continues to be important to American state courts today. A search for American decisions that cite English cases as precedent for American law reveals a surprisingly large number of such opinions. American courts continue to cite to English common law as authority on a wide variety of subjects, including torts,³¹ contracts,³² and family law.³³

Property law, a field that emphasizes continuity, is particularly rich with citations to English nuisance cases,³⁴ landlord and tenant cases,³⁵ covenant cases,³⁶ trust cases,³⁷ and many other property-related cases.³⁸ Because it is the property law of the states that has

30. FRIEDMAN, *supra* note 23, at 16, 109.

31. *See, e.g.*, *Ercole v. Cuomo*, No. CV 93-04569635, 1994 WL 363361 (Conn. Super. Ct. June 15, 1994); *Coclin v. Lane Press*, 620 N.Y.S.2d 41 (N.Y. App. Div. 1994); *Thompson v. Wing*, 637 N.E.2d 917 (Ohio 1994); *Amatulli Imports v. Nargezian*, No. 30 90 84, 1993 WL 11937 (Conn. Super. Ct. Jan. 19, 1993); *United Bilt Homes v. Sampson*, 832 S.W.2d 502 (Ark. 1992); *Petriello v. Kalman*, 576 A.2d 474 (Conn. 1990); *Gersh v. Ambrose*, 434 A.2d 547 (Md. 1981); *Crocker v. Coombs*, 328 A.2d 389 (Me. 1974); *Hoffman v. Jones*, 280 So. 2d 431 (Fla. 1973); *Maybruck v. Haim*, 340 N.Y.S.2d 469 (N.Y. App. Div. 1973).

32. *See, e.g.*, *Rachmani Corp. v. 9 East 96th Street Apartment Corp.*, 1995 WL 300265 (N.Y. App. Div. 1995); *Bruce Farms, Inc. v. Coupe*, 247 S.E.2d 400 (Va. 1978).

33. *See, e.g.*, *Woodmen of the World Life Ins. Soc'y v. Kinnaird*, 874 S.W.2d 47 (Tenn. 1993); *In re Declaratory Relief for Ladrach*, 513 N.E.2d 828 (Ohio 1987); *Farrar v. Brooklyn Union Gas Co.*, 502 N.Y.S.2d 610 (N.Y. Sup. Ct. 1986); *M.T. v. J.T.*, 355 A.2d 204 (N.J. Super. Ct. App. Div. 1976); *Pacheco v. Pacheco*, 246 So.2d 778 (Fla. 1971).

34. *See, e.g.*, *Defino v. Sloan*, 25 Cal. Rptr. 2d 265 (Ct. App. 1994); *Deardorff v. Burger*, 606 A.2d 489 (Pa. Super. Ct. 1992); *Thomas v. Holliday*, 764 P.2d 165 (Okla. 1988); *Fazzolari v. Portland Sch. Dist. No. 1J*, 734 P.2d 1326 (Or. 1987).

35. *See, e.g.*, *Food Pantry Ltd. v. Waikiki Business Plaza*, 575 P.2d 869 (Haw. 1978); *Mid-Continent Life Ins. Co. v. Henry's, Inc.*, 520 P.2d 1319 (Kan. 1974); *Boston Housing Auth. v. Hemingway*, 293 N.E.2d 831 (Mass. 1973); *2814 Food Corp. v. Hub Bar Bldg. Corp.*, 297 N.Y.S.2d 762 (N.Y. Sup. Ct. 1969); *Plaza Investment Co. v. Abel*, 153 N.W.2d 379 (Mich. Ct. App. 1967).

36. *See, e.g.*, *Leach v. Larkin*, 1993 WL 377629 (Tenn. Ct. App. 1993); *Davidson Bros. v. D. Katz & Sons*, 579 A.2d 288 (N.J. 1990); *Flying Diamond Oil Corp. v. Newton Sheep Co.*, 776 P.2d 618 (Utah 1989); *Gallagher v. Bell*, 516 A.2d 1028 (Md. 1987); *Mercantile-Safe Deposit and Trust Co. v. Mayor and City Council of Baltimore*, 521 A.2d 734 (Md. 1987).

37. *Christiansen v. Casey*, 613 S.W.2d 906 (Mo. Ct. App. 1981); *State ex rel. Willow Monument Works v. Mountain Grove Cemetery Ass'n*, 362 A.2d 1341 (Conn. 1975); *Wilson v. Flowers*, 277 A.2d 199 (N.J. 1971); *Epperly v. Mercantile Trust and Sav. Bank of Quincy, Ill.*, 415 S.W.2d 819 (Mo. 1967); *Feinberg v. Feinberg*, 131 A.2d 658 (Del. Ch. 1957); *In re Small's Estate*, 58 N.W.2d 477 (Iowa 1953); *Feinman v. State*, 717 S.W.2d 106 (Tex. Ct. App. 1986); *Pratte v. Balatsos*, 323 A.2d 924 (N.H. 1955); *Raney v. Tompkins*, 78 A.2d 183 (Md. 1951).

38. *See, e.g.*, *City of Blue Springs, Mo. v. Central Dev. Ass'n*, 831 S.W.2d 655 (Mo. Ct. App. 1992); *Davis v. Deposit Guar. Nat'l Bank*, 541 So. 2d 423 (Miss. 1989); *Connecticut Bank and Trust Co. v. Brody*, 392 A.2d 445 (Conn. 1978); *Friendswood Dev. Co. v. Smith-Southwest Indus.*, 576 S.W.2d 21 (Tex. 1978); *Finley v. Teeter Stone*, 248 A.2d 106 (Md.

been incorporated into constitutional doctrine by *Lucas*, we may expect that the state courts will pay special attention to the English common law in developing their own common law of wetlands.

III. UNDERSTANDING THE NATURE OF WETLANDS—DEFINITIONS, FUNCTIONS AND SOME ENGLISH GEOGRAPHY

A. *Defining Wetlands and Their Functions*

The term "wetlands" has only recently become a part of our vocabulary; until the latter half of the twentieth century, there was no single common term used to describe what we now call wetlands.³⁹ Instead, a variety of terms were used to describe different types of wetland, including "bog," "fen," "marsh," "mire," "muskeg," "slough," and "swamp."⁴⁰ As suggested by these many monikers, there are many different kinds of wetlands.⁴¹ These differences have complicated regulation, and the definition of wetlands for regulatory purposes has been very controversial.⁴² The

1968); *Williams v. City of Wichita*, 374 P.2d 578 (Kan. 1962) The English common law of property might be assumed to be less relevant in states where the title to significant amounts of land can be traced to grants under Spanish law rather than English law. See *Summa Corp. v. California ex rel. State Lands Comm'n*, 466 U.S. 198 (1984). But courts in these states, including Arizona, California, Florida and Texas, also cite English common law property cases with some frequency. See, e.g., *Delfino v. Sloan*, 25 Cal. Rptr. 2d 265 (Ct. App. 1993); *Matcha v. Mattox*, 711 S.W.2d 95 (Tex. Ct. App. 1986); *Leslie Salt Co. v. San Francisco Bay Conservation & Dev. Comm'n*, 200 Cal. Rptr. 575 (Ct. App. 1984); *Dessommes v. Dessommes*, 505 S.W.2d 673 (Tex. Civ. App. 1973); *Camp v. Gulf Counties Gas Co.*, 265 So. 2d 730 (Fla. Dist. Ct. App. 1972); *Morrison v. Thoeke*, 155 So. 2d 889 (Fla. Dist. Ct. App. 1963); *Higgins v. Arizona Sav. and Loan Ass'n*, 365 P.2d 476 (Ariz. 1961). This article makes no attempt to analyze the law of medieval Spain regarding the use of wetlands. For a study of rights of common in land in modern Spain, see J.W. Fernandez, *The Call to the Commons: Decline and Recommitment in Asturias, Spain*, in *THE QUESTION OF THE COMMONS* 266 (Bonnie J. McCay & James M. Acheson eds., 1987).

39. NATIONAL RESEARCH COUNCIL, *supra* note 3, at 43. The first well-recognized attempt to define wetlands was described in U.S. FISH AND WILDLIFE SERVICE, *CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES* (1979).

40. WILLIAM J. MITSCH & JAMES G. GOSSELINK, *WETLANDS* 32 (2d ed. 1993). Although distinctions among wetland types are largely irrelevant for regulatory purposes, the categorization of wetland types continues to be useful for scientific purposes. See, e.g., MARK M. BRINSON, *A HYDROGEOMORPHIC CLASSIFICATION FOR WETLANDS*, (U.S. Army Corps of Engineers Wetlands Research Technical Report WRP-DE-4, 1993).

41. See, e.g., BRINSON, *supra* note 40.

42. See *United States v. Holland*, 373 F. Supp. 665 (M.D. Fla. 1974) (endeavoring to define wetlands under the Federal Water Pollution control Act). The Army Corps of Engineers adopted a very broad definition of wetlands that was later upheld in *United States v. Riverside Bayview Homes*, 474 U.S. 121, 124, 138 (1985). Interpretation of the definition remains a problem at the margins. See, e.g., *Leslie Salt Co. v. United States*, 55 F.3d 1388 (9th Cir. 1995); *Hoffman Homes, Inc. v. Administrator, U.S. Envtl. Protection Agency*, 999 F.2d 256 (7th Cir. 1993). See generally ENVIRONMENTAL DEFENSE FUND & WORLD WILDLIFE

National Research Council's Committee on Wetlands Delineation has proposed the following scientific definition of wetlands to help clarify the question:

A wetland is an ecosystem that depends on constant or recurrent, shallow inundation or full saturation at or near the surface of the substrate. The minimum essential characteristics of a wetland are: (1) recurrent, sustained inundation at or near the surface, and (2) the presence of physical, chemical, and biological features reflective of recurrent, sustained inundation and saturation. Common diagnostic features of wetlands are hydric soils and hydrophytic vegetation; these features will be present except where specific physics-chemical, biotic, or anthropogenic factors have removed them or prevented their development.⁴³

All categories of wetland maintain a basic system of energy flow in which sources of organic input, such as decaying vegetation, are converted into more and more concentrated forms of energy through a food web.⁴⁴ If the biogeochemical cycles of the wetland are protected, a wetland can be extremely productive biologically.⁴⁵ However, wetlands have historically been under-appreciated.⁴⁶ In fact, wetlands were often the subject of ill-conceived legislative reclamation efforts to convert them to agricultural land.⁴⁷ Today, our view of wetlands has changed dramatically.

FUND, HOW WET IS A WETLAND? THE IMPACTS OF THE PROPOSED REVISIONS TO THE FEDERAL WETLANDS DELINEATION MANUAL 10-18 (1992) (outlining the complexities of wetland identification); NATIONAL RESEARCH COUNCIL, *supra* note 3 (describing wetland characteristics and identification techniques).

43. NATIONAL RESEARCH COUNCIL, *supra* note 3, at 59. While there is a strong scientific basis for the creation of a category called "wetlands," as Dan Tarlock has pointed out, the attempt to define wetlands is "a scientific dilemma for those who see the landscape as a continuous interactive system . . ." A. Dan Tarlock, *The Nonequilibrium Paradigm in Ecology and the Partial Unraveling of Environmental Law*, 27 LOY. L.A. L. REV. 1121, 1132 (1994).

44. WILLIAM A. NIERING, WETLANDS 27 (1985).

45. MARK S. DENNISON & JAMES F. BERRY, WETLANDS: GUIDE TO SCIENCE, LAW, AND TECHNOLOGY 50-54 (1993).

46. For a literary perspective on the nineteenth-century American view of wetlands, see DAVID C. MILLER, DARK EDEN: THE SWAMP IN NINETEENTH-CENTURY AMERICAN CULTURE (1989).

47. Congress began in 1849 to grant to the states for reclamation "those swamp and overflowed lands, which may be or are found unfit for cultivation . . ." See An Act to aid the State of Louisiana in draining the Swamp Lands therein, ch. 87, 9 Stat. 352 (1849). The purpose of the statute was to "aid the State of Louisiana in constructing the necessary levees and drains to reclaim the swamp and overflowed land therein . . ." *Id.* These statutes are generally known as the Swamp Land Acts and are codified as amended in 43 U.S.C.A. §§ 981-994 (West 1988 & Supp. 1995). The vague definition provided by the words "wet and unfit for cultivation" led to extensive litigation. See PAUL W. GATES, HISTORY OF PUBLIC LAND LAW DEVELOPMENT 324 (1968). Notwithstanding the problems of their legal application, the Swamp Land Acts actually resulted in the creation of very little new agricultural land. "In few instances in the land history have the results deviated so

Lands that were once thought to be worthless have in the last twenty years been recognized as increasingly scarce⁴⁸ and valuable resources that need to be protected.⁴⁹ We now realize that wetlands are the source of many important resource values,⁵⁰ and provide vital ecosystem services. For example, wetlands function as wildlife nurseries, absorb nutrients that would otherwise destabilize lakes and rivers, and control flooding.⁵¹

Our enlightened appreciation of these ecosystem values is manifest in recent statutory schemes. Modern legislation, both in the United States and throughout the world, emphasizes wetland protection, not wetland conversion.⁵² In a sense, this appreciation of wetlands takes us back to our roots. While modern legislatures have been slow to recognize the importance of wetlands, medieval English common law gave wetlands great protection—far more than did the English statutory law that succeeded it.⁵³ A proper understanding of the degree of restriction imposed by our modern statutes, therefore, is enhanced by an examination of the English common law of wetlands and the early statutory schemes which replaced them. This law developed around three prominent English wetlands.⁵⁴

widely from the plans . . . The Swamp Act provided a means of getting rid of land but to a trifling extent of effecting drainage. The amount of money realized by the state out of the swamp land was small." BENJAMIN HORACE HIBBARD, *A HISTORY OF THE PUBLIC LAND POLICIES* 288 (Peter Smith 1939) (1924).

48. Estimates of U.S. wetlands already lost are in MILTON W. WELLER, *FRESHWATER MARSHES: ECOLOGY AND WILDLIFE MANAGEMENT* 87-89 (3d ed. 1994).

49. *Id.* at 92-94.

50. See JON A. KUSLER, *OUR NATIONAL WETLAND HERITAGE: A PROTECTION GUIDEBOOK* 1-5 (1983); Eric T. Freyfogle, *The Owning and Taking of Sensitive Lands*, 43 *UCLA L. REV.* 77, 81-83 (1995).

51. DENNISON & BERRY, *supra* note 45, at 54-67 (1993). Some commentators are now beginning to question whether the claims made on behalf of the value of wetlands are sometimes exaggerated. See Mark Sagoff, *Settling America, or the Concept of Place in Environmental Ethics*, 12 *J. ENERGY, NAT. RESOURCES & ENVTL. L.* 349, 374-80 (1992).

52. NATIONAL RESEARCH COUNCIL, *supra* note 3, at 45-47, 52-54. Courts sometimes have trouble adapting the language of older statutes to modern attitudes toward wetlands. See, e.g., *In re Thousand Acre Marsh Tax Ditch*, 1994 Del. Super. LEXIS 604 (Del. Super. Ct. Nov. 23, 1994) (drainage district legislation may only be used to remove water, not to manage it for maximum wetland benefits).

53. See *infra* text accompanying notes 333-367.

54. Three of the best known medieval English wetlands are Romney Marsh, Somerset Levels, and the Great Fens. England, being a relatively small country, never had as extensive wetlands as are found in the United States, but the nature and range of the types of wetland in England were not particularly distinguishable in any way that affects the application of legal doctrines. In prehistoric times, substantial parts of England were subject to periodic flooding and supported various types of hydrophytic vegetation. See generally

B. *The Wetlands of Medieval England*1. *Romney Marsh.*

Romney Marsh occupied a site in Kent on the English Channel that has been key to Britain's defense and trade since Roman times.⁵⁵ The marsh occupied about 50,000 acres,⁵⁶ partially protected from the Channel by barrier beaches.⁵⁷ In the early Middle Ages, the wide-ranging tides in the Channel periodically flooded.⁵⁸ Still, the marsh provided extensive pasture for sheep in the summer, and the high quality of this pasture was famous.⁵⁹

Attempts to build dikes and other protective measures in Romney Marsh began during the Roman occupation⁶⁰ and continued into the early medieval period.⁶¹ Between the ninth and eleventh centuries a gradual reduction in sea levels⁶² exposed parts of the marsh and people moved into the area.⁶³ When sea levels rose again in the thirteenth century,⁶⁴ there was an even greater need to

Michael Williams, *Marshland and Waste*, in *THE ENGLISH MEDIEVAL LANDSCAPE* 86 (Leonard Cantor ed. 1982) (describing English marshland areas).

55. E.W. Gilbert, *The Human Geography of Roman Britain*, in *AN HISTORICAL GEOGRAPHY OF ENGLAND BEFORE A.D. 1800*, at 30, 38-39 (H.C. Darby ed., Cambridge University Press 1961) (1936). See also M. Oppenheim, *Shipping*, in *MEDIAEVAL ENGLAND* 245, 249-51 (H.W.C. Davis ed., 1924); WALTER J.C. MURRAY, *ROMNEY MARSH* 41-48 (1953) (describing Romney marsh's special status as the location for two of the Crown's Cinque Port cities). Designation of Cinque Ports in Romney Marsh dates back to the reign of Edward the Confessor. WILLIAM HOLLOWAY, *THE HISTORY OF ROMNEY MARSH* 59 (London, John Russell Smith 1849). The marsh also occupies a special place in English history as the locus of famous battles against invaders from the continent. N.P. Brooks, *Romney Marsh in the Early Middle Ages*, in *THE EVOLUTION OF MARSHLAND LANDSCAPES* 74, 91-92 (1981); MURRAY, *supra*, at 61-67.

56. JOHN PIPER, *ROMNEY MARSH* 10-11 (1950).

57. *Id.* at 11-12; MURRAY, *supra* note 55, at 83-90.

58. MURRAY, *supra* note 55, at 29-31; JEREMY PURSEGLOVE, *TAMING THE FLOOD: A HISTORY AND NATURAL HISTORY OF RIVERS AND WETLANDS* 241 (1988).

59. MURRAY, *supra* note 55, at 118-25; see J.N.L. Baker, *England in the Seventeenth Century*, in *AN HISTORICAL GEOGRAPHY OF ENGLAND BEFORE A.D. 1800*, at 387, 408-09 (H.C. Darby ed., Cambridge University Press 1961) (1936). The management practices of sheep farmers in Romney Marsh were used as a model for English sheep farmers generally. See DANIEL PRICE, *A SYSTEM OF SHEEP-GRAZING AND MANAGEMENT AS PRACTICED IN ROMNEY MARSH* (London, Richard Phillips 1809).

60. PURSEGLOVE, *supra* note 58, at 40-41.

61. J. L. BOLTON, *THE MEDIEVAL ENGLISH ECONOMY, 1150-1500*, at 84 (1980); Brooks, *supra* note 55, at 78-80; WILLIAM DUGDALE, *THE HISTORY OF IMBANKING AND DRAYNING OF DIVERS FENNS AND MARSHES* 17 (London, Alice Warren 1662).

62. H.C. DARBY, *THE CHANGING FENLAND* 38-40 (1983); OLIVER RACKHAM, *THE HISTORY OF THE COUNTRYSIDE* 376 (Weidenfeld & Nicolson 1995) (1986).

63. HOLLOWAY, *supra* note 55, at 64; RACKHAM, *supra* note 62, at 376.

64. DARBY, *CHANGING FENLAND*, *supra* note 62, at 40. Drainage and silting also produced flooding. PURSEGLOVE, *supra* note 58, at 44-45. Archaeologists continue to uncover

build dikes—to protect the settlements that had been established when the sea receded.⁶⁵ After three notable storms in the mid-thirteenth century and another early in the fourteenth century the Crown ordered the construction of a series of major dikes to protect the coast.⁶⁶

By the end of the sixteenth century, the acreage of diked-off marshland was extensive.⁶⁷ It provided such productive grazing that Romney sheep became famous for their high quality—"ever since Cobbett wrote of them as being 'as white as a piece of writing paper. . . .'"⁶⁸ Today, the area that is still known as Romney Marsh is not marshland at all⁶⁹ but is prime pasture and crop land divided among private owners without the rights in common characteristic of English wetlands.⁷⁰ Nevertheless, Romney Marsh occupies a place of particular interest in the history of English wetlands for two reasons. First, the adoption of a code of laws for Romney Marsh in the thirteenth century provided a model for the management of wetlands throughout the medieval period.⁷¹ Second, the failure of the British government to protect Romney Marsh's last remaining wetlands in the 1980s triggered protests that increased

new evidence of the many modifications of the landscape that took place during the thirteenth and fourteenth centuries. Tim Tatton-Brown, *The Topography of the Walland Marsh Area Between the Eleventh and Thirteenth Centuries*, in ROMNEY MARSH: EVOLUTION, OCCUPATION, RECLAMATION 105, 105 (Jill Eddison & Christopher Green eds., 1988).

65. HOLLOWAY, *supra* note 55, at 67; Eleanor Vollans, *New Romney and the "River of Neuenden" in the later Middle Ages*, in ROMNEY MARSH: EVOLUTION, OCCUPATION, RECLAMATION 128, 132 (Jill Eddison & Christopher Green eds., 1988). A similar response to rising sea levels in the thirteenth century was also seen in other English wetlands. W. G. HOSKINS, *THE MAKING OF THE ENGLISH LANDSCAPE* 97 (1955). See also EMMANUEL LE ROY LADURIE, *TIMES OF FEAST, TIMES OF FAMINE: A HISTORY OF CLIMATE CHANGE SINCE THE YEAR 1000*, at 248-64 (Barbara Bray trans., 1971) (presenting historical evidence of medieval climate changes).

66. HOLLOWAY, *supra* note 55, at 78-79.

67. M. TEICHMAN DERVILLE, *THE LEVEL AND LIBERTY OF ROMNEY MARSH* 24-25, 30-32 (1936).

68. PURSEGLOVE, *supra* note 58, at 242; Brooks, *supra* note 55, at 75-78. In the mid-nineteenth century the marsh was said to support a half-million sheep. HOLLOWAY, *supra* note 55, at 182.

69. MURRAY, *supra* note 55, at 10. "The unusual features of this region are many. Firstly, it is not a marsh, it is dry land. Secondly, the land is below the level of the sea at high water, and actually tilts inward away from the sea. Thirdly, it is crisscrossed with . . . winding water channels that have no immediately apparent drainage pattern." DUNCAN FORBES, *THE FIFTH CONTINENT: THE STORY OF ROMNEY MARSH AND ITS SURROUNDINGS* 10 (1984).

70. W.G. HOSKINS & L. DUDLEY STAMP, *THE COMMON LANDS OF ENGLAND & WALES* 145 (1963).

71. See *infra* text accompanying notes 265-270.

modern public consciousness of the value of wetlands.⁷²

2. *Somerset Levels.*

In western Britain, the largest wetland area was the Somerset Levels, which encompass some 250 square miles of lowland and constitute a physically distinct territory with "steep slopes and rapid changes in relief on its edges [that] leave no doubt about its individuality."⁷³ The Levels are an important wintering ground for migratory shorebirds and waterfowl and are the home of some of the last otters in England.⁷⁴

Archaeological investigations show that the Levels have been through a number of cycles of flooding and drying since humans first occupied the area.⁷⁵ By the Middle Ages, the problem of flooding and flood control dominated all aspects of life and activity.⁷⁶ The flooding was caused by the physical condition of the land, tidal behavior, marine siltation along the coast, and rainfall,⁷⁷ which was often seasonally heavy.⁷⁸ Pasture was scarce in the Levels during the winter floods,⁷⁹ but it was a common practice to drive livestock to the wetlands for the summer—the origin of the name Somerset.⁸⁰

In medieval times, monastic orders controlling much of the land in the Levels began to drain portions to convert the Levels to

72. PURSEGLOVE, *supra* note 58, at 242-44.

73. MICHAEL WILLIAMS, *THE DRAINING OF THE SOMERSET LEVELS* 6 (1970). The main body of the Levels is flanked by the Mendip Hills to the north and the Quantock Hills to the southeast, while the Levels themselves are relatively flat except for ridges and swales. The Triassic and Jurassic rocks in the basin nestled between these two uplands eroded over time resulting in an uneven surface. The remaining, protruding sections created prominent ridges and "islands" in the Levels. *Id.* See DAVID BALDOCK ET AL., *WETLAND DRAINAGE IN EUROPE: THE EFFECTS OF AGRICULTURAL POLICY IN FOUR EEC COUNTRIES* 152 (1984); PURSEGLOVE, *supra* note 58, at 244.

74. BALDOCK ET AL., *supra* note 73, at 152.

75. Harry Godwin, *Botanical and Geological History of the Somerset Levels*, in 12 *PROCEEDINGS OF THE BRITISH ASS'N FOR THE ADVANCEMENT OF SCIENCE* NO. 47, 319, 319-22 (1955).

76. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 9-11; DUGDALE, *supra* note 61, at 104.

77. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 9-11; DUGDALE, *supra* note 61, at 6-17.

78. Rainfall over the region is relatively high for England, with an average annual rainfall of 40 inches, and the November and December floods are often the result of rainfall in the autumn. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 11-14. See also PURSEGLOVE, *supra* note 58, at 246 (noting the high local rainfall).

79. DUGDALE, *supra* note 61, at 111-12.

80. HOSKINS & STAMP, *supra* note 70, at 7. See PURSEGLOVE, *supra* note 58, at 244-48 (discussing the inaccessibility of the moors in winter and how geography affected the use of the land).

pasture and crops.⁸¹ But despite a gradual increase in drainage, significant wetlands remain, and the Somerset Levels are still prized by biologists for their wildlife habitat:

The ecological diversity which has made the Somerset Levels justly famous is remarkable, because it combines everything which a fine wetland should have: otters, wildfowl in winter, migrating birds in autumn and spring, ditches alive with all the dragonflies and flowers which a naturalist could hope to find, and, in summer, breeding waders and a tapestry of meadow flowers extending over the major part of the moors. The sheer scale of this abundance is exceptional.⁸²

Attempts to find a balance between agricultural use and wildlife habitat have been important in the history of the Somerset Levels and remain so today.⁸³

3. *The Great Fens.*

The Fens, England's largest wetland area, occupied some 1300 square miles in east-central England,⁸⁴ and drained a large part of central England. The catchment area for the Fens is nearly 6000 square miles.⁸⁵ The eastern border of the Fens consists of chalk uplands while sandstone ridges border them on the west.⁸⁶ A bed of clay underlies the Fens, extending between the highlands of chalk to the east and those of sandstone on the west.⁸⁷ Water cannot penetrate the clay; therefore, water entering the Fens remains

81. BERNARD STORER, *THE NATURAL HISTORY OF THE SOMERSET LEVELS* 27-28 (1972); BOLTON, *supra* note 61, at 85; HOSKINS, *ENGLISH LANDSCAPE*, *supra* note 65, at 99. Drainage became more intensive from around 1790. ROBIN WILLIAMS & ROMNEY WILLIAMS, *THE SOMERSET LEVELS* 24 (1992).

82. PURSEGLOVE, *supra* note 58, at 249.

83. The recent conflict between agricultural and conservation interests in the West Sedgemoor region of the Levels is described in PHILIP LOWE ET AL., *COUNTRYSIDE CONFLICTS: THE POLITICS OF FARMING, FORESTRY AND CONSERVATION* 231-63 (1986). See also PURSEGLOVE, *supra* note 58, at 250-58 (describing the history of conflict over the Somerset Levels). In response, the government created the Somerset Levels Environmentally Sensitive Area in which farmers are subsidized if they agree to farm in a traditional manner. WILLIAMS & WILLIAMS, *supra* note 81, at 30-33. Differences between agricultural and conservation interests remain, however, particularly in regard to the water level to be maintained by the National Rivers Authority, which is itself undergoing a reorganization as a result of the Environment Act of 1995, ch. 25. *Id.* at 157.

84. The Great Fens includes "the 1,300 square miles of countryside which stretch from Cambridge in the South to Lincoln in the north, from Peterborough in the west to Lakenheath in the east . . ." A.K. ASTBURY, *THE BLACK FENS* 1 (1958).

85. RICHARD L. HILLS, *MACHINES MILLS AND UNCOUNTABLE COSTLY NECESSITIES* 1 (1967).

86. *Id.*

87. *Id.*

upon the land until the rivers can carry it to the sea.⁸⁸ Occasionally, outcrops of green sandstone penetrate the basic clay stratum under the Fens, creating islands such as the Isle of Ely.⁸⁹

During the Middle Ages, it was not unusual for the Fens to be under water every year for much of the winter.⁹⁰ Salt water flooding could result from ocean storms and high tides, while fresh water flooding might result from excessive rainfall inland.⁹¹ In the northern part of the fens, the soil that overlays the clay is primarily silt that has washed down through the river systems, while in the south the soil is peat formed by centuries of waterlogged vegetation.⁹² Peat soils shrink dramatically if they are drained.⁹³ There were no settlements on the peatlands during the early medieval period⁹⁴ because primitive attempts to drain these peatlands resulted in land subsidence that often created greater flooding than before.⁹⁵

Despite these problems, the Great Fens, like other English wetlands, were used productively by a large population during the Middle Ages.⁹⁶ A visitor to the fens in 1611 described seeing a fenman on stilts driving 400 cows to pasture, with the assistance of only a small boy.⁹⁷ In 1724, Daniel Defoe wrote of Lincolnshire: "The country round this place is all fenn and marsh grounds, the land very rich, and which feeds prodigious numbers of large sheep, and also oxen of the largest size. . . ."⁹⁸

To understand the high productivity of these wetlands it is necessary to examine the role that they played in the medieval economy.

88. *Id.*

89. *Id.* Bede, writing in the eighth century, said that Ely (named for its many eels) was an island surrounded by marsh and water containing 600 families. DARBY, *CHANGING FENLAND*, *supra* note 62, at 7.

90. DARBY, *CHANGING FENLAND*, *supra* note 62, at 13.

91. DARBY, *CHANGING FENLAND*, *supra* note 62, at 20.

92. ASTBURY, *supra* note 84, at 6. "In their undrained state the southern fens were . . . a huge sea choked with floating vegetable matter. Not only did the peat swim in water, but each little fibre was filled with water by capillary action." *Id.* at 11. This condition is typical of other coastal wetlands as well. RACKHAM, *supra* note 62, at 376, 377-79.

93. HARRY GODWIN, *FENLAND: ITS ANCIENT PAST AND UNCERTAIN FUTURE* 124-33 (1978).

94. DARBY, *CHANGING FENLAND*, *supra* note 62, at 8-9.

95. See J.R. RAVENSDALE, *LIABLE TO FLOODS: VILLAGE LANDSCAPE ON THE EDGE OF THE FENS, AD 450-1850*, at 10-11 (1974). See generally HILLS, *supra* note 85, at 6-7.

96. DARBY, *CHANGING FENLAND*, *supra* note 62, at 10-31.

97. HILLS, *supra* note 85, at 8.

98. 2 DANIEL DEFOE, *A TOUR THROUGH THE WHOLE ISLAND OF GREAT BRITAIN* 95 (Everyman's Library rev. ed. 1962) (1724).

IV. THE MEDIEVAL WETLANDS ECONOMY

Perhaps the most surprising fact about the medieval wetlands was the thriving economy based on the direct use of wetlands products. Today, we tend to think of the functions of wetlands as more indirect than commodity-based,⁹⁹ but in medieval and even post-medieval times the direct economic value of wetlands was quite obvious.

A. *Economic Activities in the Wetlands*

The wetlands played an important and well-recognized role in the economy of medieval England, supplying key commodities such as peat and top quality thatch. The wetlands also provided supplemental ecosystem services for other products important in the medieval economy, most notably cattle, fish and fowl.

One of the most important commodities produced in the wetlands was the thatch used for roofing. A well-made thatch roof provided insulation in addition to basic covering; many of them have lasted for centuries.¹⁰⁰ The better thatched roofs that protected medieval homes were those made from sedges, rushes and reeds cut in the wetlands, because the durability of these products far exceeded the durability of straw thatching.¹⁰¹ The wetland vegetation grew quickly and provided a sustainable supply of thatch.¹⁰² Different varieties were treated as successional crops harvested in carefully maintained cycles.¹⁰³ Sword-sedges, found in the peatland areas, are evergreen and have traditionally been valued as the highest quality source of thatch.¹⁰⁴ *Phragmites communis*, known in England as Norfolk Reed, was an additional desirable source of thatch.¹⁰⁵

Another important commodity derived from wetlands was peat, the fuel commonly used for heating in medieval times.¹⁰⁶ Peat is compressed vegetation unable to oxidize because it is saturated

99. See *infra* text accompanying notes 538-545.

100. RAVENSDALE, *supra* note 95, at 54, 150. There has been a revival of interest in the use of thatching for roofs in modern times. PURSEGLOVE, *supra* note 58, at 120-21.

101. GODWIN, FENLAND *supra* note 93, at 24-26.

102. Sedge was also dried and burned as a very low grade fuel. HILLS, *supra* note 85, at 37. See also BRUCE GALLOWAY, A HISTORY OF CAMBRIDGESHIRE 86 (1983).

103. DARBY, CHANGING FENLAND, *supra* note 62, at 24.

104. GODWIN, FENLAND *supra* note 93, at 145-46.

105. GODWIN, FENLAND *supra* note 93, at 149-50.

106. GODWIN, FENLAND *supra* note 93, at 114-23.

with water.¹⁰⁷ Once dried, it provides a low grade fuel that was popular before coal became plentiful.¹⁰⁸ Peat was preferred over coal in areas where peat was readily available because it was less expensive than coal, had a less unpleasant odor, did not result in much soot, and would smolder with little attention.¹⁰⁹

Turbary, the cutting of peat, created a significant change in the wetland ecosystem by at least temporarily providing more areas of open water.¹¹⁰ But in most wetland areas the cutting of peat was done mainly by individual families rather than by commercial operators.¹¹¹ As long as the amount of peat removed was relatively small,¹¹² the resulting mixture of wetland and open water may have been favorable for the production of two other important commodities provided by the wetlands: fish and fowl.¹¹³

Eels, one of the favorite foods of medieval English people, were taken from the wetlands by the tens of thousands per year in many places.¹¹⁴ Eels were packed in barrels at wetland sites and rushed to London on horse-drawn wagons to satisfy the demand.¹¹⁵ The wetlands were a source of a wide variety of other fish as well,¹¹⁶ and

107. DENNISON & BERRY, *supra* note 45, at 119-23; MITSCH & GOSSELINK, *supra* note 40, at 371-75. See generally HOWARD CRUM, A FOCUS ON PEATLANDS AND PEAT MOSSES (1988) (discussing in detail peat and its origin).

108. GODWIN, FENLAND *supra* note 93, at 122.

109. HILLS, *supra* note 85, at 37.

110. TOM WILLIAMSON & LIZ BELLAMY, PROPERTY AND LANDSCAPE: A SOCIAL HISTORY OF LAND OWNERSHIP AND THE ENGLISH COUNTRYSIDE 77 (1987); GODWIN, FENLAND *supra* note 93, at 114. Another large section of Eastern England, known as the Norfolk Broads, contains a mixture of wetlands and bodies of open water that are the result of peat extraction dating back to prehistoric times. See J.M. LAMBERT ET AL., THE MAKING OF THE BROADS: A RECONSIDERATION OF THEIR ORIGIN IN THE LIGHT OF NEW EVIDENCE 63 (1960).

111. BARBARA A. HANAWALT, THE TIES THAT BOUND: PEASANT FAMILIES IN MEDIEVAL ENGLAND 50 (1986).

112. In the area known as the Norfolk Broads, the extraction of peat was so extensive that the turbaries apparently failed as early as the fourteenth century. H.E. HALLAM, SETTLEMENT AND SOCIETY: A STUDY OF THE EARLY AGRARIAN HISTORY OF SOUTH LINCOLNSHIRE 132 (1965). The Broads continue to be the site of difficult issues in wetland management. PHILIP LOWE ET AL., *supra* note 83, at 265-300.

113. WILLIAMS, DRAINING OF THE SOMERSET LEVELS, *supra* note 73, at 25; JAMES WENTWORTH-DAY, A HISTORY OF THE FENS 74 (1954).

114. H.C. Darby, *The Economic Geography of England A.D. 1000-1250*, in AN HISTORICAL GEOGRAPHY OF ENGLAND BEFORE A.D. 1800, at 165, 202-03 (H.C. Darby ed., 1936); DUGDALE, *supra* note 61, at 365. Fisheries were especially important to the local economy; Morcock Estwere in the Somerset Levels yielded 5,000 eels a year in the twelfth century. WILLIAMS, DRAINING OF THE SOMERSET LEVELS, *supra* note 73, at 26. See also DARBY, CHANGING FENLAND, *supra* note 62, at 22-24; GODWIN, FENLAND *supra* note 93, at 95.

115. PURSEGLOVE, *supra* note 58, at 142.

116. M.W. BARLEY, LINCOLNSHIRE AND THE FENS 123-24, 143 (1952); STORER, *supra* note 81, at 40; WENTWORTH-DAY, *supra* note 113, at 20-21.

served as a nursery for ocean-dwelling marine life.¹¹⁷

Fowling was another characteristic occupation in the wetlands.¹¹⁸ Stories of clouds of birds that darkened the air may be suspect,¹¹⁹ but there is little doubt that fowling was a significant element of the economy of wetland areas.¹²⁰ Various means were used to capture wild wetland birds, including decoys, birdlime, traps, nets and later, firearms.¹²¹ Geese were raised as domestic animals in wetland areas and provided the source for goose down pillows and bedding, and the invaluable quill pen.¹²²

In addition to their key role in providing the commodities of thatch, peat, fish and wildfowl, wetland areas often provided an important supplemental source of food for cattle and sheep.¹²³ In the winter, salt hay from the wetland marshes often was available when annual grasses were dormant,¹²⁴ and in the summer, when the water levels in the wetlands were typically lower, herders would drive their cattle and sheep into the wetlands to graze because the shortage of grass in midsummer was a continual problem in the open-field system of the Middle Ages.¹²⁵

Finally, the wetland areas were the source for certain specialized crops that were widely used in the economy of the times. Woad, grown in the wetlands, was an important source of blue dye.¹²⁶ Hemp was cultivated to make rope, especially for ships.¹²⁷ And in the salt marshes, areas were diked off to facilitate the pro-

117. K.H. MANN, *ECOLOGY OF COASTAL WATERS* 18-33 (1982).

118. E.G.R. Taylor, *Camden's England*, in *AN HISTORICAL GEOGRAPHY OF ENGLAND BEFORE A.D. 1800*, at 354, 368 (H.C. Darby ed., 1936).

119. EDWARD STOREY, *PORTRAIT OF THE FEN COUNTRY* 168-70 (2d ed. 1975).

120. RAVENSDALE, *supra* note 95, at 48-51. From an early date, English laws attempted to protect a sustained yield of wildlife. THOMAS A. LUND, *AMERICAN WILDLIFE LAW* 4-5, 14-17 (1980).

121. GALLOWAY, *supra* note 102, at 45; GODWIN, *FENLAND* *supra* note 93, at 161-62; WENTWORTH-DAY, *supra* note 113, at 23-28.

122. PURSEGLOVE, *supra* note 58, at 29; WENTWORTH-DAY, *supra* note 113, at 75-76.

123. DARBY, *CHANGING FENLAND*, *supra* note 62, at 26-29; Williams, *supra* note 54, at 96-97.

124. See Williams, *supra* note 54, at 97; DARBY, *CHANGING FENLAND*, *supra* note 62, at 29-31; Taylor, *supra* note 118, at 348.

125. PURSEGLOVE, *supra* note 58, at 28. Under the open field system that was typically used prior to the eighteenth century, cropland was often made available for grazing once the crops had been harvested. See *infra* text accompanying notes 208-220.

126. GODWIN, *FENLAND* *supra* note 93, at 158-60. Another wetland plant, the teasel, was once widely used to raise the nap on woolen cloth to give it a softer feel. STORER, *supra* note 81, at 126-28.

127. GODWIN, *FENLAND* *supra* note 93, at 154-56; PURSEGLOVE, *supra* note 58, at 30-31.

cess of salt-making.¹²⁸ The right to take wood from the wetland trees was also valuable.¹²⁹ For example, willow trees were pruned by a process called pollarding and then cropped for use as firewood or as material for baskets and cricket bats.¹³⁰

During the common law period, it appears that many wetland areas provided a continuous supply of these commodities and services over many centuries.¹³¹ The limited technology available, and the relatively small number of users, especially after the plagues of the fourteenth century,¹³² seem to have kept the usage of many wetlands at a sustainable level,¹³³ although some wetlands gradually

128. DARBY, *CHANGING FENLAND*, *supra* note 62, at 5; HALLAM, *supra* note 112, at 170-71.

129. The right to gather wood (estovers) was considered one of the more important rights to the use of all wooded common property. HOSKINS & STAMP, *supra* note 70, at 47. The waterlogged peat moors of the Somerset Levels contained extensive thickets of alder, ash, and willow that were used for both construction and fuel. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 29.

130. Pollarding is a form of severe pruning that causes the tree to produce many shoots at a height convenient for human harvest but above the reach of cattle. PURSEGLOVE, *supra* note 58, at 100-12. In addition, osiers were grown for use in making baskets and similar utensils. STORER, *supra* note 81, at 125-26.

131. "The fen satisfied so many needs that the peasantry was more closely attached to the continued existence of this economy than was the Midland peasantry to its own economy." HALLAM, *supra* note 112, at 171 (1965). See also PURSEGLOVE, *supra* note 58, at 81 (describing the harvests of the wetlands and the regulations governing them).

132. In the eleventh and twelfth centuries rural population densities in England were relatively high, and some tenant farmers were forced to abandon free status in favor of villeinage. See M.M. POSTAN, *Legal Status and Economic Conditions in Medieval Villages*, in *ESSAYS ON MEDIEVAL AGRICULTURE AND GENERAL PROBLEMS OF THE MEDIEVAL ECONOMY* 278, 284-85 (1973). The supply of land continued to be tight until the epidemics of bubonic plague in the mid-fourteenth century. George Townsend Warner, *Country Life*, in *MEDIAEVAL ENGLAND* 319, 332-34 (H.W.C. Davis ed., 1924). At that point, depopulation sometimes made it difficult to maintain the adaptive management of wetland areas. See, e.g., 1 *PUBLIC WORKS IN MEDIAEVAL LAW* 268-69 (C.T. Flower ed., Publications of the Selden Soc'y Vol. 32, 1915) (In 1375, "a jury of Elloe wapentake [found] . . . that the town of Spalding was in danger of being submerged . . . because since the first pestilence the lands of the said township have been so divided and alienated that the keepers of the ditches know not by whom they ought to be repaired, and that the whole township and the holders of lands there ought to repair them."). For some time after the plague years, the shortage of land was replaced by a shortage of labor. JOHN P. POWELSON, *THE STORY OF LAND: A WORLD HISTORY OF LAND TENURE AND AGRARIAN REFORM* 60 (1988). This created an incentive to enclose fields (to save labor in herding) and to convert cropland into grazing land. See HANAWALT, *supra* note 111, at 21.

133. Cf. HILLS, *supra* note 85, at 39 (discussing reasons why marshland was not developed). On the various meanings of "sustainable," see Jane Lubchenco et al., *The Sustainable Biosphere Initiative: An Ecological Research Agenda*, 72 *ECOLOGY* 371, 394 (1991) ("We use the term to imply management practices that will not degrade the exploited systems or any adjacent systems."). Elinor Ostrom, who examined hundreds of case studies of common property systems, concluded that the most notable similarity of successful systems is "sheer perseverance," in the sense that they have lasted for a long time and thus "clearly meet the

disappeared during the medieval period.¹³⁴

Given the obvious usefulness of wetlands to the economy, one might expect the English people to have treated wetlands as a valued part of the geography.¹³⁵ But the appreciation of wetland values is primarily a twentieth century phenomenon.¹³⁶ Earlier English people typically thought fen and marsh areas were ugly and worthy only of improvement.¹³⁷ For example, in the Middle Ages many believed that the Somerset Levels were a "gloomy waste of waters, or still more hideous expanse of reeds and other aquatic plants, impassable by human foot, and involved in an atmosphere pregnant with pestilence and death."¹³⁸ As late as the nineteenth century, when Charles Dickens wanted the dreariest of settings for *Bleak House*, he chose the Great Fens of Lincolnshire.¹³⁹

This hostility toward wetlands reflects the fact that, despite their many benefits, the wetlands were better known for imposing two very significant negative externalities upon people that lived near them: the disease then called "ague" or "marsh fever" (now known to be one of the less virulent forms of malaria),¹⁴⁰ and the frequent

criterion of sustainability." ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 89 (1990).

134. See PURSEGLOVE, *supra* note 58, at 32-33; Williams, *supra* note 54, at 86-90, 106-07, 119-21; WILLIAMSON & BELLAMY, *supra* note 110, at 72-90.

135. See J.M. NEESON, COMMONERS: COMMON RIGHT, ENCLOSURE AND SOCIAL CHANGE IN ENGLAND, 1700-1820, at 173 (1993).

136. For contemporary accounts of late-medieval attitudes, see generally H.C., A DISCOURSE CONCERNING THE DRAYNING OF FENNES (Walter J. Johnson, Inc. reprint 1976) (1629); DUGDALE, *supra* note 61. For modern English attitudes toward wetlands, see generally PURSEGLOVE, *supra* note 58; SECRETARY OF STATE FOR THE ENVIRONMENT ET AL., BIODIVERSITY: THE UK ACTION PLAN 37-38, 64-69 (London, HMSO 1994).

137. PURSEGLOVE, *supra* note 58, at 22-39.

138. R.A. WARNER, A HISTORY OF THE ABBEY OF GLASTON AND THE TOWN OF GLASTON-BURY 241 (1826). To another writer of the time, Romney Marsh "was nothing better than a low, wet, swampy morass, abounding in malaria, the ever-fruitful source of disease." HOLLOWAY, *supra* note 55, at 182. Rural folklore sometimes attributed ailments of horses or cattle to witches who rode the animals through the mires at night. See MARGARET BAKER, FOLKLORE AND CUSTOMS OF RURAL ENGLAND 38 (1974).

139. BARLEY, *supra* note 116, at v. See also DOROTHY L. SAYERS, THE NINE TAYLORS 4 (1934) ("They wrapped their coats about them and turned their faces to the wind and snow. To left of them, the drain ran straight as a rule could make it, black and sullen, with a steep bank shelving down to its slow, unforgiving waters.") For another view of *Bleak House* and the wetlands, see Blumm, *supra* note 1, at 177 (comparing the Florida Rock proceedings to those in *Bleak House*).

140. HOLLOWAY, *supra* note 55, at 182. The fen people themselves apparently "ma[d]e light of" their propensity toward ague. 1 DANIEL DEFOE, A TOUR THROUGH THE WHOLE ISLAND OF GREAT BRITAIN 80 (Everyman's Library rev. ed. 1962) (1724-26). The form of malaria parasite found in England was *Plasmodium vivax*, which does not cause the most virulent type of malaria but can survive in cooler climates than the other forms of the

flooding that endangered life and property.¹⁴¹ In the medieval period, people did not know that ague was spread by mosquitoes, but they did realize that the disease was prevalent in wetland areas, and it was commonly thought that the fogs, which were typical in these low-lying regions, were responsible for the disease.¹⁴² Reliable statistics on the actual incidence of ague are not available, but the references to it in anecdotal accounts are sufficiently prevalent to suggest that it was a major public health problem.¹⁴³

People who lived near wetlands also suffered the risk that their homes would be flooded by rising rivers or ocean storms.¹⁴⁴ The association of the wetlands with flooding and disease was sufficient to taint the public perception of the people living near them, who became known as the fen people.¹⁴⁵

B. *The Fen People*

Since ancient times, people have lived in the fens and marshes, originally on small islands surrounded by the wetlands.¹⁴⁶ Because of the peculiar lifestyle and attitude of the fen people, the upland majority viewed them with hardly less disdain than their watery environment itself, as evidenced by the following description of Sir Lancelot's encounter with the fen people in Malory's *Morte D'Arthur*.

Now Lancelot . . . crossed a fenny land where the reeds grew as tall as his horse and open water dangerous with quicksand where

parasite. See Mary J. Dobson, *When Malaria was an English Disease*, 54 THE GEOGRAPHICAL MAGAZINE 94, 95 (1982).

141. BARLEY, *supra* note 116, at 118-19; DARBY, CHANGING FENLAND, *supra* note 62, at 20-22; CHARLES G. HARPER, THE CAMBRIDGE ELY AND KING'S LYNN ROAD: THE GREAT FENLAND HIGHWAY 118-19 (1902); MURRAY, *supra* note 55, at 31-32; WILLIAMS, DRAINING OF THE SOMERSET LEVELS, *supra* note 73, at 11. See HALLAM, *supra* note 112, at 134-35.

142. See GODWIN, FENLAND, *supra* note 93, at 157.

143. See Dobson, *supra* note 140, at 95-97. Other diseases also became prevalent as the number of people living near wetlands increased; for example, the accumulation of sewage in the slow-moving water contributed to epidemics of cholera. See PURSEGLOVE, *supra* note 58, at 27.

144. WILLIAMS, DRAINING OF THE SOMERSET LEVELS, *supra* note 73, at 9-11.

145. BARLEY, *supra* note 116, at 118-23; PURSEGLOVE, *supra* note 58, at 27. At one time, the term "fen people" probably referred specifically to the residents of the Great Fens. The residents of other wetland areas were similarly characterized, although the specific terminology may have been different. For example, the inhabitants of Romney Marsh are said to have been called "Mercsware, or Marsh-Men," and William the Conqueror's troops complained that they were treated "rudely and barbarously . . ." by them. HOLLO-WAY, *supra* note 55, at 53-54, 63.

146. BARLEY, *supra* note 116, at 28-41; DARBY, CHANGING FENLAND, *supra* note 62, at 1-10.

great colonies of ducks and wild swans lived in peace and rose into the air in thundering dances at his approach. Far out in the water he saw round reed huts with conical roofs, each on its little island, each with its dugout boat. When Lancelot hailed the huts, short dark men with slings rained baked clay bullets on him with such force that his shield was dented and his horse lamed. It was a wild, unfriendly land where men were lessoned to ferocity by fear of men. The unsubstantial . . . fairy lights of the fen, were less terrible than strangers of their own kind, for in this impoverished land the only property men knew was other men. The chill of suspicious rage cut like an icy wind, so that the knight turned inland to higher ground.¹⁴⁷

Although their reputation for rough independence was not entirely undeserved,¹⁴⁸ the fen people had adapted to their lowly niche in English society.¹⁴⁹ Theirs was a violent¹⁵⁰ but fruitful culture. One scholar has argued that "[t]he Fenland communities formed the most successful culture in medieval rural England."¹⁵¹

Contemporary assessments of the fen people must be evaluated with a recognition that most English people probably traveled very little and would have been quite unfamiliar with life in the fens. Outsiders sometimes attributed the unusual behavior of the fen people¹⁵² to their use of hemp for purposes other than rope-making,¹⁵³ their cultivation of the opium poppy, which grew well in

147. The quotation is from John Steinbeck's version of the Winchester Malory. JOHN STEINBECK, *THE ACTS OF KING ARTHUR AND HIS NOBLE KNIGHTS FROM THE WINCHESTER MANUSCRIPTS OF THOMAS MALORY AND OTHER SOURCES* 264-65 (Chase Horton ed., 1976).

148. See PURSEGLOVE, *supra* note 58, at 34-35. Among the pioneers in the fens was Saint Guthlac, an eccentric eighth century Saxon mystic who founded Crowland Abbey, only to be drowned by the demonic local inhabitants in the muddy waters of the black fens. *Id.* at 25.

149. See NEESON, *supra* note 135, at 4-5; G.M. TREVELYAN, *ENGLISH SOCIAL HISTORY: A SURVEY OF SIX CENTURIES CHAUCER TO QUEEN VICTORIA* 148-49 (1942).

150. The anecdotal accounts of violence among the fen people do not tell us the extent to which this may have been a measured violence used within the group as an informal means of social control. Cf. ROBERT C. ELLICKSON, *ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES* 212-13 (1991) (discussing violence and informal social control).

151. HALLAM, *supra* note 112, at 222. See also RAVENSDALE, *supra* note 95, at 151; BOLTON, *supra* note 61, at 28-31.

152. William Dugdale, a seventeenth century reporter of court decisions who strongly favored the drainage of the wetlands for agriculture, wrote that the fens "over much harbour to a rude, almost barbarous, sort of lazy and beggerly people." DUGDALE, *supra* note 61, at 171.

153. Cf. PURSEGLOVE, *supra* note 58, at 38 ("[T]he workers in the hemp fields were known to become exceedingly drowsy"). *Contra* GODWIN, *FENLAND*, *supra* note 93, at 156 ("[T]here seems no evidence that the plant was grown in the Fens except for fibre."). It was also suggested that inbreeding had deleterious effects. PURSEGLOVE, *supra* note 58, at 38.

that environment,¹⁵⁴ or simply their susceptibility to marsh fever.¹⁵⁵ More likely, however, such sentiments simply reflected the inability of agrarian people to understand hunters and gatherers.¹⁵⁶ "The Fenmen loved their watery wastes," remarked one commentator, "for they knew none other, and they were a highly specialized race of amphibious creatures, skilled in all the arts of the wildfowler and the fisherman, by which they lived. Farming was not within their ken."¹⁵⁷

Economic historians are discovering that the outcast status of the fen people did not hamper their ability to accumulate wealth. In fact, such indicators of wealth as can be implied from ancient records suggest that the fen people were more successful in accumulating wealth than their counterparts in drier areas.¹⁵⁸ Some historians have suggested that the complex nature of the fen economy, with its varied pattern of interrelated resources, was responsible for its long-lasting success.¹⁵⁹

Wealthy or not, independence and rebelliousness have characterized the fen people throughout history.¹⁶⁰ The attempts of large landowners to drain the wetlands for agrarian purposes sparked rebellious uprisings by the fen people in the sixteenth and seventeenth centuries.¹⁶¹ Many fen people became converts to nonconformist churches, particularly the Baptists,¹⁶² and a significant number of fen people emigrated to the American colonies in

154. GODWIN, FENLAND, *supra* note 93, at 156-58.

155. *Cf.* Dobson, *supra* note 140, at 96-97 (discussing attitudes toward marshes and marshmen, and the prevalence of malaria).

156. *Cf.* Paul Shepard, *A Post-Historic Primitivism*, in *THE WILDERNESS CONDITION* 40, 52-53 (Max Oelschlaeger ed., 1992) (discussing ethnocentrism and attitudes towards hunter-gatherers). "Fen-men were depicted impressionistically as a race apart, fiercely independent, ague-ridden, web-footed, who lived precariously on birds and fish." RACKHAM, *supra* note 62, at 374. Compare DANIEL B. BOTKIN, *OUR NATURAL HISTORY: THE LESSONS OF LEWIS AND CLARK* 169-70 (1995).

157. BARLEY, *supra* note 116, at 126. Unlike the fen people who enjoyed a constant but seasonally varying abundance, medieval farmers outside the wetlands may have been reluctant to experiment with crops other than grain and fodder because of periodic shortages of food. Taylor, *supra* note 118, at 347-48.

158. *See, e.g.*, BOLTON, *supra* note 61, at 116; HANAWALT, *supra* note 111, at 70, 112; RAVENSDALE, *supra* note 95, at 151-56, 162-63.

159. *See, e.g.*, BOLTON, *supra* note 61, at 31; HALLAM, *supra* note 112, at 170-71; RACKHAM, *supra* note 62, at 387; RAVENSDALE, *supra* note 95, at 151-52.

160. HALLAM, *supra* note 112, at 221.

161. William Dugdale referred to the uprisings as "barbarous outrages and high insolences . . ." DUGDALE, *supra* note 61, at 148. *See generally* STEPHEN K. LAND, *KETT'S REBELLION: THE NORFOLK RISING OF 1549* (1977); KEITH LINDLEY, *FENLAND RIOTS AND THE ENGLISH REVOLUTION* (1982).

162. John Smyth, the founder of the Baptists, and Thomas Grantham, another early

the seventeenth century to escape religious intolerance.¹⁶³ But resistance to centralized control did not imply a *laissez faire* philosophy. The fen people combined a libertarian resistance to governmental authority with a degree of self-regulation so detailed that it rivals the modern administrative state in its complexity. To understand the larger regulatory system that governed the medieval wetlands, it is instructive to examine the particular legal rules of the period respecting ownership, use and development.

V. OWNERSHIP, USE AND DEVELOPMENT OF MEDIEVAL WETLANDS

For analytical purposes, it is useful to separate the land laws governing medieval wetlands into three categories: laws governing (1) ownership, (2) use, and (3) development. These are modern categories that would not have been used by the people of the Middle Ages,¹⁶⁴ but they make it easier to compare the medieval laws with those of today.

A. Patterns of Wetland Ownership

Land owned "in common" was a feature of the agricultural landscape throughout England in the Middle Ages,¹⁶⁵ though the rights associated with common land varied according to regional differences.¹⁶⁶ In a typical upland farming area, the tenant farmers lived in a village and controlled the rights to derive economic benefit from the surrounding area,¹⁶⁷ subject to their obligations to

Baptist leader, successfully established a number of churches in the Great Fens. Cf. HARPER, *supra* note 141, at 179, 188.

163. HARPER, *supra* note 141, at 137-39. However, the salt grasses of New England were less favorable for grazing than the sweeter grasses of the English marshes, and the settlers found it more difficult to use the New England wetlands. See WILLIAM CRONON, CHANGES IN THE LAND: INDIANS, COLONISTS AND THE ECOLOGY OF NEW ENGLAND 31, 115 (1983).

164. I am using "ownership" to refer broadly to the rights to occupy land and exclude others from it that were available to tenant farmers under the feudal system; this is not identical to modern conceptions of ownership. The "use" of land means its use for traditional purposes, usually agriculture. Land "development" refers to changes in the use of land from traditional uses to some other use. The idea of urban development would probably have been incomprehensible to the typical rural resident of the early Middle Ages—the age of urbanization was far in the future.

165. See generally HOSKINS & STAMP, *supra* note 70.

166. RAVENSDALE, *supra* note 95, at 108-09. See generally CARL J. DAHLMAN, THE OPEN FIELD SYSTEM AND BEYOND: A PROPERTY RIGHTS ANALYSIS OF AN ECONOMIC INSTITUTION (1980) (postulating that alterations in the structure of the common land system were caused by the economic differences among regions).

167. H.E. HALLAM, RURAL ENGLAND, 1066-1348, at 17-20 (1981).

provide payments and services to the lord of the manor.¹⁶⁸ The agricultural land that surrounded the village would typically be divided between (1) land on which individual residents had the right to grow crops, and (2) common land on which each resident had a right to graze cattle.¹⁶⁹ The role of the fen people in the feudal system of land tenure differed from that of the other tenant farmers¹⁷⁰ because such a large share of their livelihood derived from land owned in common.¹⁷¹

How did these common rights originate? For centuries the origins of English land rights have been shrouded in controversy,¹⁷² but historians now generally agree that the idea of common rights in land preceded the Norman conquest.¹⁷³ Each Anglo-Saxon

168. A.W.B. SIMPSON, *A HISTORY OF THE LAND LAW* 15-21 (2d ed. 1986).

169. The historical origins of this "open-field" system are "shrouded in the mists of time," but may have been brought to England by the Anglo-Saxons. WARREN O. AULT, *OPEN-FIELD FARMING IN MEDIEVAL ENGLAND* 16 (1972).

170. The term "tenant farmer" describes the people who actually did the farm work. This is a modern term, but I am deliberately glossing over the complex array of status distinctions that imposed on the farmers various degrees of dependence upon the lord of the manor ranging from virtual slavery (which was common only in the early part of the period) to a more businesslike arrangement resembling a modern farm lease, which became more common as the end of the medieval period neared. See, e.g., M.M. Postan, *Glastonbury Estates in the Twelfth Century*, 5 *ECON. HIST. REV.* 358, 364-65 (1953). Except where otherwise specified, the details of these tenurial arrangements are irrelevant to the argument of this article.

171. HALLAM, *supra* note 112, at 171.

172. The issue provoked strong emotion during the English civil war. The royalists tended to support a version of history in which all rights originated with William the Conqueror, while the people who supported the commonwealth argued that land rights were based on customary practices that dated back at least to the Anglo-Saxon period if not earlier. For a long time, subsequent historians had a hard time separating the facts from the seventeenth century spin-doctoring. See J. G.A. Pocock, *THE ANCIENT CONSTITUTION AND THE FEUDAL LAW* 15-19 (Rev. ed. 1967).

173. D.R. DENMAN, *ORIGINS OF OWNERSHIP* 37 (1958); HOSKINS & STAMP, *supra* note 70, at 16-27; Susan Jane Buck Cox, *No Tragedy on the Commons*, 7 *ENVTL. ETHICS* 49, 53 (1985) (discussing research on the right of common developing with the "nucleated" village of the ninth, tenth and eleventh centuries); Julian C. Juergensmeyer & James B. Wadley, *The Common Lands Concept: A "Commons" Solution to a Common Environmental Problem*, 14 *NAT. RES. J.* 361, 363 (1974). Blackstone had believed that the rights of common were brought from the continent by the Normans, 2 WILLIAM BLACKSTONE, *COMMENTARIES ON THE LAWS OF ENGLAND* *32-35, 48-50 (1765), but by the nineteenth century historians knew that their origin went much farther back in English history. THOMAS EDWARD SCRUTTON, *COMMONS AND COMMON FIELDS* 5-9 (London, Cambridge University Press 1887). See SIMPSON, *supra* note 168, at 107-08. Despite this increasing awareness of the Anglo-Saxon heritage, many lawyers were slow to discard Blackstone's conviction that it was the Normans who invented all of the important legal institutions. See, e.g., H. Cabot Lodge, *The Anglo Saxon Land Law*, in *ESSAYS IN ANGLO SAXON LAW* 55 (1876) ("The extreme clumsiness of the Anglo Saxon mind is apparent to anyone who has closely studied their early legal history . . .").

thane or baron had jurisdiction over a certain territory known as a "mark," which was the precursor of the feudal manor. Though concepts of ownership differed between mark and manor, the practice of land use was similar.¹⁷⁴ The mark consisted of four main categories of land: village, arable fields, meadowland (i.e., hay producing fields), and "waste."¹⁷⁵ Notions of private ownership were strongest in the village, where families dwelt in their own homes, and weakened respectively for arable fields, meadow and waste.¹⁷⁶

The Anglo-Saxons categorized all of the land of the mark as "folcland," or land owned by the community and administered by community leaders, later by the Anglo-Saxon Kings,¹⁷⁷ and treated much of the folcland as common fields.¹⁷⁸ A grant of folcland could be made to an individual to hold privately; the grant was then recorded and that land became "bocland."¹⁷⁹

Among the chief recipients of grants of bocland were religious bodies,¹⁸⁰ who became major landowners in wetland areas.¹⁸¹ The

174. HENRY S. MAINE, *VILLAGE COMMUNITIES IN THE EAST AND WEST* 143 (London, Spottiswoode & Co., 2d. ed. 1872). Seventh century documents suggest that the system of common fields existed as far back as that period. HOSKINS & STAMP, *supra* note 70, at 9. "There can be little doubt that common land was originally common property. Today all common land is private property, subject to certain rights over its surface. . . . This profound change in the status of common land is evident as far back as the ninth century, where the records exist, and was probably the result of the imposition of manorial organization upon the earlier Old English community." *Id.* at 34.

175. MAINE, *supra* note 174, at 97-99. The term "waste" should not be given the derogatory connotation we associate with it today. It simply referred to all of the forests, wetlands, pastures and other areas that were not used to produce crops.

176. K.E. DIGBY, *THE LAW OF PROPERTY reprinted in 12 CLASSICS IN LEGAL HISTORY* 11-15 (Roy M. Mersky & J. Myron Jacobstein eds., 1972) (1875).

177. Warner, *Country Life*, *supra* note 132, at 320-22.

178. DENMAN, *supra* note 173, at 58-60. Denman suggests that some evidence even exists for believing that the use of communal land ownership goes back to the Roman occupation of England. *Id.* at 37.

179. DENMAN, *supra* note 173, at 66-68. Conveyancing practices in Anglo-Saxon times are not fully understood. See SIMPSON, *supra* note 168, at 119. The grant may have been accompanied by duties to the community or King, but normally such a grant created "alodial land," or land held without duty to the grantor, although all Anglo-Saxon landowners owed a duty to render military service and repair bridges and fortresses. DIGBY, *supra* note 176, at 4-5.

180. For example, the Carmelite Friars established a monastery in Romney Marsh in the year 1241. HOLLOWAY, *supra* note 55, at 67-68. But shortly thereafter the Crown began attempting to limit the extent to which land could be conveyed to religious houses. PAUL BRAND, *THE MAKING OF THE COMMON LAW* 233-44 (1992).

181. DARBY, *CHANGING FENLAND*, *supra* note 62, at 6-7, 43-44; DERVILLE, *supra* note 67, at 31-32. The religious houses undertook many of the earliest efforts at land reclamation and reaped much wealth from the wetlands; they also provided some stability in the con-

seclusion of wetland areas particularly suited the needs of monasteries for quiet contemplation.¹⁸² The fact that many of these religious bodies derived a large part of their income from wetland rentals¹⁸³ created an incentive for them to keep large tracts of wetland under their unified control rather than breaking them up into small parcels.¹⁸⁴

The Norman invasion and subsequent dominance of the country reinforced this pattern of centralized control of large areas of wetlands. William the Conqueror rewarded loyal barons and abbots with feudal title to land that had been held allodially under the Saxon system. "The doctrine that the lord of the manor was the owner of the wastes and commons was firmly entrenched by the time of the great lawyer Henry de Bracton (fl. 1245-68) and most lowland commons were by that date firmly appropriated to some lordship or other."¹⁸⁵

The Normans continued to allow the tenants and villeins of the manor to enjoy a right of commons in the use of the lord's waste for as much pasture, turf cutting, etc. as they required to meet the needs of themselves and their livestock,¹⁸⁶ and as the Normans developed their version of the feudal system, their laws gradually evolved to govern the use of common land.¹⁸⁷ Under Norman law, rights of common in the waste could be held as part of an estate in land.¹⁸⁸

trol over the banks and drains that controlled the floodwaters. PURSEGLOVE, *supra* note 58, at 41-44.

182. DUGDALE, *supra* note 61, at 180-83. The religious orders were also attracted by the piscatorial plenitude of the wetlands, since their members forsook the eating of meat. *Id.* at 180.

183. BOLTON, *supra* note 61, at 86. "The medieval houses in the Levels, the Fens, and the Hull valley grew into some of the largest and wealthiest properties in England" WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 4; DARBY, *CHANGING FENLAND*, *supra* note 62, at 6-7 (listing the some of the monasteries in the Fenlands); JUNE A. SHEPPARD, *THE DRAINING OF THE HULL VALLEY* 3-4 (1958) (discussing how monastic activities such as building channels to facilitate communication and bring wetland products to markets produced changes in the medieval wetlands).

184. HILLS, *supra* note 85, at 8.

185. HOSKINS & STAMP, *supra* note 70, at 35.

186. FREDERIC WILLIAM MAITLAND, *DOMESDAY BOOK AND BEYOND* 142-44 (2d ed. 1907).

187. SIMPSON, *supra* note 168, at 103-18; Lynda L. Butler, *The Commons Concept: An Historical Concept with Modern Relevance*, 23 WM. & MARY L. REV. 835, 854-55 (1982); Carol M. Rose, *The Comedy of the Commons: Custom, Commerce and Inherently Public Property*, 53 U. CHI. L. REV. 711, 740-41 (1986); SCRUTTON, *supra* note 173, at 39.

188. THOMAS H. CARSON, *PRESCRIPTION AND CUSTOM* 93-115 (1907); SIMPSON, *supra* note 168, at 107-08.

The basic pattern of land ownership had many complex variations, reflecting not only regional differences,¹⁸⁹ but also variations in temporal ownership in which some land might be subject to individual rights during the crop growing season and to common rights after the crops were harvested.¹⁹⁰ For example, upland hay-producing meadows were often found near streams and subject to flooding, limiting their use during flood season; while waste pasture was thought of as available year-round,¹⁹¹ and was shared by the community in both theory and practice.¹⁹²

The medieval person established the right to use common land by asserting (1) rights of "common appendant," (2) rights of "common appurtenant," or (3) the doctrine of custom. The tenant of a manor could show the right to common pasture by showing that he and his predecessors held a freehold estate originating by enfeoffment occurring before 1290 (when the Statute *Quia Emptores* banned further subinfeudation).¹⁹³ These rights of "common appendant" in the lord's waste attached by law to freehold tenements.¹⁹⁴

A second form of holding a right of common, attached to an estate in land, was "common appurtenant."¹⁹⁵ This form of commons was available to persons who were not tenants of a manor, and had to be asserted by anyone claiming a profit—the right to take some resource from the land of another.¹⁹⁶ Common appurtenant could originate by grant, but most often was asserted by prescription: the commoner asserted he and his predecessors had used this commons for a period of time such that the "memory of man runneth not to the contrary."¹⁹⁷ Early interpretation established that the time to which the memory of man runneth was

189. See generally HALLAM, *supra* note 167 (describing in detail regional differences in land ownership and agriculture in early England).

190. DENMAN, *supra* note 173, at 130; Juergensmeyer & Wadley, *supra* note 173, at 364. For a case study of similar agricultural practices in Spain, see Fernandez, *supra* note 38, at 270-82.

191. Darby, *supra* note 114, at 165, 198.

192. MAITLAND, *supra* note 186, at 348-52; STORER, *supra* note 81, at 28; DENMAN, *supra* note 173, at 115-31. See Sax, *Historical Shackles*, *supra* note 14, at 189.

193. Andrea C. Loux, *The Persistence of the Ancient Regime: Custom, Utility, and the Common Law in the Nineteenth Century*, 79 CORNELL L. REV. 183, 189-90 (1993). See AMERICAN LAW INSTITUTE, *RESTATEMENT OF THE LAW OF PROPERTY THIRD (SERVITUDES)* 4-9 (Tentative Draft No. 3, 1993).

194. SCRUTTON, *supra* note 173, at 42-43.

195. Cox, *supra* note 173, at 54.

196. See NEESON, *supra* note 135, at 64-65.

197. Loux, *supra* note 193, at 187-88, 194.

1189; prescription had to show use of the right uninterrupted from that year.¹⁹⁸

The third way of proving rights to use common land was through the doctrine of custom.¹⁹⁹ The English courts recognized rights of the people in a community to use land where they could show that such usage had been customary for a long period of time.²⁰⁰ The tests for proving a custom were quite similar to those for proving prescription,²⁰¹ but a right of custom ran to the "locality" (i.e., to the general public residing in a particular local area) while a right of prescription ran to particular individuals.²⁰² Given the lack of mobility of medieval people,²⁰³ the limitation of customary rights to people of the locality, rather than an individual, would make little practical difference in who utilized them.²⁰⁴

Rights of ownership to common lands, therefore, had a clearly defined legal status throughout the Middle Ages. Rights to most common land were available only to those people living in proximity to, or otherwise having a special relationship with, the common land.²⁰⁵

B. *Land Use in the Wetlands*

Although patterns of wetland ownership and the rules governing them evolved gradually from Saxon times through the seventeenth century, the actual use of English wetlands remained fairly stable throughout this period. The use of English wetlands

198. SIMPSON, *supra* note 168, at 109.

199. Albert Kiralfy, *Custom in Medieval English Law*, 9 J. OF LEGAL HIST. 26, 33-34 (1988); Loux, *supra* note 193, at 188-95.

200. CARSON, *supra* note 188, at 93-96; 2 BLACKSTONE, *supra* note 173, at *75-79.

201. See CARSON, *supra* note 188, at 113, 120-29.

202. In *Mercer v. Denne*, 2 Ch. 534, 556 (1904), the court said that "the difference between custom and prescription [is] only that the right to the former must be claimed by or in respect of a locality, and to the latter by a person or corporation, but that the rules affecting the subject-matter were in each case the same. . . ." CARSON, *supra* note 188, at 112-14; SIMPSON, *supra* note 168, at 110. Dugdale describes common rights in the wetlands as rights of particular towns. DUGDALE, *supra* note 61, at 365-67.

203. Mobility was minimal prior to the plague years, but for a while after the terrible plague of 1381 there was a period of greater movement as survivors moved to take over lands vacated by tenants who had died of the plague. BOLTON, *supra* note 61, at 236.

204. An expanded concept of locality was apparently applied to places that were assets of a regional character, such as roads and rivers. DUGDALE, *supra* note 61, at 301-06. See Rose, *supra* note 187, at 740-41.

205. Cox, *supra* note 173, at 55. These limitations on the number of users distinguish the common lands from the theoretical free goods often postulated in discussions of resource economics. See *infra* text accompanying notes 378-382.

during this period was greatly influenced by the nature of the common rights and communally derived codes.

1. *The use of common land.*

Villages in the great fens region often shared common rights of pasture, fishing, and other economic activities in the wetlands.²⁰⁶ Wetland villages typically occupied a belt of high ground between two types of wetlands, saltwater wetlands along the coast and freshwater wetlands inland.²⁰⁷ Due to the different types of wetlands, each villager had two types of land use rights. First, each villager had exclusive rights to use some land adjoining salt water marshes.²⁰⁸ Dikes typically protected this land,²⁰⁹ which villagers used for the planting of crops or, in some cases, for the evaporation of salt from sea water.²¹⁰ Second, villagers had rights in common to large tracts of peatland.²¹¹ They generally used this peatland for pasture, fishing, fowling and gathering of reeds.²¹²

The sharing of common rights to use wetlands allowed residents of wetland villages to rely on a wide range of economic activities to sustain themselves through seasonal fluctuations and long term cycles of drought and flood.²¹³ This was an especially valuable asset for tenant farmers, because they derived most of their sustenance from the commonly used wetlands.²¹⁴ Residents reserved wetlands that were under water most of the time for gathering reeds, cutting peat, fishing, or fowling.²¹⁵ Wetlands which were

206. DARBY, *CHANGING FENLAND*, *supra* note 62, at 10-12, 26-28; see DUGDALE, *supra* note 61, at 365.

207. HOSKINS, *ENGLISH LANDSCAPE*, *supra* note 65, at 96.

208. From the earliest times, those who settled the wetlands built and maintained banks and drains to protect small tracts of land from sea and river floods DARBY, *CHANGING FENLAND*, *supra* note 62, at 13-15; HALLAM, *supra* note 112, at 218-22.

209. DARBY, *CHANGING FENLAND*, *supra* note 62, at 13-15.

210. See HALLAM, *supra* note 112, at 157. The medieval system of "scattered fields" assigned fixed property rights to individual families in scattered parcels of arable land surrounding a village in many dry and wet areas throughout England. Warner, *Country Life*, *supra* note 132, at 333-35. By not allowing a family to assemble a large enough pasture to achieve economies of scale greater than was possible in the commons, the scattered fields system may have prevented any one family from threatening the system of common pasture. DAHLMAN, *supra* note 166, at 128-29.

211. DARBY, *CHANGING FENLAND*, *supra* note 62, at 11-13.

212. DARBY, *CHANGING FENLAND*, *supra* note 62, at 22-25.

213. *E.g.*, Taylor, *supra* note 118, at 348-349.

214. DARBY, *CHANGING FENLAND*, *supra* note 62, at 11, 26-27.

215. Throughout the year individuals owned the right to grow crops on their land, but, in the winter, all residents held the right to graze cattle on such land in common. HALLAM, *supra* note 112, at 168.

usually wet only in the winter floods, on the other hand, were used for crops in the summer and for grazing, after the crops were harvested.²¹⁶ Other wetlands, which lay in between these extremes, were used for grazing in the summer during dry years.²¹⁷

Common rights to use wetlands were not without restriction, however. These common rights only allowed use of wetlands for those economic activities which could be practiced perpetually without depleting the resource—activities which we would now call “sustainable.”²¹⁸ Examples of such activities included grazing, gathering, fowling and fishing.²¹⁹ In the Somerset Levels, for example, “[a]lthough rights of gathering firewood . . . often went with rights of pasture, there seems to have been no similar right to take wood for constructional purposes, for this meant the total destruction of the trees.”²²⁰

2. *Dispute resolution procedures.*

The complexity of land use arrangements in the fens region inevitably led to disputes and the accompanying need for dispute resolution procedures.²²¹ Prior to the institution of legal reforms by Henry II in the twelfth century, tenants took disagreements over land rights into the courts of their manor’s lord.²²² The manorial courts clearly helped resolve disputes among tenants.²²³ What is less clear is how fairly such courts resolved disputes between a tenant and his lord,²²⁴ for the tenant’s position was certainly weak.²²⁵

Beginning in the twelfth century, some tenant farmers began to assert these rights of common against their manorial lords in the

216. HALLAM, *supra* note 112, at 168

217. DARBY, CHANGING FENLAND, *supra* note 62, at 10-11, 26-27. *See also* WILLIAMS, DRAINING OF THE SOMERSET LEVELS, *supra* note 73, at 32 (discussing the seasonal nature of grazing dictated by flooding).

218. *See* HOSKINS & STAMP, *supra* note 70, at 47-49.

219. HOSKINS & STAMP, *supra* note 70, at 47-49.

220. WILLIAMS, DRAINING OF THE SOMERSET LEVELS, *supra* note 73, at 31.

221. DARBY, CHANGING FENLAND, *supra* note 62, at 28.

222. SIMPSON, *supra* note 168, at 25.

223. *Compare* BRAND, *supra* note 180, at 203-225 with S.F.C. MILSOM, THE LEGAL FRAMEWORK OF ENGLISH FEUDALISM 71-102 (1976). The history of this debate is described in CANTOR, *supra* note 11, at 58-78.

224. BRAND, *supra* note 180, at 203-25.

225. NEESON, *supra* note 135, at 78-79. Common rights to wetland use endured because custom had the force of law between the tenant farmers and the lord of the manor. Indeed, custom was the only claim tenant farmers could make against the lord of the manor. SIMPSON, *supra* note 168, at 110-11.

royal courts rather than in the manorial courts.²²⁶ Potential pitfalls awaited those asserting rights of common, especially the fen people.²²⁷ First, many important wetlands rights fell into the legal category known as "profits," which included the rights to take something from the land of another, such as rights to fish, cut peat, fowl, and gather thatch. The difficulty arose because the common law allowed a party to assert a right of profit only pursuant to a right of common appurtenant.²²⁸ Although prescription was the most usual way to acquire a right of common appurtenant, fen residents often relied on the doctrine of custom because they could not assert a prescriptive right, as a group, to profits of a wetland, no matter how long they had enjoyed them.²²⁹ Residents were typically unable to acquire such prescriptive rights for two reasons: (1) prescription was based on the fiction that there was once an actual grant from the lord that had become lost in antiquity,²³⁰ and (2) grants could be made only to individuals or corporate bodies, not to groups such as the inhabitants of an unincorporated village.²³¹

Disputes about the amount of water a given wetland should contain often resulted in long and contentious litigation among villages sharing wetland use rights²³² and between tenant farmers and monasteries controlling various wetland areas.²³³ Appropriate water levels in wetlands were necessary to the multiple activities which sustained wetland economies; too much or too little flooding could wreak havoc with the complex ecology of wetlands.²³⁴ Residents often accused the responsible party of failing to fulfill its

226. Kiralfy, *supra* note 199, at 29-30. The law still required, however, that tenants of low stature, such as villeins and copyholders, to assert rights of common against their lord in the lord's own manorial courts. Loux, *supra* note 193, at 189-90. While these tenants could assert rights in common in the royal courts against others, they could do so only in the name of their lord. 10 WILLIAM S. HOLDSWORTH, *A HISTORY OF ENGLISH LAW* 321 (1932).

227. Loux, *supra* note 193, at 184.

228. SIMPSON, *supra* note 168, at 113.

229. CARSON, *supra* note 188, at 15-16, 101-02, 114-15.

230. Most prescriptive rights never actually involved a lost grant, but simply represented uses that predated the Norman legal system of 1189. SIMPSON, *supra* note 168, at 107-08.

231. See *supra* text accompanying notes 193-202.

232. DARBY, *CHANGING FENLAND*, *supra* note 62, at 28.

233. DARBY, *CHANGING FENLAND*, *supra* note 62, at 28; HARPER, *supra* note 141, at 132; WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 34-38.

234. See, e.g., DUGDALE, *supra* note 61, at 106-09. For an interesting modern example see *In re Thousand Acre Marsh Tax Ditch*, 1994 Del. Super. LEXIS 604 (Nov. 23, 1994).

obligation to protect wetlands from flooding.²³⁵ In other cases, those who used wetland waters claimed that the activities of others had dried up their supply.²³⁶

The replacement of resident users by absentee or uncertain owners apparently complicated the problem of wetland management.²³⁷ The monasteries, which occupied and used vast tracts of English wetland in their search for a secluded lifestyle,²³⁸ were stripped of their land by Henry VIII as part of the religious upheaval of the time.²³⁹ Title to these lands often passed to large absentee landowners who supported the Crown,²⁴⁰ and in many cases the state of the title was uncertain.²⁴¹ This condition caused further uncertainty over which party was responsible for the maintenance of the wetlands or liable for damage from lack of upkeep. Lack of certainty about underlying titles led to more frequent disputes about wetland responsibilities²⁴² and a sense of uncertainty about how those disputes should be resolved.²⁴³

3. *Codes of customary law.*

Because of this lack of manorial supervision by landlords over tenant activities, the fen people developed their own rules for the use and protection of wetlands to resolve local disputes. This resulted in part because the landlords of the early Middle Ages ignored the tenants usually as long as the tenants stood ready to fight

235. See, e.g., DUGDALE, *supra* note 61, at 42-43.

236. See *infra* text accompanying notes 315-21.

237. DERVILLE, *supra* note 67, at 32-34; DUGDALE, *supra* note 61, at 375. See DARBY, CHANGING FENLAND, *supra* note 62, at 43-44.

238. See *supra* text accompanying notes 180-84.

239. DARBY, CHANGING FENLAND, *supra* note 62, at 43; John Guy, *The Tudor Age (1485-1603)*, in *THE OXFORD HISTORY OF BRITAIN* 257, 282-85 (Kenneth O. Morgan ed., 1988).

240. Guy, *supra* note 239, at 285-86.

241. DARBY, CHANGING FENLAND, *supra* note 62, at 44. For example, during the Middle Ages, Romney Marsh was effectively controlled by six religious institutions, but by the beginning of the seventeenth century, the Crown held seven manors, private landowners held fifteen manors, and the church held only one. DERVILLE, *supra* note 67, at 31-32.

242. Medieval wetland users relied heavily on a network of dikes and canals, or "sewers," as they were called to create viable boundaries between wetland and upland, and to facilitate travel through wetland areas. DARBY, CHANGING FENLAND, *supra* note 62, at 31-36. Customary law required landowners benefiting from these structures to share their maintenance and repair costs. DARBY, CHANGING FENLAND, *supra* note 62, at 36-37. Initially, common law courts enforced these obligations, although eventually the Crown appointed special "Courts of Sewers" for this purpose. See *infra* text accompanying notes 347-52. See also, ROBERT CALLIS, *READING UPON THE STATUTE OF SEWERS* *80 (London, Joseph Butterworth & Son, William John Broderip ed., 1824) (1622).

243. DARBY, CHANGING FENLAND, *supra* note 62, at 45-46.

for the lord and paid the feudal incidents and rents which provided the lords' primary income.²⁴⁴ Thus, disputes such as those described in the previous section were often of more concern to tenant farmers than to landlords. In addition, because the fen people conducted many of their economic activities in areas beyond the normal range of the lord's observation, the regulation of agrarian activities was effectively in the hands of the fen people themselves.²⁴⁵

The fen people developed complex systems of rules that governed economic activities in the wetlands, stipulating who could exploit the wetland, as well as when and to what extent they could exploit the land.²⁴⁶ Although these collections of rules were called "codes," they were not adopted by a legislative body, but were applied by common law courts through the doctrine of custom.²⁴⁷ The common law courts validated these wetland codes because they codified local customs exercised continuously since before 1189,²⁴⁸ and because they were sufficiently consistent with other customs, certain and compulsory, to justify their enforcement.²⁴⁹ Local customs meeting these tests were enforceable in the courts, and the codes served merely to memorialize such customs.²⁵⁰

244. MAY MCKISSACK, *THE FOURTEENTH CENTURY, 1307-1399*, at 341 (1959) ("By and large, the great landlords had delegated their responsibilities as farmers to their tenants; henceforward, their main interest in their estates would be financial and administrative . . ."). See also PAUL VINOGRADOFF, *VILLEINAGE IN ENGLAND 172-75* (1976) (explaining the role of custom in manorial management); CHRISTOPHER HILL, *THE CENTURY OF REVOLUTION, 1603-1714*, at 12 (rev. ed. 1980) (discussing estate management in the seventeenth century generally).

245. HALLAM, *supra* note 112, at 207.

246. DARBY, *CHANGING FENLAND*, *supra* note 62, at 24-29; PURSEGLOVE, *supra* note 58, at 31.

247. These rules were sometimes set out in documents called "customals" and were treated as statements of existing common law rather than legislation. Kiralfy, *supra* note 199, at 26-27, 36.

248. The Code of Romney Marsh was said to embody such preexisting customs. HOLLOWAY, *supra* note 55, at 73.

249. 1 WILLIAM BLACKSTONE, *COMMENTARIES* *69-72 (1765); Babcock, *supra* note 7, at 30-35, 49-54; LOUX, *supra* note 193, at 192-95; ARTHUR R. HOGUE, *ORIGINS OF THE COMMON LAW* 184-88 (1966). Fen codes originating in later times often had more formal legislative adoption; a code of fen laws was officially enacted by parliament for the fens of Lincolnshire in 1573 and remained in force into the 19th century. DARBY, *CHANGING FENLAND*, *supra* note 62, at 44.

250. POCOCK, *supra* note 172, at 16; Kiralfy, *supra* note 199, at 26, 28-34. See Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1390-91 (1993). The enforcement of fen codes was primarily the job of the "fen-reeve," an office that dates back at least to the year 1100. HALLAM, *supra* note 112, at 167. However, both the manorial and the royal courts also enforced the fen codes. Kiralfy, *supra* note 199, at 33-34. "[L]ong and wearisome lawsuits" often resulted from enforcement of the complex fen codes; this litigation was

Despite the reputation of the fen people for being wild and lawless, their codes regulated a wide array of wetlands uses and did so in minute detail. Indeed, these fen codes regulated every aspect of wetland use, from the grazing of cattle, to the cutting of reeds and rushes for thatch,²⁵¹ to fishing rights,²⁵² and to the harvesting of peat.²⁵³ Although detailed codes of local rules governed the use of agricultural land all over medieval England,²⁵⁴ the wetland codes were particularly detailed because much of the wetlands were used as commons. As commons, the wetlands had a wide variety of uses, necessitating clear provisions to promote cooperative and flexible management by the users. One way this was accomplished was through the assigning of "stints," a practice common not only in the wetlands but in all agricultural land in England. By assigning each person a "stint," specifying the number of animals each person could graze,²⁵⁵ one fen code controlled the number of cattle allowed to graze on common land. The grazer was required to brand his livestock to enable enforcement of the number limit.²⁵⁶ The codes also imposed fines for violations of these

especially common when tracts of wetland served as common grazing pasture for a number of villages, increasing the potential for conflict. DARBY, *CHANGING FENLAND*, *supra* note 62, at 28.

251. Cutting was limited to certain times of year in order to avoid impact on the fish harvest. AULT, *supra* note 169, at 120; DARBY, *CHANGING FENLAND*, *supra* note 62, at 24. "Sometimes, the sale of thatching materials outside a manor was forbidden; and on most manors, rushes and reeds were to be cut only at 'competent and reasonable times of the year' so that fisheries were not injured 'by the long standing of the said rushes and reeds.' " DARBY, *CHANGING FENLAND*, *supra* note 62, at 24 (citations omitted).

252. Theoretically, the right to fish in tidal waters was shared in common among "all the subjects of the realm." S. REGINALD HOBDAV, COULSON & FORBES ON THE LAW OF WATERS AND LAND DRAINAGE 413 (6th ed. 1952). However, an individual could obtain an exclusive right to fish in a given area by showing a grant from the sovereign pre-dating the Magna Carta, which forbade such grants, or by proving that the right was obtained by prescription. *Id.* at 422-32. See also Rose, *supra* note 187, at 747-49.

253. For example, the cutting of peat was regulated by limiting the number of people who could work at a given time. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 29.

254. See generally AULT, *supra* note 169 (examining village by-laws in medieval England).

255. NEESON, *supra* note 135, at 113-18; Cox, *supra* note 173, at 55-56. While stinting was a common practice in all agricultural land in England, it was more common in southern England where population densities were highest. As the population grew, the stints became more restrictive because pressure on the common land increased. HOSKINS & STAMP, *supra* note 70, at 9, 36. For example, by the middle of the thirteenth century the stint at one location in Leicestershire "had been rationed to two horses, four oxen and cows, thirty sheep, four pigs and five geese, with all their offspring, for every yardland of arable that a man held in the open fields." *Id.* at 37.

256. S.V. Ciriacy-Wantrup & Richard C. Bishop, "Common Property" as a Concept in Nat-

rules.²⁵⁷ Even more illustrative is the code for the fens of Lincolnshire which serves as an example of the detail in the fen codes. The Lincolnshire code contained seventy-two articles,²⁵⁸ and each code was read aloud in church once a year to keep people familiar with its terms.²⁵⁹ Indeed, the codes were part of the daily lives of the fen people and helped them to steward their wetland resources:

Within common-field England, forest, fen, heath and scarp commoners took more from the waste than commoners in the most arable of fielden villages. Though even the fenland courts restricted some commodities to particular cottages and landowners, fen harvests were evidently very valuable. Commoners named particular days for down gathering, for getting reeds, peat turfs and rushes for ropes. They took sedge too, and willows and osiers, and more.²⁶⁰

The fen codes provided guidelines for what we now call "adaptive management."²⁶¹ This adaptive management was required because the fen people needed to monitor the water levels continuously to maintain the wetlands in a productive state. The rules required each landholder to maintain certain portions of the

ural Resources Policy, 15 NAT. RES. J. 713, 719 (1975). Some wetland codes required branding not only of cattle but geese to ensure that the stint was not exceeded. NEESON, *supra* note 135, at 136.

257. NEESON, *supra* note 135, at 118. The right to restrict use of the commons by outsiders made it possible to avoid depletion of the resource. DAHLMAN, *supra* note 166, at 100-02. See Rose, *supra* note 187, at 746-47.

258. The Lincolnshire code's level of detail was extraordinary: Many of the rules related to the intercommoning of cattle, and dealt with the disputes that intercommoning inevitably provoked. There were regulations, also, to control the cutting of thatch and reed, to regulate fowling, to prevent interference with the common sewers or drains, and generally to order the many details connected with the day-to-day management of the fen. In a like manner, a code was devised to regulate the types of fishing-nets allowed, the manner of using them, and such-like problems. Further, the keeping of swans had become important during this period, and there was likewise developed an associated body of regulations.

DARBY, CHANGING FENLAND, *supra* note 62, at 45.

259. One commentator described the reading of the codes in church: The inhabitants were thus reminded that all fishers and swanherds were to be ready to help the fen-reeves to break ice when the dikes were frozen, that none were to catch any fowl in breeding time; that all such as proposed to lie in the fen all night fowling should be there by 8.0 p.m. and stay until 2.0 a.m. These and scores of other minute requirements maintained the safety and prosperity of the community.

HARPER, *supra* note 141, at 131.

260. NEESON, *supra* note 135, at 173.

261. For a definition and discussion of adaptive management, see Tarlock, *Nonequilibrium Paradigm*, *supra* note 43, at 1139-40.

embankments, drains, and channels which protected economically useful wetlands from inundation by the sea or freshwater floods.²⁶² Any one landholder's failure to meet his obligation imperiled the livelihood of many others. It was when tenants or landholders neglected this duty that disputes arose.²⁶³ When an unusual event such as a storm caused major damage, the code provided that all landholders had to share the cost of repair.²⁶⁴

To illustrate the importance of protection from flooding, one need only look to the Code of Romney Marsh,²⁶⁵ the earliest recorded fen code, which became the model for rules employed in other wetland areas.²⁶⁶ Henry III granted a charter to the community of Romney Marsh and appointed twenty-four men to apportion among the marsh landowners the cost of repairing the walls and water-gates which defended them against the sea.²⁶⁷ Sir Henry de Bathe, a "famous Justice Itinerant"²⁶⁸ in the reign of Henry III, is credited with drafting this detailed code.²⁶⁹ An idea of the level of detail contained in the code can be seen from the following extract:

And that it be not lawful henceforth to make dams or fourds or other Impediments in any Lands, Watergages & Ditches, or common Conduits in the aforesaid Marsh whereby the right course of Waters may in any wise be hindered. And if any do it and it be testified by the Bailiff and six of the Jurors, or by the Communalty of the Conduit where Damage shall be done, let him be presently amerced according to the quantity of the Offence, by the said Bailiff, and 24 Jurats and forthwith leyed for common benefit as is aforesaid. And nevertheless, if any other than the Communalty shall be hurt thereby, and the same be proved by Testimony of the Bailiff, and six of the Jury, let him recompence the damified. Also they ordained and established, that every assessment in the same Marsh should be proclaimed in certain publick places,

262. See generally DUGDALE, *supra* note 61; CALLIS, *supra* note 242.

263. DARBY, CHANGING FENLAND, *supra* note 62, at 36.

264. DUGDALE, *supra* note 61, at 71-73.

265. THE CHARTER OF ROMNEY MARSH: OR THE LAWS AND CUSTOMS OF ROMNEY MARSH: FRAMED AND CONTRIVED BY THE VENERABLE JUSTICE, HENRY DE BATHE (London, Samuel Keble 1686).

266. DERVILLE, *supra* note 67, at 16-17. "Lord Coke observes, that not only those parts of Kent, but all England, receive light and direction from those laws." HUMPHRY W. WOOLRYCH, A TREATISE ON THE LAW OF WATERS AND OF SEWERS 374-75 (London, 1830) (citation omitted).

267. Vollans, *supra* note 65, at 132-33. See HOLLOWAY, *supra* note 55, at 174; DUGDALE, *supra* note 61, at 16.

268. DUGDALE, *supra* note 61, at 18.

269. DUGDALE, *supra* note 61, at 18.

and that day of payment thereof be assigned and proclaimed, that none ignorance may excuse when and in what place it ought to be paid. Also, they have ordained and established, that every Acre for the Walls and Watergages, be bought for forty shillings. And that it be not lawful for anyone, to take away laborers being in common work, for his own private business, nor to keep them in any other place, until the same work be finished.²⁷⁰

To a modern American observer, the wetland codes seem analogous in many respects to both current local growth management ordinances and community associations.²⁷¹ Like local growth management ordinances, they could be adopted only with the "consent of the commonality" of people in the area, because the codes were deemed to represent the practices followed by these people from time immemorial.²⁷² Thus, "in the old proceedings under the Romney Marsh commissions, the laws are represented as taking effect at the request of the commonality of the Marsh."²⁷³ Hence, the terms of the wetland codes varied according to local needs.²⁷⁴ For this reason, although the code of Romney Marsh was often used as a model, the local people had the power to modify it.²⁷⁵ Similarly, modern growth management ordinances also are often stimulated by demands of the local residents to control the use of property in their immediate community or neighbor-

270. HENRY DE BATHE, *THE CHARTER OF ROMNEY MARSH*, *supra* note 265, at 72-76.

271. For an excellent analysis of the law of growth management see A. Dan Tarlock, *Western Water Law, Global Warming, and Growth Limitations*, 24 LOY. L.A. L. REV. 979 (1991) [hereinafter *Western Water Law*]. Robert Freilich has been one of the leading proponents of innovative growth control measures and his point of view is presented in DAVID L. CALLIS ET AL., *CASES AND MATERIALS ON LAND USE* 555-60 (2d ed. 1994). See also DONALD G. HAGMAN & JULIAN CONRAD JUERGENSMEYER, *URBAN PLANNING AND LAND DEVELOPMENT CONTROL LAW* § 9 (2d ed. 1986) (providing an overview of growth management and planning issues).

272. See *supra* text accompanying notes 193-94.

273. WOOLRYCH, *supra* note 266, at 374-75.

274. Although Henry de Bathe's code was often used as a model, it could be adapted to local conditions. "Lord Coke, in his report of Keighley's case, takes occasion to observe [that local communities] are not bound to follow the laws and customs of Romney Marsh; but that . . . they might follow them, for *consuetudo loci est observanda*." WOOLRYCH, *supra* note 266, at 374-75 (citing 10 Coke 140).

275. WOOLRYCH, *supra* note 266, at 374-75 (citing CALLIS, *supra* note 242, at 202. Woolrych goes on to:

say a word in explanation of the term "according to your discretion," so often found in the statute of Hen. VIII. These expressions are by no means to be understood to confer an unlimited authority; but, to use the language of Lord Coke, they are to be intended and interpreted according to law and justice; for every judge, or commissioner, ought to have wisdom, so as not to be inefficient, and a conscience to prevent his being unmerciful.

Id. at 375 (citing 10 Coke 140).

hood.²⁷⁶ The local medieval codes are similar to modern community associations in that they imposed detailed limitations on the nature of the activities that the local users could undertake.²⁷⁷ Today, this is increasingly accomplished through the vote of a majority of the residents themselves.²⁷⁸

C. *Land Development in the Wetlands*

The modern idea of land development—the changing of a land's use to something other than the uses associated with an agricultural economy—was uncommon in early medieval times.²⁷⁹ This was because people valued land for its agricultural potential far more than for any future development potential:²⁸⁰ “Land outside towns was intrinsically of value, e.g., for farming or grazing. Inside the towns land was merely a site on which activities were carried on. The residence of the trader or artisan or his shop was merely one of his assets, without any feudal mystique about it.”²⁸¹

The most common types of development activity were those associated with transportation, such as roads, waterways and

276. See Note, *A Zoning Program for Phased Growth: Ramapo Township's Time Controls on Residential Development*, 47 N.Y.U. L. REV. 723 (1972). A century earlier, the original demands for zoning regulation grew out of similar grass roots movements. See Fred P. Bosseman, *The Commodification of "Nature's Metropolis": The Historical Context of Illinois' Unique Zoning Standards*, 12 N. ILL. U. L. REV. 527, 567-75 (1993). The support for growth management is often expressed directly by the voters through initiatives and referenda rather than by elected local officials. See, e.g., *DeVita v. County of Napa*, 889 P.2d 1019 (Cal. 1995). See David L. Callies et al., *Ballot Box Zoning: Initiative, Referendum and the Law*, 39 WASH. U.J. URB. & CONTEMP. L. 53 (1991) (analyzing the legal issues implicated by the use of initiative and referenda for rezoning land). The Supreme Court has held that the Constitution so strongly values the power of the voters to legislate directly that that power overrides certain other rights protected by the Constitution. *James v. Valtierra*, 402 U.S. 137, 143 (1971); *City of Eastlake v. Forest City Enterprises, Inc.*, 426 U.S. 668, 675 (1976).

277. See *supra* text accompanying notes 246-64. See Todd Brower, *Communities Within the Community: Consent, Constitutionalism, and Other Failures of Legal Theory in Residential Associations*, 7 J. LAND USE & ENVTL. L. 203 (1992); Clayton P. Gillette, *Courts, Covenants and Communities*, 61 U. CHI. L. REV. 1375 (1994); George W. Liebmann, *Devolution of Power to Community and Block Associations*, 25 URB. LAW. 335 (1993).

278. See HAGMAN & JUERGENSMEYER, *supra* note 271.

279. Lucy Toulmin Smith, *Town Life, in MEDIAEVAL ENGLAND* 281, 281-85 (H.W.C. Davis ed., 1924).

280. Urban areas were small and few in the medieval period. A study of the poll tax returns from the year 1377 indicates that London had a population of about 35,000 and York of about 11,000; no other town had a population exceeding 10,000. R.A. Pelham, *Fourteenth-Century England*, in AN HISTORICAL GEOGRAPHY OF ENGLAND BEFORE A.D. 1800, at 230, 231-33 (H.C. Darby ed., 1961). See also G.E. FUSSELL & K. R. FUSSELL, *THE ENGLISH COUNTRYMAN: HIS LIFE AND WORK FROM TUDOR TIMES TO THE VICTORIAN AGE* 72 (1981) (explaining that London was the only large town in England during the period).

281. Kiralfy, *supra* note 199, at 34 (1988).

bridges,²⁸² and with trade, such as markets.²⁸³ From early Norman times, the Crown exercised control over such land development²⁸⁴ through its prerogative powers²⁸⁵ as enforced through the royal courts, such as the Court of Star Chamber.²⁸⁶

1. *The royal prerogative.*

The Crown's control over wetland activities stemmed from its prerogative powers over highways, fishing, rivers, and drainage.²⁸⁷ The prerogative powers of the Crown "were the powers of other feudal lords magnified" into "slightly exaggerated feudal privileges."²⁸⁸ Those wishing to undertake any activity having a substantial impact on commerce or transportation had to get permission from the sovereign.²⁸⁹ The sovereign could punish those who failed to comply with this requirement, for example, by enforcing obligations to maintain waterways or roads.

The sovereign could delegate many of its prerogative powers to private individuals.²⁹⁰ One of the most important prerogative pow-

282. I.S. Leadam, *Trade and Commerce, in MEDIAEVAL ENGLAND 577, 609-14* (H.W.C. Davis ed., 1924).

283. See VERNON A. MUND, *OPEN MARKETS: AN ESSENTIAL OF FREE ENTERPRISE* 32-59 (1948); Smith, *Town Life*, *supra* note 279, at 312-18.

284. The term "Crown" or "sovereign" is used in this article to signify the king or queen then in office. At the beginning of the medieval period, there was no real distinction between the king or queen as an individual and the Crown as an institution, but by the end of the period the distinction was beginning to become quite important. 3 WILLIAM S. HOLDSWORTH, *A HISTORY OF ENGLISH LAW* 466-69 (3d ed. 1923). In discussing the sovereign prerogative, reference is to the Crown as an institution unless otherwise indicated.

285. See generally 8 MATTHEW BACON, *ABRIDGEMENT OF THE LAW* 114-15 (Phila., Thomas Davis 1846) (enumerating the powers the Crown may grant through its prerogative powers). The Crown's prerogative powers have played an interesting role in the development of a number of aspects of modern environmental law. For a fascinating account of the Crown's attempts to use the prerogative powers to control air pollution in London in the early seventeenth century, see Thomas G. Barnes, *The Prerogative and Environmental Control of London Building in the Early Seventeenth Century: The Lost Opportunity*, 1 *ECOL. L.Q.* 62 (1971). See also SELECT CHARTERS OF TRADING COMPANIES, A.D. 1530-1707, at lxiv-lxvi (Cecil T. Carr ed., Selden Soc'y 1913) (discussing the controversy over the queen's grant of monopoly patents); William B. Stoebuck, *A General Theory of Eminent Domain*, 47 *WASH. L. REV.* 553, 562-66 (1972).

286. F. W. MATTLAND, *THE CONSTITUTIONAL HISTORY OF ENGLAND* 256-63 (1913). The court was abolished in 1641. *Id.* at 302.

287. See MATTHEW HALE, *THE PREROGATIVES OF THE KING* 309-13 (D.E.C. Yale ed., 1976); BACON, *supra* note 285, at 18-21.

288. 3 HOLDSWORTH, *supra* note 284, at 460. See also MATTLAND, *supra* note 286, at 196-97, 255-57.

289. See HALE, *supra* note 287, at 310, 313; 2 *PUBLIC WORKS IN MEDIAEVAL LAW* lvi-lviii (C.T. Flower ed., Selden Soc'y 1926).

290. 4 WILLIAM S. HOLDSWORTH, *A HISTORY OF ENGLISH LAW* 204-08 (1924). The

ers was the power to suspend and dispense, which allowed the Crown to issue charters, licenses, and other exclusive rights to undertake activities that could not otherwise be done without the Crown's approval.²⁹¹

2. *Medieval public works.*

Even in the early medieval period, the King's Bench assumed jurisdiction over controversies relating to public works, such as the construction and maintenance of transportation and drainage facilities.²⁹² This involvement by the Crown provided a degree of uniformity in both procedure and result that would otherwise have been lacking.²⁹³

The role played by wetlands in both transportation and fishing was well recognized in the English law of public works. Thus, for example, the Code of Romney Marsh provided that "it be not lawful henceforth to make dams or fourds or other Impediments in any Lands, Watergages Ditches or common Conduits in the afore-said Marsh whereby the right course of Waters may in any wise be hindered."²⁹⁴

In resolving disputes regarding public works,²⁹⁵ the King's

powers that could be delegated were known as the "ordinary" prerogative powers to distinguish them from the "absolute" powers, such as the power to pardon crimes, which were non-delegable.

291. *Id.* at 217-21, 223-25. The Crown's use of this power to raise revenue through the grant of monopolies in exchange for contributions was a source of major controversy. See WILLIAM HYDE PRICE, *THE ENGLISH PATENTS OF MONOPOLY* 16-34 (1906); MAITLAND, *supra* note 286, at 260-61, 302-06; F.A. HAYEK, *THE CONSTITUTION OF LIBERTY* 167-70 (1960). For a modern evaluation of the controversy, see Douglass C. North & Barry R. Weingast, *Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England*, 49 J. OF ECON. HIST. 803, 810-15 (1989).

292. "This recognition of the responsibilities and interest of the Crown in the maintenance of public works marks an important stage in the evolution of local government." 2 PUBLIC WORKS, *supra* note 289, at lvi. See Leadam, *Trade and Commerce*, *supra* note 282, at 610-11; CALLIS, *supra* note 242, at *73-74 (discussing statutes concerning public works).

293. See 3 SELECT CASES IN THE COURT OF KING'S BENCH UNDER EDWARD I xliii-liii (G.O. Sayles ed., Selden Soc'y 1939).

294. HENRY DE BATHE, *THE CHARTER OF ROMNEY MARSH*, *supra* note 265, at 72.

295. C.T. Flower provided the following six examples to illustrate the kinds of public works disputes that arose in the early medieval period. As with many of the early year book cases, the record shows the allegations of the parties but not the factual background of the controversy or even the result. First, The Prior of Barnwell was accused of unlawfully blocking a canal. 1 PUBLIC WORKS IN MEDIAEVAL LAW, *supra* note 132, at 43. He said that he had raised the banks to protect his garden, and that malefactors had destroyed the banks in 1380-81, thereby blocking the canal. *Id.* at 43-44. He denied that the canal was a "common drain" for passage of boats and claimed that it was for the exclusive use of the priory from time out of mind. *Id.* at 43-44. Second, a presentment was brought against the

Bench considered whether or not the activities complained of damaged either the Crown or other people. In 1375 a presentment was brought alleging that "the Earl of Angus took toll at a dyke of all boats, having no right to do so by charter or otherwise."²⁹⁶ The Earl defended his actions by showing that:

the king, finding by inquisition returned into chancery that it was not to the damage of him or any one else, both in reward for the said earl's good office and in promotion of the common weal, granted him by letters . . . for the expenses [incurred in repairing the channel and banks] the following customs on ships passing through his said manor, namely 4d. on every sack of wool . . .²⁹⁷

Although the Crown was not required to compensate subjects who were adversely affected by its sovereign powers, an individual who obtained a license from the Crown for the purpose of constructing public works was often required to compensate persons who suffered damage as a result.²⁹⁸ The procedure used to determine whether the project could proceed, and whether compensation was required, was the writ of *ad quod damnum*.²⁹⁹

The royal prerogative to effectively control major development in the wetlands bears a noticeable resemblance to the United States government's control over wetlands under the commerce power.³⁰⁰ Just as the English Crown sought control over these

Earl of Stafford, alleging that he stopped a ditch in Berkeley with stones so that the country thereabout was flooded, and consequently he should be required to repair the ditch. *Id.* at 116. Third, neighbors complained that the Abbot of Tewkesbury had failed to maintain a ditch adjacent to a monastery, but a jury found that the Abbott had no obligation to maintain a ditch, but only to plow a single furrow, because that was all that had been done from time out of mind. *Id.* at 120. Fourth, a presentment was brought by six townships who alleged that the Abbot of Malmesbury had stopped a watercourse and flooded the adjoining country. *Id.* at 133. The Abbot said the watercourse had been unlawfully created on his land by others and that he rightfully stopped it. The jury agreed with the Abbot. *Id.* at 133. Fifth, the Abbot of Flaxley admitted to having caused flooding by setting a ditch at greater height than was lawful. *Id.* at 155. He was fined and ordered to lower the ditch. *Id.* at 155. Sixth, there was a dispute about whether flooding of the lands of the Abbot of Louth Park was caused by his own creation of a new ditch or the stopping of an old ditch by his neighbors. *Id.* at 218. The dispute was referred to a jury. *Id.* at 220.

296. 1 PUBLIC WORKS IN MEDIAEVAL LAW, *supra* note 132, at 295.

297. 1 PUBLIC WORKS IN MEDIAEVAL LAW, *supra* note 132, at 295.

298. Stoebuck, *supra* note 285, at 65-66. The king's highway was the property of the king and the unauthorized occupation of that highway was an encroachment on the king himself. 2 PUBLIC WORKS, *supra* note 289, at lviii.

299. 10 HOLDSWORTH, *supra* note 226, at 320-22. The term *ad quod dampnum* is sometimes used to describe the writ; there appears to be no substantive difference that results from the differing spellings.

300. For a discussion of the interstate commerce requirements for United States jurisdiction over the wetlands, see WANT, *supra* note 3, § 4.05. Although the legislative history of the decision to give Congress the power to control interstate commerce, U.S. CONST. art.

functions in defense of its sovereignty,³⁰¹ the United States government similarly justifies its control over wetlands by its belief that commerce and navigation are in the national interest.³⁰²

3. *The writ of ad quod damnum.*

The general principle underlying the writ was that "the King, having been asked to confer some favour—to grant a franchise, for instance, or a license in mortmain—he issued this writ to ascertain whether the granting of this favour would prejudice third persons."³⁰³ A person seeking to build any form of public works was required to seek a writ of *ad quod damnum*.³⁰⁴ Once the writ was issued a jury was asked to determine "what damage" the project would cause.³⁰⁵ Although those undertaking a new project were required to obtain such a writ, those simply maintaining existing public works were not.³⁰⁶ Thus, for example, the sovereign could license a person to repair a seawall without issuance of the writ, but no one could build a new seawall except by bringing an action "*ad quod damnum* to know what damage it shall be to the king and others."³⁰⁷

Although very little has been written about the history of the writ of *ad quod damnum*,³⁰⁸ we have some information about both

I, § 8, is murky, see JOHN E. NOWAK ET AL., CONSTITUTIONAL LAW 144-46 (2d ed. 1983), it seems likely that Congress was given the power to control domestic commerce to ensure that the executive branch could not claim to have inherited the Crown's prerogative powers over the field. See 1 WILLIAM WINSLOW CROSSKEY, POLITICS AND THE CONSTITUTION IN THE HISTORY OF THE UNITED STATES 409-67 (1953). In any case, the drafters of the United States Constitution were well aware of the royal prerogative powers. See Martin S. Flaherty, *History "Lite" in Modern American Constitutionalism*, 95 COLUM. L. REV. 523, 542-45 (1995). Blackstone discussed these powers extensively. BLACKSTONE, COMMENTARIES, *supra* note 249, at *237-80.

301. See *supra* text accompanying notes 287-89.

302. See generally Renee Stone, *Wetlands Protection and Development: The Advantages of Retaining Federal Control*, 10 STAN. ENVTL. L.J. 137 (1991). The history of the federal role in wetland regulation is chronicled in NATIONAL RESEARCH COUNCIL, *supra* note 3, at 38-78.

303. 10 HOLDSWORTH, *supra* note 226, at 320. An action in anticipatory nuisance, if allowed, would be somewhat comparable although the remedies authorized would be more limited. See, e.g., *New Mexico ex rel. Village of Los Ranchos de Albuquerque v. City of Albuquerque*, 889 P.2d 185 (N.M. 1994) (holding that an action in anticipatory nuisance may not be brought to enjoin public works project that has been duly authorized by law).

304. See 10 HOLDSWORTH, *supra* note 226, at 320-21.

305. See *Id.*

306. See *The Case of the Isle of Ely*, 10 Co. Rep. 141a, 77 Eng. Rep. 1139 (K.B. 1609).

307. S. REGINALD HOBDAV, COULSON & FORBES ON THE LAW OF WATERS AND LAND DRAINAGE 49 (6th ed. 1952); see HALE, *supra* note 287, at 310, 313.

308. The writ was used for such a mixed bag of substantive issues that it has apparently not attracted the interest of modern scholars. Letter from Professor John Hamilton

the procedures required under the writ and the sorts of disputes to which it was applied. Procedure under the writ of *ad quod damnum* required the local sheriff to call together a jury of local residents.³⁰⁹ The writ also required that notice be given to other affected persons, though these requirements fell short of modern American standards of procedural due process.³¹⁰ Over time, procedure on the writ of *ad quod damnum* became increasingly lengthy and expensive, which contributed to the desire to replace the writ by legislative remedies as the Middle Ages ended.³¹¹

The sorts of disputes to which the writ was applied varied widely. On the one hand, it appears that the Crown often used the writ in the early medieval period to investigate whether gifts of land to religious institutions would adversely affect the Crown's right to receive income from the land.³¹² In later years, on the other hand, the writ often seems to have been used to protect existing monopolists from competition.³¹³ Despite this wide range of applications, however, the writ does seem to have been used extensively for the

Baker, Cambridge University, to Fred P. Bosselman (Feb. 17, 1995) (on file with the *Stanford Environmental Law Journal*).

309. *The King v. Warde and Lyme*, Cro. Car. 266, 79 Eng. Rep. 832 (K.B. 1632). See 1 NICHOLS ON EMINENT DOMAIN § 1.21(2) (3d ed. 1995).

310. For example, when the licensee of a new market failed to provide notice to a neighboring market, the license was found to be invalid because "the *ad quod dampnum* was deceitfully executed," but upon issuance of a new writ the license was reinstated. *The King v. Sir Oliver Butler*, 3 Lev. 220, 83 Eng. Rep. 659, 661 (K.B. 1685). In another case, the plaintiff's failure to receive notice that a road was being relocated onto his land did not invalidate the writ of *ad quod damnum* because it was not shown that "the jury had manifestly done contrary to the general good of the country. . . ." *Ex Parte Vennor*, 3 Atk. 766, 26 Eng. Rep. 1239, 1241 (Chancery 1754) (The court was convinced that a jury that included the "knight of the shire" and "persons of great fortune" would not "do an unpopular thing in turning the road, which is a circumstance at least to show fairness."). Four centuries earlier, concern about the abuse of procedures under the writ of *ad quod damnum* led the chancery court to warn sheriffs that they might be personally liable if the Crown lost property due to the sheriff's failure to follow the procedures carefully. 5 SELECT CASES IN THE COURT OF KING'S BENCH UNDER EDWARD III lxxvi (G.O. Sayles ed., Selden Soc'y 1958). See also 10 HOLDSWORTH, *supra* note 226, at 320-21.

311. See 10 HOLDSWORTH, *supra* note 226, at 320-21. For a discussion of the replacement of the writ by legislatively established procedures, see *infra* text accompanying notes 333-65. A review of the cases cited by Dugdale suggests that juries implementing the writ may have been more likely than the sewer commissioners to award damages to wetland users. See, e.g., DUGDALE, *supra* note 61, at 154-55, 301-06.

312. FITZHERBERT'S NATURA BREVIVM 493 (London, George Sawbridge, Thomas Roycroft & William Rawlins 1677); BRAND, *supra* note 180, at 233-44; 5 SELECT CASES IN THE COURT OF KING'S BENCH UNDER EDWARD III lxxv (G.O. Sayles ed., Selden Soc'y 1958). See also T.F.T. PLUCKNETT, LEGISLATION OF EDWARD I 100 (1949).

313. See CHARLES M. HAAR & DANIEL WILLIAM FESSLER, THE WRONG SIDE OF THE TRACKS 91-95 (1986) (citing *Payne v. Partridge*, 1 Salkeld 12, 91 Eng. Rep. 12 (K.B. 1689)).

protection of the general public, as well as the Crown's own particular interests.³¹⁴

Since the Crown retained power over waterways to protect transportation and fishing, persons proposing to make significant changes in the wetland landscape had to ask the Crown for a writ of *ad quod damnum* before making such changes. For example, in 1578, the Prior of Billyngtone applied to the King for the writ to drain a sixty acre marsh belonging to the Prior's manor in Romney Marsh.³¹⁵ The King's tribunal for the county inquired into "whether the same [result] might be effected without prejudice to [the King] or others."³¹⁶ The jury found that there would be no prejudice to others, and that the reclaimed land would increase noticeably in value.³¹⁷ In another case where the jury found no prejudice under a writ of *ad quod damnum*, the jury released ecclesiastical authorities from their obligation to dredge a channel that had silted up.³¹⁸ The jury found that a new channel permitted nav-

314. BACON, *supra* note 285, at 114-15; DUGDALE, *supra* note 61, at 154-55, 301-06.

315. William Dugdale, whose records of early court decisions are one of the primary sources of information about the English wetlands, reported that:

In 20 Edward II the Prior of Bilsyntone representing to the King; that whereas *John Maunsell*, the founder of that Monastery, had given to the Canons of that House and their Successors, the Mannour of Over Bilsyntone, with the appurtenances; whereunto a certain salt Marsh, situate in Lyde, neer Romenale, containing 60 Acres, did belong: which both at the time of the said grant, and since, had been alwayes drowned by the flowings of the Sea: humbly petitioned, that he would please to grant license for the drayning thereof; and that it might be reduced to culture, by the defence of Banks, according to the Marsh Law. Whereupon the said King issued forth a Writ of *Ad quod dampnum* to his Escaetor for his County, commanding him to enquire whether the same might be effected without prejudice to himself or others. Upon which enquiry, the Jury certified upon their Oaths, that it might: and that the said Marsh contained of itself 240 perches in length, and 40 perches in bredth; and that it was of no value before the drayning, and banking thereof; but that being so banked and drayned, it might be yearly worth 30 shillings every Acre prized at 6 pence.

DUGDALE, *supra* note 61, at 42. See also *id.* at 106-09 (recounting other cases under the writ of *ad quod damnum* in the marshes).

316. DUGDALE, *supra* note 61, at 42.

317. DUGDALE, *supra* note 61, at 42.

318. The Decision was described by Dugdale:

In II Edward III upon a Writ of *Ad quod dampnum*, the Jury certified, that it would not be prejudicial to the King or any other, if license were given to *John* then Archbishop of Canterbury, and to the Prior of *Christs-Church* in Canterbury, to suffer an antient Trench, leading from an arm of the Sea, called Apuldre, towards the town of Romeney, which passed through the proper soyl of the said Archbishop and Prior, and which was then newly so obstructed by the Sea-sands, that Ships could not passe thereby, to the said town of Romeney, as they had used; to be wholly stopped up and filled, so that they the said Archbishop and Prior might make their benefit there of as they thought fir; in regard that there then was a

igation rights equivalent to those enjoyed in the old channel.³¹⁹ In contrast, in 1664, a court found sufficient prejudice to enjoin the drainage of a wetland where a jury had found that the Prior of Christ Church in Canterbury "had built a gutter on a wetland manor that was so raised [that] the water, so descending from the upper parts . . . could not passe through it, whereby . . . the said fishing became totally lost . . . and other traditional uses³²⁰ could not be made of the flowing water."³²¹

We have become accustomed to thinking of impact assessment as a modern innovation,³²² but the Corps of Engineers currently

certain other Trench, leading from the said arm unto Romeney, lately made by the force of the Sea, by which Ships and Boats might passe, without impediment to the said town, as they had wont to do by the other, before it was so filled up. And they said moreover, that the said antient Trench was the proper soyl, of the before-specified Archbishop, Prior, and *Margaret de Basinges*; and that it had been obstructed in such a sort, by the space of 30 years and more then last past, by the Silt and Sea-sands, as that Ships could not conveniently passe that way: And that the new Trench was more proper and sufficient, whilst it was open, than the said old one, for the passage of Ships to Romeney above-mentioned; and did so remain at that time: And moreover, that the same new Trench was the soyl of the said Archbishop, Prior, and Covent, *Margaret de Basynges*, and the Abbot of Robertswigge.

DUGDALE, *supra* note 61, at 43-44. See also *The King v. Montague*, 4 B. & C. 599, 107 Eng. Rep. 1183 (K.B. 1825) (using the writ of *ad quod damnum* to determine whether public right of navigation has been extinguished).

319. DUGDALE, *supra* note 61, at 43-44.

320. The other traditional uses were especially medieval in character:

In the sixth year of Edward II the Jury for the Hundred of Cornylo exhibited a Presentment unto *Hervic de Stanton* and his fellow Justices Itinerants, sitting at Canterbury in the Octaves of *S. John Bapt.* importing that the Prior of *Christs-Church* in Canterbury, did, about ten years then past, divert the course of a certain water, called Gestling, in which such Felons as were condemned to death, within the before-specified Hundred, ought to suffer judgement by drowning; so that by this turning of that stream, those condemned persons could not there be drowned as formerly; and that this was to the prejudice of the King, &c. And they likewise presented, that the said Prior, about two years then past, raised a certain Trench of four foot, by which the same water of Gestling, coming from the upper part of that Country, had wont to passe unto the Sea, and wherein the King had used to have fishing worth 100 shillings by the year: And that by the said diversion, the King not only lost the profit of his fishing, but a thousand and five hundred Acres of Land were thereby drowned, to the great damage of the said King, and all the Country thereabouts . . .

DUGDALE, *supra* note 61, at 41.

321. DUGDALE, *supra* note 61, at 41-42. A gutter "is of a less size, and of a narrower passage and current, than a Sewer . . ." CALLIS, *supra* note 242, at *100.

322. Oliver A. Houck, *Of BATs, Birds and B-A-T: The Convergent Evolution of Environmental Law*, 63 Miss. L.J. 403, 435 (1994). During the colonial period, some of the American colonies used the writ of *ad quod damnum* extensively in connection with the construction of major facilities. John F. Hart, *The Maryland Mill Act, 1669-1766: Economic Policy and the Confiscatory Redistribution of Private Property*, 39 AM. J. LEGAL HIST. 1, 16-17 (1995). Some

uses a public interest review quite similar to the procedures under the old writ of *ad quod damnum* when it reviews applications for permits to dredge and fill wetlands.³²³ Like the Corps of Engineers section 404 permit program, the writ of *ad quod damnum* provided the procedure for granting permits for changes in wetland configuration, and for enforcing maintenance obligations.³²⁴ The writ supplied a flexible procedure allowing development to proceed on the condition that the developer pay damages to persons who would suffer economic loss.³²⁵ Interestingly, this same remedy has been widely supported in American academic literature as the most efficient way to deal with many claims of environmental injury.³²⁶ Like the section 404 process, the writ allowed changes to wetlands, but ensured that the changes were consistent with the public interest.³²⁷ It is important to note, however, that the rules established by the English common law courts were rules designed to promote human use of the wetlands; the idea that wetlands should be protected because they are "natural" would have been foreign to the medieval mind.³²⁸ Yet, by enforcing such rules, the old English courts helped maintain an environment far more natural than the legislatively engineered landscape that succeeded it.³²⁹

In summary, wetland use amounted to small scale adaptive

state courts in the United States continued to use the writ of *ad quod damnum* even after independence. See, e.g., *Mairs v. Gallahue*, 50 Va. (1 Gratt.) 94 (1852).

323. See generally WANT, *supra* note 3, § 6.03.

324. See *infra* text accompanying notes 333-65. The degree of navigability needed to maintain royal jurisdiction was not clearly established. CALLIS, *supra* note 242, at *270.

325. DUGDALE, *supra* note 61, at 154-55.

326. See *Symposium on Nuisance Law: Twenty Years after Boomer v. Atlantic Cement Co.*, 54 ALB. L. REV. 170-399 (1990); Daniel A. Farber, *Equitable Discretion, Legal Duties, and Environmental Injunctions*, 45 UNIV. PITT. L. REV. 513 (1984).

327. See generally DENNISON & BERRY, *supra* note 45, at 213-77 (explaining the nature of the public interest review under the § 404 permit process). These parallels between medieval and modern practice are intriguing. Do they suggest that we are doomed to repeat the history we failed to study? See GEORGE SANTAYANA, 1 *THE LIFE OF REASON* 284 (1936). Or do they suggest some type of unconscious convergent evolution toward a workable system? See Houck, *supra* note 322, at 403; William H. Rodgers, Jr., *Where Environmental Law and Biology Meet: Of Pandas' Thumbs, Statutory Sleepers and Effective Law*, 65 U. COLO. L. REV. 25 (1993).

328. See, e.g., JOHN PASSMORE, *MAN'S RESPONSIBILITY FOR NATURE* 10-21 (1974). For an interesting commentary on the eighteenth-century English view of nature, see NIGEL EVERETT, *THE TORY VIEW OF LANDSCAPE* (1994). The idea that there is a scientific basis for leaving natural areas alone originated in the late nineteenth century. See Fred P. Bosseman & A. Dan Tarlock, *The Influence of Ecological Science on American Law: An Introduction*, 69 CHI-KENT L. REV. 847, 849-52 (1994).

329. For current examples of similar conflicts, see Marcel Marchand, *The Productivity of African Floodplains*, 29 INT'L J. OF ENVTL. STUD. 201 (1987).

management³³⁰ with minimal degradation of the environment. Dikes, canals and watergates were prominent features of the medieval wetland landscape, but they were used only to maintain the balance between the various wetland and upland uses on which the economy depended, rather than to eradicate the wetlands. Ironically, the fear with which most medieval people regarded both the wetlands and the fen people that occupied them probably contributed to the society's ability to maintain a sustainable pattern of use of wetland resources for nearly a thousand years. The hardships associated with life near the wetlands, and the social stigma attached to the people who endured them,³³¹ probably deterred overpopulation as social mobility increased over time.³³²

The common law of wetlands lasted roughly a thousand years, until the British Parliament gradually replaced the common law of wetlands with a new system more to its liking. This new system eliminated both the wetlands and the fen people, and created new agricultural land held by individual landowners.

VI. LEGISLATIVE RENT-SEEKING: DRAINAGE BILLS

The culture of the fen people survived relatively unimpeded until the seventeenth century, when new technology and a new political climate combined to increase the amount of wetland drainage dramatically.³³³ Large scale drainage projects coincided with the "enclosure movement," in which rights to common lands were extinguished over much of England, and large tracts of land were assembled by land-owning members of the aristocracy and gentry who became known as the "landed magnates."³³⁴

From the revolution of 1640 through the entire eighteenth century, the landed magnates controlled Parliament.³³⁵ They viewed the economic conditions of the time as advantageous for the replacement of small-scale crop-growing with large-scale grain farm-

330. Tarlock, *Nonequilibrium Paradigm*, *supra* note 43, at 1139-40.

331. *See supra* text accompanying notes 135-45.

332. *See* HALLAM, *supra* note 167, at 251-54.

333. E.C.K. GONNER, *COMMON LAND AND INCLOSURE* 113-14 (2d ed. 1966).

334. *See* Fred Bosselman, *Four Land Ethics: Order, Reform, Responsibility, Opportunity*, 24 ENVTL. L. 1439, 1455-56 (1994).

335. Paul Langford, *The Eighteenth Century (1688-1789)*, in *THE OXFORD HISTORY OF BRITAIN* 399, 430-36 (Kenneth O. Morgan ed., 1988). *See* Bosselman, *Four Land Ethics*, *supra* note 334, at 1439, 1455-58. *See also* North & Weingast, *supra* note 291, at 808-29 (discussing English rights under the Stuarts and after the Glorious Revolution).

ing and pasturage of grazing animals,³³⁶ the products of which (particularly wool) could bring profits in international trade.³³⁷ In addition, they perceived wetlands as potential grazing and crop land if the water could be removed by drainage projects.³³⁸

Consequently, Parliament began enacting bills to authorize drainage by private undertakers as early as 1600, typically awarding the undertakers a share of any lands they successfully reclaimed.³³⁹ As technological capability increased over time, these projects expanded from the traditional banking out of the tidal and fresh-water floods to drainage of large tracts of land.³⁴⁰ This drainage fundamentally changed the character of the land by allowing wet pasture land to produce crops, and previously inundated land to be used for year-round pasture.³⁴¹

Drainage accelerated during the seventeenth and eighteenth centuries and often resulted in an immediate increase in the land's market value.³⁴² But as the peatlands of the Great Fens were drained, the peat gradually dried up and blew away, leaving a clay base that was substantially below sea level.³⁴³ Thereafter, rivers and

336. HILL, *supra* note 244, at 127-28; DOUGLASS C. NORTH, *STRUCTURE AND CHANGE IN ECONOMIC HISTORY* 154-57 (1981).

337. E.P. THOMPSON, *CUSTOMS IN COMMON* 189-200 (1991). As late as 1878, among the large landowners known as the landed magnates there were fewer than 400 aristocrats and some 3000 members of the gentry. HOWARD NEWBY, *SOCIAL CHANGE IN RURAL ENGLAND* 31-33 (1979).

338. RAVENSDALE, *supra* note 95, at 162-72. The history of the drainage of the English wetlands is extensively discussed in DARBY, *CHANGING FENLAND*, *supra* note 62, at 41-147. *See also* GODWIN, *FENLAND* *supra* note 93, at 111-44; HOLLOWAY, *supra* note 55, at 182; PURSEGLOVE, *supra* note 58, at 40-67; WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 38; SHEPPARD, *supra* note 183, at 2-10.

339. DARBY, *CHANGING FENLAND*, *supra* note 62, at 50-51. Prior to the Civil War the Crown had shown a willingness to authorize such efforts, but the technology that made drainage feasible on a large scale was not yet available. *Id.* at 57.

340. During the sixteenth and seventeenth centuries, much arable land throughout England was converted to pasture in response to changing market demands. ANN KUSSMAUL, *A GENERAL VIEW OF THE RURAL ECONOMY OF ENGLAND, 1538-1840*, at 78, 173 (1990). Drained wetlands often proved particularly desirable as large-scale pastures. DARBY, *CHANGING FENLAND*, *supra* note 62, at 189-90. Although much cropland was converted to pasture as a result of enclosure, in some places enclosure created cropland out of pasture. HOSKINS, *ENGLISH LANDSCAPE*, *supra* note 65, at 188-96.

341. DARBY, *CHANGING FENLAND*, *supra* note 62, at 189-90.

342. HILLS, *supra* note 85, at 127.

343. GODWIN, *FENLAND* *supra* note 93, at 137 ("the unforeseen consequences of shrinkage and wastage of the peat [have never] . . . subsequently been fully counteracted despite many new drains and extensive modifications and clearances through the last three hundred years."). *See also* DARBY, *CHANGING FENLAND*, *supra* note 62, at 102-10. For a while, fenland farmers were able to mix peat and clay to produce profitable grain crops, particularly during the period when high tariffs protected grain prices. HILLS, *supra* note 85, at

canals increasingly flowed at an altitude higher than the surrounding land, so the expense of maintaining dikes and drains grew.³⁴⁴

At the time of the civil war, the sinking of the land surface had not yet become so obvious that it deterred other newly empowered landed magnates from undertaking new drainage projects, but the seriousness of the problem gradually became apparent:

The very efficiency of any improvement only served to increase the rate of lowering by drying the peat more effectively. The better the drainage the more rapid the wastage The promoters of each successive project did not realize that their design also contained, within itself, the seeds of its own disaster.³⁴⁵

Floods continued to break through the system intermittently, causing the need for repeated enactment of government-financed flood protection schemes until as recently as the 1970s.³⁴⁶

To help implement the drainage, the writ of *ad quod damnum* was gradually replaced over time by the Private Acts of Parliament and the appointment of special courts to administer wetland management projects and deal with wetland disputes.³⁴⁷ These "Courts of Sewers" or "Commissioners of Sewers" had first been authorized by general statute in 1531,³⁴⁸ and exercised considerable authority over the structures that were used to manage the wetlands.³⁴⁹ They

128-32. Shrinkage of peat also took place in other wetlands, such as Romney Marsh. PURSEGLOVE, *supra* note 58, at 44-46, 83-84.

344. Godwin writes of the effort:

By 1700 shrinkage and wastage of the peat were such that it was necessary to dig subsidiary drains converging to places on the banks of the main drains where windmills drove large scoop-wheels to raise the water over the containing bank. Thus in the early eighteenth century the Fen landscape was dotted with these decorative wind-pumps

GODWIN, FENLAND *supra* note 93, at 139. See also DARBY, CHANGING FENLAND, *supra* note 62, at 111-38. This system of perched waterways still crosses the fens like a system of elevated aqueducts. GODWIN, FENLAND *supra* note 93, at 141.

345. DARBY, CHANGING FENLAND, *supra* note 62, at 103.

346. DARBY, CHANGING FENLAND, *supra* note 62, at 215-27.

347. The King v. Montague, 107 Eng. Rep. 1183 (K.B. 1825). One eighteenth-century justice said that such acts "might very properly be called a Parliamentary *ad quod damnum*." Rex v. Inhabitants of Flecknow, 97 Eng. Rep. 403, 406 (1758). The relationship of the writ to the newer legislation is discussed in The Case of the Isle of Ely, 77 Eng. Rep. 1139 (K.B. 1609). See CALLIS, *supra* note 242, at *93-96. See also Louis L. Jaffe & Edith G. Henderson, *Judicial Review and the Rule of Law: Historical Origins*, 72 L.Q. REV. 345 (1956); Hudson v. Tabor, 1 Q.B.D. 225 (1876) (instead of imposing costs of repairing dike on owner of adjacent land, a commission should be appointed to apportion the cost fairly among all benefited parties).

348. See generally CALLIS, *supra* note 242. Romney Marsh was apparently exempted from the general statute because of its complex history. DERVILLE, *supra* note 67, at 19.

349. See, e.g., H.C. DARBY, THE MEDIEVAL FENLAND 155-63 (1940). The Crown had occasionally appointed commissioners to resolve wetlands issues as far back as the thir-

had authority to mediate disputes, to levy assessments for maintenance of dikes and other control structures, to seize property of landholders who refused to pay, to authorize work on drainage facilities, and to enact ordinances for local regulation.³⁵⁰

A proponent of wetland drainage, who chronicled the workings of the sewer courts early in the seventeenth century, explained the rationale for the replacement of the writ of *ad quod damnum* by the new administrative procedure:

And whereas it is formerly alleged, that the wariness of the common law was such in these cases, that it admitted not one such new trench, river, or new cut to be made, without the awarding out of the writ of *ad quod damnum* directed to the escheator, an officer sworn to enquire, first, what damage it might be if such a new cut or drain were made? and then upon his inquisition returned, there might be one made; if by the inquisition it were found convenient, else not to, be proceeded farther in. But in answer thereto, being the argument set down in the said case of the Isle of Ely, I am of the opinion that there may be more wary and circumspect proceedings by [the sewer] commission, than in the *ad quod damnum* by [a single] escheator; for there be many Commissioners which be all sworn, and in the *ad quod damnum* there is but one, the escheator, *plus vident oculi quam oculus, et tutius est rem committere pluribus quam uni*; and in my opinion, it is much better to commit this weighty business to many Commissioners of great gravity, experience, learning, wisdom and integrity, than to one escheator, who may perhaps want all these virtues.³⁵¹

However, it may also be true that these same "wary and circumspect" sewer commissioners, who were appointed by the proponents of a drainage project, could more easily avoid the inconvenient obligation to compensate affected parties that often

teenth century, when Henry III by royal proclamation appointed commissioners to see that the wetlands of Romney Marsh were protected. DERVILLE, *supra* note 67, at 4-10; DUGDALE, *supra* note 61, at 16-24. Ongoing commissioners of a permanent nature apparently began to be used for Romney Marsh in the late fourteenth or early fifteenth centuries. HOLLOWAY, *supra* note 55, at 78-79. See also HALLAM, *supra* note 112, at 135 (discussing the origin of the commissions of sewers).

350. One ordinance enacted by the Courts of Sewers provided that "Those persons which have common of piscary, turbary, or of pasture in great fens, marshes, and wastes, may be charged: but commoners *in agris seminatis* after the corn severed, as stock commons which be of small value, are not to be charged for their commons, but for their lands." CALLIS, *supra* note 242, at *137. Douglass North suggests that the increased use of such procedures to protect the landed magnates made them more willing to loan money to the Crown. North & Weingast, *supra* note 291, at 817-29 (1989).

351. CALLIS, *supra* note 242, at *96-97.

accompanied the writ of *ad quod damnum*.³⁵²

Indeed, the statutes that authorized drainage made only minimal attempts to protect the interests of the commoners.³⁵³ The violent resistance of the fen people to these programs reflected their displeasure.³⁵⁴ The Battle for the Fens rose to the intensity of vandalism, mob action, beatings of drainage workers, and even murder.³⁵⁵ In 1637, for example, when the Earl of Bedford sought to drain the Great Level, the commoners gathered under the pretext of a football match with the intent of destroying the drainage works, and in the ensuing commotion many people were arrested.³⁵⁶

In the end, the fen people did not win the battle against the proponents of drainage, the landed magnates.³⁵⁷ The social structure of the fenland communities deteriorated with the loss of the common fields, and the "designation 'Pauper' became frequent in the burial register."³⁵⁸ Nonetheless, the post-civil war effort to

352. See *supra* text accompanying notes at 322-29. The new statutes limited the role of the jury to certain findings of fact and gave the commissioners broad discretion over damages. CALLIS, *supra* note 242, at *108-10, 112-14.

353. HILL, *supra* note 244, at 127. The Stuart kings were no more solicitous of the commoners' rights than Parliament:

the commission established in 1633 to protect the midlands poor by limiting enclosure and depopulation soon degenerated into a mere fiscal device which sold licenses to enclosing landlords. Even its intentions - let alone its effects - were countered by the Crown's own disruptive record as a speculative encloser and depopulator in the southwestern forests and the fens.

DEREK HIRST, *AUTHORITY AND CONFLICT: ENGLAND 1603-1658*, at 172 (1986).

354. DARBY, *CHANGING FENLAND*, *supra* note 62, at 163. Oliver Cromwell came to prominence as an advocate for the fen people, but after he assumed power he supported legislative measures to drain his family's lands. L.E. HARRIS, *VERMUYDEN AND THE FENS* 72-74 (1953).

355. PURSEGLOVE, *supra* note 58, at 46-58.

356. SCRUTTON, *supra* note 173, at 107-08. The Earl's drainage scheme adversely affected not only the fen people but also the people who depended on the river for navigation. DOROTHY SUMMERS, *THE GREAT OUSE: THE HISTORY OF A RIVER NAVIGATION* 75-92 (1973). The channelization of the Ouse River became a controversial and expensive project. HILLS, *supra* note 85, at 60-66.

357. For an example of the relative benefits obtained by large and small landowners from enclosure see DOUGLAS STONE, *OUR FENLAND HERITAGE* 65-66 (1979). After 1600, "popular representation gradually disappeared and borough administration fell in the hands of closed bodies, largely self-elected," thus excluding the commonalty from management of land drainage and sea defense projects. DERVILLE, *supra* note 67, at 34. Today, only remnants of inland wetlands survive in England; RACKHAM, *supra* note 62, at 391-93. However, many current observers would probably still agree with Trevelyan's conclusion that "whether [the fen people] received proper compensation for this loss of livelihood we have not the evidence to decide." G.M. TREVELYAN, *supra* note 149, at 225.

358. RAVENSDALE, *supra* note 95, at 177. The increased rental income led to in-

drain vast acres of the Great Fens and other English wetlands at first appeared successful.³⁵⁹ However, when shrinkage of the dried peat lowered the level of the ground in the Great Fens to near or below sea level, some farmers actually ended up cultivating the clay subsoil and the value of the projects began to seem more dubious.³⁶⁰

The fen people were not the only ones to lose their commons.³⁶¹ Privatization of commons in the upland also accelerated after 1750, when Parliament began enacting enclosure legislation at a rapid pace.³⁶² The peak period of parliamentary enclosure, 1760 to 1790,³⁶³ coincided with the unrest and subsequent revolution of the American colonists, whose complaints of parliamentary oppression echoed those of the fen people.³⁶⁴ Over the next century and a half, a large proportion of tenant farmers were displaced from their commons.³⁶⁵

The wetland enclosure process was administered by the sewer commissioners well into the 20th century, when the Drainage Act of 1933 gave them new titles and codified their powers.³⁶⁶ Some commentators have characterized the commissions of sewers as

creased spending by the gentry on "stately homes, servants and imported handicrafts." MAXINE BERG, *THE AGE OF MANUFACTURES, 1700-1820*, at 85 (2d ed. 1994).

359. DARBY, *CHANGING FENLAND*, *supra* note 62, at 92-110.

360. DARBY, *CHANGING FENLAND*, *supra* note 62, at 238. See DOROTHY L. SAYERS, *THE NINE TAILORS* 197 (1934) ("If this country had been drained intelligently and all of one piece," remarked Wimsey, "by running all the canals into the rivers instead of the rivers into the canals . . . the landscape would look rather less like a crazy quilt.").

361. Like the English wetlands, vast stretches of wetlands were drained throughout western and northern Europe, from the coasts of northern France, Belgium, Holland, Germany and Denmark to the interior swamps of Poland and Russia. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 2.

362. See MAINE, *supra* note 174, at 88; PURSEGLOVE, *supra* note 58, at 60-61; Butler, *supra* note 187, at 866-67; Cox, *supra* note 173, at 57-60.

363. "There were only eight private acts for enclosure in the whole of England before 1714, eighteen under George I (1714-27), and 229 under George II (1727-60), most of these in the latter part of his reign In the next forty years no fewer than 1,479 enclosure acts were passed" HOSKINS, *ENGLISH LANDSCAPE*, *supra* note 65, at 185. Somerset Levels, for example, escaped the earlier attempts at drainage, as evidenced by the absence of windmills, a hallmark of the landscape in the eastern lowlands. But an increased demand for food, in addition to the agricultural and industrial revolutions, prompted the undertakers to attack the Levels in the late eighteenth and early nineteenth centuries at a time when the technology was available to pump the Levels dry. WILLIAMS, *DRAINING OF THE SOMERSET LEVELS*, *supra* note 73, at 4.

364. NEESON, *supra* note 135, at 46-47.

365. See generally NEESON, *supra* note 135, at 46-47. (relating the political struggles and ultimate defeat of the commoners).

366. BALDOCK ET AL., *supra* note 73, at 135-36; PURSEGLOVE, *supra* note 58, at 44.

one of the earliest precursors of the modern administrative state.³⁶⁷

VII. NO QUICK AND EASY ANSWERS

For a thousand years, the English wetlands were a commons in which small-scale flood protection was combined with sustainable use of natural wetland products. Parliament then extinguished the rights of the wetland users and redistributed those rights to the landed magnates in conjunction with large scale drainage projects. As a result of the gradual enclosure and drainage of wetlands, the common law of wetlands fell into disuse. Fewer and fewer wetlands existed, and those that remained often became part of the fee simple estate of a large land owner. Courts of Sewers replaced the common law courts and their writs of *ad quod damnum*, and the local codes that governed wetlands in such detail faded away as the wetlands themselves faded away.

Why did the common law of wetlands die out? Some would undoubtedly argue that the replacement of the common law by statutory controls represented "progress." From an economic perspective, such an argument would focus on the common law's reliance on commonly-owned property and the threat of overuse posed by the "tragedy of the commons." From a biological perspective, this argument might point to "survival of the fittest" as a justification for the replacement of the wetlands and their particular legal institutions.

Others might view this history from the opposite perspective, representing not progress but "depravity." The parliamentary dominance that led to these changes meant that powerful interest groups were able to manipulate public choices in order to replace an economically efficient common law system with a legislatively driven system based on massive rent-seeking. And the dramatic changes in the natural environment caused by wetland drainage would be viewed with suspicion by those who suspect that nature knows best.

Each of these arguments can marshal certain aspects of the history of English wetlands to support its theory, but upon analysis each seems inadequate to explain the complex pattern of events by which the common law of wetlands faded away. The supporters of progress tend to rely on an economic metaphor—the tragedy of

367. Jaffe & Henderson, *supra* note 347, at 348. Since that time, further reorganization of the functions of the agencies concerned with drainage have taken place, but the current English practice is not relevant to this article.

the commons—and a biological metaphor—the survival of the fittest. The advocates of depravity rely on their own economic and biological metaphors: the common law’s “inherent efficiency,” and “nature knows best.” This section will examine the applicability of each of these metaphors to the decline of the common law of wetlands to see if one or more of them provide a quick and easy explanation for the pattern of historical change.

A. *The Tragedy of the Commons*

Many people today might assume that the fen people’s use of the wetlands as common property made their overuse of the wetlands inevitable, or “tragic,” in the sense popularized by Garrett Hardin’s famous “Tragedy of the Commons.”³⁶⁸ Hardin’s essay has become so well-known that many people accept his metaphor as gospel,³⁶⁹ believing that commonly owned resources will inevitably deteriorate unless they are either privatized or controlled by a regulatory agency.³⁷⁰ In fact, the system of common rights in the wetlands appears to have supported a productive economy while also maintaining a supply of natural resources that proved to be sustainable for many centuries.³⁷¹ This success is no longer surprising. In recent years researchers have undertaken extensive empirical investigations to understand the operation of common property systems,³⁷² motivated to a great extent by international development

368. Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). Hardin described the dilemma of herders who have the right to graze an unlimited number of cows on a common pasture. Even though an increase in the total number of cows gradually reduces the health and value of each cow, for any individual herder the economically beneficial decision at any time is to add one more cow because the value he gains from adding that cow is always greater than the loss in average value of each cow, which is spread among all the herders’ cows.

369. Although Hardin’s metaphor is well-known, the content of his article is not as simple as the metaphor has led people to assume. David A. Westbrook, *Liberal Environmental Jurisprudence*, 27 U.C. DAVIS L. REV. 619, 652-55 (1994). See also James E. Krier, *The Tragedy of the Commons, Part Two*, 15 HARV. J.L. & PUB. POL’Y 325, 334-39 (1992). Because the metaphorical use of Hardin’s article has become such a part of our culture, however, this article will employ that usage. See OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 2-3, 7-8.

370. Garrett Hardin, *Denial and Disguise*, in MANAGING THE COMMONS 45, 49 (Garrett Hardin & John Baden eds., 1977).

371. See BOLTON, *supra* note 61, at 31, 116.

372. NATIONAL RESEARCH COUNCIL, PROCEEDINGS OF THE CONFERENCE ON COMMON PROPERTY RESOURCE MANAGEMENT vii-viii (1986). For a recent analysis of common-pool resources, with a thorough bibliography of the various studies see ELINOR OSTROM ET AL., RULES, GAMES AND COMMON-POOL RESOURCES 331-60 (1994), which I recently reviewed in 13 YALE J. ON REG. 391 (1996).

agencies building projects in countries still using such systems.³⁷³ To the extent English common law was successful in maintaining an efficient common property system in the wetlands, this success is consistent with the results of many empirical studies suggesting that common use of land would not necessarily lead to depletion of the resource, under the conditions present in the medieval wetlands.³⁷⁴

This is not to say that Hardin was wrong. His theory was sound, but only under certain assumptions that were not factually present in the medieval commons, particularly as found in the wetlands.³⁷⁵ There are five major ways in which Hardin's assumptions do not correlate with the conditions present in medieval wetlands.

The first and most important distinction between the English wetlands and Hardin's hypothetical commons is that legal rights to common land in medieval England were held only by a limited pool of individuals,³⁷⁶ not by the perpetually expandable pool assumed in the tragedy metaphor.³⁷⁷ Hardin's logic applies if the resource is open to all users, or "lacks excludability."³⁷⁸ The "common" pasture of medieval England, however, was open only to a limited number of people who resided in the area and had both a

373. The World Bank has been actively encouraging the participation of local groups in project design and management in order avoid some of the problems created when traditional control mechanisms are ignored. See WORLD BANK PARTICIPATION SOURCEBOOK (Environment Department, World Bank, June 1995); THE WORLD BANK AND PARTICIPATION (Operations Policy Department, The World Bank, Sept. 1994).

374. A sample of the many such studies conducted in recent years is discussed and analyzed in OSTROM, GOVERNING THE COMMONS, *supra* note 133. See also Bonnie J. McCay & James M. Acheson, *Human Ecology of the Commons*, in THE QUESTION OF THE COMMONS 1, 12 (Bonnie J. McCay & James M. Acheson eds., 1987) (reporting mixed conclusions from a number of studies about whether conservation and the commons are mutually exclusive).

375. Stated broadly, the imprecision of his facts has created confusion. See generally OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 2-3.

376. Not only was migration within the country uncommon during most of the middle ages, it was often illegal. For example, an act of 1662 allowed local authorities to remove any new inhabitant who occupied a dwelling worth less than £10 per annum and who was deemed likely to be chargeable to the parish, the unit traditionally responsible for the administration of poor relief. MARK A. THOMSON, A CONSTITUTIONAL HISTORY OF ENGLAND: 1642 TO 1801, at 462 (1938). Richard Epstein has suggested that restrictions on the transfer of common-pool rights to outsiders may have been appropriate to protect common-pool resources. Richard A. Epstein, *Why Restrain Alienation?*, 85 COLUM. L. REV. 970, 978-84 (1985).

377. OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 48, 88, 206; McCay & Acheson, *supra* note 374, at 10-12. See generally Ellickson, *supra* note 250, at 1315.

378. PIERS BLAIKIE & HAROLD BROOKFIELD, LAND DEGRADATION AND SOCIETY 186 (1987); Firket Berkes et al., *The Benefits of the Commons*, 340 NATURE 91, 93 (1989).

legal right to use it³⁷⁹ and a practical ability to take advantage of it.³⁸⁰ Such land might better be called communal property rather than open property.³⁸¹ Recent research suggests that overutilization of resources is less likely if the resources are communal rather than open.³⁸²

A second important distinction is that, unlike the users of the common resource in Hardin's metaphor, the users of medieval English wetlands were a cohesive, communicative group.³⁸³ Game theorists have typically overlooked the importance of communication by focusing on individuals,³⁸⁴ but empirical studies suggest that cohesive, communicative³⁸⁵ groups are best able to maintain an efficient system of common resource management.³⁸⁶ Indeed, recent empirical studies have pinpointed divisiveness among user groups as one of the most difficult problems typically encountered in common property resource management.³⁸⁷ In light of this re-

379. DAHLMAN, *supra* note 166, at 100-02. See *supra* text accompanying notes 199-205.

380. Both the lack of social mobility of wetlands users, as well as fear of the risks and stigma associated with wetland life, together deterred outsiders from seeking to use the wetlands and thus limited the tendency to overutilize the resources. See *supra* text accompanying notes 142-45, 156-57, 203-04.

381. Berkes et al., *supra* note 378, at 91.

382. Berkes et al., *supra* note 378, at 93.

383. Hardin, *supra* note 368, at 1243.

384. Carlisle F. Runge, *Common Property Externalities: Isolation, Assurance, and Resource Depletion in a Traditional Grazing Context*, 63 AMER. J. OF AGRIC. ECON. 595, 599-600 (1981). In a series of laboratory experiments designed to test the willingness of students to cooperate in simulated common property situations, Elinor Ostrom found that game theory had only limited predictive value. The willingness of the students to cooperate exceeded what would be predicted by game theory as long as adequate communication was available. OSTROM ET AL., *supra* note 372, at 105-223. See also ROBERT C. ELLICKSON, *ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES* 156-66, 167-68 (1991) (discussing the puzzle of cooperation and welfare-maximizing norms).

385. ELLICKSON, *ORDER WITHOUT LAW*, *supra* note 384, at 167-68, 177-83; OSTROM ET AL., *supra* note 372, at 145-69; Bruce Campbell and Ricardo A. Godoy, *Commonfield Agriculture: The Andes and Medieval England Compared*, in NATIONAL RESEARCH COUNCIL, *PROCEEDINGS OF THE CONFERENCE ON COMMON PROPERTY RESOURCE MANAGEMENT* 323, 339-42 (1986).

386. SHUI YAN TANG, *INSTITUTIONS AND COLLECTIVE ACTION: SELF-GOVERNANCE IN IRRIGATION* 130-31 (1992); OSTROM, *GOVERNING THE COMMONS*, *supra* note 133, at 206; Berkes et al., *supra* note 378, at 93.

387. A particularly apt current example of common property management failure resulted from a government attempt to displace intergroup agreement in a large wetland area in the Niger River basin in Mali, the "Inland Delta", which serves as a flood plain for the heavy May-September rains in the Guinean Highlands. R. L. Welcomme, *The Niger River System*, in *THE ECOLOGY OF RIVER SYSTEMS* 9, 14 (Bryan R. Davies & Keith F. Walker, eds., 1986). Like many African wetlands, the Inland Delta is a source of high economic productivity. See Marchand, *supra* note 329, at 201. A recent study of the Niger Delta found that common property management systems, which developed over hundreds of

search, the success of the fen people may be explicable despite Hardin's paradigm. The cohesiveness of the fen people would undoubtedly have been enhanced by their outcast status and their lack of communication with the outside world;³⁸⁸ these factors would have meant that they attached even more importance to their internal communications.³⁸⁹

A third distinction is the critical difference between the grazing land resource used in Hardin's paradigm and the wetlands resource in medieval England. Unlike grazing land, wetlands pro-

years among several ethnic groups that used different production systems (e.g. fishing, farming, etc.) and were particularly adapted to the bioclimatic diversity of the region, "have been increasingly undermined, and . . . the more productive and reliable resources of the delta have fallen under the increasing control of . . . powerful groups within rural communities, such as retired soldiers who fought in the French colonial army, who are able, through their access to credit, capital equipment and labour, to monopolize the more productive resources." Richard Moorehead, *Changes Taking Place in Common-Property Resource Management in the Inland Niger Delta of Mali*, in COMMON PROPERTY RESOURCES: ECOLOGY AND COMMUNITY-BASED SUSTAINABLE DEVELOPMENT 256, 265-67 (Firket Berkes, ed., 1989). The government now manages the majority of collective fisheries and sets the crossing dates of herds into the flood retreat pastures through a regional administrative conference. *Id.* As a result of the shift from management by intergroup agreement to management by government:

[T]he quality of management of the commons is declining. Rising cash needs within communities are obliging influential groups to monopolize the more productive resources, while using revenue from their management for their individual interests. At the same time the state, while undermining customary common-property management institutions (which were based upon an inherited and practiced knowledge of the area) is unable to replace them with an effective and knowledgeable alternative management system. In these conditions, the increasing numbers of rural poor are being obliged to exploit more marginal commons. They are disproportionately taxed by the state, and have increasing cash needs. As a result, they have less and less choice in how they manage their environment and almost no opportunity to develop institutions conducive to better resource management in the future.

Id. Moreover:

[T]he export of resources from the rural sector is taking place without any comparable reinvestment being made in traditional rural economies [R]evenue from state management of resources on the residual commons goes to the national exchequer, whose principal concern is with liquidity to pay for . . . payment of civil-service salaries and educational grants. . . . Fish production is down 50 per cent from the early 1970s; over 60 per cent of the area's livestock was lost between 1983 and 1985; and cereal production has fallen by 70 per cent since the last reasonable year in 1977

Id.

388. See ELLICKSON, ORDER WITHOUT LAW, *supra* note 384, at 52-53 (noting ranchers' isolation enhances importance of internal communication).

389. Frequently, groups which successfully manage common property resources willingly borrow rules from other similar groups. OSTROM ET AL., *supra* note 372, at 323 n.1. The frequent replication of the Code of Romney Marsh reflects this characteristic. See *supra* text accompanying notes 265-75.

vided a storage capacity for most of their important resources, reducing the importance of the "use it or lose it" attitude that frequently hampers efficient management.³⁹⁰ It is this characteristic adaptability of wetland plants and animals to variations in hydrological conditions³⁹¹ that facilitated efficient common property management in the English wetlands. Elinor Ostrom's empirical analysis of field studies suggests that efficient management is easier if the resource can be "stored," thus giving users more flexibility as to time of use and making it easier to devise allocation rules that are perceived as fair.³⁹² This characteristic natural flexibility means that wetland resources may be better than planted crops at adapting to climatic disturbance.³⁹³

This is not to suggest that wetland resources lack all subtractability, in the manner of some of the transportation and commerce resources discussed by Carol Rose in her article on the "comedy" of the commons.³⁹⁴ Rather, the multiple economic bases of the wetlands allowed users to shift back and forth from one use to another to adapt to varying environmental conditions, thus effectively storing resources for future use.³⁹⁵ Empirical studies suggest that there may be a correlation between the complexity of the environment and the success of resource management programs.³⁹⁶

A fourth distinction is that the grazing land in Hardin's paradigm was presumably fairly homogeneous in the amount of resources (grasses) each part of the land contained. Wetland areas,

390. This attitude is sometimes described as the "green apple syndrome," referring to a metaphorical orchard in which everyone has the right to pick the apples with the result that they will always be picked before they are ripe. BLAIE & BROOKFIELD, *supra* note 378, at 192.

391. NATIONAL RESEARCH COUNCIL, *supra* note 3, at 21.

392. OSTROM ET AL., *supra* note 372, at 312-15.

393. 1 OFFICE OF TECHNOLOGY ASSESSMENT, PREPARING FOR AN UNCERTAIN CLIMATE 172-85 (1993); NATIONAL RESEARCH COUNCIL, *supra* note 3, at 26-33.

394. Rose suggests that treating highways and similar facilities that could absorb many users without restricting the use of other users as common property is not tragic because excludability is not a problem. Rose, *supra* note 187 (addressing the highways of earlier centuries, not those of today.).

395. A.P. Lino Grima & Firket Berkes, *Natural Resources: Access, Rights to Use and Management*, in COMMON PROPERTY RESOURCES: ECOLOGY AND COMMUNITY-BASED SUSTAINABLE DEVELOPMENT 32, 42-43 (Firket Berkes ed., 1989).

396. OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 88-103. Ostrom's initial empirical analysis of systems for allocating common pool resources led her to suggest that one criteria of success was environmental complexity; in other words, uncertainty about the environment apparently fosters cooperative action. OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 88-89.

by contrast, often contain mobile and varied resources distributed disproportionately in particular sub-areas.³⁹⁷ The assignment of private rights to these productive sub-areas would not have displaced the need for common ownership, because most of the resources in the wetlands were highly mobile. Some fish and fowl migrate within regular patterns,³⁹⁸ making them both mobile and fungible. The allocation of private rights to these animals themselves would have been very difficult.³⁹⁹ Even wetland plants, which provided the basis for grazing and thatch gathering, are subject to wide-ranging seasonal and stochastic variability, so that a person whose property rights were tied to a particular spot in the wetlands might find that spot of little value for months or years at a time.⁴⁰⁰

Finally, in Hardin's paradigm, the herders setting their cattle to graze did not appear to have a method for assessing damages to their resource, while the users of medieval wetlands did. This is an important distinction in light of empirical studies suggesting that institutions facilitating ongoing communication among users can assist commons management by enabling adaptation of the rules to changing conditions.⁴⁰¹ Thus a key element of the common law of wetlands may well have been the existence of a procedure by which the impact of potential changes to the environment could be assessed and communicated to the users of the wetlands so that adjustments could be made in the rules, as needed. The writ of *ad quod damnum*, though its application in practice has been little studied, may have provided such a communication mechanism.⁴⁰²

The bottom line is that both the empirical and theoretical studies of common property resource management confirm that neither privatization⁴⁰³ nor external regulation is necessarily the

397. OSTROM ET AL., *supra* note 372, at 308-12.

398. See Christopher J.N. Gibbs & Daniel W. Bromley, *Institutional Arrangements for Management of Rural Resources: Common-Property Regimes*, in COMMON PROPERTY RESOURCES: ECOLOGY AND COMMUNITY-BASED SUSTAINABLE DEVELOPMENT 22, 24-26 (Fikret Berkes ed., 1989).

399. See OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 88-96; JAMES A. TOBER, WHO OWNS THE WILDLIFE? 119-38 (1981). For a discussion of potential systems for creating private property in wildlife, see Robert J. Smith, *Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife*, 1 CATO J. 439 (1981).

400. MITSCH & GOSSELINK, *supra* note 40, at 190-203.

401. OSTROM ET AL., *supra* note 372, at 149.

402. See *supra* text accompanying notes 308-14.

403. For a summary of the arguments that an allocation of private property rights is inevitably the best way to solve problems of common pool resources see OSTROM, GOVERNING THE COMMONS, *supra* note 133, at 12-13. Empirical research suggests that although

ideal solution to problems of overutilization.⁴⁰⁴ Indeed, if any generalization can safely be made on the basis of studies to date, it is that the replacement of locally-derived rules by outside forces is the most common threat to the efficient management of common property resources.⁴⁰⁵ The success of the medieval system of common rights in wetlands itself supports the conclusions of those modern scholars who argue that common rights in land can be an efficient method of resource protection in certain environments.⁴⁰⁶ It suggests that one should not treat private rights and common rights as opposing alternatives, but as tools to solve those problems to which each is best suited.

It should be noted, however, that the exclusion of outsiders is the practical result of most attempts to avoid the tragedy of the commons. While Elinor Ostrom suggests that users "who interact with each other in many situations other than the sharing of their common-pool resources are apt to develop strong norms of acceptable behavior and to convey their mutual expectations to one another in many reinforcing encounters,"⁴⁰⁷ a mobile and multi-ethnic society may have difficulty in maintaining this type of local cohesiveness without enforcing it by legal or extra-legal sanctions designed to exclude outsiders.⁴⁰⁸ If such exclusion is designed to hoard available resources to a degree far beyond the needs of those to whom the entitlement is reserved, it is rightly subject to charges

conversion of common rights to private rights may produce desirable results under many circumstances, no theoretical solution best fits all circumstances. *Id.* at 18-27. See JAMES M. BUCHANAN, *THE LIMITS OF LIBERTY: BETWEEN ANARCHY AND LEVIATHAN* 21 (1975) (finding privatization may be more efficient than common ownership, but the relative inefficiency of common ownership is not comparable to the extreme inefficiency that accompanies uncertainty about what structure of rights will be legally enforced upon privatization).

404. In numerous instances, "attempts at asserting government ownership have broken down effective traditional management approaches, leading to far greater degradation of resources" Jeffrey A. McNeely, *Common Property Resource Management or Government Ownership: Improving the Conservation of Biological Resources*, 10 INT'L. REL. 211, 212 (1991). See also Berkes et al., *supra* note 378, at 93; Bruce A. Larson & Daniel W. Bromley, *Property Rights, Externalities, and Resource Degradation: Locating the Tragedy*, 33 J. OF DEV. ECON. 235, 256 (1990).

405. BLAIKIE & BROOKFIELD, *supra* note 378, at 192-93; McNeely, *supra* note 404, at 211-13.

406. See Ellickson, *Property in Land*, *supra* note 250, at 1390-91.

407. OSTROM, *GOVERNING THE COMMONS*, *supra* note 133, at 206.

408. See, e.g., ELICKSON, *ORDER WITHOUT LAW*, *supra* note 384, at 284; Bonnie J. McCay, *The Culture of the Commoners: Historical Observations on Old and New World Fisheries*, in *THE QUESTION OF THE COMMONS* 195, 214-15 (Bonnie J. McCay & James M. Acheson eds., 1987).

of antidemocratic bias.⁴⁰⁹ Reasonable restrictions on potential new users, however, are an inevitable element of any policy to promote sustainable use of common resources; even powerfully motivated land reform programs have hesitated to abandon the principle of first possession for fear of the chaos that might follow.⁴¹⁰

The ability to assess the potential impact of proposals for land development also played a key role in the maintenance of the medieval English wetland economy. The writ of *ad quod damnum*, despite its imperfections, gave the fen people an opportunity to have a local jury review the potential impact of man-made changes in the wetland landscape, and to have the fairness of that review determined by the royal courts.⁴¹¹ The availability of this remedy must have enhanced the bargaining power of the fen people in dealing with adventurers from outside the area.⁴¹² In addition, the availability of the royal courts to adjudge disputes about the maintenance of dikes, drains and other devices for wetland management alleviated the holdout problems that arise when a group of individuals have the collective responsibility to maintain protective systems that benefit the entire group.⁴¹³

B. *The Survival of the Fittest*

Research in evolutionary biology has progressed dramatically since Darwin's day, but attempts to use evolutionary theory in the analysis of social problems⁴¹⁴ still rely heavily on the simple principle associated with Darwin: the "survival of the fittest."⁴¹⁵ The sur-

409. For a recent commentary on the underlying issue, see Richard Thompson Ford, *The Boundaries of Race: Political Geography in Legal Analysis*, 107 HARV. L. REV. 1841, 1910-13 (1994). See generally Richard J. Lazarus, *Pursuing "Environmental Justice": The Distributional Effects of Environmental Protection*, 87 N.W. U. L. REV. 787 (1993); Carol Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1 (1991); A. Dan Tarlock, *Environmental Protection: The Potential Misfit Between Equity and Efficiency*, 63 COLO. L. REV. 871 (1992).

410. See generally, CHARLES C. GEISLER & FRANK J. POPPER, *LAND REFORM, AMERICAN STYLE* (1984) (describing the history of land reform in the United States). See also OSTROM, *GOVERNING THE COMMONS*, *supra* note 133, at 88-89 (discussing similarities among enduring self-governing common-pool resource institutions including the appropriation principle).

411. See, e.g., DUGDALE, *supra* note 61, at 301-06.

412. See *supra* text accompanying notes 308-13.

413. See, e.g., *Hudson v. Tabor*, 1 Q.B.D. 225 (1876).

414. After a long hiatus inspired by revulsion against Nazi eugenics, "Social Darwinism" appears again to be on the rise in some academic circles. See, e.g., RICHARD J. HERRNSTEIN & CHARLES MURRAY, *THE BELL CURVE: INTELLIGENCE AND CLASS STRUCTURE IN AMERICAN LIFE* (1994).

415. The metaphor actually originated with Herbert Spencer. PAT SHIPMAN, *THE*

vival of the fittest has historically been used by those who have survived to suggest that they *should* have survived because they and their ancestors were the fittest. However, such bootstrap reasoning requires an acceptance of the "is/ought" fallacy, a position that most scientists and philosophers find logically untenable.⁴¹⁶ And if the claim is implausible that the survival of modern English agriculture demonstrates its current fitness, any claim that it represents superior evolutionary fitness for the future is even more suspect. A more apt metaphor for claims based on past evolutionary history may be "survival of the adequate," rather than "survival of the fittest."⁴¹⁷

The ability to adapt to environmental change may be the most important element of fitness for humans, as well as for all other organisms.⁴¹⁸

Man has been highly successful as a biological species because he is adaptable. He can hunt or farm, be a meat-eater or a vegetarian, live in the mountains or by the seashore, be a loner or a team-member, function in a democratic or totalitarian state. History shows, on the other hand, that societies which were efficient because they were highly specialized rapidly collapsed when conditions changed.⁴¹⁹

EVOLUTION OF RACISM 107 (1994). A recent historical survey of the application of Darwin's theories in the social sciences can be found in CARL N. DEGLER, *IN SEARCH OF HUMAN NATURE: THE DECLINE AND REVIVAL OF DARWINISM IN AMERICAN SOCIAL THOUGHT* (1991). For an indication of the range of views about the origin and power of social Darwinism, compare RICHARD HOFSTADTER, *SOCIAL DARWINISM IN AMERICAN THOUGHT* (rev. ed. 1955) with ROBERT C. BANNISTER, *SOCIAL DARWINISM: SCIENCE AND MYTH IN ANGLO-AMERICAN SOCIAL THOUGHT* (rev. ed. 1979).

416. See, e.g., ERNST MAYR, *EVOLUTION AND THE DIVERSITY OF LIFE* 13 (1976). Nevertheless, some scholars have insisted upon a connection between "is" and "ought," at least in certain circumstances. Leonard Ratner, for example, argues that evolutionary utilitarians should reject Hume's ban on saying it ought to be because it is. "Goals that facilitate human existence are persistently chosen by most humans, because human structure and function have evolved and are evolving to facilitate such existence" and the "ultimate human goal" is "long-run human survival." "Like most generalizations, the is-ought dictum overgeneralizes. The is of evolved human existence implies the human goal, or ought, of human need/want fulfillment Rejection of that ought is a rejection of all oughts, because any other ought necessarily assumes present or future survival." Leonard G. Ratner, *The Utilitarian Imperative: Autonomy, Reciprocity, and Evolution*, 12 HOFSTRA L. REV. 723, 732-34 (1984).

417. DANIEL R. BROOKS & E.O. WILEY, *EVOLUTION AS ENTROPY: TOWARD A UNIFIED THEORY OF BIOLOGY* 103 (2d ed. 1988).

418. MAYR, *supra* note 416, at 103-06; HERBERT A. SIMON, *REASON IN HUMAN AFFAIRS* 67-71 (1982); Keith S. Thomson, *Fisher's Microscope, or the Gradualist's Dilemma*, 76 AM. SCIENTIST 500, 501-02 (1988). See generally NILES ELDRIDGE & IAN TATTERSALL, *THE MYTHS OF HUMAN EVOLUTION* (1982) (debunking the gradualist myth of constant adaptive change).

419. RENÉ DUBOS, *SO HUMAN AN ANIMAL* 175 (1968).

Indeed, adaptability to environmental change may be a more important component of fitness than scientists had earlier assumed,⁴²⁰ especially given recent scholarship that suggests traditional evolutionary theory has erred in assuming that evolution has taken place in a relatively stable environment.⁴²¹ The scholarship includes the work of paleontologists, who have suggested that catastrophic change has played a greater role in the history of the world than people had previously thought,⁴²² and ecologists, who have emphasized that the world is not stable but contains a wide range of rapidly changing environmental niches.⁴²³ Recent scholarship by molecular biologists also supports the importance of adaptability; it suggests that the genetic variability of organisms far exceeds that predicted by traditional evolutionary theories,⁴²⁴ and that mutations may not be entirely random,⁴²⁵ as evolutionary theory has steadfastly held,⁴²⁶ but may actually be directed from within the genome itself.⁴²⁷ The extent to which an organism can evolve is relative to the ability of its genes or combi-

420. DAVID J. MERRELL, *THE ADAPTIVE SEASCAPE: THE MECHANISM OF EVOLUTION* 99, 137-44 (1994); SIMON, *supra* note 418, at 71.

421. MERRELL, *supra* note 420, at 54; Richard D. Alexander, *Biology and Law*, in GRUTER INSTITUTE, *LAW, BIOLOGY AND CULTURE* 413, 416-17 (1994); Eviatar Nevo, *Genetic Diversity in Nature: Patterns and Theory*, 23 *EVOLUTIONARY BIOLOGY* 217 (1988); Keith Stewart Thomson, *Fisher's Microscope, or the Gradualist's Dilemma*, 76 *AM. SCIENTIST* 500 (1988).

422. Stephen Jay Gould, *Jove's Thunderbolts: Comet Shoemaker-Levy 9 was a Pat on the Back for Science*, *NAT. HIST.*, Oct. 1994 at 6; Stephen Jay Gould & Niles Eldredge, *Punctuated Equilibria: The Tempo and Mode of Evolution Reconsidered*, 3 *PALEOBIOLOGY* 115 (1977); David Jablonski, *Larval Ecology and Macroevolution in Marine Invertebrates*, 39 *BULL. OF MARINE SCI.* 565 (1986); Leigh M. Van Valen, *A Theory of Origination and Extinction*, 7 *EVOLUTIONARY THEORY* 133 (1985). See generally PETER J. BOWLER, *EVOLUTION: THE HISTORY OF AN IDEA* 336-38 (rev. ed. 1989); DAVID M. RAUP, *EXTINCTION: BAD GENES OR BAD LUCK* (1991). Critiques include DANIEL R. BROOKS & E.O. WILEY, *EVOLUTION AS ENTROPY: TOWARD A UNIFIED THEORY OF BIOLOGY* 49 (2d. ed. 1988); Jeffrey S. Levinton, *Stasis in Progress: The Empirical Basis of Macroevolution*, 14 *ANN. REV. ECOL. SYST.* 103 (1983).

423. See *supra* text accompanying notes 497-500.

424. STEPHEN JAY GOULD, *WONDERFUL LIFE: THE BURGESS SHALE AND THE NATURE OF HISTORY* 51 (1989); MERRELL, *supra* note 420, at 60-75; BRUCE WALLACE, *FIFTY YEARS OF GENETIC LOAD: AN ODYSSEY* 113-16 (1991); ROBERT WESSON, *BEYOND NATURAL SELECTION* 153 (1991). See generally ERNST MAYR, *ONE LONG ARGUMENT: CHARLES DARWIN AND THE GENESIS OF MODERN EVOLUTIONARY THOUGHT* (1991).

425. MARK RIDLEY, *THE PROBLEMS OF EVOLUTION* 65-72 (1985). For a recent example see Sean Nee & Paul H. Harvey, *Getting to the Roots of Flowering Plant Diversity*, 264 *SCIENCE* 1549 (1994).

426. WESSON, *supra* note 424, at 28-29.

427. The rapid evolution of insect genes for resistance to pesticide is a prime example. MERRELL, *supra* note 420, at 88-92. See also Richard M. Burian, *Challenges to the Evolutionary Synthesis*, 23 *EVOLUTIONARY BIOLOGY* 247, 252-54 (1988); Elizabeth Culotta, *A Boost for "Adaptive" Mutation*, 265 *SCIENCE* 318 (1994); Mae-Wan Ho et al., *A New Paradigm for Evolution*, *NEW SCIENTIST*, Feb. 27, 1986 at 41; David S. Thaler, *The Evolution of Genetic Intelli-*

nations of genes to adapt to environmental change (referred to as "evolutionary plasticity"). As a result, the natural selective preference of the evolutionary process should, over the long term, lead an organism to retain those genes with greater, rather than lesser, plasticity.⁴²⁸

By protecting varied ecosystems, we can help ourselves contend with environmental change because this protection will broaden or at least maintain the base of source material from which future adaptations may be chosen.⁴²⁹ For example, organisms can enhance their own fitness to cope with cyclical environmental change by readapting to earlier behavior patterns, remembering old ways of doing things.⁴³⁰ It may be especially important to maintain a broad base of source material, given the fact that the direction of future change is unpredictable, and therefore prior selection of appropriate source material is infeasible.⁴³¹ Because many scientists suggest that future climatic change may take place more dynamically than it has in the past,⁴³² adaptation will become even more

gence, 264 SCIENCE 224 (1994); Jonathan Weiner, *Evolution Made Visible*, 267 SCIENCE 30 (1995).

428. WALLACE, *supra* note 424, at 134-37; MICHAEL RUSE, PHILOSOPHY OF BIOLOGY TODAY (1988). See also Richard Kerr, *Who Profits from Ecological Disaster?*, 266 SCIENCE 28 (1994); William K. Stevens, *Extinction of the Fittest May Be the Legacy of Lost Habitats*, N. Y. TIMES, Sept. 27, 1994, at B8.

429. The ability to utilize varied source material in the past probably enhanced fitness in times of environmental change. STEVE JONES, THE LANGUAGE OF THE GENES 200-02 (1993). See also ANTONETTE MANNION, GLOBAL ENVIRONMENTAL CHANGE: A NATURAL AND CULTURAL ENVIRONMENTAL HISTORY 191-95 (1990); Michael E. Soulé, *Biophilia: Unanswered Questions*, in THE BIOPHILIA HYPOTHESIS 441, 450 (Stephen R. Kellert & Edward O. Wilson eds., 1993). See generally RICHARD DAWKINS, THE EXTENDED PHENOTYPE (1982).

430. M. J. FRENCH, INVENTION AND EVOLUTION: DESIGN IN NATURE AND ENGINEERING 268-73 (1988); Madhav Gadgil, *Of Life and Artifacts*, in THE BIOPHILIA HYPOTHESIS 365 (Stephen R. Kellert & Edward O. Wilson eds., 1993).

431. See generally MERRELL, *supra* note 420, at 144. Merrell finds that natural selection tests genes:

[N]ot in one particular gene complex, but in an ever-changing array of gene complexes and in a variety of environmental conditions. Those that survive this constant winnowing process persist in the gene pool of the population; the others fall along the way. The chromosomal polymorphism that is so often observed in natural populations seems to be preserved by natural selection, not to create an integrated, cohesive genetic system, but to establish permanent linkage disequilibrium and thus maximize and perpetuate the heterosis based on associative overdominance.

Id. at 144.

432. A balanced discussion of the potential impacts of future climate change is found in NATIONAL ACADEMY OF ENGINEERING, ENERGY: PRODUCTION, CONSUMPTION, AND CONSEQUENCES (1990). See also William K. Stevens, *Experts Confirm Human Role in Global Warming*,

important to the preservation of our species.⁴³³

Stocking an area with a very limited variety of agricultural species (creating a "monoculture") makes it vulnerable to environmental change by decreasing its adaptability.⁴³⁴ Lack of variety in crop selection generates serious doubt about the survivability of existing plant species because, "[i]n a world created by natural selection, homogeneity means vulnerability. Purity of stock lowers resistance to disease, while monocultures spread contiguously over vast areas are an invitation to enemies made newly formidable."⁴³⁵ Thus, it should not be surprising that English wetlands survived well in their natural state, but not when drained of water and genetic diversity. Recall, from Part IV above, that the English wetland economy during the common law period relied heavily on an vast array of many plants and animal species. Recall, as well, Part V's suggestion that the wetland ecosystem was quite adaptable to changes in climate, to adaptive management on a small scale, and to changes in population levels and economic conditions.⁴³⁶ The ability of the English wetlands to change, marked by a wide plant and animal diversity, suggests that the wetlands had attained a level of fitness necessary to survive natural selection. On the other hand, the agricultural economy that followed drainage and enclosure of these wetlands shares a lack of genetic variety in common with much modern agriculture.

Supported by government subsidies,⁴³⁷ farmers continue to drain and convert English wetlands, often to monocultural agriculture, at a rate of about 100,000 hectares per year.⁴³⁸ Farmers do not necessarily choose the small number of crop varieties they use

N.Y. TIMES, Sept. 10, 1995, at A1 (citing modern human activity as a likely cause of global warming).

433. See generally VIRGINIA ABERNETHY, *POPULATION PRESSURE AND CULTURAL ADJUSTMENT* (1979).

434. EUGENE P. ODUM, *ECOLOGY AND OUR ENDANGERED LIFE-SUPPORT SYSTEMS* 53 (2d ed. 1993). For an interesting example, see Deborah H. Stinner, Ivan Glick and Benjamin R. Stinner, *Forage Legumes and Cultural Sustainability: Lessons from History*, 40 *AGRIC., ECOSYSTEMS & ENV'T* 233 (1992).

435. EDWARD O. WILSON, *THE DIVERSITY OF LIFE* 301 (1992).

436. Carl Dahlman suggests, however, that one of the advantages of the enclosure of common lands was the fact that more unified control of large land areas gave the landowner the flexibility to change crops or production methods to meet the constantly changing demands of the market. DAHLMAN, *supra* note 166, at 174-78.

437. PHILIP LOWE ET AL., *supra* note 83, at 67.

438. PHILIP LOWE ET AL., *supra* note 83, at 67. Between 1949 and 1986, about half of the wetlands then remaining were "destroyed or significantly damaged, mostly due to drainage and reclamation." *Id.* at 66.

because those varieties have demonstrated their superior fitness; instead their choices are probably based on European Community agricultural subsidies,⁴³⁹ which have skewed crop selection dramatically,⁴⁴⁰ and on artificially subsidized drainage.⁴⁴¹ Moreover, since many of these varieties have been in existence for only a relatively short period, they have not yet even withstood the test of time.⁴⁴² Given the replacement of so many English wetlands with a monocultural pasture of ryegrass means that it will be difficult to protect from extinction the native crop diversity that characterized the wetlands during the common law period.⁴⁴³

Social factors, including the dominance of the large agricultural landowners over the fen people, explain the monocultural fallout of the English wetlands better than a survival of the fittest theory. The extraordinary political power that the landed magnates assembled during a relatively brief period in English history allowed them to make irreversible changes in the English landscape.⁴⁴⁴ They replaced a landscape that had proven its long term viability in the face of environmental change with one that may be more susceptible to such change, in a time when such change seems ever more rapid.

The British government is slowly becoming more aware of the problems created by monocultural farming and wetland drainage. Indeed it has designated sixty-eight wetland areas for protection

439. These subsidies have resulted in large crop surpluses. "The wetlands, long regarded as wastes by generations of farmers, have been replaced by a harvest which fits the dictionary definition of 'waste' in every sense." PURSEGLOVE, *supra* note 58, at 79. "In the north, agricultural officials no longer discuss whether the harvest was adequate, only how the latest addition to the grain mountain can be stored." *Id.* at 77.

440. PHILIP LOWE ET AL., *supra* note 83, at 311. British environmental groups advocate inclusion of biodiversity as one of the central objectives of the European Community agricultural policy. ROYAL SOCIETY FOR THE PROTECTION OF BIRDS, ET AL., BIODIVERSITY CHALLENGE: AN AGENDA FOR CONSERVATION ACTION IN THE UK 36-37 (1993).

441. BALDOCK ET AL., *supra* note 73, at 129, 140-43.

442. See, e.g., J. Trevor Williams, *Identifying and Protecting the Origins of our Food Plants*, in BIODIVERSITY 240 (Edward O. Wilson ed., 1988) (finding a need to protect older varieties of crops).

443. For a discussion of the difficulty of creating small scale "museums" of crop diversity, see Miguel A. Altieri & Laura C. Merrick, *Agroecology and In Situ Conservation of Native Crop Diversity in the Third World*, in BIODIVERSITY 361, 365-68 (Edward O. Wilson ed., 1988). See generally Alan Randall, *The Value of Biodiversity*, 20 AMBIO 64 (1991) (considering various philosophical approaches to the value of biodiversity).

444. See *supra* text accompanying notes 335-65. See generally BERG, *supra* note 358, at 85; E.A. WRIGLEY, *CONTINUITY, CHANCE & CHANGE: THE CHARACTER OF THE INDUSTRIAL REVOLUTION IN ENGLAND* (1988).

under the Ramsar Convention.⁴⁴⁵ In addition, a recent White Paper on Rural Affairs now encourages farmers to create wildlife havens and to restore ponds and hedgerows through "green farming" grants.⁴⁴⁶ In sum, a "survival of the fittest" analysis of the drainage and enclosure movement affecting English wetlands suggests that political power trumped natural selection in determining the future course of the wetlands.

C. *The Inherent Economic Efficiency of the Common Law*

Despite claims to the contrary, the common law governing the English wetlands may have been more economically efficient than the statutory scheme which displaced it. The common law of wetlands evolved over many centuries without any significant legislative interference. Once parliament assumed absolute power during the interregnum, however, it replaced the common law with legislation that converted commonly owned wetland to farmland under the exclusive control of a single landowner. Several law and economics scholars suggest that legislative solutions are less efficient than common law solutions because the common law is inherently efficient.⁴⁴⁷ This suggestion may support the proposal that English common law was more efficient for governing wetlands than the legislative measures which followed.

Richard Posner is the most consistent proponent of the theory that the common law is more efficient than legislation.⁴⁴⁸ According to Posner, the principal rules of common law can be derived by casting the legal doctrines of various private common law fields in an economic form.⁴⁴⁹ In the field of property law, for example, Posner suggests that "the common law establishes property rights, regulates their exchange, and protects them against unreasonable interference—all to the end of facilitating the operation of the free market, and where the free market is unworkable of simulating its results."⁴⁵⁰

445. SECRETARY OF STATE FOR THE ENVIRONMENT ET AL., *BIODIVERSITY: THE UK ACTION PLAN* 163 (London, HMSO 1994).

446. SECRETARY OF STATE FOR THE ENVIRONMENT AND THE MINISTER OF AGRICULTURE, FISHERIES AND FOOD, *RURAL ENGLAND: A NATION COMMITTED TO A LIVING COUNTRYSIDE* 110-11 (London, HMSO 1995).

447. Jeffrey Evans Stake, *Status and Incentive Aspects of Judicial Decisions*, 79 GEO. L.J. 1447, 1477-85 (1991).

448. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 496-99 (3d ed. 1986).

449. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 229. See, e.g., WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* (1987).

450. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 230. "The definition of property

Posner premises his theory on the "public choice" argument that the multitude of conflicting interests to which legislatures must respond makes it impossible for legislatures to reach efficient solutions,⁴⁵¹ while judges, on the other hand, do not share the legislators' bias toward inefficiency because they are relatively insulated from the elective process. Given that judges are not buffeted by the same pressures as legislatures, they purportedly view the parties to litigation more as representatives of activities than as individuals. Thus, Posner contends, "it is natural" that a judge would ask "which of the competing activities is more valuable in the economic sense."⁴⁵² Posner deems this "[t]he Implicit Economic Logic of the Common Law."⁴⁵³

Finding Posner's contention that "it is natural" for a judge to choose the most economically valuable alternative too reminiscent of a natural law theory,⁴⁵⁴ a number of modern scholars have de-

rights can itself be viewed as a process of figuring out what measures parties would agree to, if transaction costs weren't prohibitive, in order to create incentives to avoid wasting valuable resources." POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 231.

451. The *Lucas* opinion is apparently based on public choice theory. See *infra* text accompanying notes 511-15. For a concise history of the application of public choice theory to law, see Charles K. Rowley, *Public Choice and the Economic Analysis of Law*, in LAW AND ECONOMICS 123, 145-57 (Nicholas Mercuro ed., 1988). The strengths and weaknesses of social choice theory are set out in DANIEL A. FARBER & PHILIP P. FRICKEY, *LAW AND PUBLIC CHOICE* (1991). See also Herbert Hovenkamp, *Regulation History as Politics or Markets*, 12 YALE J. ON REG. 549 (1995). For a discussion of Justice Scalia's support for public choice theory, see Bosselman, *Four Land Ethics*, *supra* note 334, at 1439, 1503-06.

452. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 496. Other public choice scholars have questioned whether judges are as independent of political forces as Posner suggests. See Rowley, *supra* note 451, at 139-40, 165-66; Richard A. Epstein, *The Static Conception of the Common Law*, 9 J. LEGAL STUD. 253, 269-75 (1980). I am indebted to my colleague, Dan Tarlock, for reminding me that one of the least efficient legal rules ever devised was devised by a common law court. See *Westmoreland & Cambria Natural Gas Co. v. DeWitt*, 18 A. 724, 725 (Pa. 1889) (following what is now called the "rule of capture," under which oil field operators were compelled to drill wells cheek by jowl in order to avoid having their oil drained away by their neighbors); *Ohio Oil Co. v. Indiana*, 177 U.S. 190 (1900). Although it was derived from wildlife law (see *Pierson v. Post*, 3 Cai. R. 175 (N.Y. Sup. Ct. 1805)), the rule has been no more efficient in regard to wildlife than in regard to petroleum. See Rance L. Craft, Comment, *Of Reservoir Hogs and Pelt Fiction: Defending the Ferae Naturae Analogy Between Petroleum and Wildlife*, 44 EMORY L. J. 697 (1995).

453. This is the title of § 8.1 of POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 229. Many leading scholars in the field of law and economics use adjectives such as "controversial" in relation to Posner's theory. See, e.g., ELLICKSON, *ORDER WITHOUT LAW*, *supra* note 384, at 168. Even those who find his theoretical hypothesis unconvincing, however, suggest that a "striking fact about the economic analysis of law is that it seems to explain the logic of some laws even where common law judges have not explicitly discussed efficiency in their opinions." ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 497 (1988).

454. "Particularly in our legal culture, economics has been traduced by some scholars to serve a program of inquiry that systematically constricts the range of values that should

vised other explanations for the apparently implicit economic logic of the common law.⁴⁵⁵ John Goodman, for example, argues that perception of economic logic in the common law can be explained because the side with the greater economic stake in winning will prepare more carefully. As a result, this side will have more influence on the court, which will eventually lead to the evolution of rules that favor their views. More specifically, Goodman argues:

Of course, the individual litigants are motivated by private gains, not social ones. Nonetheless, if the ratio of private benefits which derive from a favorable decision accurately reflects the ratio of social benefits — as would be the case if the parties are representative of the market as a whole — or if the ratio of private benefits does not unduly distort the ratio of social benefits, we expect, over a series of cases, an efficient precedent to be established.⁴⁵⁶

After analyzing the various theories about how competition among litigants might make the common law efficient, Robert Cooter concludes that, “unfortunately, these hypotheses are more clever than convincing.”⁴⁵⁷ Moreover, Posner himself appears to rely more on his empirical observations of the efficient results produced by the common law than on any precise theory of causation.⁴⁵⁸ Indeed, his theory merely postulates that judicial “common sense” replicated the economic goal of wealth maximiza-

influence public policy and that uses its constricted normative scheme as the basis for a ruthless critique of public action.” David Charny, *Economics of Death*, 108 HARV. L. REV. 2056 (1995) (reviewing TOMAS J. PHILIPSON & RICHARD A. POSNER, *PRIVATE CHOICES AND PUBLIC HEALTH* (1993)).

455. Stake, *supra* note 447, at 1477-85. See also John C. Goodman, *An Economic Theory of the Evolution of Common Law*, 7 J. LEGAL STUD. 393 (1978); George L. Priest, *The Common Law Process and the Selection of Efficient Rules*, 6 J. LEGAL STUD. 65 (1977); Paul H. Rubin, *Why is the Common Law Efficient?*, 6 J. LEGAL STUD. 51 (1977); R. Peter Terrebone, *A Strictly Evolutionary Model of the Common Law*, 10 J. LEGAL STUD. 397, 404 (1981) (finding that model predicts high rates of litigation when legal rules are inefficient).

456. Goodman, *supra* note 455, at 395.

457. ROBERT D. COOTER, *THE STRUCTURAL APPROACH TO ADJUDICATING SOCIAL NORMS: EVOLUTION OF THE COMMON LAW RECONSIDERED* 4-11 (Boalt Hall School of Law, Univ. of Cal. at Berkeley, John M. Olin Working Papers in Law and Economics No. 90-5, 1990). See also George J. Stigler, *Law or Economics?*, 35 J. L. & ECON. 455, 459-61 (1992); COOTER & ULEN, *supra* note 453, at 492-504; Rowley, *supra* note 451, at 140-41.

458. See Richard A. Posner, *Wealth Maximization and Judicial Decision-Making*, 4 INT'L. REV. L. & ECON. 131, 132-34 (1984). The progression over time of Posner's views is set out in Charles K. Rowley & Wayne Brough, *The Efficiency of the Common Law: A New Institutional Economics Perspective*, in *EFFICIENCY, INSTITUTIONS AND ECONOMIC POLICY* 103, 109-10 (Rüdiger Pethig & Ulrich Schlieper eds., 1987). Posner's critics suggest that his thesis requires “strong transaction cost assumptions . . . in a field where comparative institutions studies are rarely available.” Rowley, *supra* note 451, at 138. No one seems to have attempted to prove that the common law is efficient using empirical analysis, and the difficulty of doing so, given the complexity of information that would need to be processed, seems formida-

tion, especially in the 19th century, so that "justice" often turned out to be a version of efficiency even though the judges didn't purport to be economists.⁴⁵⁹ In addition, Posner argues that the public support for efficiency was often so strong that if judges didn't support it then the public would have found ways to exclude the judiciary from the decisionmaking process.⁴⁶⁰

Although it might seem inconceivable that any but the roughest approximation of efficiency could evolve out of the diverse and intricate pattern of decisions forming the common law,⁴⁶¹ Posner's more recent and modest argument may be accurate: that the common law often tends to produce a *relatively* efficient result in most private law contexts.⁴⁶² This more modest claim is attractive to many,⁴⁶³ especially with regard to situations in which the common law is analogous to the "law merchant;" that is, those situations in which the law is based on the customs of people engaged in a particular business.⁴⁶⁴ Indeed, Robert Cooter has suggested that where common law is based on the customs of people engaged in a

ble. Lewis A. Kornhauser, *A Guide to the Perplexed Claims of Efficiency in the Law*, 8 HOFSTRA L. REV. 591, 610-11 (1980).

459. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 232-33. See also COOTER & ULEN, *supra* note 453, at 497-99.

460. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 506 (other social goals such as redistribution are more controversial than wealth maximization). Justice Scalia apparently would agree; he has written that the "vast majority of political issues . . . ultimately boil down to questions of prudence or utility," and that "even though our point of departure is a morally charged word like justice, practical utility is what we are really discussing here." Antonin Scalia, *Morality, Pragmatism and the Legal Order*, 9 HARV. J.L. & PUB. POL'Y 123, 123-24 (1986). Ellickson, however, says that the "difficulty with Posner's thesis is that many recent common-law decisions have had an overtly redistributive cast." ELLICKSON, *ORDER WITHOUT LAW*, *supra* note 384, at 168, n.6. See also Epstein, *supra* note 452, at 269-75.

461. Mario J. Rizzo, *The Mirage of Efficiency*, 8 HOFSTRA L. REV. 641, 641 (1980) ("if the normative case for common law efficiency has any validity at all, it can only be for concepts of efficiency for which the information requirements are exceedingly high [and] partial efficiency is insufficient as a basis for constructing any persuasive normative argument."). Economic theories that assume that efficiency has resulted from an evolutionary process are susceptible to the is/ought fallacy. For example, game theory suggests that processes with repeated interaction may reach any number of inefficient equilibria. Brian R. Binger & Elizabeth Hoffman, *Institutional Persistence and Change: The Question of Efficiency*, 145 J. OF INSTITUTIONAL AND THEORETICAL ECON. 67 (1989). See also ELLICKSON, *ORDER WITHOUT LAW*, *supra* note 384, at 150-52; Rowley, *supra* note 451, at 155.

462. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 229-31.

463. POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 229-31. "Posner, in particular, has stressed that common law judgments reflect economic efficiency. Probably, a majority of law and economics scholars worldwide subscribe to this viewpoint." Rowley, *supra* note 451, at 137.

464. Bruce L. Benson, *The Spontaneous Evolution of Commercial Law*, 55 S. ECON. J. 644 (1989). See Epstein, *supra* note 452, at 269-75.

particular business and produced by a process involving people who (a) have long-term relationships, (b) plan to stay in the business for a long time, (c) operate in an above-board manner, and (d) create few externalities, the courts can enforce the customs with confidence that they will produce an efficient result.⁴⁶⁵

Using these guidelines, we can speculate about whether the common law of wetlands was efficient.⁴⁶⁶ First, the fen people clearly formed a special class of people who maintained long-term relationships with an expectation that their offspring would continue those relationships. Second, given the fen people's specialized skills and outcast status, their mobility must have been very low; lower still than the low mobility that was common to this period.⁴⁶⁷ Third, in light of the close-knit nature of medieval communities, it would have been difficult for individual fen people to violate the local customs without being discovered.⁴⁶⁸ Most products were sold at open markets, where the quantity and price would be known to all.⁴⁶⁹ Some poaching of game or fish for personal consumption may have occurred, but large scale violations would

465. COOTER, *supra* note 457, at 28-29. See also Robert D. Cooter, *Structural Adjudication and the New Law Merchant: A Model of Decentralized Law*, 14 INT'L. REV. L. & ECON. 215, 216, 226 (1994) (hereinafter *Structural Adjudication*). Game theory supports the hypothesis that repeated interactions and the opportunity to exchange information foster cooperative behavior. OSTROM ET AL., *supra* note 372.

466. It must be recognized that (1) the paucity of data available after the intervening centuries makes anything but speculation impossible, and (2) only a relative efficiency and not a perfect efficiency could ever be expected. However, Stewart Sterk argues:

[N]o particular system for allocating land use rights need be universally efficient. A system that permits a broad array of unilateral decisions about land use would be silly in a society where exclusion from the decisionmaking process is itself painful and where a larger community can rapidly reach agreement, either unanimously or by unanimously accepted processes, on uses of land. No system of unilateral decisionmaking can internalize the positive externality attached by individuals in such a society to the process of communal decisionmaking.

Stewart E. Sterk, *Neighbors in American Land Law*, 87 COLUM. L. REV. 55, 94 (1987). Given the outcast status of the fen people in English society, any suggestion that their rulemaking would be solely motivated by economic efficiency seems implausible. Thus the fen people might well have valued the close relationships that were furthered by involvement with their peers more highly than any modest efficiency gains that could be expected from a more hierarchical authority structure. See OLIVER E. WILLIAMSON, *MARKETS AND HIERARCHIES* 55 (1975).

467. The fact that many of the fen people emigrated to America when their livelihoods were threatened suggests that their opportunities in England were limited. See *supra* text accompanying notes 162-63.

468. Empirical studies of close-knit groups suggest that one of their procedural norms often involves transmitting information to others in the group about violations of substantive norms. See *supra* text accompanying notes 383-89.

469. See MUND, *supra* note 283, at 15.

have been easily detected as the poachers traveled across the flat wetland terrain where they could be observed by everyone.⁴⁷⁰ Fourth, if any important adverse externalities were produced by the activities of the fen people, they are not immediately apparent from the literature.⁴⁷¹ Instead, we find that most recorded disputes concerning the activities of the fen people were among the fen people themselves, not between the fen people and outsiders.⁴⁷² Moreover, there is little indication that the exclusion of outsiders from participation in the process was a cause of concern to those excluded. This is likely due to the hardships of the life of the fen people and the social stigma attached to them.⁴⁷³

Although the common law of wetlands apparently contributed to a high degree of prosperity among the fen people,⁴⁷⁴ and although it seems likely to have produced a relatively efficient result under Cooter's criteria, this does not necessarily prove that it

470. It seems likely that informal peer pressure would have been sufficient to deter conduct such as extensive poaching. See WILLIAMSON, *supra* note 466, at 48. For an interesting study of poaching in medieval England, see ROGER B. MANNING, *HUNTERS AND POACHERS* (1993).

471. One exception may be the extensive peat cutting that took place in the Norfolk Broads area, which created large bodies of open water and may have had effects beyond the immediate area. See *generally supra* note 112.

472. See *supra* text accompanying notes 295-314.

473. Daniel Bromley has suggested that the social structure of European society before the industrial revolution tended to produce groups who made decisions through a process that would meet Cooter's criteria:

In earlier times, property arrangements were integrative in nature, with the primary purpose being to weave individuals together in a network of mutual expectations and obligations. Since the Industrial Revolution a constellation of property arrangements supportive of atomistic choices has evolved, largely because such arrangements seem essential to democracy and ubiquitous markets As integrative property arrangements gave way to atomistic property arrangements the nature of interdependence among individuals also changed. When common property prevails—as, for example, in the Swiss Alps—the interdependence is mediated through the group decision process. This political forum is the nexus of interdependence; it is the place where conflicts over scarce resources are heard and settled. It is an interdependence that is both recognized and confronted. The users are the group over which costs and benefits are distributed—that is, costs and benefits of joint use are internalized to the group.

DANIEL W. BROMLEY, *ECONOMIC INTERESTS AND INSTITUTIONS: THE CONCEPTUAL FOUNDATIONS OF PUBLIC POLICY* 207 (1989). Where private property is the norm, Bromley suggests, externalities arise because these interrelationships are not mediated. *Id.* at 207. Robert Cooter has also suggested that a return to more decentralized lawmaking is desirable because, as economies become more complex, central planning cannot cope with the mass of information and the subtleties of incentives. Cooter, *Structural Adjudication*, *supra* note 465, at 225-26.

474. See *supra* text accompanying notes 149-59.

was more efficient than the legislative drainage program that followed.

The drainage of the fens was part of a larger program known as the "enclosure movement," which took place during the mid-seventeenth and eighteenth centuries. Through this program, Parliament authorized the dominant landowner of the area to extinguish commoners' rights so that the scattered fields of medieval times could be assembled into larger units to be managed as the private property of a single landowner.⁴⁷⁵ During this period, public sentiment blamed the enclosure movement for driving small farmers off the land and forcing them to emigrate to the cities or the colonies.⁴⁷⁶

By the nineteenth century, many historians came to believe that enclosure promoted increased efficiency by allowing the introduction of new agricultural methods.⁴⁷⁷ However, some economic historians are now challenging the idea that enclosure increased efficiency.⁴⁷⁸ They suggest that earlier historical studies undercounted the displaced commoners⁴⁷⁹ and failed to recognize the efficiency of the common field system. For example, in his influential study of the enclosure movement, Carl Dahlman concluded that the earlier system of common lands was probably an efficient use of the land during the time it was prevalent, and that enclosure became feasible only as markets expanded as a result of improved transportation technology.⁴⁸⁰ In support of this argument, some recent studies suggest that the enclosure movement was simply a redistribution scheme that transferred wealth from

475. Large landowners have dominated the formation of land law throughout English history. See A.R. Buck, *Property, Aristocracy, and the Reform of the Land Law*, 16 J. LEGAL HIST. 63 (1995). But Douglass North has interpreted the 17th century parliament's dominance over the Crown (including parliamentary enclosures) as a key factor in the surge of economic growth that accompanied the industrial revolution. The replacement of the arbitrary sale of privileges by the Crown with "better specification and enforcement of property rights over goods and services" led to "more efficient markets" with "well-specified and enforced property rights, which means the creation of a set of restraints encouraging productivity growth." NORTH, *supra* note 336, at 167. See also North & Weingast, *supra* note 291, at 829.

476. See KUSSMAUL, *supra* note 340, at 78; NEESON, *supra* note 135, at 9-10.

477. The authorities are cited in NEESON, *supra* note 135, at 7-9. See also Ellickson, *Property in Land*, *supra* note 250, at 1391-92.

478. See generally Robert Allen, *Agriculture during the industrial revolution*, in THE ECONOMIC HISTORY OF BRITAIN SINCE 1700, at 96 (Roderick Floud & Donald McCloskey eds., 1994).

479. NEESON, *supra* note 135, at 78-79.

480. DAHLMAN, *supra* note 166, at 130-41, 173-78.

the tenants to the landlord,⁴⁸¹ confirming the accuracy of an anonymous verse that was popular during the enclosure period:

They clap in gaol the man or woman
Who steals the goose from off the common;
But let the bigger knave go loose
Who steals the common from the goose.⁴⁸²

Other studies suggest that there is inadequate evidence of any overall change in efficiency during this period of time.⁴⁸³

Any attempt to compare the costs and benefits of the enclosure of the wetlands with the common land system would be particularly difficult in light of the complexities of the wetland systems. The wetland economic base was far more complex than the typical agrarian economic base of grain and pasture,⁴⁸⁴ and the products of the wetland would have been sold at a variety of markets at a variety of times. Further, although evidence suggests that the fen people were more prosperous than their dry-land counterparts, this would be hard to quantify reliably.⁴⁸⁵ Finally, the expenditures for drainage were costly and had to be repeated frequently as storms regularly destroyed earlier works,⁴⁸⁶ and though the agricultural land that resulted from wetland drainage was often quite productive,⁴⁸⁷

481. Robert C. Allen, *The Efficiency and Distributional Consequences of Eighteenth Century Enclosures*, 92 *ECON. J.* 937, 950-51 (1982); See also Cox, *supra* note 173, at 57-59; Cf. Larson & Bromley, *supra* note 404, at 256.

482. Quoted in, among many other places, Garrett Hardin, *Denial and Disguise*, in *MANAGING THE COMMONS* 45, 46 (Garrett Hardin & John Baden eds., 1977).

483. J. A. YELLING, *COMMON FIELD AND ENCLOSURE IN ENGLAND 1450-1850*, at 144-45 (1977). The effects of changes in ownership and the changes wrought by technological innovation in agricultural methods cannot be sorted out with any efficacy. Bennett Baack, *Testing the Impact of Exclusive Property Rights: The Case of Enclosing Common Fields*, in *EXPLORATIONS IN THE NEW ECONOMIC HISTORY: ESSAYS IN HONOR OF DOUGLASS C. NORTH* 1 (Roger L. Ransom et al. eds., 1982). See Allen, *supra* note 478, at 119. See also J.M. NEESON, *supra* note 135, at 7-8; Cox, *supra* note 173, at 59-60. In particular, a wide variety of new crops were introduced during the enclosure period, and these were grown both on common land and on newly-enclosed land. See generally Baack, *supra*; Bruce Campbell & Ricardo A. Godoy, *Commonfield Agriculture: The Andes and Medieval England Compared*, in *NATIONAL RESEARCH COUNCIL, PROCEEDINGS OF THE CONFERENCE ON COMMON PROPERTY RESOURCE MANAGEMENT* 323, 342 (1986).

484. See *supra* text accompanying notes 100-34.

485. See *supra* text accompanying notes 149-59. Of course, the fen peoples' economic prosperity came at the expense of significant health and safety risks as well as a degree of social ostracism, which would help to explain the lack of new entrants into the wetland markets. See *supra* text accompanying notes 135-45.

486. See *supra* text accompanying notes 343-46.

487. "So rich was the land, wrote John Evelyn, in 1670 "that weeds grew on the banks, almost as high as a man and a horse.'" DARBY, *CHANGING FENLAND*, *supra* note 62, at 94.

it would take an extensive study to quantify the overall costs and benefits of wetland drainage.

In summary, there is some evidence to support the argument that the common law did produce a relatively efficient system for use of the English wetlands, but in order to evaluate that claim, a study would have to be done that quantifies the costs and benefits of the wetland system relative to the common land system. Such a quantitative study exceeds the limits imposed by the sparse documentary evidence available to us; the requisite records often were not recorded or preserved.

D. *Nature Knows Best*

Ecologists once believed that there was a "climax" state for every spot on the globe. When that climax had been reached, all changes in the distribution of plants and animals in that area would cease, because the landscape would have reached its natural condition of equilibrium in which each plant and animal species would then occupy its niche in perpetual harmony.⁴⁸⁸ Fire, flood, or other natural event might temporarily disrupt the harmony, but the landscape would ultimately return to its climax condition.⁴⁸⁹

By 1935, ecologists had developed a more advanced scientific idea of ecosystems, based on areas of relatively stable dynamic equilibria in nature.⁴⁹⁰ Aldo Leopold in *A Sand County Almanac*⁴⁹¹ and Rachel Carson in *Silent Spring*⁴⁹² later popularized this concept. Many theologians, however, have clung to the older concepts of climax and equilibrium, because they fit more neatly into the idea of a "balance of nature," a concept long associated with the Garden of Eden.⁴⁹³ They believe that humans should accommodate them-

488. See Frederic E. Clements, *The Nature and Structure of the Climax*, 24 J. ECOLOGY 252, 255-56 (1936).

489. As Weaver and Clements explain:

While the climax is permanent because of its entire harmony with a stable habitat, the equilibrium is a dynamic one and not static. Superficial adjustments occur with the season, year, or cycle While change is constantly and universally at work, in the absence of civilized man this is within the fabric of the climax and not destructive of it.

JOHN WEAVER & FREDERIC E. CLEMENTS, *PLANT ECOLOGY* 80 (2d ed. 1938).

490. A.G. Tansley, *The Use and Abuse of Vegetational Concepts and Terms*, 16 ECOLOGY 284 (1935).

491. ALDO LEOPOLD, *A SAND COUNTY ALMANAC* (2d ed. 1966).

492. RACHEL CARSON, *SILENT SPRING* (1962). This history of the idea of ecosystems is traced in FRANK B. GOLLEY, *A HISTORY OF THE ECOSYSTEM CONCEPT IN ECOLOGY* (1993).

493. DONALD WORSTER, *NATURE'S ECONOMY: A HISTORY OF ECOLOGICAL IDEAS* 138-43 (1985).

selves to natural processes so that a condition of permanent stability can be re-established.⁴⁹⁴ Promoters of "pop ecology" such as Barry Commoner⁴⁹⁵ continue to patronize this simple concept because it is one with which the public can easily identify and understand: "nature knows best; leave her alone." This concept dovetailed nicely with the mood of the 1960s.⁴⁹⁶

In modern ecology, however, researchers are now replacing the equilibrium paradigm with other concepts, such as "patch dynamics."⁴⁹⁷ Ecosystems are now seen as patches or collections of conditions that exist for finite periods of time.⁴⁹⁸ The trend is to view ecosystems on a smaller scale and as existing over shorter spans of time. Seen this way, the behavior of ecosystems undermines the equilibrium paradigm: it is impossible to return to what never was. There is no single ideal state. Indeed, the accelerating interaction between humans and the natural environment makes it impossible to return to an ideal state of nature.⁴⁹⁹ We now believe that, at best, ecosystems can be managed, rather than restored or preserved, and even management will be a series of calculated risky experiments. "[N]ature moves and changes and involves risks and uncertainties and . . . our own judgments of our actions must be made against this moving image."⁵⁰⁰

494. PETER J. BOWLER, *THE NORTON HISTORY OF THE ENVIRONMENTAL SCIENCES* 507-09 (1992). The climax theory tended to "remove ecological communities from history." WILLIAM CRONON, *supra* note 163, at 10.

495. See BARRY COMMONER, *THE CLOSING CIRCLE* (1971); James E. Krier, *The Political Economy of Barry Commoner*, 20 ENVTL. L. 11 (1990).

496. Bosselman & Tarlock, *supra* note 328, at 847, 864.

497. Steward T.A. Pickett et al., *The New Paradigm in Ecology: Implications for Conservation Above the Species Level*, in CONSERVATION BIOLOGY: THE THEORY AND PRACTICE OF NATURE PRESERVATION AND MANAGEMENT (Peggy L. Fiedler & Subodh K. Jain eds., 1992).

498. D.L. Urban et al., *Landscape Ecology*, 37 BIOSCIENCE 119, 119 (1987).

499. Some observers would argue that such a return would be disadvantageous: "Nature knows best" is the twentieth-century equivalent of Pangloss's affirmation in the eighteenth century that everything is for the best in the best of all possible worlds. The interplay between humankind and the Earth has often generated ecosystems that, from many points of view, are more interesting and more creative than those occurring in the state of wilderness.

RENÉ DUBOS, *THE WOING OF EARTH* 81 (1980).

500. DANIEL B. BOTKIN, *DISCORDANT HARMONIES: A NEW ECOLOGY FOR THE TWENTY-FIRST CENTURY* 190 (1990). See Pickett et al., *supra* note 497; Judy L. Meyer, *The Dance of Nature: New Concepts in Ecology*, 64 CHI.-KENT L. REV. 875 (1994). See generally SIMON, *supra* note 418; DONALD WORSTER, *THE WEALTH OF NATURE* 167 (1993). The changing attitudes of ecologists are just beginning to attract attention in the legal literature. See, e.g., Freyfogle, *supra* note 50, at 110-14; A. Dan Tarlock, *Environmental Law, But Not Environmental Protection*, in NATURAL RESOURCES POLICY AND LAW: TRENDS AND DIRECTIONS (Lawrence J. MacDonnell & Sarah F. Bates eds., 1993); Bosselman & Tarlock, *supra* note 328, at 847;

The English wetlands have not been natural, in the purist's sense, since before the Romans began experimenting with banks and drains. Further, the history of the English wetlands suggests that they would have been ecologically unstable,⁵⁰¹ even in the absence of human intervention, given the rise and fall of sea levels and the changes in climate observed throughout the medieval period.⁵⁰² But intervene we did. From prehistoric times, people have "managed" the English wetlands; however, until the major drainage projects of the seventeenth century, that management was small in scale.⁵⁰³ Rather than attempting to replace the natural ecosystem, people worked with it, merely modifying it to meet their needs.⁵⁰⁴ In contrast, the enclosure and development of the wetlands, following the nineteenth century, led to an artificial environment, heavily dependent upon costly technological intervention to ensure its survival.⁵⁰⁵

The idea that human tinkering with the wetlands disrupted a state of equilibrium that "nature knew was best" seems inconsistent with modern ecological science. A more likely scenario is that the adaptive management practiced by the wetland commoners was *relatively* consistent with the maintenance of a *relatively* stable ecosystem, as evidenced by its survival for a thousand years.

VIII. USING THE COMMON LAW OF WETLANDS UNDER *LUCAS*

The English common law of wetlands could be particularly relevant to those interested in wetlands use or protection in the United States today. It may be that under the constitutional doctrine relating to "limitations inherent in the title to land" articulated in *Lucas*, natural areas cannot be protected by regulation unless they were protected by common law.⁵⁰⁶ While it is unclear whether the Court will carry its analysis that far, an examination of the common law⁵⁰⁷ rules relating to wetlands may be useful in the determination

Jonathan B. Wiener, *Law and the New Ecology: Evolution, Categories, and Consequences*, 22 *ECOLOGY L.Q.* 325 (1995).

501. Absent fluctuating conditions, traditional ecological theory assumes that freshwater wetlands are merely stages in the development of uplands through gradual siltation. FREDERIC E. CLEMENTS & VICTOR E. SHELFORD, *BIO-ECOLOGY* 294 (1939).

502. See *supra* text accompanying notes 62-66. See also MANNION, *supra* note 429, at 99.

503. See *supra* text accompanying notes 218-20.

504. See *supra* text accompanying notes 66-68.

505. See *supra* text accompanying notes 343-44, 360.

506. See Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding Lucas v. South Carolina Coastal Council*, 45 *STAN. L. REV.* 1433 (1993).

507. Nowhere in the *Lucas* opinion did the Court define what it meant by the term

of the validity of wetland regulations under *Lucas*.

As noted in Part II above, this constitutional doctrine holds that a government action banning a land-use is not an unconstitutional taking, unless the claimant had the right to so use the land in the first place. But the *Lucas* doctrine implicates the common law in a second way as well—determining the nature of the interest inhering in title. The Federal Circuit Court of Appeals suggests a two-step analysis for making this determination: First, a court should inquire into the nature of the land owner's estate to determine whether the use interest proscribed by the governmental action was part of the owner's title to begin with, i.e., whether the land use interest was a "stick in the bundle of rights" acquired by the owner. Second, if the claimant can establish the existence of such an interest, the court must then determine whether the governmental action at issue constituted a compensable taking of that stick.⁵⁰⁸ The proposition that the Constitution does not protect all property interests is familiar; traditional due process analysis holds that for an interest to become a protected property right, it must involve a "legitimate claim of entitlement."⁵⁰⁹ The Court is apparently developing a parallel takings doctrine, protecting only those interests that involve "distinct investment-backed expectations."⁵¹⁰

The Court broke new ground in *Lucas* by preferring those limitations imposed by the common law over those enacted by legislative authority.⁵¹¹ Unfortunately, it created this new distinction

"common law." Freyfogle, *supra* note 50, at 118-21. For an interesting example of the interpretation of *Lucas* in light of Hawaii's mixture of English and local common law, see *Public Access Shoreline Hawaii v. Hawaii County Planning Comm'n.*, 903 P.2d 1246 (Haw. 1995).

508. *M & J Coal Co. v. United States*, 47 F.3d 1148, 1154 (Fed. Cir. 1995). This process is similar to the one used by the Massachusetts Supreme Court in the *Lopes* case, *supra* note 19.

509. *Board of Regents v. Roth*, 408 U.S. 564, 577 (1972).

510. *Penn Central Transp. Co. v. City of New York*, 438 U.S. 104, 124 (1978). See Daniel R. Mandelker, *Investment-Backed Expectations in Taking Law*, 27 URB. L. 215 (1995). In *Lucas*, the Court also implied that it would frown on changes state courts made to the common law rules that "already" exist, where a state court overrules its precedents and more narrowly confines property rights. See, e.g., *Ward v. Harding*, 860 S.W.2d 280, 289 (Ky. 1993) (Leibson, J., dissenting), *cert. denied*, 114 S. Ct. 1218, (1994). The Court has suggested that it may treat the state court decision as a judicial taking, although it has never done so. See generally Barton H. Thompson, Jr., *Judicial Takings*, 76 VA. L. REV. 1449 (1990). On occasion, however, the Court has avoided such a result only by some rather free-wheeling construction of state law. See Note, *Bright Lines in the Big City: Seawall, Tenant Succession Rights, and the Jurisprudence of Takings*, 91 COLUM. L. REV. 609, 628-31 (1991).

511. *Lucas*, 505 U.S. at 1029-32. John A. Humbach, "Taking" the Imperial Judiciary Seriously: Segmenting Property Interests and Judicial Revision of Legislative Judgements, 42 CATH. U. L. REV. 771, 779-84 (1993). For a discussion of problems associated with this shift see Louise

without setting forth any clear rationale for it.⁵¹² Some scholars have argued that it would be consistent with the original intent of the taking clause to use the common law as a "baseline" for determining the extent to which property has been taken,⁵¹³ but there is little evidence that the Court based the *Lucas* decision on original intent.⁵¹⁴ It is also possible that the Court based its decision on the proposition discussed in Part VII.C. that judges tend to make more economically-efficient decisions than legislatures.⁵¹⁵

Whatever the reason, the decision in *Lucas*, coupled with the proposition that the property protected by the Constitution is so designated by state law,⁵¹⁶ makes the state common law of property central to determining the extent and validity of wetlands regulations in the face of takings challenges. A number of state courts, however, have rejected *Lucas*'s implication that common law restrictions should be treated differently from legislative ones. These courts, instead, have interpreted *Lucas* to mean that purchase of land with knowledge of *either* prior legislative or prior common law restrictions bars a challenge to those restrictions under the takings clause.⁵¹⁷ But even these state courts⁵¹⁸ may find an examination

A. Halper, *Why the Nuisance Knot Can't Undo the Takings Muddle*, 28 IND. L. REV. 329, 334-35 (1995).

512. See Frank I. Michelman, *Property, Federalism and Jurisprudence: A Comment on Lucas and Judicial Conservatism*, 35 WM. & MARY L. REV. 301, 322-23 (1994). Professor Ausness has suggested that this distinction is supportable because "legislatures are unlikely to be either knowledgeable or objective about principles of property or nuisance law" while courts "have expertise in dealing with complex legal doctrines and are more likely to act as impartial decisionmakers." Ausness, *supra* note 1, at 408 (footnotes omitted). Richard Levy suggests that the Court's "high profile commitment to judicial restraint" may have inhibited its exposition of its reasoning. Richard E. Levy, *Escaping Lochner's Shadow: Toward a Coherent Jurisprudence of Economic Rights*, 73 N.C. L. REV. 329, 390 (1995). The commentary on *Lucas* is proliferating and no attempt will be made to cite all relevant articles comprehensively.

513. See CASS R. SUNSTEIN, *THE PARTIAL CONSTITUTION* 91 (1993). Cf. Levy, *supra* note 512, at 391-421.

514. William M. Treanor, *The Original Understanding of the Takings Clause and the Political Process*, 95 COLUM. L. REV. 782, 805-09 (1995); Levy, *supra* note 512, at 410.

515. "Although the correlation is far from perfect, judge-made rules tend to be efficiency-promoting while those made by legislatures tend to be efficiency-reducing." POSNER, *ECONOMIC ANALYSIS*, *supra* note 448, at 495 (footnotes omitted). See *supra* text accompanying notes 447-87. Professor Louise Halper suggests that an even more comprehensive rationale is implicit in the *Lucas* opinion: "to resuscitate the nineteenth-century formalist proposition that law and the legal system may be derived entirely from the principles of private law." Halper, *supra* note 511, at 334.

516. *Board of Regents v. Roth*, 408 U.S. 564, 577 (1972).

517. *Grant v. South Carolina Coastal Council*, 461 S.E.2d 388, 391 (S.C. 1995); *Hunziker v. State of Iowa*, 519 N.W. 2d 367, 371 (Iowa 1994), *cert. denied*, 114 S. Ct. 1313 (1994); *Ward v. Harding*, 860 S.W.2d 280, 288-89 (Ky. 1993), *cert. denied*, 114 S. Ct. 1218 (1994); *Kudloff v. City of Billings*, 860 P.2d 140, 143 (Mont. 1993). But see *Vatalaro v. Dep't*

of the English common law useful in situations where statutory law is inapplicable.

As illustrated earlier,⁵¹⁹ American state courts frequently look to the English common law as authority for their decisions. Thus, it is critical to examine what the English common law tells us about the limitations that inhere in the title to wetlands. For that purpose, it is convenient to continue to divide the topic into the same three categories used in Part VI: ownership, use, and development.

A. *Land Ownership*

American courts, like English common law courts, accept the view that title to land does not necessarily imply dominion over all property interests in that land.⁵²⁰ English common law courts envisioned land ownership as a complex mixture of private rights,

of Env'tl Regulation, 601 So. 2d 1223, 1229 (Fla. Dist. Ct. App. 1992) (holding that a taking occurs when a permit is denied and the "land is purchased with future development legitimately anticipated and with no existing bar thereto"), *review denied*, 613 So. 2d 3 (Fla. 1992). For a discussion of this last case see Grosso & Russ, *supra* note 7, at 470-71. See Mandelker, *supra* note 510, at 237-49. The Federal Circuit also treats common-law and legislative restrictions synonymously. *M & J Coal Co. v. United States*, 47 F.3d 1148 (Fed. Cir. 1995). The Federal Circuit has suggested that the cut-off point at which knowledge is obtained should be the date that the "regulatory environment" began. *Loveladies Harbor, Inc. v. United States*, 28 F.3d 1171, 1181 (Fed. Cir. 1994). See Blumm, *supra* note 1, at 186.

518. Because it is a question of property law, the extent of limitations on the title to land should be an issue of state law, not federal law. The Supreme Court has always taken the position that the "property" protected by the United States Constitution is whatever interests state law designates as property. See, e.g., *Board of Regents v. Roth*, 408 U.S. 564 (1972). In a recent dissent to a denial of certiorari, Justice Scalia suggested that there are limitations to the power of state courts to change state law in a manner that affects property rights. *Stevens v. City of Cannon Beach*, 114 S. Ct. 1332, 1334 (1994) (Scalia, J., dissenting). See also *Hughes v. Washington*, 389 U.S. 290, 296-97 (1967) (Stewart, J., concurring). To date, the Court has never overruled any state court determination of what property means under the law of that state. See Sax, *supra* note 15, at 477 n.11. See generally Note, *Robinson v. Ariyoshi: A Federal Intrusion into State Water Law*, 17 ENVTL. L. 325 (1987). Thus, although the current significance of the question derives from an interpretation of federal constitutional law, the responsibility for answering the question is that of the state courts.

519. See *supra* text accompanying notes 31-38.

520. See Carol M. Rose, *Given-ness and Gift: Property and the Quest for Environmental Ethics*, 24 ENVTL. L. 1, 25-31 (1994). Modern academic legal literature tends to de-emphasize property "boundaries" in favor of property "concepts," a trend that may be attributed to the obligation of property law professors to convince law students that property involves more than geographical boundaries. For an interesting explanation of this theory see Theodore Steinberg, *God's Terminus: Boundaries, Nature and Property on the Michigan Shore*, 37 AM. J. OF LEGAL HIST. 65, 66-68 (1993). On the place of geographical boundaries in the history of American concepts of real property, see RUTHERFORD H. PLATT, *LAND USE AND SOCIETY: GEOGRAPHY, LAW, AND PUBLIC POLICY* 107-120 (1996), and see generally CRONON,

rights held in common, and obligations to neighbors, some admixture of which may be held by any given individual at any given point in time.⁵²¹ Some state courts have articulated this complexity of ownership in their own common law relating to wetland property. For instance, in *Just v. Marinette County*,⁵²² the Wisconsin court created a common law rule that land title did not convey ownership of the power to change the natural character of wetland property.⁵²³ Other states, such as Florida, Washington, New Hampshire, and New Jersey, have taken similar positions.⁵²⁴

Some American courts have gone even further, holding that there is no constitutional right to develop any land, wet or dry, until developers have obtained government permission for their specific development proposal.⁵²⁵ These courts reason from the Supreme Court's opinion in *Board of Regents v. Roth* that there is no "protected property interest" until there is a "legitimate claim of entitlement" to develop the property.⁵²⁶ Whether the Supreme Court would agree that the only landowners with a constitutional right to develop are those protecting existing uses of land, or exercising a "vested right,"⁵²⁷ remains to be seen.⁵²⁸

Regardless of whether the right of ownership should be limited

supra note 163; EDWARD T. PRICE, DIVIDING THE LAND: EARLY AMERICAN BEGINNINGS OF OUR PRIVATE PROPERTY MOSAIC (1995).

521. See *supra* text accompanying notes 165-71.

522. 201 N.W.2d 761 (Wis. 1972).

523. See generally James B. Wadley & Pamela Falk, Lucas and Environmental Land Use Controls in Rural Areas: Whose Land is it Anyway?, 19 WM. MITCHELL L. REV. 331 (1993).

524. Rowe v. Town of North Hampton, 553 A.2d 1331 (N.H. 1989); Orion Corp. v. State, 747 P.2d 1062 (Wash. 1987); Graham v. Estuary Properties, 399 So. 2d 1374 (Fla. 1981), cert. denied, 454 U.S. 1083 (1981). See AMG Associates. v. Township of Springfield, 319 A.2d 705, 711 n.4 (N.J. 1974).

525. Sylvia Dev. Corp. v. Calvert County, 48 F.3d 810 (4th Cir. 1995); Triomphe Investors v. City of Northwood, 49 F.3d 198 (6th Cir. 1995); Zahra v. Town of Southold, 48 F.3d 674 (2d Cir. 1995). But see DeBlasio v. Zoning Bd. of Adjustment for the Township of West Amwell, 53 F.3d 592 (3d Cir. 1995).

526. 408 U.S. 564 (1972). For an opinion suggesting that *Roth* applies only to "new" property, see River Park, Inc. v. City of Highland Park, 23 F.3d 164, 166 (7th Cir. 1994). The Seventh Circuit, however, is perhaps the most hostile of all of the circuits to this type of property rights claim. See, e.g., Pro-Eco, Inc. v. Board of Comm'rs of Jay County, 57 F.3d 505 (7th Cir. 1995).

527. DANIEL L. MANDELKER, LAND USE LAW 213-23 (2d ed. 1988).

528. See Nollan v. California Coastal Comm'n, 107 S. Ct. 3141 (1987). The prospect of a Supreme Court review of the issue is complicated by the fact that it arises in the context of the doctrine of substantive due process, a subject on which the views of the justices diverge widely because it is also the foundation of the Court's abortion decisions. See, e.g., Albright v. Oliver, 114 S. Ct. 807 (1994); U.S. v. Carlton, 114 S. Ct. 2018, 2026 (1994) (Scalia, J., concurring).

to that degree, it is well established that ownership of property does not carry with it an absolute right to build anything in any place, even in the absence of any legislatively imposed regulation. In *Lucas*, for example, the court cited the inability to build on the bed of a lake or an earthquake fault as limitations inherent in the title to land.⁵²⁹

American courts should follow the English common law and recognize that wetlands involve a complex mixture of land and water rights, private, common and public, and that simply declaring some person the "owner" of the land without examining the use and proposed development of the land in relationship to its surroundings and the rights of others resolves little. These contextual issues are explored further in the next two subsections.

B. *Land Use*

The English common law courts applied the traditional law of custom⁵³⁰ to enforce codes of conduct developed by the wetlands users themselves.⁵³¹ American courts have also applied the doctrine of custom to uphold limitations on the title to land, although use of the doctrine is more controversial in the United States than it was in England.⁵³² Ongoing studies of regulatory systems suggest that custom can produce highly efficient results,⁵³³ yet custom has often been replaced by less efficient government programs.⁵³⁴

America arguably already has modern analogues to the Code of Romney Marsh. Local land use regulations have been prevalent in the United States, after all, almost since "time out of mind."⁵³⁵ Like the fen people, local community members have participated

529. *Lucas*, 505 U.S. at 1029.

530. See generally Babcock, *supra* note 7, at 30-35, 49-54; Loux, *supra* note 193, at 192-95; Rose, *supra* note 187, at 741-43.

531. See *supra* text accompanying notes 265-70.

532. *Stevens v. City of Cannon Beach*, 854 P.2d 449 (Or. 1993), *cert. denied*, 114 U.S. 1232 (1994) (Scalia, J., dissenting). The Oregon Supreme Court did follow the English common law. However, the decision remains controversial because of Justice Scalia's dissent from the denial of certiorari, which argued that there was not enough evidence in the record to support the state supreme court's determination that the limitation was, in fact, customary. 114 S. Ct. at 1335-36.

533. See *supra* text accompanying notes 326-406.

534. "This is the *real* tragedy of the commons: common property management systems that were effective for thousands of years become obsolete in a few decades, replaced by systems of exploitation which bring short-term profits for a few and long-term costs for many." McNeely, *supra* note 404, at 213.

535. See generally SEYMOUR I. TOLL, *ZONED AMERICAN* (1969) (discussing history of zoning).

in the development of such regulations, with extensive input from all sectors of the population.⁵³⁶ Many of these local ordinances focus particular attention on the use of wetlands.⁵³⁷

Unfortunately, Americans were not as aware as the few people of the many ways in which we indirectly "use" wetlands. Thus we have only recently realized the costs of continued wetland loss. Today, increased scientific knowledge has made us aware that the impact of land use decisions can extend far beyond the boundaries of a single community.⁵³⁸ This is particularly evident in the case of wetlands, where an examination of their functions demonstrates how geographically widespread the "users" of a wetland can be located. Consider, for example, the once extensive wetlands of the Mississippi River Basin, only scattered remnants of which survive today.⁵³⁹ After the tragic floods of recent years, it is now apparent that the "users" of those wetlands include not only those who may cut reeds or graze sheep, but also all of the farmers of low-lying land in the basin who have lost the water storage capacity that the wetlands formerly provided.⁵⁴⁰ Unfortunately, too few farmers and elected representatives have understood this relationship.⁵⁴¹ Similarly, urban residents rely on wetlands to filter pollutants from surface water and recharge the aquifers that provide their drinking water.⁵⁴² Only belatedly are they beginning to recognize the costs they will pay for ignoring the loss of wetlands.⁵⁴³

These wetland uses are as real and as important to society as was the digging of peat or the netting of eels during the common law period, but they are less easily understood because they depend on

536. In most states, the statutory parameters local governments work within give them almost complete freedom in selecting the substantive content of local land use regulations. See HAGMAN & JUERGENSMEYER, *supra* note 271, at 710-69.

537. DENNISON & BERRY, *supra* note 45, at 268-74.

538. FRED BOSSELMAN & DAVID CALLIES, *THE QUIET REVOLUTION IN LAND USE CONTROL* (1971).

539. Yva Momatiuk & John Eastcott, *Creatures from the Black Lagoon*, NATURE CONSERVANCY, Sept.-Oct. 1995, at 24. See MITSCH & GOSSELINK, *supra* note 40, at 454-57.

540. *Reauthorization of Clean Water Act, 1994: Hearings on H.R. 340, 1330, 3465, and 3948 Before the Subcomm. on Water Resources of the House Comm. on Public Works and Transportation*, 103rd Cong., 2d Sess., 4-6 (1994) (statement of Terry Schley, counsel, National Wildlife Federation). See MITSCH & GOSSELINK, *supra* note 40, at 519-22; William K. Stevens, *Restoring Wetlands Could Ease Threat of Mississippi Floods*, N.Y. TIMES, Aug. 8, 1995, at C1. See generally INTERAGENCY FLOODPLAIN MANAGEMENT REVIEW COMMITTEE, *SHARING THE CHALLENGE: FLOODPLAIN MANAGEMENT INTO THE 21ST CENTURY* (1994).

541. BOTKIN, *OUR NATURAL HISTORY*, *supra* note 156, at 36.

542. MITSCH & GOSSELINK, *supra* note 40, at 522-24.

543. WILLIAMS AND TAYLOR, *supra* note 5, at 478-85.

a chain of relationships that is not necessarily obvious.⁵⁴⁴ Indirect users are often characterized as the "public" because, to the casual observer, their individuality is less apparent than that of the medieval turf-diggers and woad-growers. However, the fact that these users are called "public" does not make them any less real people.⁵⁴⁵

Some wetland user groups have long understood the wide geographic scope of their use of wetlands. A century ago, sport hunting and fishing organizations throughout the hemisphere, for example, recognized the need for wetlands throughout the hemisphere,⁵⁴⁶ and fought to create a national network of protected wetlands as part of the National Wildlife Refuge system.⁵⁴⁷ Commercial fishing interests have also organized efforts to protect wetlands that serve as breeding grounds for fish for human food.⁵⁴⁸

If all of these user groups are adequately organized, the same processes that have successfully produced negotiated agreements among local user groups for the efficient use of common resources⁵⁴⁹ could work at a larger scale.⁵⁵⁰ Changes in the regulatory environment suggest that this is becoming increasingly

544. See E. Manning Seltzer & Robert E. Steinberg, *Wetlands and Private Development*, 12 COLUM. J. ENVT'L. L. 159 (1987); Royal C. Gardner, *Public Participation and Wetlands Regulation*, 10 UCLA J. ENVT'L. L. & POL'Y 1 (1991); Joseph L. Sax, *The Fate of Wetlands in the Face of Rising Sea Levels: A Strategic Proposal*, 9 UCLA J. ENVT'L. L. & POL'Y 143 (1991); Tarlock, *Western Water Law*, *supra* note 271, at 979; Linda Butler, *Environmental Water Rights: An Evolving Concept of Public Property*, 9 VA. ENVT'L. L.J. 323 (1990).

545. Krier, *supra* note 369, at 338-42. See also Sax, *Historical Shackles*, *supra* note 14, at 194 ("The courts should recognize that mere unutilized title, however ancient, does not generate the sort of expectations central to the justness of property claims, and that long-standing public uses have an important place in the analysis.").

546. THOMAS R. DUNLAP, *SAVING AMERICA'S WILDLIFE* 11 (1988); HANS HUTH, *NATURE AND THE AMERICAN: THREE CENTURIES OF CHANGING ATTITUDES* 185 (1957).

547. See generally Richard J. Fink, *The National Wildlife Refuges: Theory, Practice, and Prospect*, 18 HARV. ENVT'L. L. REV. 1 (1994).

548. MITSCH & GOSSELINK, *supra* note 40, at 514-16 (discussing wetlands importance for fish for human consumption). Despite these efforts, the harvest of seafood in coastal areas of the United States is in serious trouble. Heather Dewar, *Blue Crabs Decline in Chesapeake Bay: Maryland Limits Fishing for Popular Seafood*, PITTSBURGH POST-GAZETTE, Sept. 17, 1995, available in LEXIS, News library, BUSDTL file. See also *The Tragedy of the Oceans*, THE ECONOMIST, Mar. 19, 1994, at 21 (noting a decline in ocean fish worldwide).

549. See *supra* text accompanying notes 386-87.

550. "What, then, is the answer if it is not property, primogeniture, and class? The only other answer to the tragedy of the commons is the comedy of community. One is tempted to call it the Divine Comedy of community. Without some sort of sacredness, the comedy easily becomes black and obscene and returns once more to tragedy, either through incompetence or through tyranny." Kenneth E. Boulding, *Commons and Community: The Idea of a Public*, in *MANAGING THE COMMONS* 280, 286 (Garrett Hardin & John Baden eds., 1977). See also Richard J. Lazarus, *Debunking Environmental Feudalism: Promoting*

feasible. Currently, there is growing recognition in the United States that the regulatory process needs to take a wider range of views into consideration.⁵⁵¹ Federal experiments with negotiated rulemaking⁵⁵² offer promising opportunities to test these concepts,⁵⁵³ and many states are developing methodologies by which affected interest groups can work together to try to produce land use rules acceptable to all.⁵⁵⁴

The most serious environmental problems associated with human impact on wetlands, however, arise not from the *use* of wetlands but from the *development* of wetlands—human activities that substantially change the wetlands' character. For law relevant to development, we need to look for a common law analogy not in the customary codes but in the processes used by the common law courts to assess major developments.

C. Land Development

The English common law distinguished between normal uses of the wetlands, governed by the customary codes, and major changes to the wetlands, affecting the flow of water, which involved a national interest.⁵⁵⁵ Such major changes, referred to herein as "development" (as distinct from "use")⁵⁵⁶ required the person

the Individual Through the Collective Pursuit of Environmental Quality, 77 IOWA L. REV. 1739, 1771-73 (1992).

551. Lazarus, *supra* note 550, at 1765-71.

552. See Tom Melling, *Bruce Babbitt's Use of Governmental Dispute Resolution: A Mid-Term Report Card*, 30 LAND & WATER L. REV. 57 (1995). For a discussion of the theoretical background, see Lawrence Susskind and Gerard McMahon, *The Theory and Practice of Negotiated Rulemaking*, 3 YALE J. ON REG. 133 (1985); Henry Perritt, Jr., *Negotiated Rulemaking Before Federal Agencies: Evaluation of Recommendations by the Administrative Conference of the United States*, 74 GEO. L. J. 1625 (1986). For a critique, see Patricia M. Wald, *Regulation at Risk: Are Courts Part of the Solution or Most of the Problem?*, 67 S. CAL. L. REV. 621, 651-52 (1994).

553. Susan Rose-Ackerman, Comment, *Consensus Versus Incentives: A Skeptical Look at Regulatory Negotiation*, 43 DUKE L. J. 1206 (1994) (discussing experience under the Negotiated Rulemaking Act of 1990).

554. Lee P. Breckenridge, *Reweaving the Landscape: The Institutional Challenges to Ecosystem Management for Lands in Private Ownership*, 19 VT. L. REV. 363 (1995); J.B. Ruhl, *Biodiversity Conservation and the Ever-Expanding Web of Federal Laws Regulating Nonfederal Lands: Time for Something Completely Different?*, 66 U. COLO. L. REV. 555 (1995). Of particular interest is California's program for "natural community conservation" in which the rules applicable to disturbance of the natural landscape are negotiated through the local preparation of natural community conservation plans that reflect the views of user groups. Fred Bosseman, *Planning to Prevent Species Endangerment*, 44 LAND USE L. AND ZONING DIG. 3 (March 1992); Craig Manson, *Species & Habitat Conservation: Natural Communities Conservation Planning: California's New Ecosystem Approach to Biodiversity*, 24 ENVTL. L. 603 (1994).

555. See *supra* text accompanying notes 279-89.

556. See Smith, *supra* note 279.

initiating the change to bring a writ of *ad quod damnum*, so that a jury could weigh the benefits of the project against its potential harm to others and a judge could balance the equities through awards of compensation.⁵⁵⁷

The U.S. Army Corps of Engineers' role in regulating American wetlands⁵⁵⁸ is analogous to the common law courts' role in writ of *ad quod damnum* proceedings. The Corps' "public interest" standards allow a wide-ranging inquiry into all of the costs and benefits of a development proposal.⁵⁵⁹ Although the Corps may not demand that the applicant compensate other wetland users in cash, it typically imposes mitigation requirements, intended to compensate in kind for the externalities created by the development.⁵⁶⁰ The concept of mitigation banking, which has recently become popular, creates further flexibility in allocation of resources.⁵⁶¹

States could go still further, however, by reinstating judicial procedures along the lines of the writ of *ad quod damnum*. Such a proceeding could produce a declaratory judgment for anticipatory nuisance; courts could award various forms of mitigation, including damages. Developers would then have an opportunity to avoid costly future litigation.⁵⁶²

Courts in some American states have already used the writ of *ad quod damnum* to provide a private right of eminent domain.⁵⁶³ As in any eminent domain proceeding, with such a writ: (a) the applicant could redesign or withdraw the project if damages were so high that the project was unprofitable;⁵⁶⁴ (b) even unknown prop-

557. See *supra* text accompanying notes 315-21.

558. See generally WANT, *supra* note 3.

559. DENNISON & BERRY, *supra* note 45, at 237-38. See David Farrier, *Conserving Biodiversity on Private Land: Incentives for Management or Compensation for Lost Expectations?*, 19 HARV. ENVTL. L. REV. 303, 360-68 (1995).

560. DENNISON & BERRY, *supra* note 45, at 278-97. See generally APPLIED WETLANDS SCIENCE AND TECHNOLOGY 127-361 (Donald M. Kent ed., 1994).

561. DENNISON & BERRY, *supra* note 45, at 298-303.

562. See *supra* text accompanying notes 322-27.

563. See, e.g., *Lewis v. DuPont*, 22 A.2d 832 (Del. Super. Ct. 1941); *Elbert v. Scott*, 5 Boyce 1, 90 A. 587 (Del. 1914); *Gross v. Jones*, 122 N.W. 681 (Neb. 1909); *Smoot v. Schooler*, 87 Ky. 157, 8 S.W. 202 (1888); *Wilson v. Balt. & Phil. R.R. Co.*, 5 Del. Ch. 524 (1884); *Tripp v. County Comm'rs of Bristol County*, 84 Mass. (2 Allen) 556 (1861); *Mairs v. Gallahue*, 50 Va. 94 (9 Grat.) (1852); *Jacob v. City of Louisville*, 39 Ky. (9 Dana) 114 (1839); *Schuylkill & Susquehanna Navigation v. Decker*, 42 Penn. (2 Watts) 343 (1834); *Schackelford's Heirs v. Coffey*, 27 Ky. (4 J.J. Marsh.) 40 (1830); *Eppes v. Crallè*, 15 Va. (1 Munf.) 258 (1810); *Gay v. Caldwell*, 3 Ky. (Hard.) 68 (1806); *Wroe v. Harris*, 2 Va. (2 Wash.) 126 (1795). See also JOHN LEWIS, LAW OF EMINENT DOMAIN 614 (3d ed. 1909); Hart, *supra* note 322, at 1 (discussing Maryland cases).

564. 6 PATRICK J. ROHAN, NICHOLS ON EMINENT DOMAIN § 26.4 (3d ed. 1990).

erty owners would be bound by the proceeding;⁵⁶⁵ and (c) the result of the litigation would provide *res judicata* protection against future litigation.⁵⁶⁶ Moreover, the use of a guardian *ad litem* could protect the interests of future generations in this type of proceeding, thus alleviating concerns about the predominance of short-term interests.⁵⁶⁷ As pointed out earlier, however, the meaningful use of *ad quod damnum* procedures would require the modernization of the ancient rules of standing, in order to insure that diverse user groups impacted by land development have the opportunity to participate in the process.

IX. CONCLUSION

The English common law contributed to the maintenance of a sustainable wetland economy in a number of important ways. First, the common law enforced a pattern of interrelated ownership interests promoting continuation of existing patterns of wetland ownership and use. This continuity provided a degree of security that allowed people to invest in the tools and skills that enabled them to use the wetlands productively without unduly depleting their resources. Second, by using the doctrine of custom to enforce regulatory codes developed and endorsed by the wetland users themselves, the common law encouraged these people to find their own ways of balancing their immediate economic desires with the need to maintain a way of life for future generations. Third, through the use of the writ of *ad quod damnum* and similar procedures, the common law provided a means for evaluating proposed development activities in the wetlands in terms of their effects on the fens and the fen people, and for allocating the costs and benefits of such development in an equitable manner.

The English common law offers a wealth of interesting analogues from which the American state courts can find guidance in shaping their own common law of wetlands. The Supreme Court's reliance on state common law makes the role of the state courts crucial if the nation's wetlands are to be used in efficient, productive, and sustainable ways.

565. See, e.g., *Cadore v. United States*, 988 F.2d 215, 222-23 (1st Cir. 1993).

566. See, e.g., *City of Tacoma v. Taxpayers of Tacoma*, 357 U.S. 320, 334-41 (1958).

567. *Motley v. Calhoun*, 521 So. 2d 28 (Ala. 1988); *Sanford v. Louisville & Nashville R.R.*, 469 S.W.2d 363 (1971). See Lazarus, *supra* note 550, at 1761-62.