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THE IMPORTANCE OF GETTING NAMES RIGHT: THE MYTH OF MARKETS FOR WATER

JOSEPH W. DELLAPENNA*

If names are not correct, then language is not in accord with the truth of things. If language is not in accord with the truth of things, then affairs cannot be carried out successfully.

—Confucius¹

I. DO NAMES MATTER?

Confucius was onto something²—even if his point that using names correctly is central to a successful ordering of society is not self-evident to many speaking and writing today. The practice of getting names right is particularly important in the legal profession for we are, in fact, in a line of work that all too often richly rewards members of the profession who succeed in obfuscating names and meanings.³ Increasingly, the leading members of the legal profession, however, have come to embrace the idea that speaking and writing clearly—which, among other things, includes getting names right—is essential not only to the success-

* Professor of Law, Villanova University; B.B.A., University of Michigan (1965); J.D., Detroit College of Law (1968); LL.M. in Public International & Comparative Law, George Washington University (1969); LL.M. (Environmental Law), Columbia University (1974).

¹ CONFUCIUS, ANALECTS 1 (ca. 450 BCE) (author's translation).

² See generally Janet E. Ainsworth, *Categories and Culture: On the "Rectification of Names"* in *Comparative Law*, 82 CORNELL L. REV. 19 (1996); Jerry J. Phillips, *Commentary on the Foibles of the English Language*, 66 TENN. L. REV. 789 (1999); K.M. Sharma, *What's in a Name?: Law, Religion, and Islamic Names*, 26 DENV. J. INT'L L. & POL'Y 151 (1998).

³ See, e.g., RONALD L. GOLDFARB & JAMES C. RAYMOND, *CLEAR UNDERSTANDINGS: A GUIDE TO LEGAL WRITING* 3-20 (1982); DAVID MELLINKOFF, *THE LANGUAGE OF THE LAW* 290-98 (1963). Of course, the same phenomenon is found in some other professions as well. See, e.g., George Orwell, *Politics and the English Language*, in *A COLLECTION OF ESSAYS* 156 (Sonia Brownell Orwell ed., 1953).

ful ordering of society, but also to the successful practice of law.⁴ Hence the emergence and eventual dominance of the plain English movement in the contemporary practice of law.⁵

In this article, I address one particular name much in vogue around the globe since the end of communism and the virtual demise of socialism—the word “market.”⁶ I address the use of this word as applied to a

⁴ See, e.g., GOLDFARB & RAYMOND, *supra* note 3; DAVID MELLINKOFF, *LEGAL WRITING: SENSE & NONSENSE* (1982).

⁵ See, e.g., CARL FELSENFELD & ALAN SIEGEL, *WRITING CONTRACTS IN PLAIN ENGLISH* (1981) (advocating the use of plain, understandable English to increase consumer protection and communication).

⁶ There is a large body of literature on the transition from command to market economies. See generally ALICE H. AMSDEN ET AL., *THE MARKET MEETS ITS MATCH: RESTRUCTURING THE ECONOMIES OF EASTERN EUROPE* (1994); DIETER BÖS, *PRIVATIZATION: A THEORETICAL TREATMENT* (1991); THE ECONOMICS OF TRANSFORMATION: THEORY AND PRACTICE IN THE NEW MARKET ECONOMIES (Alfred Schipke & Alan Taylor eds., 1994); FROM SOCIALISM TO MARKET ECONOMY: THE TRANSITION PROBLEM (William S. Kern ed., 1992); A FOURTH WAY?: PRIVATIZATION, PROPERTY, AND THE EMERGENCE OF NEW MARKET ECONOMIES (Gregory S. Alexander & Grazyna Skapska eds., 1994); ROMAN FRYDMAN & ANDREJ RAPACZYNSKI, *PRIVATIZATION IN EASTERN EUROPE: IS THE STATE WITHERING AWAY?* (1994); ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, *REGULATORY REFORM, PRIVATISATION AND COMPETITION POLICY* (1992); *PRIVATIZATION AND DEREGULATION IN GLOBAL PERSPECTIVE* (Dennis J. Gayle & Jonathan N. Goodrich eds., 1990); ADAM PRZEWORSKI, *DEMOCRACY AND THE MARKET: POLITICAL AND ECONOMIC REFORMS IN EASTERN EUROPE AND LATIN AMERICA* (1991); DANIEL YERGIN & JOSEPH STANISLAW, *THE COMMANDING HEIGHTS: THE BATTLE BETWEEN GOVERNMENT AND THE MARKETPLACE THAT IS REMAKING THE MODERN WORLD* (1998); Richard J. Arneson, *Is Socialism Dead? A Comment on Market Socialism and Basic Income Capitalism*, 102 ETHICS 485 (1992); Amy L. Chua, *The Privatization-Nationalization Cycle: The Link Between Markets and Ethnicity in Developing Countries*, 95 COLUM. L. REV. 223 (1995); Matthew J. Hagopian, *The Engines of Privatization: Investment Funds and Fund Legislation in Privatizing Economies*, 15 NW. J. INT'L L. & BUS. 75 (1994); Andrew Xuefeng Qian, *Riding Two Horses: Corporatizing Enterprises and the Emerging Securities Regulatory Regime in China*, 12 UCLA PAC. BASIN L.J. 62 (1993); Klaus M. Schmidt, *The Costs and Benefits of Privatization: An Incomplete Contracts Approach*, 12 J. L. ECON. & ORG. 1 (1996); Mary M. Shirley, *The What, Why, and How of Privatization: A World Bank Perspective*, 60 FORDHAM L. REV. S23 (1992); Karla W. Simon, *Privatization of Social and Cultural Services in Central and Eastern Europe: Comparative Experiences*, 13 B.U. INT'L L.J. 383 (1995); Symposium, *A Recipe for Effecting Institutional Changes to Achieve Privatization*, 13 B.U. INT'L L.J. 295-465 (1995); Kim Reisman, Note, *The World Bank and the IMF: At the Forefront of World Transformation*, 60 FORDHAM L. REV. S349 (1992).

particular context—namely the now fashionable claim that markets for water will provide a nearly painless means for resolving problems of water allocation, distribution, and preservation.⁷ What I find most alarming

⁷ Many authors have analyzed or advocated a shift to a privatized water markets. See, e.g., TERRY L. ANDERSON & PAMELA SNYDER, *WATER MARKETS: PRIMING THE INVISIBLE PUMP* (1997); HARALD FREDERIKSEN ET AL., *WATER RESOURCES MANAGEMENT IN ASIA* (World Bank Tech. Pap. no. 212, 1993); DIANA C. GIBBONS, *THE ECONOMIC VALUE OF WATER* (1986); CLAY J. LANDRY, *SAVING OUR STREAMS THROUGH WATER MARKETS* (1998); BONNIE SALIBA & DAVID BUSH, *WATER MARKETS IN THEORY AND PRACTICE: MARKET TRANSFERS, WATER VALUES, AND PUBLIC POLICY* (1987); RODNEY SMITH, *TRADING WATER: AN ECONOMIC AND LEGAL FRAMEWORK FOR WATER MARKETING* (1988) [hereinafter SMITH, *TRADING WATER*]; *WATER MARKETING—THE NEXT GENERATION* (Terry L. Anderson & Peter Hill eds., 1997); *WATER RESOURCES MANAGEMENT: A WORLD BANK POLICY PAPER* (1994) [hereinafter *WATER RESOURCES MANAGEMENT*]; *WATER RIGHTS: SCARCE RESOURCE ALLOCATION, BUREAUCRACY, AND THE ENVIRONMENT* (Terry L. Anderson ed., 1983) [hereinafter *WATER RIGHTS*]; Nir Becker & Naomi Zeitouni, *A Market Solution for the Israeli-Palestinian Water Dispute*, 23 *WATER INT'L* 238 (1998); H. Stuart Burness & James P. Quirk, *Water Law, Water Transfers, and Economic Efficiency: The Colorado River*, 23 *J.L. & ECON.* 111 (1980); Chan Chang & Ronald C. Griffin, *Water Marketing as a Reallocative Institution in Texas*, 28 *WATER RESOURCES RES.* 879 (1992); Bonnie G. Colby, *Economic Impacts of Water Law—State Law and Water Market Development in the Southwest*, 28 *NAT. RESOURCES J.* 721 (1988); James N. Corbridge, Jr., *Historical Water Use and the Protection of Vested Rights: A Challenge for Colorado Water Law*, 69 *U. COLO. L. REV.* 503 (1998); James D. Crammond, *Leasing Water Rights for Instream Flow Uses: A Survey of Water Transfer Policy, Practices, and Problems in the Pacific Northwest*, 26 *ENVTL. L.* 225 (1996); Ariel Dinar & J. Letey, *Agricultural Water Marketing, Allocative Efficiency, and Drainage Reduction*, 20 *J. ENVTL. ECON. & MGMT.* 210 (1991); Andrew K. Dragan & Victor Gleeson, *From Water Law to Transferability in New South Wales*, 29 *NAT. RESOURCES J.* 645 (1989); Thomas J. Graff & David Yaras, *Reforming Western Water Policy: Markets and Regulation*, 12 *NAT. RESOURCES & ENV'T.* 165 (1998); Brian E. Gray, *The Modern Era in California Water Law*, 45 *HASTINGS L.J.* 249 (1994); Ronald C. Griffin & Fred O. Boadu, *Water Marketing in Texas: Opportunities for Reform*, 32 *NAT. RESOURCES J.* 265 (1992); Ronald C. Griffin & Shih-Hsun Hsu, *The Potential for Water Market Efficiency when Instream Flows Have Value*, 75 *AM. J. AGRIC. ECON.* 292 (1993); Ray Huffaker et al., *Institutional Feasibility of Contingent Water Marketing to Increase Migratory Flows for Salmon on the Upper Snake River*, 33 *NAT. RESOURCES J.* 671 (1993); Morris Israel & Jay R. Lund, *Recent California Water Transfers: Implications for Water Management*, 35 *NAT. RESOURCES J.* 1, 21-29 (1995); Ronald A. Kaiser, *Texas Water Marketing in the Next Millennium: A Conceptual and Legal Analysis*, 27 *TEX. TECH. L. REV.* 181 (1996); Ronald A. Kaiser & Laura M. Phillips, *Dividing the Waters: Water Marketing as a Conflict Resolution Strategy in the Edwards Aquifer Region*, 38 *NAT. RESOURCES J.* 411 (1998); Ari Michelsen, *Administrative, Institutional, and Structural Characteristics of an Active Water Market*, 30 *WATER RESOURCES BULL.*

about this fashion is the misuse of the name market—at least as I understand that word.

I, of course, understand that water in relatively small quantities can easily be bought or sold. I myself have bought bottled water in markets in many parts of the world. What I am concerned about—as are those who advocate markets as water management tools—is raw water in bulk, such as rivers, lakes, aquifers, and the like. In this article, I shall explore the reasons why markets have not worked, and will not work, for raw water. In so doing, I shall consider how the question has been rendered more difficult to assess by misuse of the name “market” to describe certain situations that simply are not markets.

Before I begin, however, I also want to make clear that I am not opposed to markets on principle. I have lived in a communist command economy for a year—in a remote corner of the People's Republic of China—without the protections from local conditions that even then foreigners living in large cities like Beijing, Guangzhou, or Shanghai could expect.⁸ As a result, I know first hand what the most likely alternative to a

971 (1994); Gabriel Roth, *The Role of the Private Sector in Providing Water in Developing Countries*, 9 NAT. RESOURCES F. 167 (1985); Mohammad Shatanawi & Odeh al-Jayousi, *Evaluating Market-Oriented Water Policies in Jordan: A Comparative Study*, 20 WATER INT'L 88 (1995); Hillel I. Shuval, *Approaches to Resolving the Water Conflicts between Israel and Her Neighbors—A Regional Water-for-Peace Plan*, 17 WATER INT'L 133 (1992); Paula K. Smith, *Coercion and Groundwater Management: Three Case Studies and a “Market” Approach*, 16 ENVTL. L. 797 (1986) [hereinafter Smith, *Groundwater Management*]; Jack Sterne, *Instream Rights & Invisible Hands: Prospects for Private Instream Water Rights in the Northwest*, 27 ENVTL. L. 203 (1997); David Sunding et al., *Water Markets and the Cost of Improving Water Quality in the San Francisco Bay/Delta Estuary*, 2 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 159 (1995); Symposium, *The Model Water Transfer Act for California*, 4 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 1 (1996); Gregory A. Thomas, *Conserving Aquatic Biodiversity: A Critical Comparison of Legal Tools for Augmenting Streamflows in California*, 15 STAN. ENVTL. L.J. 3 (1996); Barton H. Thompson, Jr., *Institutional Perspectives on Water Policy and Markets*, 81 CAL. L. REV. 673 (1993); Paul R. Williams & Stephen J. McHugh, *Water Marketing and Instream Flows: The Next Step in Protecting California's Instream Values*, 9 STAN. ENVTL. L.J. 132 (1990); Hisham Zarour & Jad Isaac, *Nature's Apportionment and the Open Market: A Promising Solution to the Arab-Israeli Water Conflict*, 18 WATER INT'L 40 (1993); Alison Mylander Gregory, Comment, *Groundwater and Its Future: Competing Interests and Burgeoning Markets*, 11 STAN. ENVTL. L.J. 229 (1992); Lee Herold Storey, Comment, *Leasing Indian Water Off the Reservation: A Use Consistent with the Reservation's Purpose*, 76 CAL. L. REV. 179 (1988).

⁸ Just for the record, I was a Fulbright Professor of Law at Jilin University, in Changchun, China, in 1987-1988. Changchun is in the center of Manchuria and is the capital of

market economy actually would be like—and I fully appreciate the many virtues of a market economy. My concern in this paper is more narrow than questions about the utilities of markets generally. Simply put, it is that, all too often, the proponents of markets as water management tools confuse the administrative use of economic incentives for markets.⁹ The following example will perhaps make the point clear.

Bolivia is one of the poorer nations on the planet. Like many poor nations, it has had trouble providing water to its cities, industries, and farmers. In an effort to deal with the problem, the Bolivian government recently proposed to privatize the delivery of water, beginning in the city of Cochabamba, the country's third largest city.¹⁰ The plan involved the construction of a new electricity and drinking water network by a consortium of American, Bolivian, British, Italian, and Spanish companies at a cost of \$200 million. The project promised more reliable delivery of potable water, but would raise the cost of the water to the residents of the city and the surrounding countryside by 35 percent. The plan provoked such widespread public opposition—including roadblocks across highways in widely scattered regions and violent protests in which people on both sides died—that the consortium cancelled its project rather than attempt to force it through in the face of such widespread opposition.

Now, I am the first to acknowledge that the project might very well have been the best possible solution to the pressing needs for a safer and more certain water supply for Cochabamba.¹¹ Places in the world where

Jilin Province. Jilin Province at the time had less than 200 foreigners living there in the midst of a Chinese population of around 23,000,000.

⁹ See generally David M. Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 289 (1998) (suggesting more economic incentive programs to increase innovation and continuous improvement in emissions trading).

¹⁰ *Bolivian Water Plan Dropped after Protests Turn into Melees*, N.Y. TIMES, Apr. 11, 2000, at A12.

¹¹ For sources regarding the consequences, difficulties, and benefits of privatizing markets for environmental resources, see generally ENFORCING ENVIRONMENTAL STANDARDS: ECONOMIC MECHANISMS AS VIABLE MEANS? (Rüdiger Wolfrum ed., 1996) [hereinafter ENFORCING ENVIRONMENTAL STANDARDS]; ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, ENVIRONMENTAL POLICY: HOW TO APPLY ECONOMIC INSTRUMENTS (1991) [hereinafter OECD]; Leigh Hancher, *Privatization of Drinking Water in Europe*, in THE SCARCITY OF WATER: EMERGING LEGAL AND POLICY RESPONSES 277 (Edward H.P. Brans et al. eds., 1997); Thomas M. Kerr, *Supplying Water Infrastructure to Developing Countries via Private Sector Project Financing*, 8 GEO.

water delivery facilities do not recover their costs from their customers are places where water delivery facilities are underfunded, unreliable, and generally decrepit. The city of Amman, the capital of Jordan, provides an excellent example. There water is pumped for domestic uses only one day per week, and the shortfall for domestic needs has been estimated as high as 50 percent.¹² Furthermore, making water users pay at least the cost of processing and delivering water is the easiest way, perhaps the only way, to make individual water users consider the worth of the use relative to the cost of using the water. Only if they consider the cost of the water usage will individual water users make rational decisions regarding whether and how to use water.

My problem is that the Bolivian proposal is very unlikely to produce anything like a real market—that is, a setting where water users will be able to negotiate over the price of water and seek out the least cost provider, providers will be able to seek out the user willing to pay the highest price, and both will otherwise engage in the sorts of activities that give rise to the expectation that markets are likely to generate the “highest and best” or at least the most economically efficient use of water.¹³ The price of water in Cochabamba almost certainly would be set by the consortium, with governmental regulation hardly mattering. The result is that who re-

INT'L ENVTL. L. REV. 91 (1995); Monica Maldonado, *Public Water in Private Hands*, CIV. ENGINEERING, Jan. 1997, at 49; Peter Passell, *A Gush of Profits from Water Sale?*, N.Y. TIMES, Apr. 23, 1998, at D1; Andrew Pollack, *Tightening the Faucet: How U.S. Filter Is Consolidating the Waterworks*, N.Y. TIMES, Apr. 23, 1998, at D1; Roth, *supra* note 7.

¹² See DANIEL HILLEL, RIVERS OF EDEN: THE STRUGGLE FOR WATER AND THE QUEST FOR PEACE IN THE MIDDLE EAST 175 (1994); NURIT KLIOT, WATER RESOURCES AND CONFLICT IN THE MIDDLE EAST 230 (1994); Radwan Al-Mubarak Al-Weshah, *Jordan's Water Resources: Technical Perspective*, 17 WATER INT'L 124, 128 (1992); Manuel Schiffler, *Sustainable Development of Water Resources in Jordan: Ecological and Economic Aspects in a Long-Term Perspective*, in WATER IN THE MIDDLE EAST: LEGAL, POLITICAL AND COMMERCIAL IMPLICATIONS 239, 245-47 (J.A. Allan & Chibli Mallat eds., 1995).

¹³ The classic statement, of course, comes from Adam Smith. See ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 423 (Edwin Cannan ed., 1937). See also ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 492 (1988); PAUL R. MILGROM & JOHN ROBERTS, ECONOMICS, ORGANIZATION AND MANAGEMENT 28 (1992); RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW §§ 1.1, 1.2 (5th ed. 1998); Steven A. Bibas, Student Writing Competition, *A Contractual Approach to Data Privacy*, 17 HARV. J.L. & PUB. POL'Y 591 (1994).

ceives water at what price and for what purposes is an administrative decision that will not result from the play of market forces.

Unfortunately, all too often economists and others will proclaim that proposals such as the now abandoned Cochabamba plan were markets. An excellent example of such misnaming is the California Water Bank to be discussed below.¹⁴ Why does that matter? It matters because—particularly since the collapse of communism and socialism on a global scale—we presume that the results reached in a market are “correct”—a presumption that we do not indulge for the outcomes of governmental or other non-market decisions.¹⁵ After all, there are serious questions about whether the experts at any administering agency ever can realistically be expected to acquire the necessary information to arrive at the right conclusions. The market, on the other hand, functions like a mammoth computational system that translates relevant information into common factors—dollars and cents—which can then be combined to tell us through a single figure—the price—the sum of all the variables that impact upon the price. It is no wonder then that many people advocate markets not only for managing water, but for managing environmental problems generally.¹⁶

¹⁴ See the text *infra* at notes 127-63.

¹⁵ For a crisp statement of the point, see Frank J. Trelease, *The Model Water Code, the Wise Administrator and the Goddam Bureaucrat*, 14 NAT. RESOURCES J. 207 (1974).

¹⁶ Many authors have argued that private markets would produce better environmental policies. See, e.g., TERRY L. ANDERSON & DONALD R. LEAL, *FREE MARKET ENVIRONMENTALISM* (1991); DANIEL W. BROMLEY, *ENVIRONMENT AND ECONOMY: PROPERTY RIGHTS AND PUBLIC POLICY* (1991); ENFORCING ENVIRONMENTAL STANDARDS: ECONOMIC MECHANISMS AS VIABLE MEANS? (Rüdiger Wolfrum ed., 1996); DAVID W. PEARCE & R. KERRY TURNER, *ECONOMICS OF NATURAL RESOURCES AND THE ENVIRONMENT* (1990); T.H. TIETENBERG, *EMISSIONS TRADING: AN EXERCISE IN REFORMING POLLUTION POLICY* (1985); John A. Baden & Pete Geddes, *Environmental Entrepreneurs: Keys to Achieving Wilderness Conservation Goals?*, 76 DENV. U. L. REV. 519 (1999); John R.E. Bliese, *Conservative Principles and Environmental Policies*, 7 KAN. J.L. & PUB. POL'Y, No. 2, at 1, 23-36 (1998); Robert I. Fassbender, *Reducing Great Lakes Toxics: Can We Do More for Less through Wastewater Effluent Trading?*, 1 WIS. ENVTL. L.J. 57 (1994); James L. Huffman, *Markets, Regulation, and Environmental Protection*, 55 MONT. L. REV. 425 (1994); R. Prescott Jaunich, *The Environment, the Free Market, and Property Rights: Post-Lucas Privatization of the Public Trust*, 15 PUB. LAND L. REV. 167 (1994); Dean Lueck, *Property Rights and the Economic Logic of Wildlife Institutions*, 35 NAT. RESOURCES J. 625 (1995); Frederic C. Menz, *Transborder Emissions Trading between Canada and the United States*, 35 NAT. RESOURCES J. 803 (1995); Andrew J. Miller, *Transferable Development Rights in the Constitutional Land-*

Given my experience, I fully accept that markets are the best tool we have for managing resources when markets work reasonably well, and therefore I fully accept the presumption that the outcome of a set of market transactions are the best outcomes. But that presumption should not be accorded to the outcomes of administrative events masquerading as markets.¹⁷ Calling an administrative system a market reduces, if it does not remove altogether, the sort of close, on-going scrutiny that the decision properly deserves. Thus, we must be very careful to use the name "market" accurately.

Once we begin to use the label "market" accurately in water management contexts, perhaps the most striking point that we discover is that, as an empirical matter, actual markets in free-flowing water have always been extremely rare. Such markets as there are generally have been used to transfer fairly small quantities of water among similar users in close proximity to each other, such as between farmers or ranchers within a single irrigation or water management district.¹⁸ The modern concern, how-

scape: Has Penn Central Failed to Weather the Storm?, 39 NAT. RESOURCES J. 459 (1999); Matthew Polesetsky, *Will a Market in Air Pollution Clean the Nation's Dirtiest Air? A Study of the South Coast Air Quality Management District's Regional Clean Air Incentives Market*, 22 ECOLOGY L.Q. 359 (1995); Kurt Stephenson et al., *Toward an Effective Watershed-Based Effluent Allowance Trading System: Identifying the Statutory and Regulatory Barriers to Implementation*, 5 ENVTL. L. 775 (1999); Carrie A. Tipton, Note, *Protecting Tomorrow's Harvest: Developing a National System of Individual Transferable Quotas to Conserve Ocean Resources*, 14 VA. ENVTL. L.J. 381 (1995).

¹⁷ For sources examining the notion that markets and ownership are not always the answer to resources problems, see generally Michael C. Blumm, *The Fallacies of Free Market Environmentalism*, 15 HARV. J.L. & PUB. POL'Y 371 (1992); John Prather Brown & William L. Holahan, *Taxes and Legal Rules for the Control of Externalities When There Are Strategic Responses*, 9 J. LEG. STUD. 165 (1980); Paul Stephen Dempsey, *Market Failure and Regulatory Failure as Catalysts for Political Change: The Choice between Imperfect Regulation and Imperfect Competition*, 46 WASH. & LEE L. REV. 1 (1989); Eric T. Freyfogle, *The Construction of Ownership*, 1996 U. ILL. L. REV. 173; Eric T. Freyfogle, *Water Rights and the Common Wealth*, 26 ENVTL. L. 27 (1996) [hereinafter Freyfogle, *Common Wealth*]; Steven E. Hendrix, *Myths of Property Rights*, 12 ARIZ. J. INT'L & COMP. L. 183 (1995); Mark Kanazawa, *Water Subsidies, Water Transfers and Economic Efficiency*, 22 CONTEMP. ECON. POL'Y 112 (1994).

¹⁸ See, e.g., *Westlands Water Dist. v. United States*, 100 F.3d 94 (9th Cir. 1996), *rev'g sub nom*, *Westlands Water Dist. v. Patterson*, 900 F. Supp. 1304 (E.D. Cal. 1995). The process involved in that case is also described in *Logging into Water*, CIV. ENGINEERING, July 1996, at 14. See also RICHARD W. WAHL, *MARKETS FOR FEDERAL WATER: SUBSIDIES, PROPERTY RIGHTS, AND THE BUREAU OF RECLAMATION* 133-40 (1989); Owen L. Anderson & Pauline M. Simmons, *Reallocation*, in *WATERS AND WATER RIGHTS* §§

ever, is not with creating markets to facilitate such transactions, but to find ways to move large quantities of water out of existing uses into uses that were not developed at the time the water was first allocated to existing patterns of use. This generally means moving water out of agriculture in order to meet the needs of growing cities, new industries, or newly recognized environmental needs.¹⁹ Water markets in fact have seldom been

16.04(c)(2) to 16.04(c)(5) (Robert E. Beck ed., 1991); Dana Sebreon Cooper & D. Michael Harvey, *An Upstream Swim: The Crafting and Passage of the Central Valley Project Improvement Act*, in *WATER LAW: TRENDS, POLICIES, AND PRACTICES* 253, 258-61 (Kathleen Marion Carr & James Crammond eds., 1995) [hereinafter *WATER LAW*]; John H. Davidson, *Emerging Issues in Western Water Transfers*, 13 J. AGRIC. TAX'N & L. 73 (1991); Willis H. Ellis & Charles T. DuMars, *The Two-Tiered Market in Western Water*, 57 NEB. L. REV. 333 (1978); Todd G. Glass, *The 1992 Omnibus Water Act: Three Rubrics of Reclamation Reform*, 22 *ECOLOGY L.Q.* 143 (1995); Brian E. Gray, *The Shape of Transfers to Come: A Model Water Transfer Act for California*, 4 HASTINGS W-NW. J. ENVTL. L. & POL'Y 23, 27 (1996); Brian E. Gray et al., *Transfers of Federal Reclamation Water: A Case Study of California's San Joaquin Valley*, 21 ENVTL. L. 911 (1991); Charles W. Howe et al., *Innovative Approaches to Water Allocation: The Potential for Water Markets*, 22 *WATER RESOURCES RES.* 439 (1986); Richard Roos-Collins, *Voluntary Conveyance of the Right to Receive a Water Supply from the United States Bureau of Reclamation*, 13 *ECOLOGY L.Q.* 773 (1987); Thompson, *supra* note 7, at 708-23.

The lower Rio Grande basin has seen the emergence of a "spot market" for water transfers that some might think defies the statement in the text. While some of these transactions involve very dissimilar uses, the water uses are all highly regulated, short term, and are for relatively small quantities, and transfers do not take water out of the basin. See David W. Yoskowitz, *Spot Market for Water along the Texas Rio Grande: Opportunities for Water Management*, 39 NAT. RESOURCES J. 345 (1999). Cf. Wim H. Kloezen, *Water Markets between Mexican Water User Associations*, 1 *WATER POL'Y* 437 (1998) (discussing the use of water markets and trades in Mexico, specifically analyzing the Alto Rio Lerma irrigation district). See generally Lawrence J. MacDonnell & Teresa A. Rice, *Moving Agricultural Water to Cities: The Search for Smarter Approaches*, 2 HASTINGS W-NW. J. ENVTL. L. & POL'Y 27, 45-46 (1994) (discussing the short-term transfers of water that are used in the west for seasonal or temporary needs).

¹⁹ For sources discussing the increasing need to move agricultural users' water to meet urban and municipal needs, see for example ANDERSON & SNYDER, *supra* note 7; LANDRY, *supra* note 7; NATIONAL RESEARCH COUNCIL, *WATER TRANSFERS IN THE WEST: EFFICIENCY, EQUITY, AND THE ENVIRONMENT* (1992); SALIBA & BUSH, *supra* note 7, at 45-46; JOSEPH SAX ET AL., *LEGAL CONTROL OF WATER RESOURCES: CASES AND MATERIALS* 217-18 (2nd ed. 1991); SMITH, *TRADING WATER*, *supra* note 7; WAHL, *supra* note 18, at 140-44; RICHARD WAHL, *WATER MARKETING IN CALIFORNIA: PAST EXPERIENCE, FUTURE PROSPECTS* 11-12 (1993); *WATER SCARCITY: IMPACTS ON WESTERN AGRICULTURE* (Ernest A. Engelbert & Ann Foley Scheuring eds., 1984); Michael C. Blumm, Symposium, *Seven Myths of Northwest Water Law and Associated Stories*, 26 ENVTL. L. 141, 145-46 (1996); Colby, *supra* note 7; Corbridge, *supra* note 7;

used to accomplish such significant changes in the ways in which water is used, even when there would be clear benefits to society from the transaction.²⁰ This raises a rather interesting, if all too obvious, question: If markets in water are so good, why are they so seldom used?

Crammond, *supra* note 7; Dragun & Gleeson, *supra* note 7; Graff & Yardas, *supra* note 7, at 165; Gray, *supra* note 7; Griffin & Boadu, *supra* note 7; Charles W. Howe et al., *The Economic Impacts of Agriculture-to-Urban Water Transfers on the Area of Origin: A Case Study of the Arkansas River Valley in Colorado*, 72 AM. J. AGRIC. ECON. 1200 (1990); Israel & Lund, *supra* note 7; Kaiser, *supra* note 7, at 185-92; Ronald A. Kaiser & Shane Binion, *Untying the Gordian Knot: Negotiated Strategies for Protecting Instream Flows*, 38 NAT. RESOURCES J. 157 (1998); Kaiser & Phillips, *supra* note 7, at 436-43; MacDonnell & Rice, *supra* note 18; Steven J. Shupe et al., *Western Water Rights: The Era of Reallocation*, 29 NAT. RESOURCES J. 413 (1989); Sterne, *supra* note 7; A. Dan Tarlock & Sarah D. Van de Wetering, *Growth Management and Western Water Law from Urban Oases to Archipelagos*, 5 HASTINGS W-NW. J. ENVTL. L. & POL'Y 163, 168-69 (1999); Gregory Thomas & Tara Miller, *Reflections on the "Model Water Transfer Act" by the National Heritage Institute*, 4 HASTINGS W-NW. J. ENVTL. L. & POL'Y 91, 99-101 (1996); Thompson, *supra* note 7; Kenneth R. Weber, *Effects of Water Transfers on Rural Areas*, 30 NAT. RESOURCES J. 13 (1990); Williams & McHugh, *supra* note 7; Robert A. Young, *Why Are There So Few Transactions Among Water Users?*, 68 AM. J. AGRIC. ECON. 1143 (1986); Jennifer L. Cordua, Comment, *The Search for New Supplies: Salvaging the Remains of Agricultural Water Conservation in California*, 31 U.C. DAVIS L. REV. 591 (1998); Mark W. Tader, Note, *Reallocating Western Water: Beneficial Use, Property, and Politics*, 1986 U. ILL. L. REV. 277.

²⁰ See SMITH, TRADING WATER, *supra* note 7, at 28-52; WAHL, *supra* note 18, at 197-29; Steven E. Clyde, *Legal and Institutional Barriers to Transfers and Reallocation of Water Resources*, 29 S.D. L. REV. 232 (1984); Colby, *supra* note 7; Eric T. Freyfogle, *Water Justice*, 1986 U. ILL. L. REV. 481, at 510-14; Mason Gaffney, *Economic Aspects of Water Resources Policy*, 28 AM. J. ECON. & SOC. 131 (1969); Micha Gisser & Ronald N. Johnson, *Institutional Restrictions on the Transfer of Water Rights and the Survival of an Agency*, in WATER RIGHTS, *supra* note 7, at 137; Zachary McCormick, *Institutional Barriers to Water Marketing in the West*, 30 WATER RESOURCES BULL. 953 (1994); Kevin M. O'Brien, *Water Marketing in California*, 19 PAC. L.J. 1165 (1988); William C. Schaab, *Prior Appropriation, Impairment, Replacements, Models and Markets*, 23 NAT. RESOURCES J. 25 (1983); Thompson, *supra* note 7, at 723-39; Timothy D. Tregarthen, *The Market for Property Rights in Water*, in WATER NEEDS FOR THE FUTURE: POLITICAL, ECONOMIC, LEGAL, AND TECHNICAL ISSUES IN A NATIONAL AND INTERNATIONAL FRAMEWORK 139 (Ved Nanda ed., 1977); Timothy D. Tregarthen, *Water in Colorado: Fear and Loathing of the Marketplace*, in WATER RIGHTS, *supra* note 7, at 119; Frank J. Trelease & Dellas W. Lee, *Priority and Progress—Case Studies in the Transfer of Water Rights*, 1 LAND & WATER L. REV. 1 (1966); Stephen F. Williams, *Optimizing Water Use: The Return Flow Issue*, 44 U. COLO. L. REV. 301 (1973); see also Jeffrey N. Gordon & Lewis A. Kornhauser, *Efficient Markets, Costly Information, and Securities Research*, 60 N.Y.U. L. REV. 761 (1985) (casting doubt on the wisdom of reliance on the "efficient

In this article, I shall address that last question first: Why are markets so seldom found in fact as a water management tool? In doing so, I will demonstrate that not only have true markets for water been rare, but that there are very good reasons why this is so. I then shall consider how certain administrative regimes that have been misdescribed as “markets” have functioned—principally the California Water Bank. Then I shall close by presenting an alternative to a market regime that perhaps could better accomplish the goals propounded by those who trumpet the virtues of markets as water management tools.

II. WHY DO MARKETS FOR WATER FAIL?

Many of us have become so accustomed to markets in our lives that we have lost sight of the fact that markets are not natural phenomena. Markets are cultural artifacts created and structured by social arrangements that we term “law.”²¹ To understand markets, how and why they operate, and when and how they fail, one must begin by examining the law that structures a particular market. While many aspects of the law serve to establish and regulate markets, most fundamental to the functioning of markets are the laws that define the property rights that form the “objects” of the market’s transactions, that define the “things” that are bought or sold in the market. We must begin then by considering the possibilities for “owning” water.

Given the generally unquestioning acceptance of markets in the United States, it is remarkable how, when markets for water become a subject of public concern, the debate often becomes highly emotional,

market” hypothesis); Eric J. Tabor, Note, *A Proposal for a Regulated Market of Water Rights in Iowa*, 65 IOWA L. REV. 979 (1980) (discussing types of water markets that could be used in Iowa to protect against times of water scarcity).

²¹ For sources on the economic effects of social institutions, like markets, property rights, and law, see generally ROBERT HALE, *FREEDOM THROUGH LAW: PUBLIC CONTROL OF PRIVATE GOVERNING POWER* (1952); Lee Alston et al., *The Determinants and Impact of Property Rights: Land Titles on the Brazilian Frontier*, 12 J.L. ECON. & ORG. 25 (1996); Tamar Frankel, *The Legal Infrastructure of Markets: The Role of Contract and Property Law*, 73 B.U. L. REV. 389 (1993); Paul Stanton Kibel, *Reconstructing the Marketplace: The International Timber Trade and Forest Protection*, 5 N.Y.U. ENVTL. L.J. 735 (1996). Cf. Lawrence M. Friedman, *Legal Rules and the Process of Social Change*, 19 STAN. L. REV. 786 (1967) (arguing that there is no inherent function in the concept of a “court” or any other branch of government).

with a great deal of the emotion against markets.²² Economists and others who advocate the utility of markets as water management tools, on the other hand, seldom address why markets are so rarely found or why there is so much resistance to applying market principles to water. Rather, such advocates are likely to denigrate critics of water markets as holding onto cultural, religious, or even mystical notions of the importance of water, resulting in arbitrary legal impediments to markets when water ought to be treated like any other commodity.²³ This attitude simply ignores the most important features of water. First, people look upon water differently from other resources because water is more immediately essential to life than any other resource except air. Deprive us of air, and we die in minutes. Deprive us of water, and we die in days. Deprive us of food, and we can go on for weeks or months, depending on our physical condition at the beginning of the fast—and on whether we have adequate supplies of water. Finally, as a Turkish businessman once commented, “[c]ountless millions

²² For examples of opposition to water markets specifically, see Cordua, *supra* note 19, at 610-11; Anthony DePalma, *Free Trade in Fresh Water? Canada Says No and Halts Exports*, N.Y. TIMES, Mar. 8, 1999, at A9; Graff & Yardas, *supra* note 7, at 169; Gray, *supra* note 18, at 26; Richard W. Wahl, *Market Transfers of Water in California*, 1 HASTINGS W-NW. J. ENVTL. L. & POL'Y 49, 51-52 (1994).

²³ See Timothy D. Tregarthen, *Water in Colorado: Fear and Loathing of the Market Place*, in WATER RIGHTS, *supra* note 7, at 119 (“[A]n economist might be defined as someone who doesn’t see anything special about water.”). See also ANDERSON & LEAL, *supra* note 16; ANDERSON & SNYDER, *supra* note 7, at 17-29, 114-16; NATIONAL RESEARCH COUNCIL, *supra* note 19, at 70-84; SMITH, TRADING WATER, *supra* note 7, at 10-15; WAHL, *supra* note 18, at 147-91; Kenneth E. Boulding, *The Implications of Improved Water Allocation Policy*, in WESTERN WATER RESOURCES: COMING PROBLEMS AND THE POLICY ALTERNATIVES 299, 306 (1980); F. Lee Brown, *Water Markets and Traditional Water Values: Merging Commodity and Community Perspectives*, 22 WATER INT’L 2 (1997); F. Lee Brown & Charles T. DuMars, *Water Rights and Market Transfers*, in WATER SCARCITY, *supra* note 19, at 408, 412-13; Clyde, *supra* note 20; Colby, *supra* note 7; Cordua, *supra* note 19; Dragun & Gleeson, *supra* note 7; Gisser & Johnson, *supra* note 20; Graff & Yardas, *supra* note 7, at 169, 220-21; Gregory, *supra* note 7; Griffin & Boadu, *supra* note 7; Huffaker et al., *supra* note 7; James Huffman, *Instream Water Use: Public and Private Alternatives*, in WATER RIGHTS, *supra* note 7, at 249, 268; Kaiser, *supra* note 7, at 247-50, 260; MacDonnell & Rice, *supra* note 18, at 52; McCormick, *supra* note 20; Kathleen Miller, *The Right to Use Versus the Right to Sell: Spillover Effects and Constraints on the Water Rights of Irrigation Organization Members*, 23 WATER RESOURCES RES. 2166 (1987); Michelson, *supra* note 7; Smith, *Groundwater Management*, *supra* note 7; Thompson, *supra* note 7; Williams & McHugh, *supra* note 7; Young, *supra* note 19, at 1144-45, 1149. See also Tom Kuhnle, Note, *The Federal Income Tax Implications of Water Transfers*, 47 STAN. L. REV. 533 (1995).

of people have lived without love, but none without water.”²⁴ Furthermore, water is an ambient resource that by its very nature is shared among users. Therefore, water cannot be owned in the usual sense of that word.

These two features of water make sense of the observation of Justice Oliver Wendell Holmes that “[a] river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it.”²⁵ In a sense, this article is an extended meditation on Holmes’ comment, seeking to explain why raw water is more than simply a resource like other resources. In this section, I shall explore why water is a “public good,” and how because of this reality our attempts to treat water as a form of common or private property have failed.

A. *Water as a Public Good*

Because of water’s importance to human and other life, and because of its ambient nature, water has long been considered to be the quintessential “public good.”²⁶ Economists are so accustomed to considering water as a paradigm of a public good that they customarily use water metaphors to discuss public goods generally: “common pool resource,” “spill over effects,” and so on. This fact alone should be enough to give even the most free-market oriented economists pause to consider whether true markets will function effectively for these resources. Yet upon careful consideration, water turns out not to be a public good in the narrowest sense of that term. Only the impossibility of setting up real markets for raw water demonstrates the wisdom of treating water as a public good.

²⁴ Amikam Nachmani, *The Politics of Water in the Middle East: The Current Situation, Imaginary and Practical Solutions*, in *WATER AS AN ELEMENT OF COOPERATION AND DEVELOPMENT IN THE MIDDLE EAST* 301, 302 (Ali İhsan Bağis ed., 1994)

²⁵ *New Jersey v. New York*, 283 U.S. 336, 342 (1931). See also Eric T. Freyfogle, *Context and Accommodation in Modern Property Law*, 41 *STAN. L. REV.* 1529, 1543-45 (1989) (interpreting the new California water entitlement laws).

²⁶ See *WATER RESOURCES MANAGEMENT*, *supra* note 7, at 81-92; John S. Harbison, *Waist Deep in the Big Muddy: Property Rights, Public Values, and Instream Waters*, 26 *LAND & WATER L. REV.* 535, 546-49 (1991); Douglas R. Williams, *Valuing Natural Environments: Compensation, Market Norms, and the Idea of Public Goods*, 27 *CONN. L. REV.* 365 (1995). See generally MANCUR OLSON, *THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS* (1965); JOHN RAWLS, *A THEORY OF JUSTICE* 266-74 (1971); Margaret Jane Radin, *Market-Inalienability*, 100 *HARV. L. REV.* 1849 (1987).

A "public good" is one that shares two qualities: indivisibility and publicness.²⁷ Indivisibility means that a good cannot be divided up among the consuming public to allow some consumers access to the resource while excluding other potential consumers from the resource. Publicness means that the resource is shared freely (if not equally) among the group—consumption by one person does not, at least under most circumstances, interfere with consumption by others. Because the good is indivisible, one cannot simply divide it up and buy as much as one wants; because it is public, it is impossible to keep others from accessing and enjoying the good so long as it is accessible and enjoyable by anyone. In other words, a public good is one that all within the relevant public must enjoy more or less equally, or no one can enjoy the good at all.

Public goods generally are free goods as far as markets are concerned because, as the definition suggests, consumers cannot (or cannot realistically) be excluded from enjoying the good.²⁸ How much can one charge others for viewing the blue sky over one's property? The only costs, if any, associated with a public good are the costs of capture, transportation, and delivery, not a cost for the good itself. This gives rise to the most important problem regarding the efficient management of public goods. If you invest in developing or improving the good, others who invest or pay nothing will enjoy the benefits of your investment because you cannot exclude those others from enjoying the good.²⁹ Such others are known as "free riders" and are seen as a serious inhibition to investment unless the government (or some other institution) takes responsibility for assuring that all (or nearly all) in fact pay for the benefits they receive.³⁰

²⁷ See ANDERSON & SNYDER, *supra* note 7, at 112-13; GLOBAL PUBLIC GOODS: INTERNATIONAL COOPERATION IN THE 21ST CENTURY (Inge Kaul et al. eds., 1999); STEPHEN WALTERS, ENTERPRISE, GOVERNMENT, AND THE PUBLIC (1993); Niva Elkin-Koren & Eli M. Salzberger, *Law and Economics in Cyberspace*, 19 INT'L REV. L. & ECON. 553, 559-61 (1999); Harbison, *supra* note 26, at 547.

²⁸ See generally PUBLIC GOODS AND MARKET FAILURES: A CRITICAL EXAMINATION (Tyler Cowen ed., 1992); John Ledyard, *Market Failure*, in THE NEW PALGRAVE: ALLOCATION, INFORMATION AND MARKETS 185 (John Eatwell et al. eds., 1989).

²⁹ See generally R.H. Coase, *The Lighthouse in Economics*, 17 J.L. & ECON. 357 (1974) (discussing the misconception of economists who use the British lighthouse system as an example of a benefit best provided by the government).

³⁰ See R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). See also Mehmet Bac, *Incomplete Information and Incentives to Free Ride on International Environmental Resources*, 30 J. ENVTL. ECON. & MGT. 301 (1996); Amnon Rapoport, *Provi-*

Air pollution is an excellent example. Automobile exhaust is a significant source of air pollution. If many people voluntarily invest in cleaner running cars in order to protect the air we breathe, I will have cleaner air just as much as they will. If I decide not to buy a cleaner running car, that decision by itself will not greatly affect the quality of the air we all breathe. I can (and many would) decide to become "free riders" on the efforts of others to clean the air. As more people realize that this possibility exists, fewer would voluntarily buy a cleaner running car. Why bother when my buying a cleaner running car will have little effect on air quality and many or most others are not making the investments necessary to improve air quality? My single decision to buy a cleaner running car actually would have too small an effect on air quality to justify my cost if most other people are free riding. Under these circumstances, all (or nearly all) simply will not buy cleaner running cars voluntarily, and we will end up with dirtier air than we would if there were no free riders. The solution, of course, is to compel all to buy cleaner running cars. Relying on the market simply won't work; relying on regulation will.

Water, of course, is not indivisible and public in the strictest sense, and a few economists therefore have denied that it is a public good.³¹ But few things are strictly indivisible and public, which is why economists and philosophers often use something like nuclear deterrence as an example of a true public good.³² What a culture treats as a public good, however, is not determined just by its physical characteristics, but also by its social and economic characteristics. When the costs to exclude others would be so high that it is impractical to exclude others from access to the good, or when there are other (perhaps cultural) reasons why a society will not exclude some of its members from access to the good, the good is treated as if it were a public good.

The most usual social or economic characteristic that leads to our treating something as a "public good" that is not strictly indivisible or public is that transaction costs are simply so high that no market can func-

sion of Public Goods and the MCS Experimental Paradigm, 79 AM. POL. SCI. REV. 148 (1985); Ramzi Suleiman, *Provision of Step-Level Public Goods Under Uncertainty: A Theoretical Analysis*, 9 RATIONALITY & SOC'Y 163 (1997).

³¹ See, e.g., ANDERSON & SNYDER, *supra* note 7, at 113-14; Harbison, *supra* note 26, at 546-47.

³² See, e.g., Tregarthen, *supra* note 23, at 119.

tion with even minimal effectiveness.³³ Yet, most economists and others who advocate markets as management tools for raw water say little or nothing about transaction costs. Economist Ronald Coase—seen by many as the founding guru of law and economics,³⁴ author of the most cited law review article published since World War II, and winner of the Nobel Prize in Economics in 1991³⁵—has argued that analyses that ignore such basic concerns as are outlined in this paragraph are typical of the “black-board economics” that he has concluded is the bane of most academic economists.³⁶ The most important and consistent simplifying assumption

³³ See NATIONAL RESEARCH COUNCIL, *supra* note 19, at 117-18; Ujjayant Chakravorty et al., *A Spatial Model of Optimal Water Conveyance*, 29 J. ENVTL. ECON. & MGT. 25 (1995); Charles W. Howe et al., *Transaction Costs as Determinants of Water Transfers*, 61 U. COLO. L. REV. 393 (1990). See generally COOTER & ULEN, *supra* note 13, at 100-01; NEIL KOMESAR, *IMPERFECT ALTERNATIVES* 19-26 (1994); A. MITCHELL POLINSKY, *AN INTRODUCTION TO LAW AND ECONOMICS* 12-14 (2d. ed. 1989); POSNER, *supra* note 13, at § 3.11, at 87-88; Robert Ellickson, *The Case for Coase and against “Coaseanism,”* 99 YALE L.J. 611, 614-16 (1989); Daniel Farber, *The Coase Theorem and the Eleventh Amendment*, 13 CONST. COMMENTARY 141 (1996); Harbison, *supra* note 26, at 544-46; Howard Shelanski & Peter Klein, *Empirical Research in Transaction Cost Economics: A Review and Assessment*, 11 J.L. ECON. & ORG. 335 (1995).

³⁴ See Edmund Kitch, *The Fire of Truth: A Remembrance of Law and Economics at Chicago, 1932-1970*, 26 J.L. & ECON. 163, 221 (1983) (describing how Coase won over an extremely hostile audience at a faculty seminar at the University of Chicago in defending the piece eventually published as *The Problem of Social Cost*, *supra* note 30); POSNER, *supra* note 13, at § 2.1, at 25-26; CENTO VELJANOVSKI, *THE ECONOMICS OF LAW: AN INTRODUCTORY TEXT* 18-19, 22, 46-47 (1990).

³⁵ For more on Coase himself and the Coase Theorem, see ROBERT ELICKSON, *ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES* 2 (1991); RICHARD POSNER, *OVERCOMING LAW* 406 (1995); Daniel Farber, *Parody Lost/Pragmatism Regained: The Ironic History of the Coase Theorem*, 83 VA. L. REV. 397, 399-401 (1997); Herbert Hovenkamp, *Marginal Utility and the Coase Theorem*, 75 CORNELL L. REV. 783, 783 (1990); Mark Kelman, *Consumption Theory, Production Theory, and Ideology in the Coase Theorem*, 52 S. CAL. L. REV. 669, 669 (1979); Daniel O. Posin, *The Error of the Coase Theorem: Of Judges Hand and Posner and Carroll Towing*, 74 TUL. L. REV. 629, 629-30 (1999); Stewart Schwab, *Coase Defends Coase: Why Lawyers Listen and Economists Do Not*, 87 MICH. L. REV. 1171, 1189 n.51 (1989); Peter Passell, *For a Common-Sense Economist, a Nobel—and an Impact on the Law*, N.Y. TIMES, Oct. 20, 1991, at § 4, at 2.

³⁶ R.H. COASE, *THE FIRM, THE MARKET, AND THE LAW* 1-20 (1988). Coase also indicated that he considered the major point of his famous article was to persuade economists to begin to take transaction costs seriously, not to assure them that markets without transaction costs were worth studying. *Id.* at 13-15, 174. Another comment perhaps best sums up his attitude towards his fellow economists: “In my youth, it was said that what

that most economists make is to assume a "frictionless market"—a market without transaction costs. Lawyers, on the other hand, focus precisely on the costs and frictions of the marketplace for their role is to minimize, accommodate, or overcome such problems.³⁷ Lawyers simply are not concerned about how ideal markets could function—except as a baseline for measuring the failures of real markets.

Another reason for treating something as a public good is because society's values require that all receive a "fair" share of the resource, or at least that the good not be subject to the strictures of the marketplace.³⁸ When transaction costs make markets impossible, yet the good is perceived as essential for the minimum socially acceptable well-being of all members of the society, society (today, usually through government) undertakes to provide the good to all without direct cost for the amount consumed. Such goods could be termed socially created public goods. Examples of socially created public goods include fire protection or public education, both of which are, in some settings, treated as private goods but are generally made available to all by governments, at no direct cost to actual consumers. The status of socially created public goods changes through time. Thus, for most people in the United States, education for their children is still provided as a public good, although there is a growing demand in some quarters to reprivatize education (through vouchers, for example), although few if any analyses in these debates have used this terminology.³⁹ Similarly, strong efforts have been made recently to extend a sort of common (or perhaps public) property approach to medical care.⁴⁰

was too silly to be said may be sung. In modern economics it may be put into mathematics." *Id.* at 185. No wonder Coase has concluded that, "My point of view has not in general commanded assent, nor has my argument, for the most part, been understood." *Id.* at 1.

³⁷ See Schwab, *supra* note 35, at 1188-98.

³⁸ See generally Neil Duxbury, *Law, Markets and Valuation*, 61 BROOK. L. REV. 657 (1995) (asserting that legal systems reflect societies' inherent belief that certain resources should remain outside the market); Thomas W. Merrill, *Dolan v. City of Tigard: Constitutional Rights as Public Goods*, 72 DENV. U. L. REV. 859 (1995) (discussing the unconstitutional conditions doctrine as making constitutional rights public goods).

³⁹ For discussions about benefits, difficulties, and approaches to changing the general and financial structures of public education, see generally CHANGING URBAN EDUCATION (Clarence Stone ed., 1998); 1 & 2 CHOICE AND CONTROL IN AMERICAN EDUCATION (William H. Clune & John F. Witte eds., 1990); JOHN CHUBB & TERRY MOE, POLITICS, MARKETS, AND AMERICA'S SCHOOLS (1990); LAWRENCE CREMIN, AMERICAN EDUCATION: THE METROPOLITAN EXPERIENCE (1988); JEFFREY HENIG, RETHINKING

Water is just such a commodity. This is most obvious for the protection of instream flows.⁴¹ Less obvious, but no less true, is the public nature of water when withdrawn for private use. While it is easy enough for someone to own and manage water unilaterally in small amounts (for example, bottled water), a river is an ambient resource that can never be fully controlled or fully owned. Even building a dam only delays the flow of the water; it cannot stop the flow altogether. Thus, doing something to water on a large scale necessarily affects many others, making it difficult to procure the assent of all significantly affected persons. Transaction costs on all but the smallest streams, lakes, or aquifers, quickly become

SCHOOL CHOICE: LIMITS OF THE MARKET METAPHOR (1994); JONATHAN KOZOL, *SAVAGE INEQUALITIES: CHILDREN IN AMERICA'S SCHOOLS* (1991); LAW AND SCHOOL REFORM: SIX STRATEGIES FOR PROMOTING EDUCATIONAL EQUITY (Jay P. Heubert ed., 1999); JUDITH PEARSON, *MYTHS OF EDUCATIONAL CHOICE* (1993); PRIVATIZING EDUCATION AND EDUCATIONAL CHOICE: CONCEPTS, PLANS, AND EXPERIENCES (Simon Harkin et al. eds., 1994); SCHOOL CHOICE: EXAMINING THE EVIDENCE (Edith Russell & Richard Rothstein eds., 1993); THEODORE R. SIZER, *HORACE'S COMPROMISE: THE DILEMMA OF THE AMERICAN HIGH SCHOOL* (1984); VOUCHERS FOR SCHOOL CHOICE: CHALLENGE OR OPPORTUNITY? (Marshall Berger & David Gordis eds., 1998); ARTHUR WISE, *RICH SCHOOLS, POOR SCHOOLS: THE PROMISE OF EQUAL EDUCATIONAL OPPORTUNITY* (1968); Robert Alley, *Public Education and the Public Good*, 4 WM. & MARY BILL RTS. J. 277 (1995); Eric Hanushek, *When School Finance "Reform" Might Not Be Good Policy*, 28 HARV. J. LEGIS. 423 (1991); John Jannsen, *Public School Finance, School Choice, and Equal Educational Opportunity in Texas: The Enduring Importance of Background Conditions*, 19 REV. LITIG. 1 (2000); Richard A. King & Judith K. Mathers, *Improving Schools through Performance-Based Accountability and Financial Rewards*, 23 J. EDUC. FIN. 147 (1997); Martha Minow, *Choice of Commonality: Welfare and Schooling after the End of Welfare as We Knew It*, 49 DUKE L.J. 493 (1999); James Ryan, *Schools, Race, and Money*, 109 YALE L.J. 429 (1999); Julie Underwood, *School Finance Adequacy as Vertical Equity*, 28 U. MICH. J.L. REFORM 493 (1995); John F. Witte, *Private School Versus Public School Achievement: Are There Findings that Should Affect the Education Choice Debate*, 11 ECON. EDUC. REV. 371 (1992).

⁴⁰ See, e.g., SYSTEM IN CRISIS: THE CASE FOR HEALTH CARE REFORM (Robert J. Blendon & Jennifer N. Edwards eds., 1991); Timothy Stoltzfus Jost, *Oversight of the Quality of Medical Care: Regulation, Management, or the Market?*, 37 ARIZ. L. REV. 825 (1995); Frank McLellan, *Is Managed Care Good for What Ails You? Ruminations on Race, Age, and Class*, 44 VILL. L. REV. 227 (1999); Jonathan Oberlander, *Managed Care and Medicare Reform*, 22 J. HEALTH POL. POL'Y & L. 595 (1997).

⁴¹ See DAVID M. GILLILAN & THOMAS C. BROWN, *INSTREAM FLOW PROTECTION: SEEKING A BALANCE IN WESTERN WATER USE* (1997); *INSTREAM FLOW PROTECTION IN THE WEST* (Lawrence J. MacDonnell & Teresa Rice eds., rev. ed. 1993) Michael C. Blumm, *Unconventional Waters: The Quiet Revolution in Federal and Tribal Minimum Streamflows*, 19 ECOLOGY L.Q. 445 (1992).

prohibitive unless those "spill over" effects are ignored. It is this reality that underlies the tradition of treating water as a free good—a good available to all at no cost for the water itself, but only for the cost of capturing, transporting, and using the water. Those who advocate recourse to private action as the prime means for protecting instream values miss the point entirely.⁴²

Those who advocate the privatization of water with its allocation and management to be determined by markets are demanding an end to our treatment of water as a free good. I agree that water should not be a free good any longer. Economic incentives should be introduced for those who use water so they will more realistically evaluate the social consequences of their conduct.⁴³ I cannot stress too strongly that various eco-

⁴² See ANDERSON & SNYDER, *supra* note 7, at 114-16; LANDRY, *supra* note 7; Griffin & Hsu, *supra* note 7; Huffman, *supra* note 23; Kaiser & Binion, *supra* note 19, at 169-73; Sterne, *supra* note 7; Thomas, *supra* note 7; Williams & McHugh, *supra* note 7. See also Janet Neuman & Cheyenne Chapman, *Wading into the Water Market: The First Five Years of the Oregon Water Trust*, 14 J. ENVTL. L. & LITIG. 135 (1999) (describing the problems encountered in attempting to use market transactions to secure instream flows).

⁴³ For sources that discuss the significance of linking economic impacts to the use of resources, see generally ENFORCING ENVIRONMENTAL STANDARDS, *supra* note 11; OECD, *supra* note 11; Jürgen Backhaus, *The Law and Economics of Environmental Taxation: When Should the Ecotax Kick In?*, 19 INT'L REV. L. & ECON. 117 (1999); Crammond, *supra* note 7; Roger Dahlstrom, *Development Impact Fees: A Review of Contemporary Techniques for Calculation, Data Collection, and Documentation*, 15 N. ILL. U.L. REV. 557 (1995); D. Damania, *Pollution Taxes and Pollution Abatement in an Oligopoly Supergame*, 30 J. ENVTL. ECON. & MGT. 323 (1996); Driessen, *supra* note 9; Don Fullerton & Gilbert Metcalf, *Environmental Taxes and the Double-Dividend Hypothesis: Did You Really Expect Something for Nothing?*, 73 CHI.-KENT L. REV. 221 (1998); Emily Gardner, *A Victim of Its Own Success: Can User Fees Be Used to Save Hanauma Bay?*, 4 OCEAN & COASTAL L.J. 81 (1999); Howard Gensler, *The Economics of Pollution Taxes*, 10 J. NAT. RESOURCES 1 (1994); Richard Horan & Marc Ribaud, *Policy Objectives and Economic Incentives for Controlling Agricultural Sources of Nonpoint Pollution*, 35 J. AM. WATER RESOURCES ASS'N 1023 (1999); Robert Benjamin Naeser & Lynne Lewis Bennett, *The Cost of Noncompliance: The Economic Value of Water in the Middle Arkansas River Valley*, 38 NAT. RESOURCES J. 445 (1998); Erin O'Hara & William Dougan, *Redistribution through Discriminatory Taxes: A Contractarian Explanation of the Role of the Courts*, 6 GEO. MASON L. REV. 869 (1998); S. Renzetti, *The Economics of a Seemingly Abundant Resource: Efficient Water Pricing in Vancouver, Canada*, in 4 WATER FOR WORLD DEVELOPMENT 470 (Ronald D. Townsend & Donald M. Tate eds., 1988); Roth, *supra* note 11; Hilary Sigman, *The Effects of Waste Taxes on Waste Generation and Disposal*, 30 J. ENVTL. ECON. & MGT. 199 (1996); Olli Tahvonen, *Trade with Polluting Nonrenewable Resources*, 30 J. ENVTL. ECON. & MGT. 1 (1996); Sherry

nomic incentives, including fees, taxes, and "water banks," undoubtedly are useful in managing public property. But resorting to economic incentives should not obscure the fact that water remains the prime example of a public good for which prices cannot be set in a marketplace.

The reality that good reasons exist for societies to treat water as a public good suggests that ultimately true markets must remain marginal at best to the management of large quantities of water for numerous diverse users. With this in mind, it is time to consider the several attempts that legal systems in the United States have taken to treat water other than as a public good through the forms of common or private property. We must turn then to an examination of how property in raw water, or in the use of that water, is defined by law.

B. *Patterns of Property in Water*

The following draws heavily on the legal experience in the United States, not just because I am most familiar with that experience but also because that experience has been so highly varied that it can be taken as representative of most legal approaches to water management that have been tried around the world.⁴⁴ In the United States, the law that defines property in water is state law, allowing ample opportunities to try out different approaches to water property regimes in the United States. Thus, by examining the forms of property in water in the United States, one will examine the basic forms of property in water elsewhere as well. And in this examination we shall confirm that the nature of property in water is such that markets, real markets, simply cannot work.

The paradigm of property in the common law remains the fee simple absolute. Even today, land can be marked off and considered for most purposes as the exclusive domain of a particular owner with little regard for the effects of the owner's conduct on others or their property—despite the law of nuisance and the modern law of zoning.⁴⁵ Land, however, stays put within its boundaries. Flowing water, like any ambient resource, sim-

Tippett & Craig O'Hare, *Using Price to Limit Water Use: A Case Study of the City of Santa Fe*, 39 NAT. RESOURCES J. 169 (1999).

⁴⁴ For a brief survey of water law worldwide, see George Radosevich, *Global Water Law Systems and Water Control*, in WATER NEEDS FOR THE FUTURE, *supra* note 20, at 39.

⁴⁵ See generally ROGER CUNNINGHAM ET AL., THE LAW OF PROPERTY 1-3, 26-35 (2d. ed. 1993) (discussing owners' property rights).

ply does not fit easily into such a paradigm. While considerable ink has been consumed in devising subtly varied versions of marketable water rights for the United States, no such scheme has ever actually been implemented.⁴⁶ The major changes in private property rights in water have instead stressed the public nature of the resource and the limitations that public nature impose upon private rights.⁴⁷ And this in the land that prides itself on being the international champion of free markets.⁴⁸

In all the world, there are just three basic approaches to property rights: (1) common property; (2) private property; and (3) public property.⁴⁹ The three ideal models of property each correspond rather more

⁴⁶ See, e.g., TERRY ANDERSON, *WATER CRISIS: ENDING THE POLICY DROUGHT* (1983); ROBERT DUNBAR, *FORGING NEW RIGHTS IN WESTERN WATERS* (1983); JACK HIRSHLEIFER ET AL., *WATER SUPPLY: ECONOMICS, TECHNOLOGY, AND POLICY* (1960); SMITH, *TRADING WATER*, *supra* note 7; *WATER RIGHTS*, *supra* note 7; Arthur Chan, *To Market or Not to Market: Allocating Water Rights in New Mexico*, 29 NAT. RESOURCES J. 629 (1989); Gaffney, *supra* note 20; Dudley D. Johnson, *An Optimal State Water Law: Fixed Water Rights and Flexible Market Prices*, 57 Va. L. Rev. 345 (1971); Michelson, *supra* note 7; O'Brien, *supra* note 20; Smith, *Groundwater Management*, *supra* note 7; Tabor, *supra* note 20.

⁴⁷ See FRANK E. MALONEY ET AL., *A MODEL WATER CODE* (1972); *THE REGULATED RIPARIAN MODEL WATER CODE* (Joseph W. Dellapenna ed., 1997); Robert H. Abrams, *Charting the Course of Riparianism: An Instrumentalist Theory of Change*, 35 WAYNE L. REV. 1381 (1989); Richard Ausness, *Water Rights Legislation in the East: A Program for Reform*, 24 WM. & MARY L. REV. 547 (1983); Lynda Butler, *Defining a Water Ethic through a Comprehensive Reform: A Suggested Framework for Analysis*, 1986 U. ILL. L. REV. 439; Ronald Christaldi, *Sharing the Cup: A Proposal for the Allocation of Florida's Water Resources*, 23 FLA. ST. U.L. REV. 1063 (1996); Joseph W. Dellapenna, *Regulated Riparianism*, in *WATERS AND WATER RIGHTS*, *supra* note 18, at ch. 9; Jerry Fitzgerald English, *A New Approach to New Jersey's Water Supply Problems*, 6 SETON HALL LEGIS. J. 349 (1983); Freyfogle, *supra* note 20; J.W. Looney, *Modification of Arkansas Water Law: Issues and Alternatives*, 38 ARK. L. REV. 221 (1984); Charles F. Wilkinson, *Western Water Law in Transition*, 56 U. COLO. L. REV. 317 (1985).

⁴⁸ This paradox was noted sixty years ago by one of America's most noted (and traditional) scholars of water law. See Samuel Wiel, *Natural Communism: Air, Water, Oil, Sea, and Seashore*, 47 HARV. L. REV. 425 (1934).

⁴⁹ See Harold Demsetz, *Toward a Theory of Property*, 57 AM. ECON. REV. 347 (1968). See generally STEPHEN MUNZER, *A THEORY OF PROPERTY* (1990); CAROL ROSE, *PROPERTY AND PERSUASION: ESSAYS ON THE HISTORY, THEORY, AND RHETORIC OF OWNERSHIP* (1994); Terry Frazier, *Protecting Ecological Integrity within the Balancing Function of Property Law*, 28 ENVTL. L. 53 (1998); Eric T. Freyfogle, *Eight Principles for Property Rights in the Anti-Sprawl Age*, 23 WM. & MARY ENVTL. L. & POL'Y REV. 777 (1999); Howard Gensler, *Property Law as an Optimal Economic Foundation*, 35

closely than many realize to the three real world models of water law found today in the United States. Although there has been some convergence in recent years regarding state water laws in the United States, the various states remain committed—in nearly equal numbers—to the distinctly different approaches represented by these paradigms. This equal division is all the more remarkable given that as recently as fifty years ago there were no representatives of the public property approach, and the states were divided only between the common property approach and the private property approach.⁵⁰

The correspondence between actual state water laws and the basic property types was virtually judicially acknowledged in the well-known case of *Keys v. Romley*,⁵¹ dealing with analogous doctrines of the law regarding the drainage of diffused surface water.⁵² In *Keys*, the defendant built an ice rink and paved the surrounding land as a parking lot. These and related changes produced an increase in the volume and velocity of runoff water, producing considerable erosion on the plaintiff's downhill residential property. The Supreme Court of California, in a carefully reasoned opinion by Justice Stanley Mosk, quickly reviewed and dismissed the "common enemy rule" of surface drainage, a rule that clearly had been

WASHBURN L.J. 50 (1995); Robert Goldstein, *Green Wood in the Bundle of Sticks: Fitting Environmental Ethics and Ecology into Real Property Law*, 25 ENVTL. AFF. 347 (1998); J.W. Harris, *Private and Non-Private Property: What Is the Difference?*, 111 L.Q. REV. 421 (1995); Alan Randall, *Property Rights and Social Microeconomics*, 15 NAT. RESOURCES J. 729 (1975); Jeanne Schroeder, *Chix Nix Bundle-O-Stix: A Feminist Critique of the Disaggregation of Property*, 93 MICH. L. REV. 239 (1994); A.N. Yiannopoulos, *Common, Public and Private Things in Louisiana Civilian Tradition and Modern Practice*, 21 LA. L. REV. 697 (1960).

⁵⁰ See Dellapenna, *supra* note 47, at 444-46.

⁵¹ See 412 P.2d 529 (Cal. 1966). See also *Braverman v. Eicher*, 238 N.W.2d 331 (Iowa 1976); *Luther Transfer & Storage, Inc. v. Walton*, 296 S.W.2d 750 (Tex. 1956).

⁵² For a definition and discussions of diffused surface water law, see generally Joseph W. Dellapenna, *Related Systems of Water Rights*, in WATERS AND WATER RIGHTS, *supra* note 18, at § 10.03 [hereinafter Dellapenna, *Related Systems*]; Joseph W. Dellapenna, *The Legal Regulation of Diffused Surface Water*, 2 VILL. ENVTL. L.J. 285 (1991); J.W. Looney, *Diffused Surface Water in Arkansas: Is It Time for a New Rule?*, 18 U. ARK. LITTLE ROCK L. REV. 393 (1996); Adam Lenain, Comment, *Toward a Universal Rule for the Reasonable Disposition of Surface Water in California*, 32 SAN DIEGO L. REV. 637 (1995).

rejected by California precedents.⁵³ Instead, Justice Mosk focused on choosing between the "natural servitude" rule⁵⁴ and the "reasonable use" rule.⁵⁵ In the course of his analysis, Justice Mosk described the natural servitude rule as a rule of property, and the reasonable use rule as a rule of tort,⁵⁶ apparently as a means of reconciling two doctrines which in fact operate from such divergent premises as to be irreconcilable. The court ultimately declined to choose unequivocally between the two rules, reaffirming the natural servitude rule while recognizing a duty (akin to nuisance) on landowners not to interfere unreasonably with the property of others.⁵⁷

Justice Mosk's observation about property and tort was more insightful than perhaps he recognized.⁵⁸ In writing of "property," he apparently had in mind the sort of private property concept that Americans customarily associate with the fee simple absolute. He described "property rights" in water as a system of rights or duties regarding water which attempts to define the rights and duties in clear and certain terms, with law serving to protect the resulting entitlements except in so far as the owners agree to changes through market transactions. That indeed would be a

⁵³ See *Keys*, 412 P.2d at 531-32. By this rule, diffused surface water is seen as something that all landowners need to get rid of and each landowner is entitled to do whatever is necessary to dispose of the water regardless of its effect on adjacent landowners. The rule is followed in about fifteen states. See generally Dellapenna, *Related Systems*, *supra* note 52, at § 10.03(b)(1).

⁵⁴ See *Keys*, 412 P.2d at 532-33. By this rule, lands are considered naturally burdened with a legal duty to receive the surface drainage from uphill land so long as that drainage is not increased or concentrated by the upper landowner. Neither landowner can alter the land in any way that would interfere with the natural drainage pattern without liability to the other if damage results. This rule is followed in about twenty-three states. See generally Dellapenna, *Related Systems*, *supra* note 52, at § 10.03(b)(2).

⁵⁵ See *Keys*, 412 P.2d at 533-34. By this rule, each landowner is free to take whatever steps he or she considers appropriate to drain diffused surface water from the land so long as these steps do not unreasonably injure another landowner. This rule is followed in about twelve states. See generally Dellapenna, *Related Systems*, *supra* note 52, at § 10.03(b)(3).

⁵⁶ See *Keys*, 412 P.2d at 535-36.

⁵⁷ See *Keys*, 412 P.2d at 536-38.

⁵⁸ Cf. Freyfogle, *supra* note 20, at 499-508 (describing what he terms "the shift from water rights to water wrongs" in the adjudication of water disputes).

private property system of water allocation and management.⁵⁹ The closest we come to such an arrangement in American water law is the system of appropriative rights.⁶⁰

On the other hand, as Justice Mosk acknowledged, a rule which permits anyone to use a "common pool resource" so long as the use is "reasonable" is hardly a rule of property at all, at least in the customary sense.⁶¹ The rule leaves courts to sort out conflicting claims of right to the common resource solely through a rule of tort. This amounts to a rule of common property, rather than a rule of private property, somewhat as if tenants in common were to dispute the use of land.⁶² An even closer analogy arises in the law of the open range in some western states, particularly when the law of adverse possession is held not to apply to common

⁵⁹ See generally Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972) (analyzing property rights and costs by examining notions of entitlements). See also Richard Epstein, *Why Restrain Alienation*, 85 COLUM. L. REV. 970 (1985); Susan Rose-Ackerman, *Inalienability and the Theory of Property Rights*, 85 COLUM. L. REV. 931 (1985). In the context of the drainage of diffused surface waters, the common enemy doctrine would have been a variant form of a private property rule, differing in its particulars from the natural servitude rule but not in its jurisprudential characteristics.

⁶⁰ See generally WATERS AND WATER RIGHTS, *supra* note 18, chs. 11-17 (giving an overview of historical and present status of appropriative rights).

⁶¹ *Keys*, 412 P.2d at 535-36. Note also the American Law Institute's placement of the law of riparian rights in the *Restatement of Torts* rather than the *Restatement of Property*. RESTATEMENT (SECOND) OF TORTS §§ 841-864 (1977); RESTATEMENT OF TORTS §§ 841-864 (1939). See also A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 3.14, at 3-73 (1988); Joseph W. Dellapenna, *Introduction to Riparian Rights*, in WATERS AND WATER RIGHTS, *supra* note 18, at § 6.01(c), at 134-35.

⁶² See, e.g., *Baird v. Moore*, 141 A.2d 324 (N.J. Super. Ct. 1958); *Preston v. Smith*, 293 S.W.2d 51 (Tenn. Ct. App. 1955); *Smith v. White*, 216 S.W.2d 672 (Tex. 1948); *Reilly v. Sageser*, 467 P.2d 358 (Wash. 1970) (disputes between co-tenants of land owned in common). See generally William E. Wheeler, Note, *Adverse Possession between Tenants in Common and the Rule of Presumptive Ouster*, 10 WAKE FOREST L. REV. 300 (1974) (analyzing co-tenant ousting another tenant through constructive possession).

range.⁶³ The law of riparian rights as it has evolved in the last century is a prime example of such a legal regime in the United States.⁶⁴

Justice Mosk did not consider the possibility of active public management of surface drainage. While that possibility was not in issue in *Keys*, the possibility is hardly unknown in California where at least urban surface drainage is a public responsibility and private parties are required to "hook into" the public system and to conform to the public system's decisions.⁶⁵ The newest system of American law applied to the allocation of surface water, which has been called "regulated riparianism," corresponds, at least in theory, to a public ownership model.⁶⁶

The correspondence between modern forms of American water law and the several theoretical models of property types is more than a simple curiosity. In light of the work done in recent years on the theory of property, the correspondence of forms of water law to theoretical models enables us to predict with some certainty whether existing forms are adaptable to changing circumstances, or whether an entirely new form must be substituted when circumstances of water demand or supply change dra-

⁶³ See, e.g., *England v. Ally Ong Hing*, 459 P.2d 498 (Ariz. 1969); *McDonnold v. Weinacht*, 465 S.W.2d 136 (Tex. 1971); *De Las Fuentes v. Macdonnell*, 85 Tex. 132, 20 S.W. 43 (1892) (examples of cases in which court ruled adverse possession did not apply to open range).

⁶⁴ See generally Joseph W. Dellapenna, *The Right to Consume Water under "Pure" Riparian Rights*, in *WATERS AND WATER RIGHTS*, *supra* note 18, at ch. 7 [hereinafter Dellapenna, *Riparian Rights*].

⁶⁵ See, e.g., *Mehl v. People*, 532 P.2d 489 (Cal. 1975). For representative decisions to similar effect in other states, see *Iowa Nat. Resources Council v. Van Zee*, 158 N.W.2d 111 (Iowa 1968); *Simon v. Nieses*, 395 P.2d 308 (Kan. 1964); *Reeder v. Board of County Comm'rs*, 392 P.2d 888 (Kan. 1964); *Anntco v. Shrewsbury Bank & Trust Co.*, 230 N.E.2d 795 (Mass. 1967); *Schmidt v. Eger*, 289 N.W.2d 851 (Mich. Ct. App. 1980); *Borough of Ambler v. Shepherd*, 278 A.2d 886 (Pa. 1971). See generally Dellapenna, *Related Systems*, *supra* note 52, at § 10.03(b)(5); Timothy Weston, *Gone with the Water—Drainage Rights and Storm Water Management in Pennsylvania*, 22 VILL. L. REV. 901 (1977).

⁶⁶ For various states' adoption and views of the public ownership model see generally Robert Abrams, *Water Allocation through Comprehensive Permit Systems in the East: Considering a Move Away from Orthodoxy*, 9 VA. ENVTL. L.J. 255 (1990); Ausness, *supra* note 47; Peter Davis, *Eastern Water Diversion Permit Statutes: Precedents for Missouri*, 47 MO. L. REV. 429 (1982); Dellapenna, *Regulated Ripariansim*, *supra* note 47; N. William Hines, *A Decade of Experience Under the Iowa Water Permit System—Part One*, 7 NAT. RESOURCES J. 499 (1967), *A Decade of Experience Under the Iowa Water Permit System—Part Two*, 8 NAT. RESOURCES J. 23 (1968); Looney, *supra* note 47.

matically.⁶⁷ The answer seems increasingly clear that riparian rights as known in the United States—a common property system—cannot survive. Which system should be substituted, however, is less clear. To validate these conclusions let us take a closer look at how common property, as a legal concept, functions.

C. *Why Common Property Systems Cannot Survive*

Biologist Garrett Hardin explained more than twenty years ago, in his famous article on *The Tragedy of the Commons*,⁶⁸ why a common property system can function only when the common pool resource is available in much greater supply than the demand for the resource. Whenever each common owner can decide for herself whether to increase her use of the resource regardless of the effect on other common owners (except for direct interference with the uses of the others), each owner will be able to appropriate for herself the whole of each additional increment of use, while the whole group will share equally the cost imposed on the common resource. Hardin used cows grazing on a common pasture as his example. For each additional cow I add to the herd, I obtain the full benefit of the added cow, while the common owners as a group share the burden of the reduced carrying capacity of the pasture.⁶⁹

Hardin has been criticized, particularly by economists, as having over-simplified the reality of how “commons” functioned in prior times or in remote areas. Hardin’s critics have demonstrated that many such commons have functioned over extended periods quite satisfactorily even when close to the carrying capacity of the resource through informal

⁶⁷ See also LUDWIK TECLAFF, *WATER LAW IN HISTORICAL PERSPECTIVE* 6-144 (1985); Abrams, *supra* note 47.

⁶⁸ Garrett Hardin, *The Tragedy of the Commons*, 162 *SCIENCE* 1268 (1968).

⁶⁹ For contemporary analyses of Hardin’s theory, see GLENN STEVENSON, *COMMON PROPERTY ECONOMICS: A GENERAL THEORY AND LAND USE APPLICATIONS* (1991); Fred Bosselman, *Replaying the Tragedy of the Commons*, 13 *YALE J. ON REG.* 391 (1996) (book review); James Krier, *The Tragedy of the Commons, Part Two*, 15 *HARV. J.L. & PUB. POL’Y* 325 (1992); Michael Taylor, *The Economics and Politics of Property Rights and Common Pool Resources*, 32 *NAT. RESOURCES J.* 633 (1992); James Walker & Roy Gardner, *Probabilistic Destruction of Common-Pool Resource: Experimental Evidence*, 102 *ECON. J.* 1149 (1992). See also Eric T. Freyfogle, *The Particulars of Owning*, 25 *ECOLOGY L.Q.* 574 (1999); James Huffman, *Land Ownership and Environmental Regulation*, 25 *ECOLOGY L.Q.* 591 (1999).

regulations imposed by the small communities sharing a commons.⁷⁰ The point is well taken, yet it is utterly irrelevant for describing how a "commons" works in a much larger society where, because most persons are strangers to each other, informal sanctions do not function effectively and formal law recognizes no real limits on any one person's exploitation of the commons.⁷¹ When the common owners are strangers to each other, as each user receives the full incremental value of the changes he induces while bearing only a small fraction of the costs, the only rational course for each common owner is to increase his uses until the resource is exhausted.⁷² This is more than a mere theoretical model. We have witnessed it over and over again in this century regarding common pool resources

⁷⁰ For examples, see CARL DAHLMAN, *THE OPEN FIELD SYSTEM AND BEYOND: A PROPERTY RIGHTS ANALYSIS OF AN ECONOMIC INSTITUTION* (1980); ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (1990); ELINOR OSTROM ET AL., *RULES, GAMES, AND COMMON-POOL RESOURCES* (1994); *THE QUESTION OF THE COMMONS: THE CULTURE AND ECOLOGY OF COMMUNAL RESOURCES* (Bonnie McCay & James Acheson eds., 1987); Susan Jane Buck Cox, *No Tragedy on the Commons*, 7 ENVTL. ETHICS 49 (1985); S.V. Ciriacy-Wantrup & Richard Bishop, "Common Property" as a Concept in Natural Resources Policy, 15 NAT. RESOURCES J. 713 (1975); Sanford D. Clark, *Tensions between Water Legislation and Customary Rights*, 30 NAT. RESOURCES J. 503 (1990); Bruce A. Larson & Daniel W. Bromley, *Property Rights, Externalities, and Resource Degradation: Locating the Tragedy*, 33 J. DEV. ECON. 235 (1990); Carlisle Ford Runge, *Common Property Externalities: Isolation, Assurance, and Resource Depletion in Traditional Grazing Context*, 63 AM. J. AGRIC. ECON. 595 (1981); Ramzi Suleiman et al., *Fixed Position and Property Rights in Sequential Resource Dilemmas under Uncertainty*, 93 ACTA PSYCHOLOGICA 229 (1996).

⁷¹ See Harris, *supra* note 49; Steven Lawry, *Tenure Policy toward Common Property Natural Resources in Sub-Saharan Africa*, 30 NAT. RESOURCES J. 403 (1990). On the transition from informal to formal law, see Ronald Collins & David Skover, *Paratexts*, 44 STAN. L. REV. 509 (1992).

⁷² For attempts to describe optimal conditions under which a commons might function successfully in more developed economic settings, see Richard Cornes et al., *The Commons and the Optimum Number of Firms*, 100 Q.J. ECON. 641 (1986); Steven Hackett et al., *The Role of Communications in Resolving Commons Dilemmas: Experimental Evidence with Heterogeneous Appropriators*, 27 J. ENVTL. ECON. & MGT. 99 (1994); Ethan Ligon & Urvashi Narain, *Government Management of Village Commons: Comparing Two Forest Policies*, 37 J. ENVTL. ECON. & MGT. 272 (1999); Charles Mason & Owen Phillips, *Mitigating the Tragedy of the Commons through Cooperation: An Experimental Evaluation*, 34 J. ENVTL. ECON. & MGT. 148 (1997); Charles Mason et al., *Expectations, the Commons, and Optimal Group Size*, 15 J. ENVTL. ECON. & MGT. 99 (1988); Carol Rose, *Given-Ness and Gift: Property and the Quest for Environmental Ethics*, 24 ENVTL. L. 1 (1994).

when the rule of common property is not displaced by a different rule.⁷³ In this century, we have witnessed the tragedy of the commons, precisely as Hardin predicted, regarding (to name just a few examples) fish in the sea,⁷⁴ national park access,⁷⁵ and even national treasuries.⁷⁶

Hardin concluded that only a private property system, in which the costs as well as the benefits of resource management decisions are concentrated on the particular owner making the decision, could avoid the tragedy of the commons. He argued that appeals to moderation and similar forms of moral suasion could only be self-defeating; those who responded to the appeals would simply leave the field to the other common owners who would continue to increase their own exploitation of the resource to the point of exhaustion. As each would realize that heeding a moral appeal would reduce their own gains with little or no benefit to the

⁷³ See generally *MANAGING THE COMMONS* (Garrett Hardin & John Baden eds., 1977); Keith Aoki, *Neocolonialism, Anticommons Property, and Biopiracy in the (Not-so-Brave) New World Order of International Intellectual Property Protection*, 6 IND. GLOBAL LEGAL STUD. J. 11 (1998); Erin Clancy, Note, *The Tragedy of the Global Commons*, 5 IND. GLOBAL LEGAL STUD. J. 601 (1998).

⁷⁴ See FRANCIS CHRISTY & ANTHONY SCOTT, *THE COMMON WEALTH IN OCEAN FISHERIES* (1965); Luz Eugenia Cereceda & Guillermo Wormald, *Privatization of the Sea for Seaweed Production in Chile*, 27 NATURE & RESOURCES, No. 4, at 31 (1991); Manjira Datta & Leonard Mirman, *Externalities, Market Power, and Resource Extraction*, 37 J. ENVTL. ECON. & MGT. 233 (1999); Ronald D. Fischer & Leonard J. Mirman, *The Compleat Fish Wars: Biological and Dynamic Interactions*, 30 J. ENVTL. ECON. & MGT. 34 (1996); J.R. Gould, *Extinction of a Fishery by Commercial Exploitation: A Note*, 80 J. POL. ECON. 1031 (1972); Patrick Nickler, *A Tragedy of the Commons in Coastal Fisheries: Contending Prescriptions for Conservation, and the Case of the Atlantic Bluefin Tuna*, 26 B.C. ENVTL. AFF. 549 (1999); Tipton, *supra* note 17; Katharine Marvin, Note, *Protecting Common Property Resources through the Marketplace: Individual Transferable Quotas for Surf Clams and Ocean Quahogs*, 16 VT. L. REV. 1127 (1992).

⁷⁵ See JOSEPH SAX, *MOUNTAINS WITHOUT HANDRAILS* (1980).

⁷⁶ See Rodney Fort & John Baden, *The Federal Treasury as a Common Pool Resource and the Development of a Predatory Bureaucracy*, in *BUREAUCRACY VS. ENVIRONMENT: THE ENVIRONMENTAL COSTS OF BUREAUCRATIC GOVERNANCE* 9 (John Baden & Richard Stroup eds., 1981). See also Sverre Grepperud, *Population Pressure and Land Degradation: The Case of Ethiopia*, 30 J. ENVTL. ECON. & MGT. 18 (1996); Peter MacAvoy, *The Great Lakes Charter: Toward a Basinwide Strategy for Managing the Great Lakes*, 18 CASE-W. RES. J. INT'L L. 49 (1986); Symposium, *The Law and Economics of Property Rights to Radio Spectrum*, 41 J.L. & ECON. 521-840 (1998); Robert Wilson, Student Article, *Environmental Regulation of the Human Gene Pool as a Genetic Commons*, 5 N.Y.U. ENVTL. L.J. 833 (1996);

common resource, even many who accept the message of the appeal would not change their behavior.

Hardin focused on the likelihood of over-exploitation of a common pool resource. Our experience with riparian rights suggests another feature of common pool resources. If exploitation of a common pool resource requires significant capital investment, the inability of potential investors to keep others from preempting an investor's uses will bring about under-investment in the resource.⁷⁷ This fear caused the rejection of riparian rights in the drier, western states of the United States in favor of an attempt at a sort of private property system such as Hardin would argue was necessary less than a century later.⁷⁸ Rather more puzzling is how, given the apparent superiority of private property over common property as a resource management system, the common property system we in the United States now know as riparian rights came to be substituted for the earlier private property version of that system of law.⁷⁹

D. *Why Private Property Systems Fail for Water Resources*

While the early history of water law in the eastern United States is not entirely clear, it appears that an earlier version of riparian rights, the "natural flow" theory, was once followed that was as clear and certain a system of property law as one could imagine.⁸⁰ Under the natural flow theory, each riparian owner had an apparently unqualified right to have water flow down undiminished in quality and unchanged in quantity ex-

⁷⁷ See *In re Waters of Long Valley Creek*, 599 P.2d 656, 666-67 (Cal. 1979); J.W. Milliman, *Water Law and Private Decision-Making: A Critique*, 2 J.L. & ECON. 41, 47-51 (1959); Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711 (1986). For a serious challenge to this assumption, see Harrison Dunning, *State Equitable Apportionment of Western Water Resources*, 66 NEB. L. REV. 76, 84-85 (1987).

⁷⁸ See, e.g., *Coffin v. Left-Hand Ditch Co.*, 6 Colo. 443, 446 (1882). For sources discussing early American settlements in the West and how they brought water to their communities, see generally Robert E. Beck, *Introduction and Background*, in *WATERS AND WATER RIGHTS*, *supra* note 18, at § 11.02; Corbridge, *supra* note 7, at 529; Joseph W. Dellapenna, *Dual Systems*, in *WATERS AND WATER RIGHTS*, *supra*, note 18, at § 8.01; Norman Johnson & Charles DuMars, *A Survey of the Evolution of Western Water Law in Response to Changing Economic and Public Interest Demands*, 29 NAT. RESOURCES J. 347, 351 (1989).

⁷⁹ See Dellapenna, *supra* note 64, at §§ 7.01, 7.02.

⁸⁰ See *id.* at § 7.02(c).

cept insofar as upstream uses exploited the water source for strictly domestic uses.⁸¹ So long as this was the rule, each riparian could use flowing water only to the extent that she could do so without affecting the right of any lower riparian to the continued natural flow of the water.⁸² In the mid-to late-nineteenth century the natural flow theory was replaced throughout the eastern United States with the modern "reasonable use" theory,⁸³ which as we have noted is a common property system. *Keys v. Romley*, discussed above, represents a similar transition for diffused surface water;⁸⁴ yet another similar transition has been underway for groundwater for some time.⁸⁵

Transitions from a private property system to a common property system are rare, to say the least. That societies have undergone, or are undergoing, such transitions for water resources suggests that, despite the asserted advantages of private property systems, such systems do not work well for ambient resources like water. Legal historian Morton Horwitz has described the earlier transition in the approach to riparian rights as a means for introducing flexible development into a capital poor and technologically backward, but resource rich, nineteenth-century America.⁸⁶ That we

⁸¹ For cases pertaining to the natural flow theory, see *Tyler v. Wilkinson*, 24 F. Cas. 472, 474 (D. R.I. 1827); *Ulbricht v. Eufala Water Co.*, 6 So. 78 (Ala. 1889); *Parker v. Griswold*, 17 Conn. 288 (1845); *Hendrick v. Cook*, 4 Ga. 241 (1827); *Shamleffer v. Council Grove Peerless Mill Co.*, 18 Kan. 24 (1877); *Merritt v. Parker*, 1 N.J.L. 460, 463 (1795); *Clinton v. Myers*, 46 N.Y. 511, 520 (1871); *Pennsylvania R.R. v. Miller*, 3 A. 780 (Pa. 1886).

⁸² See, e.g., *Ulbricht v. Eufala Water Co.*, 6 So. 78 (Ala. 1889); *Pennsylvania R.R. v. Miller*, 3 A. 780 (Pa. 1886) (disputing whether the riparian user was affecting the water rights of a lower riparian).

⁸³ See generally Dellapenna, *Riparian Rights*, *supra* note 64, at § 7.02(d) (explaining the reasonable use theory that is formulated upon the idea that each owner of the land may use the water in a waterbody as long as the owner does not injure the rights of other users of the water).

⁸⁴ See generally Dellapenna, *Related Systems*, *supra* note 52, at § 10.03(b)(3) (discussing reasonable use and drainage of surface water).

⁸⁵ See, e.g., *Higday v. Nickolaus*, 469 S.W.2d 859 (Mo. App. 1971) (replacing the absolute ownership rule for groundwater with the reasonable use rule); *State v. Michels Pipeline Constr. Co.*, 217 N.W.2d 339 (Wis. 1974) (same). See generally Earl Finbar Murphy, *Reasonable Use Rule*, in *WATERS AND WATER RIGHTS*, *supra* note 18, ch. 23.

⁸⁶ MORTON J. HORWITZ, *THE TRANSFORMATION OF AMERICAN LAW, 1780-1860*, at 33-53 (1977). See also ROSE, *supra* note 49, at 163-96; Abrams, *supra* note 47, at 1391-1400; Anthony Scott & Georgina Coustalin, *The Evolution of Water Rights*, 35 NAT. RESOURCES J. 821, 860-98 (1995).

are witnessing more recent transitions at least suggests that the problem is more basic than merely a lack of cash.

Ronald Coase demonstrated, in *The Problem of Social Cost*,⁸⁷ that a private-property market system is the most efficient mechanism for allocating resources to particular uses when it does work, but that the system fails if there are significant barriers to the functioning of a market.⁸⁸ The

⁸⁷ Coase, *supra* note 30. On Coase's qualifications as an expert on such matters, see the text *supra* notes 35-36.

⁸⁸ There is a vast and still growing literature regarding the so-called "Coase theorem"—that often what the legal rule is will be largely irrelevant to how resources are actually used as market transactions will correct for legal mistakes. See, e.g., Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 YALE L.J. 1027 (1995); Guido Calabresi, *Transaction Costs, Resource Allocation, and Liability Rules—A Comment*, 11 J.L. & ECON. 67 (1968); Jules L. Coleman, *Efficiency, Exchange, and Auction: Philosophic Aspects of the Economic Approach to Law*, 68 CAL. L. REV. 221 (1980); Robert Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1 (1982); Don L. Coursey et al., *Fear and Loathing in the Coase Theorem: Experimental Tests Involving Physical Discomfort*, 16 J. LEGAL STUD. 217 (1987); Harold Demsetz, *When Does the Rule of Liability Matter?*, 1 J. LEGAL STUD. 13 (1972); John J. Donohue III, *Diverting the Coasean River: Incentive Schemes to Reduce Unemployment Spells*, 99 YALE L.J. 549 (1989); Wayne Eastman, "Everything's Up for Grabs": *The Coasean Story in Game-Theoretic Terms*, 31 NEW ENG. L. REV. 1 (1996); Wayne Eastman, *How Coasean Bargaining Entails a Prisoners' Dilemma*, 72 NOTRE DAME L. REV. 89 (1996); Robert L. Ellickson, *Of Coase and Cattle: Dispute Resolution Among Neighbors in Shasta County*, 38 STAN. L. REV. 623 (1986); Ellickson, *supra* note 33; Farber, *supra* note 35; Farber, *supra* note 33; Joseph Farrell, *Information and the Coase Theorem*, 1 J. ECON. PERSP. 113 (1987); Russell Hardin, *Magic on the Frontier: The Norm of Efficiency*, 144 U. PA. L. REV. 1987 (1996); Clifford G. Holderness, *The Assignment of Rights, Entry Effects, and the Allocation of Resources*, 18 J. LEGAL STUD. 181 (1989); Hovenkamp, *supra* note 35; Chulho Jung et al., *The Coase Theorem in a Rent-Seeking Society*, 15 INT'L REV. L. & ECON. 259 (1995); Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713 (1996); Kelman, *supra* note 35; Russell B. Korobkin & Thomas S. Ulen, *Efficiency and Equity: What Can Be Gained by Combining Coase and Rawls?*, 73 WASH. L. REV. 329 (1998); Matthew H. Kramer, *A Coda to Coase*, 56 CAMBRIDGE L.J. 275 (1997); James Lindgren, *Blackmail: On Waste, Morals, and Ronald Coase*, 36 UCLA L. REV. 597 (1989); Alan J. Meese, *Antitrust Balancing in a (Near) Coasean World: The Case of Franchise Tying Contracts*, 95 MICH. L. REV. 111 (1996); Frank I. Michelman, *Pollution as a Tort: A Non-Accidental Perspective on Calabresi's Cost*, 80 YALE L.J. 647 (1971); E.J. Mishan, *Pareto Optimality and the Law*, 19 OXFORD ECON. PAPERS (N.S.) 255 (1967); Francesco Parisi, *The Market for Votes: Coasian Bargaining in an Arrovian Setting*, 6 GEO. MASON L. REV. 745 (1998); Daniel Q. Posin, *The Coase Theorem: If Pigs Could Fly*, 37 WAYNE L. REV. 89 (1990); Daniel Q. Posin, *The Coase Theorem: Through a Glass Darkly*, 61 TENN. L. REV. 797 (1994); Posin, *supra* note 35; Donald H. Regan, *The Problem of Social Cost Revisited*, 15 J.L. & ECON. 427 (1972); Pierre Schlag,

fact is that markets in water as such have never actually played much of a role even in such a paradigmatic private property system as appropriative rights.⁸⁹ This itself constitutes evidence that markets do not work well for ambient resources like water. Indeed, one might note that similarly meager results were realized from the effort to introduce "marketable emission allowances" in the Clean Air Act of 1990⁹⁰ as a means of harnessing the marketplace to the improvement of air quality.⁹¹

J.L. & ECON. 427 (1972); Pierre Schlag, *An Appreciative Comment on Coase's The Problem of Social Cost: A View from the Left*, 1986 WIS. L. REV. 919; Schwab, *supra* note 35; Howard Shelanski & Peter Klein, *Empirical Research in Transaction Cost Economics: A Review and Assessment*, 11 J.L. & ECON. ORG. 335 (1995); J. Gregory Sidak, *To Declare War*, 41 DUKE L.J. 27 (1991); A.W. Brian Simpson, *Coase v. Pigou Reexamined*, 25 J. LEGAL STUD. 53 (1996); Matthew Spitzer & Elizabeth Hoffman, *A Reply to Consumption Theory, Production Theory, and Ideology in the Coase Theorem*, 53 S. CAL. L. REV. 1187 (1980) (applying the Coase theorem to baseball free agency, among other things); Michael I. Swygert & Katherine Earle Yanes, *A Primer on the Coase Theorem: Making Law in a World of Zero Transaction Costs*, 11 DEPAUL BUS. L.J. 1 (1998); Michael I. Swygert & Katherine Earle Yanes, *A Unified Theory of Justice: The Integration of Fairness into Efficiency*, 73 WASH. L. REV. 249 (1998) [hereinafter Swygert & Yanes, *Unified Theory*]; Symposium, *Coase Theorem Symposium Part I*, 13 NAT. RESOURCES J. 557(1973); Symposium, *Coase Theorem Symposium Part II*, 14 NAT. RESOURCES J. 1 (1974); Symposium, *A Response and a Reply to Whether Pigs Can Fly*, 38 WAYNE L. REV. 1 (1991); Manuel A. Utset, *Back to School with Coase: The Production of Information and Modes of Knowledge within and across Academic Disciplines*, 75 B.U. L. REV. 1063 (1995); Kenneth R. Vogel, *The Coase Theorem and California Animal Trespass Law*, 16 J. LEGAL STUD. 149 (1987); Richard Zerbe, Jr., *An Integration of Equity and Efficiency*, 73 WASH. L. REV. 349 (1998). Coase seems to have responded directly to these commentaries only once. See R.H. Coase, *Law and Economics and A.W. Brian Simpson*, 25 J. LEGAL STUD. 103 (1996).

⁸⁹ See the authorities collected *supra* at note 20.

⁹⁰ 42 U.S.C. § 7651b(f) (1994).

⁹¹ See Vivien Foster & Robert W. Hahn, *Designing More Efficient Markets: Lessons from Los Angeles Smog Control*, 38 J. LAW & ECON. 19 (1995); Richard D. Gary & Michael C. Teague, *The Inclusion of Externalities in Electric Generation Resource Planning: Coal in the Crossfire*, 95 W. VA. L. REV. 839, 875 (1993); Paul L. Joskow & Richard Schmalensee, *The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program*, 41 J.L. & ECON. 37, 38-39 (1998); James E. Krier, *Marketable Pollution Allowances*, 25 U. TOL. L. REV. 449, 454 (1994); Deborah Mostaghel, *State Reactions to the Trading of Emission Allowances under Title IV of the Clean Air Act Amendments of 1990*, 22 B.C. ENVTL. AFF. L. REV. 201, 223-24 (1995); Polesetsky, *supra* note 16, at 371; Henry van Egteren & Marian Weber, *Marketable Permits, Market Power, and Cheating*, 30 J. ENVTL. ECON. & MGT. 161 (1996); Lorna Jaynes, Comment, *Emissions Trading: Pollution Panacea or Environmental Injustice?*, 39 SANTA CLARA L.

The explanation for this phenomenon goes under the rather straightforward name of "externalities"—a use by one person affects the uses by many others, perhaps all others, and hence a significant change in any use infringes upon the interests of many other users.⁹² While it might theoretically be possible for a properly structured market to cope with all of these concerns,⁹³ in any economically large or complex hydrologic system the difficulty and expense of structuring transactions (the problem of transaction costs)⁹⁴ are a sufficient explanation of why real markets simply

REV. 207, 214-15 (1998). See also Richard Toshiyuki Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 DUKE ENVTL. L. & POL'Y F. 231 (1999); Clare Langley-Hawthorne, *An International Market for Transferable Gas Emission Permits to Promote Climate Change*, 9 FORDHAM ENVTL. L.J. 261 (1998) (describing global efforts for emission controls).

The failure of such systems in practice seems not to have been noticed by their champions. See, e.g., Frank S. Arnold, *SO₂ Trading Success Not Easily Replicable*, 16 ENVTL. F., May/June 1999, at 11; Susan A. Austin, Comment, *Tradable Emissions Programs: Implications Under the Takings Clause*, 26 ENVTL. L. 323 (1996); Bliese, *supra* note 16, at 29-31; Timothy Cason & Charles Plott, *EPA's New Emissions Trading Mechanism: A Laboratory Evaluation*, 30 J. ENVTL. ECON. & MGT. 133 (1996); Menz, *supra* note 16. But see David M. Driesen, *Free Lunch or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention*, 26 B.C. ENVTL. AFF. L. REV. 1 (1998).

⁹² See E.J. MISHAN, *ECONOMICS FOR SOCIAL DECISIONS* 85-111 (1972); Jennifer Gerarda Brown, *Posner, Prisoners, and Pragmatism*, 66 TUL. L. REV. 1117 (1992); Brown & Holahan, *supra* note 17; Coase, *supra* note 30, at 13-15; Farber, *supra* note 35, at 411-12; Freyfogle, *supra* note 17, at 30-34; Gary & Teague, *supra* note 91; Arthur J. Jacobson, *Environmental Accountability Beyond Compliance: Externalities and Accounting*, 12 CARDOZO L. REV. 1333 (1991); Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509 (1986); Jeff L. Lewin, *Which Externalities Should We Internalize? Comment on The Role of Law in Defining Sustainable Development: NEPA Reconsidered by Professor David Hodas*, 3 WIDENER L. SYMPOSIUM J. 327 (1998); Peter M. Manus, *Natural Resource Damages from Rachel Carson's Perspective: A Rite of Spring in American Environmentalism*, 37 WM. & MARY L. REV. 381 (1996); A. Mitchell Polinsky, *Controlling Externalities and Protecting Entitlements: Property Right, Liability Rule, and Tax-Subsidy Approaches*, 8 J. LEGAL STUD. 1 (1979). See generally David J. Russ, *How the "Property Rights" Movement Threatens Property Values in Florida*, 9 J. LAND USE & ENVTL. L. 395 (1994) (criticizing a Florida movement to pass statute that would allow public compensation of land owners when their property is devalued by environmental and land use laws).

⁹³ See, e.g., POSNER, *supra* note 13, at § 3.11, at 87-88 (describing externalities for water rights).

⁹⁴ See Calabresi, *supra* note 88.

have never developed in practice, and do not appear likely to develop.⁹⁵ Only if the law chooses to disregard all such externalities could markets become a possibility.

Under appropriative rights, water rights are defined in terms of an authorization to commit a specific quantity of water at a specific point at specific times for specific uses on specific land and with a specific (time-based) priority; the regime comes as close as one might hope to a true private property system of water rights.⁹⁶ One might expect that such externalities would be less of a problem under appropriative rights because senior appropriators (those whose appropriations began earlier in time) have superior rights to junior appropriators.⁹⁷ Strongly enforcing temporal priorities among water uses might lead one to expect that the law would routinely ignore externalities in appropriative rights states when the transfer is undertaken by a senior appropriator and any externalities affects only junior appropriators. The law of appropriative rights, however, consistently prohibits even a senior appropriator from changing the time, place, or manner of use if the change would produce a significant injury to a

⁹⁵ For sources on the difficulties and expense of transferring water and water rights, see generally Bonnie G. Colby, *Transactions Costs and Efficiency in Western Water Allocation*, 72 AM. J. AGRIC. ECON. 1184 (1990); Casey S. Funk & Amy M. Cavanaugh, *Basic Exchange 101*, 1 U. DENV. WATER L. REV. 207 (1998); George Gould, *Recent Developments in the Transfer of Water Rights*, in WATER LAW, *supra* note 18, at 93; Austin Hamre, *Water Banking: Should There Be More Interest?*, 25 COLO. LAW., Aug. 1997, at 97; Kaiser, *supra* note 7, at 246-56; McCormick, *supra* note 20; Miller, *supra* note 23; Bill Provencher & Oscar Burt, *The Externalities Associated with the Common Property Exploitation of Groundwater*, 24 J. ENVTL. ECON. & MGT. 139 (1993); Charles B. Roe, Jr. & James R. Rasband, "Changes" to Water Rights, in THE NATURAL RESOURCES LAW MANUAL 341 (R. Fink ed., 1995); Scott & Coustalin, *supra* note 86, at 921-25; A. Dan Tarlock, *Reallocation: It Really Is Here*, in WATER LAW, *supra* note 18, at 104.

⁹⁶ See, e.g., *Santa Fe Trail Ranches Prop. Owners Ass'n. v. Simpson*, 990 P.2d 46 (Colo. 1999) (holding that a change in the use of a decreed water right may not be used to show historical use for a proceeding to change water rights). See generally WATERS AND WATER RIGHTS, *supra* note 18, chs. 11-17 (describing the law of appropriative rights).

⁹⁷ See, e.g., *State ex rel. Cary v. Cochran*, 292 N.W. 239 (Neb. 1940) (holding that so long as any usable quantity of water will reach the senior appropriator, the junior appropriator must allow the water to flow past unused even though more than seventy-five percent of the water will be lost through infiltration and evaporation before it reaches the senior appropriator). This principle was the first aspect of the modern appropriation doctrine to emerge. See *Irwin v. Phillips*, 5 Cal. 140, 147 (1855).

junior appropriator.⁹⁸ Generally the burden of proving that there will be no injury to other users of water is on the one seeking to make the change, rather than on the one objecting to the change.⁹⁹ Thus, if the evidence is inconclusive, a court will prohibit the change.

Precisely such uncertainty, however, is usually the case if the question is what portion of the water diverted from the stream (the usual measure of the appropriative right) was consumptively used by the senior appropriator and what portion constituted a return flow to the benefit of junior appropriators.¹⁰⁰ Indeed, placing a burden on the applicant for a

⁹⁸ See, e.g., CAL. WATER CODE § 1702 (West 1971); COLO. REV. STAT. § 37-92-305(3) (1999); MONT. CODE ANN. § 85-2-402(2)(a) (1999); NEV. REV. STAT. ANN. § 533.370(3) (Michie 1995 & Supp. 1999); N.M. STAT. ANN. §§ 72-5-23 to 72-5-25 (Michie 1978); ORE. REV. STAT. § 540.530(1) (1995 & Supp. 1999); TEX. WATER CODE ANN. § 11.134(b)(3)(B) (Vernon 2000); UTAH CODE ANN. §§ 73-3-3, 73-3-8(1)(b) (1998 & Supp. 2000); WYO. STAT. ANN. § 41-3-104 (Michie 1999); *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46; *In re May v. United States*, 756 P.2d 362 (Colo. 1988); *Orr v. Arapahoe Water & Sanitation Dist.*, 753 P.2d 1217 (Colo. 1988); *C.F. & I. Steel Corp. v. Rooks*, 495 P.2d 1134 (Colo. 1972); *Thompson v. Harvey*, 519 P.2d 963 (Mont. 1974); *Ensenada Land & Water Ass'n v. Sleeper*, 760 P.2d 787 (N.M. App. 1988); *W.S. Ranch Corp. v. Kaiser Steel Co.*, 439 P.2d 714 (N.M. 1968); *White v. Board of Land Comm'rs*, 595 P.2d 76 (Wyo. 1979). See also SMITH, *TRADING WATER*, *supra* note 7, at 17-26; NATIONAL RESEARCH COUNCIL, *supra* note 19, at 5-6, 38-42, 73-78, 189-91, 225-28, 254-57, 263-65; Anderson, *supra* note 18, at § 16.02(b), at 273-90; Corbridge, *supra* note 7, at 507-13; Willis Ellis, *Water Transfer Problems: Law, in WATER RESEARCH* 233 (Allen Kneese & Stephen Smith eds., 1965); George Gould, *Water Rights Transfers and Third-Party Effects*, 23 LAND & WATER L. REV. 1 (1988); Kaiser, *supra* note 7, at 213-14, 246-47; MacDonnell & Rice, *supra* note 18, at 29-31; Trelease & Lee, *supra* note 20; Williams, *supra* note 20. See generally Naeser & Bennett, *supra* note 43 (describing a dispute between Kansas and Colorado over the under-delivery of water from an allocation agreement and the measurement of damages by valuing the water lost).

⁹⁹ See *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46; *Weibert v. Rothe Bros., Inc.*, 618 P.2d 1367 (Colo. 1980); *Crandall v. Water Res. Dep't*, 626 P.2d 877 (Or. 1981); *Basin Elec. Power Coop. v. State Bd. of Control*, 578 P.2d 557 (Wyo. 1978); Anderson, *supra* note 18, at § 16.02(b), at 283-84; Corbridge, *supra* note 7, at 530; Kevin M. O'Brien & Robert R. Gunning, *Water Marketing in California Revisited: The Legacy of the 1987-92 Drought*, 25 PAC. L.J. 1053, 1062-74 (1994).

¹⁰⁰ See *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d 46. For sources on the difficult but necessary task of measuring consumptive use of water when deciding how much a user needs, see generally J.L. MONTEITH & M.H. UNSWORTH, *PRINCIPLES OF ENVIRONMENTAL PHYSICS* 245-63, 252 (2d ed. 1990) (discussing complexities of micrometeorology and the application of this science to the accurate measurement of agricultural water use); Anderson, *supra* note 18, at § 1602(b), at 278-85;

change of proving a negative—that there would be “no injury” to any other water user—often is a practical impossibility.¹⁰¹ While we can easily obtain exact measurements of return flows through “point sources” of discharge that characterize return flows from municipalities or industries, measuring return flows through “non-point sources”—as is characteristic of agriculture—is far from easy and nearly always uncertain.¹⁰² Yet it is from agriculture that the proponents of markets seek to move water, not the other way around.¹⁰³

The result of the third party rule is that a sale (or lease) of a water right can be blocked by any affected third party—including a junior appropriator—who is willing to sue for an injunction against the modification of the water right. The consequence is that the transaction cannot take place unless all potentially affected holders of water rights have consented. Obtaining such consents will require contracts and compensation to be paid to all such third parties. On even a moderately sized water source, the costs of identifying each affected water right holder and then securing the necessary consents will be prohibitively expensive.¹⁰⁴

Perhaps the classic example of what happens when a buyer seeks water for a use that is fundamentally different or at a considerable remove

Harry F. Blaney & Wayne D. Criddle, *Determining Water Requirements for Settling Water Disputes*, 4 NAT. RESOURCES J. 29 (1964-65); Burness & Quirk, *supra* note 7, at 116; Corbridge, *supra* note 7, at 524-30; Gould, *supra* note 98, at 25-28.

¹⁰¹ See Anderson, *supra* note 18, at § 16.02(b), at 283-84 [quoting CHARLES MEYERS & RICHARD POSNER, MARKET TRANSFERS OF WATER RIGHTS 33-34 (National Water Comm'n Law Study no. 4, 1971)].

¹⁰² The terms “point source” and “non-point source,” of course, come out of the *Clean Water Act* and its attempts to regulate the quality of water being discharged into a water body. See 33 U.S.C. § 1311 (1994); 2 WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW: AIR & WATER § 4.10 (1986).

¹⁰³ See the authorities collected *supra* at note 19.

¹⁰⁴ For a general discussion of transaction costs, see Bonnie G. Colby, *Transactions Costs and Efficiency in Western Water Allocation*, 72 AM. J. AGRIC. ECON. 1184 (1990); Harbison, *supra* note 26, at 543-49; Howe et al., *supra* note 34; Avery Katz, *Judicial Decisionmaking and Litigation Expenditure*, 8 INT'L REV. L. & ECON. 127 (1988); Jay R. Lund, *Transaction Risk Versus Transaction Costs in Water Transfers*, 29 WATER RESOURCES RES. 3103 (1993); John Posnett & Todd Sandler, *Transfers, Transaction Costs and Charitable Intermediaries*, 8 INT'L REV. L. & ECON. 145 (1988); Pierre Schlag, *The Problem of Transaction Costs*, 62 S. CAL. L. REV. 1661 (1989). Recall here Ronald Coase's comments on the tendency of economists to ignore transaction costs and of lawyers to focus on them. See COASE, *supra* note 36, at 1-20. See also Schwab, *supra* note 35, at 1188-89.

from that of the seller is shown by the case of *City and County of Denver v. Fulton Irrigating Ditch Co.*¹⁰⁵ The case involved the attempt of the city of Denver to trade its sewage water for a brewery's "clear mountain stream." Adolph Coors Co., a popular brewer in the suburbs of Denver, was well known for the high quality of the water used in its brewing. Coors, however, was unable to produce enough beer to satisfy the demand for its product without a greatly enlarged supply of water. The city of Denver, consistently one of the fastest growing in the United States, is always looking for new sources of potable water for its residents and businesses. Denver offered a swap to which Coors was all too ready to agree. Denver would take Coors' clear mountain stream to augment its municipal supplies; Coors would have the right to use unlimited quantities of Denver sewage water for its brewery.¹⁰⁶ The transaction failed not because of fears over possible outrage on the part of beer drinkers, but because a group of farmers downstream from Denver (organized as the Fulton Irrigating Ditch Co.) obtained an injunction against this trade because it would deprive them of the water on which they relied.¹⁰⁷ The outcome in the case is all the more remarkable as the city and Coors were contracting regarding "imported water"—water from outside the watershed—over which the city would have had even greater rights than if it were merely claiming the rights of a senior appropriator.¹⁰⁸ In this case, the farmers had contractually recognized the seniority of Denver's rights over their own in a contractual settlement of an earlier dispute in exchange for Denver's promise to reuse any water, regardless of source, that "shall have been once used through its municipal water system" for the benefit of the farmers.¹⁰⁹ The outcome in *Fulton Irrigating Ditch Co.* would not have depended on the existence of the contract if the water had not been imported.¹¹⁰

The law of appropriative rights does not go as far as it might in inhibiting transfers of water to new uses. For one thing, only the rights of

¹⁰⁵ 506 P.2d 144 (Colo. 1972). See generally Williams, *supra* note 20, at 311-21.

¹⁰⁶ See *Fulton*, 506 P.2d at 151.

¹⁰⁷ See *id.* at 151-53.

¹⁰⁸ See *id.* at 146-49.

¹⁰⁹ See *id.* at 151.

¹¹⁰ See *Santa Fe Trail Ranches Prop. Owners Ass'n v. Simpson*, 990 P.2d at 54 n.10; *Orr v. Arapahoe Water & Sanitation Dist.*, 753 P.2d 1217, 1223 (Colo. 1988); *Rooks*, 495 P.2d at 1135.

other appropriators are protected. Generalized social costs, such as the loss of tax revenues to a community, are not protected from the effects of transfers.¹¹¹ Concern over generalized social costs have generated enough political pressure to bring about the enactment of "area-of-origin" statutes.¹¹² Area-of-origin statutes have not appeared to be significant barriers to market transactions only because the law protecting the rights of junior appropriators provides sufficient deterrence to market transactions that it really does not matter much whether social costs are ignored or considered.

Economists and others who champion the free play of the market have insisted that the protection of third-party rights represents only an

¹¹¹ See *In re Robinson*, 103 P.2d 693, 696 (Idaho 1940). See also NATIONAL RESEARCH COUNCIL, *supra* note 19, at 42-67, 79-87, 154-58; 171-81, 204-10, 259-65; Anderson, *supra* note 18, at §§ 16.02(b), 16.02(c)(1), at 281-83; Santos Gomez & Penn Loh, *Communities and Water Markets: A Review of the Model Water Transfer Act*, 4 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 63, 69 (1996); Susanne Hoffman-Dooley, *Determining What Is in the Public Welfare in Water Appropriations and Transfers: The Intel Example*, 36 NAT. RESOURCES J. 103 (1996); Kaiser, *supra* note 7, at 219-222, 248-49; John F. Klein-Robbenhaar, *Balancing Efficiency with Equity: Determining the Public Welfare in Surface Water Transfers from Acequia Communities*, 36 NAT. RESOURCES J. 37 (1996); MacDonnell & Rice, *supra* note 19, at 31-34, 53-54; Joseph L. Sax, *Understanding Transfers: Community Rights and the Privatization of Water*, 1 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 13, 13-16 (1994); Tarlock & Van de Wetering, *supra* note 19, at 177-79, 183-85; Weber, *supra* note 19.

¹¹² See, e.g., CAL. WATER CODE §§ 10505, 10505.5 (West 1992). For sources discussing the development of areas-of-origin statutes made in response to water transfers, see generally LAWRENCE J. MACDONNELL ET AL., GUIDELINES FOR DEVELOPING AREA-OF-ORIGIN COMPENSATION (1985); NATIONAL RESEARCH COUNCIL, *supra* note 19, at 78-79, 115-16, 225-32, 243-44, 257-59; Robert Haskell Abrams, *Interbasin Transfer in a Riparian Jurisdiction*, 24 WM. & MARY L. REV. 591, 602-08 (1993); J. David Aiken, *New Directions in Nebraska Water Policy*, 66 NEB. L. REV. 8, 58-69 (1987); Anderson, *supra* note 18, at § 16.02(c)(2); Ralph W. Johnson, *The Area of Origin and a Columbia River Diversion*, 46 WASH. L. REV. 245 (1971); Kaiser, *supra* note 7, at 215-18, 251-53; Lawrence J. MacDonnell & Charles W. Howe, *Area-of-Origin Protection in Transbasin Water Diversions: An Evaluation of Alternative Approaches*, 57 U. COLO. L. REV. 527 (1986); John C. Peck, *Legal Constraints on Diverting Water from Eastern Kansas to Western Kansas*, 30 U. KAN. L. REV. 159 (1982); Ronald B. Robie & Russell R. Kletzing, *Area of Origin Statutes—The California Experience*, 15 IDAHO L. REV. 419 (1979); Gary D. Weatherford, *Legal Aspects of Interregional Water Diversion*, 15 UCLA L. REV. 1299 (1968); Gregory S. Weber, *Twenty Years of Local Groundwater Export Legislation in California: Lessons from a Patchwork Quilt*, 34 NAT. RESOURCES J. 657 (1994).

overly rigid legal regime.¹¹³ If only such requirements were removed, markets would flourish. This mischaracterizes the situation. Area-of-origin statutes are regulations that have the potential to interfere with or to prevent market transactions. The protection of third-party rights operates differently. Such protections prevent market-generated externalities from destroying the property rights of third parties. Rather than representing government intervention that prevents or distorts markets, such protections are the minimum that is necessary to assure that property rights—each person's property rights—are transferred only through markets. Judge Richard Posner has fully described why such third-party rights must be protected if society is to assure that water is used efficiently even while he was attempting to justify a shift to markets as primary water management tools:

If effects on returnflow were ignored, many water transfers would reduce overall value. Suppose A's water right is worth \$100 to him and \$125 to X, [a] municipality; but whereas A returns one-half of the water he diverted to the stream, where it is used by B, X will return only one-fourth of the water it obtains from A, and at a point far below B, where it will be appropriated by D. And suppose B would not sell his right to A's return flow for less than \$50, while D would sell his right to the municipality's return flow for \$10. To let A sell his water right to X because it is worth more to X than to A would be inefficient, for the total value of the water would be less in its new uses (X and D's)—\$135—than in its present uses (A and B's)—\$150.

The law deals with this problem by requiring the parties to show that the transfer will not injure other users. In practice this means that A and X in our example, in order to complete their transaction, would have to compensate B for the loss of A's return flow; they would not do so; and the

¹¹³ See, e.g., JOSEPH L. SAX, *WATER LAW, PLANNING & POLICY: CASES AND MATERIALS* 249 (1968); SMITH, *TRADING WATER*, *supra* note 7, at 24-25; Brown & DuMars, *supra* note 23, at 416-18; Kaiser, *supra* note 7, at 214. See also the authorities collected *supra* at note 23.

transaction would fall through, as under our assumptions it should.¹¹⁴

Things could get even more complex in situations when the transfer has the effect of increasing return flows.¹¹⁵ When one factors in the probability that much of the water one seeks to transfer was acquired through a Federal reclamation project, the complexities become greater still.¹¹⁶ Finally, there is the problem of how to structure access to water supply facilities if those structures are owned by yet another party not participating in the basic transaction.¹¹⁷

Once one realizes how the law affects the possibility of sales of water rights, one readily grasps why small-scale transfers of water rights among farmers or ranchers—all of whom are making roughly similar uses at more or less the same place—are the only ones that regularly occurred without state intervention.¹¹⁸ For these small-scale, like-kind transactions, there is little likelihood of effects on third parties. The only large-scale transactions involving a significant change in the place or manner of use and achieved purely by market transactions have been in situations where the transferor was the last beneficial user of the water. The prime example could well be the transfer of water from the Imperial Irrigation District in southern California to the Metropolitan Water District or the San Diego County Water Authority serving the urban conglomerates of southern California.¹¹⁹ In that context, if the transferred water was not conserved by

¹¹⁴ See POSNER, *supra* note 13, at § 3.11, at 88. See also Jeffrey L. Jordan, *Externalities, Water Prices, and Water Transfers*, 35 J. AM. WATER RESOURCES ASS'N 1007 (1999).

¹¹⁵ See POSNER, *supra* note 13, at § 3.11, at 88.

¹¹⁶ See Anderson, *supra* note 18, at § 16.03; Reed D. Benson, *Whose Water Is It? Private Rights and Public Authority over Reclamation Project Water*, 16 VA. ENVTL. L.J. 363 (1997).

¹¹⁷ See Timothy H. Quinn, *Wheeling Provisions of the Model Water Transfer Act*, 4 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 83, 84 (1996).

¹¹⁸ See the authorities collected *supra* at note 18.

¹¹⁹ See NATIONAL RESEARCH COUNCIL, *supra* note 19, at 234-47; MARC REISNER & SARAH BATES, *OVERTAPPED OASIS: REFORM OR REVOLUTION FOR WESTERN WATER* 154-62 (1990); Cordua, *supra* note 19, at 609-11; Michael Gheleta, *Water Use Efficiency and Appropriation in Colorado: Salvaging Incentives for Maximum Beneficial Use*, 58 U. COLO. L. REV. 657, 674 (1988); Graff & Yardas, *supra* note 7, at 166, 168-69; Gray, *supra* note 7, at 296-306; MacDonnell & Rice, *supra* note 18, at 37-38; Wahl, *supra* note 22, at 51-52. See also Jeffery Kishel, *Lining the All-American Canal: Legal Problems and Physical Solutions*, 33 NAT. RESOURCES J. 697 (1993) (exploring the potential con-

the irrigation district and conveyed to the water district, it would have passed into the increasingly saline and increasingly polluted Salton Sea which increasingly will not even sustain wildlife.¹²⁰ Even so, the transactions evoked strong, but unavailing resistance from local communities that feared the ensuing fallowing of land would injure their economic base and from other irrigation districts who contended that the salvaged water should have gone to them without charge notwithstanding that they did not benefit from any relevant return flow.¹²¹

Furthermore, there is another issue in addition to economic efficiency that needs to be considered—namely, the distributive equity—although economists often are uncomfortable discussing it.¹²² In the nineteenth century, a time of limited and ineffective government, particularly

flict between the United States and Mexico over the water conserved for California, but lost to Mexico, by the All-American Canal Project).

¹²⁰ See NATIONAL RESEARCH COUNCIL, *supra* note 19, at 240; Cordua, *supra* note 19, at 609-10.

¹²¹ See NATIONAL RESEARCH COUNCIL, *supra* note 19, at 243-44; Cordua, *supra* note 19, at 610-11; Graff & Yardas, *supra* note 7, at 169; Wahl, *supra* note 22, at 51-52.

¹²² See, e.g., BOULDING, *supra* note 23, at 306; Brown & DuMars, *supra* note 23, at 414-15. See generally BEYOND ECONOMIC MAN: FEMINIST THEORY AND ECONOMICS (Marianne Ferber & Julie Nelson eds., 1993); Guido Calabresi, *The Pointlessness of Pareto*, 100 YALE L.J. 1211 (1991); Thomas F. Cotter, *Legal Pragmatism and the Law and Economics Movement*, 84 GEO. L.J. 2071, 2102-14, 2129-41 (1996); Jeanne Dennis, *The Lessons of Comparable Worth: A Feminist Vision of Law and Economics Theory*, 4 UCLA WOMEN'S L.J. 1 (1993); Herbert Hovenkamp, *The Limits of Preference-Based Legal Policy*, 89 NW. U. L. REV. 4 (1994); Avery Wiener Katz, *Positivism and the Separation of Law and Economics*, 94 MICH. L. REV. 2229 (1996); Korobkin & Ulen, *supra* note 88; Swygert & Yanes, *Unified Theory*, *supra* note 88. For scholars of law and economics who argue against considering distributional equity in legal decision making, see RICHARD LIPSEY ET AL., *ECONOMICS* 14-16 (9th ed. 1990); POLINSKY, *supra* note 33, at 7-10, 119-27; PAUL SAMUELSON, *ECONOMICS* 590-91 (11th ed. 1980); Robert Cooter, *Law and Unified Social Theory*, 22 J. LAW & SOC'Y 50 (1995); Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667 (1994); Fred McChesney, *Positive Economics and All That*, 61 GEO. WASH. L. REV. 272 (1992) (book rev.); Richard A. Posner, *The Ethical and Political Basis of the Efficiency Norm in Common Law Adjudication*, 8 HOFSTRA L. REV. 487 (1980); Richard A. Posner, *Wealth Maximization and Judicial Decision-Making*, 4 INT'L REV. L. & ECON. 131 (1984); Thomas C. Schelling, *Economic Reasoning and the Ethics of Policy*, PUB. INTEREST, Spring 1981, at 37; Steven Shavell, *A Note on Efficiency vs. Distributional Equity in Legal Rulemaking: Should Distributional Equity Matter Given Optimal Income Taxation?*, 71 AM. ECON. REV. 414 (1981); Zerbe, *supra* note 88.

in the United States, a transition from a private property system (which had the effect of freezing uses rather than of creating a market) to a common property system at least introduced a measure of flexibility into the possible uses and thereby promoted social and economic development.¹²³ The transition from private property to common property also, whether intended or not, worked a massive and continuing, if haphazard, wealth redistribution.¹²⁴ Generally, wealth is transferred from the poorest users of water (who hold the smallest water rights or no water right at all, and in either case are unattractive to potential buyers) to the wealthier members of society (those who can afford to buy water rights but need no longer worry about compensating the small water users who lose their expected return flows).¹²⁵ Today, the transition to a common property system seems much less prudent as the demands for water outstrip supplies, creating a real risk of the tragedy of the commons for those parts of the United States that follow traditional riparian rights.¹²⁶ Given also the probably regressive distributive effects on the allocation of water rights, one ought to be wary of any such transition in today's world.

III. THE CALIFORNIA WATER BANK

California, facing a five-year long drought in the late 1980s and early 1990s, sought to arrange the transfer of water from low valued agricultural uses to higher valued urban uses. California is a dual system state that still recognizes riparian rights to some extent even while placing

¹²³ See HORWITZ, *supra* note 86, at 33-42; Abrams, *supra* note 47, at 1392-1396; Scott & Coustalin, *supra* note 86, at 871-98.

¹²⁴ See HORWITZ, *supra* note 86, at 33-34; Abrams, *supra* note 47, at 1394; Scott & Coustalin, *supra* note 86, at 870-71. See generally Lily N. Chinn, *Can the Market Be Fair and Efficient? An Environmental Justice Critique of Emissions Trading*, 26 ECOLOGY L.Q. 80 (1999); Mark A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998); Symposium, *A Recipe for Effecting Institutional Change to Achieve Privatization*, 13 B.U. INT'L L.J. 295-465 (1995).

¹²⁵ See Carl Bauer, *Slippery Property Rights: Multiple Water Uses and the Neoliberal Model in Chile, 1981-1995*, 38 NAT. RESOURCES J. 109 (1998); K. William Easter & Robert Hearne, *Water Markets and Decentralized Water Resources Management: International Problems and Opportunities*, 31 WATER RESOURCES BULL. 9 (1995); Hendrix, *supra* note 17.

¹²⁶ See the text *supra* at notes 68-79.

dominant emphasis on appropriative rights.¹²⁷ California therefore might have used common property principles to divest established riparian uses of water, having done so as recently as 1967.¹²⁸ California, however, did not attempt to enforce the common property principles already in place or to replace its private property principles embodied in its version of appropriative rights with a common property system. Instead, the state set about to create something the state and many commentators have termed a "market" where none had existed before.¹²⁹ To accomplish this end, the Governor of California created a "water bank" by executive order.¹³⁰ The "bank" was later validated by legislation.¹³¹

One must use considerable care in discussing "water banks" for the phrase is used in widely differing senses in the several states in which "water banks" have been created.¹³² For example, the term "ground water

¹²⁷ See *In re Waters of Long Valley Creek*, 599 P.2d 656 (Cal. 1979). For discussions on the definition and development of the dual system of water rights, see generally Delapenna, *Dual Systems*, *supra* note 78; Mark T. Kanazawa, *Efficiency in Western Water Law: The Development of the California Doctrine, 1850-1911*, 27 J. LEGAL STUD. 159 (1998).

¹²⁸ See *Joslin v. Marin Mun. Water Dist.*, 429 P.2d 889 (Cal. 1967).

¹²⁹ For sources regarding the results and consequences of California's creation of water banks, see generally LLOYD S. DIXON ET AL., CALIFORNIA'S 1991 DROUGHT WATER BANK: ECONOMIC IMPACTS IN THE SELLING REGIONS (1993); RICHARD HOWITT ET AL., A RETROSPECTIVE ON CALIFORNIA'S 1991 EMERGENCY DROUGHT WATER BANK (1992); Ray Coppock et al., *California Water Transfers: The System and the 1991 Drought Water Bank*, in SHARING SCARCITY: GAINERS & LOSERS IN WATER MARKETING 21 (Harold O. Carter et al. eds., 1994); Brian E. Gray, *The Market and the Community: Lessons from California's Drought Water Bank*, 1 HASTINGS W-NW. J. ENVTL. L. & POL'Y 17 (1994); Richard Howitt, *Empirical Analysis of Water Market Institutions: The 1991 California Water Market*, 16 RESOURCE & ENERGY ECON. 357 (1993); Israel & Lund, *supra* note 7; Scott A. Jercich, *California's 1995 Water Bank Program: Purchasing Water Supply Options*, 123 J. WATER RESOURCES PLAN. & MGT. 59 (1997); Kaiser, *supra* note 7, at 188 n.22, 200-01; Martha Lennihan, *The California Drought Emergency Water Bank: A Successful Institutional Response to Severe Drought*, in WATER LAW, *supra* note 18, at 127; MacDonnell & Rice, *supra* note 18, at 46, 52-53; O'Brien & Gunning, *supra* note 99; Quinn, *supra* note 117, at 84; Wahl, *supra* note 22, at 49-50.

¹³⁰ Cal. Exec. Order No. W-3-91.

¹³¹ CAL. WATER CODE §§ 1745 - 1745.11 (West Supp. 2000) (enacted 1992). On the legislative battles over the Water Bank, see MacDonnell & Rice, *supra* note 18, at 47.

¹³² See generally LAWRENCE J. MACDONNELL ET AL., WATER BANKS IN THE WEST (1994); Kevin B. Pratt, *Water Banking: A New Tool for Water Management*, 23 COLO. LAW. 595 (1994) (defining a water bank as a "mechanism for willing owners of water to

bank" has been introduced to describe a practice of "storing" water in an aquifer for later use.¹³³ This usage has little or nothing in common with the idea of using financial incentives to facilitate the transfer of water from one user to another.

In Arizona, the legislature enacted a "water bank" statute in 1996 that is closer to the model of a ground water bank than to other water banks in the western states.¹³⁴ The statute created the Arizona Water Bank Authority to collect a tax on groundwater as it is pumped for use, buying water from the Central Arizona Project for aquifer recharge. Another provision authorizes the Authority to contract with California and Nevada for the underground storage of Colorado River water allocated to those states.¹³⁵ The Authority does not operate any facilities itself, but contracts with the owners of existing facilities for the injection and extraction of groundwater.¹³⁶ This "bank" operates to store water, and not to facilitate transfers among water users. Apart from the state-operated "water bank," Arizona's government does not favor markets for the allocation of the state's share of the Colorado River water. In fact, Arizona's water bank seems more directed at preventing transfers to California than at assuring efficient use in Arizona.¹³⁷ As a result, the life of the Arizona Water Bank is likely to be rather short as demand rises to a level that leaves no water to store.¹³⁸

lease water to the 'bank' for re-lease to 'renters' on a short term basis"). Proposals to create an interstate water bank to facilitate the marketing of water rights among the states sharing the Colorado River have generated considerable discussion, but so far with no significant effect apart from the Arizona legislation designed to preclude interstate marketing. See David Getches, *Colorado River Governance: Sharing Federal Authority as an Incentive to Create a New Institution*, 68 U. COLO. L. REV. 573, 609-23 (1997); Maria O'Brien, *Possible Solutions: Policy Tools to Achieve Flexibility to Meet New Conditions*, *Preliminary Thoughts for Coping with Future Droughts*, 39 NAT. RESOURCES J. 175 (1999).

¹³³ See, e.g., Russell Kletzing, *Imported Groundwater Banking: The Kern Water Bank—A Case Study*, 19 PAC. L.J. 1225 (1988) (describing the Kern Water Bank as a place to hold water for its future withdrawal in dry years).

¹³⁴ See ARIZ. REV. STAT. §§ 45-2401 to 45-2472 (West Supp. 1999).

¹³⁵ See *id.* § 45-2423.

¹³⁶ See *id.* § 45-2471.

¹³⁷ See Getches, *supra* note 132, at 614-15; Margaret Bushman LaBianca, Note, *The Arizona Water Bank and the Law of the River*, 40 ARIZ. L. REV. 659 (1998).

¹³⁸ See LaBianca, *supra* note 137, at 679.

Idaho and Texas have also created a "water bank" that follows another model.¹³⁹ In both states, the legislation allows one to "deposit" one's water right in the bank pending a need for the water, thereby avoiding the possibility of forfeiture for nonuse.¹⁴⁰ In both states, the water bank is to use the "deposited" water to facilitate the market transfer of the water to other uses—in Idaho only through rental,¹⁴¹ and by sale in Texas.¹⁴² In neither state, however, did the legislature change the rules regarding third-party effects.¹⁴³ The Texas legislation also creates, within the water bank, a Texas Water Trust to manage water rights deposited in the bank "dedicated to environmental needs, including instream flows, water quality, fish and wildlife habitat, or bay and estuary inflows."¹⁴⁴ Transfers of water rights into the Trust must be approved by the Texas Natural Resources Conservation Commission.¹⁴⁵ In Idaho, all water bank transactions must be approved by the Director of the Department of Water Resources.¹⁴⁶ Again, how effective any of this will be remains to be seen.¹⁴⁷ After all, not one single transfer of water rights took place through the Texas water bank in the first six years of its existence.¹⁴⁸

¹³⁹ See IDAHO CODE §§ 42-1601 to 42-1605 (Michie 1996); TEX. WATER CODE ANN. § 15.701 to 15.708 (West 2000).

¹⁴⁰ See IDAHO CODE § 42-1764(2) (Michie 1996); TEX. WATER CODE ANN. § 15.704(a) (West 2000).

¹⁴¹ See IDAHO CODE § 42-1762(2) (Michie 1996).

¹⁴² See TEX. WATER CODE ANN. § 15.703 (West 2000).

¹⁴³ See IDAHO CODE § 42-1763 (Michie 1996); TEX. WATER CODE ANN. § 15.705 (West 2000). On the continuing Idaho restrictions on transfers, see MacDonnell & Rice, *supra* note 18, at 49.

¹⁴⁴ TEX. WATER CODE ANN. § 15.7031(a) (West 2000).

¹⁴⁵ See *id.* at § 15.7031(c).

¹⁴⁶ See IDAHO CODE § 42-1763 (Michie 1996).

¹⁴⁷ For sources that discuss Iowa's and Texas' water bank models, see Anderson, *supra* note 18, at § 16.04(c)(2); Crammond, *supra* note 7, at 237-38; John C. Fereday & Michael Creamer, *Swan Falls in 3-D: A New Look at the Historical, Legal and Practical Dimensions of Idaho's Biggest Water Rights Controversy*, 28 IDAHO L. REV. 573, 582-83 (1992) (evaluating Idaho's water bank model); Kaiser, *supra* note 7, at 201-03; Kaiser & Binion, *supra* note 19, at 173; MacDonnell & Rice, *supra* note 18, at 48-49; John R. Pitts & Janet L. Hamilton, *Texas Water Law for the New Millennium*, 14 NAT. RESOURCES & ENV'T, Summer 1999, at 37 (evaluating Texas' water bank model); Paul F. Waggoner, *Now, Think of Adaptations*, 9 ARIZ. J. INT'L & COMP. L. 137, 149 (1992).

¹⁴⁸ See Martin Hubert & Bob Bullock, *Senate Bill 1, the First Big and Bold Step Toward Meeting Texas's Future Water Needs*, 30 TEX. TECH. L. REV. 53, 64 (1999).

A number of states have created "water banks" that have little or nothing to do with water as such. These states have created water banks to acquire easements or other interests in land in order to preserve wetlands.¹⁴⁹ This sort of water bank actually is quite common because it is necessary to secure federal funds made available under the federal Water Bank Act enacted in 1970.¹⁵⁰ This Act also deals only with wetlands preservation and not with water management issues.¹⁵¹

The California Water Bank was superficially similar to the water banks contemplated by the Idaho and Texas legislation, but with a critical difference. Like the institutions created by the Idaho and Texas legislation, the California Water Bank functioned purely as a means for facilitating the movement of water out of agriculture in order to serve the desires of the far more numerous voters in northern California cities. California, however, decided that when it buys or sells water rights it need not concern itself with the effects of its transactions on third parties, even if the affected third parties hold valid water rights.¹⁵² No private buyer or seller would be allowed to ignore the spill-over effects on third parties.¹⁵³

The California Water Bank itself was a rather piddling affair by California standards, involving in its peak year (1992) some 400,000 acre-feet when the state's shortfall alone exceeded 6,000,000 acre-feet.¹⁵⁴ Fur-

¹⁴⁹ See, e.g., MINN. STAT. ANN. § 103F.601 (West 1997).

¹⁵⁰ See 16 U.S.C. §§ 1301 - 1311 (1994).

¹⁵¹ See Edward J. Heisel, Comment, *Biodiversity and Federal Land Ownership: Mapping a Strategy for the Future*, 25 ECOLOGY L.Q. 229, 298-99 (1998). See generally Robert E. Beck, *The Movement in the United States to Restoration and Creation of Wetlands*, 34 NAT. RESOURCES J. 781 (1994) (giving an overview of the historical and present wetlands policy in the United States).

¹⁵² See Gray, *supra* note 129, at 39-42; Lennihan, *supra* note 129, at 132-34; MacDonnell & Rice, *supra* note 18, at 47; O'Brien & Gunning, *supra* note 99, at 1075; Wahl, *supra* note 22, at 58-60.

¹⁵³ See O'Brien & Gunning, *supra* note 99, at 1062-74.

¹⁵⁴ See Israel & Lund, *supra* note 7, at 6-12; Lennihan, *supra* note 129, at 131; O'Brien & Gunning, *supra* note 99, at 1054. The Water Bank actually contracted to buy over 800,000 acre-feet, but took "delivery" of only about 665,000 acre-feet, and resold only about 400,000 acre-feet to current users, "storing" the rest for future use. See HOWITT ET AL., *supra* note 129, at 10; Kaiser, *supra* note 7, at 189; Lennihan, *supra*, at 131; O'Brien & Gunning, *supra*, at 1075. The following year, it bought another 150,000 acre-feet, most of which went into "storage." See Israel & Lund, *supra* note 7, at 15-19; O'Brien & Gunning, *supra* note 99, at 1054. See also Gomez & Loh, *supra* note 111, at

thermore, the California Water Bank was a most peculiar "market." For the 350 persons who were willing to sell water rights, the state was the only buyer, while for the 20 institutions willing to buy water rights, the state was the only seller. The state of California as buyer or seller had an inestimable advantage over private buyers or sellers given its ability to disregard third-party effects.

The California Water Bank's prices (\$125/ac-ft. to sellers, as much as \$400/ac-ft. to buyers) can hardly be described as having resulted from bidding in the market place.¹⁵⁵ The state chose to whom it would sell, and set the prices by administrative fiat.¹⁵⁶ As a result, some seventy percent of the water made available through the water bank went to just three urban water providers.¹⁵⁷ The fact that this was not really a set of market transactions is particularly underscored when the state implicitly (and sometimes explicitly) underscored its "offers" to buy with the threat of condemnation.

Rather than touting the California Water Bank as an example of markets, one should describe it as state management hiding behind the facade of a market.¹⁵⁸ Instead of a market, the state applied economic incentives to encourage private (and public) actors to comply with the state's policy choices while disregarding the effects of the state's actions on other private (or public) actors whose claims would preclude the accomplish-

66-67 (arguing that the potential for market transfers in California "is likely to be small").

¹⁵⁵ See O'Brien & Gunning, *supra* note 99, at 1075.

¹⁵⁶ See HOWITT ET AL., *supra* note 129, at 5-7; Gray, *supra* note 129, at 21-24; MacDonnell & Rice, *supra* note 18, at 46-47; O'Brien & Gunning, *supra* note 99, at 1095; Wahl, *supra* note 22, at 58-60. On the problem of setting water prices generally, see H. Bjornlund & J. McKay, *Water Markets: Buyer and Seller Perceptions*, 26 WATER, Mar.-Apr. 1999, at 41; Bonnie G. Colby, *Do Water Market Prices Appropriately Measure Water Values?*, 27 NAT. RESOURCES J. 617 (1987); Bonnie G. Colby et al., *Water Right Transactions: Market Values and Price Dispersion*, 29 WATER RESOURCES RES. 1565 (1993); Richard L. Gardner & Thomas A. Miller, *Price Behavior in the Water Market of North-eastern Colorado*, 19 WATER RES. BULL. 557 (1983). On the problem of administrative price setting generally, see Dahlstrom, *supra* note 43.

¹⁵⁷ See MacDonnell & Rice, *supra* note 18, at 47.

¹⁵⁸ See Gray, *supra* note 7, at 296-308. See generally Barton H. Thompson, Jr., *Foreword, The Search for Regulatory Alternatives*, 15 STAN. ENVTL. L.J. viii (1996) (describing the California system as state regulated).

ment of the state's goals.¹⁵⁹ The California water bank has had the same effects as with the nineteenth century transition from the natural flow theory of riparian rights (private property) to the reasonable use theory of riparian rights (common property). Flexibility was introduced to enable fundamental transformation of water uses within the state, and (incidentally) wealth is transferred from those who formerly used water to those who thereafter would use water.¹⁶⁰ Specifically, the California Water Bank transferred wealth from relatively small, poorer farmers to relatively wealthier middle class urban dwellers.¹⁶¹ Now, these may very well be laudable goals in California in the late twentieth century, although considerable evidence suggests that when it comes to water, if not other resources, equity is more important to society than efficiency.¹⁶² Further-

¹⁵⁹ See Brown & Holahan, *supra* note 17; Gray, *supra* note 7; Harris, *supra* note 49. See generally the authorities collected *supra* at note 42. The notion of economic incentives as a device for implementing public management is clearly demonstrated in the operations of the Orange County Water District. The District uses a combination of user fees, taxes, and subsidies to vary the rate of use of groundwater and imported surface water in the county. See Smith, *Groundwater Management*, *supra* note 7, at 823-42. See also OECD, *supra* note 11; ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, *WATER RESOURCES MANAGEMENT: INTEGRATED POLICIES* 74-98, 184-93 (1989).

¹⁶⁰ See Gray, *supra* note 7, at 252-71; Harbison, *supra* note 26, at 553-59; O'Brien & Gunning, *supra* note 99, at 1078-83.

¹⁶¹ See Gray, *supra* note 7, at 252-71; Gray, *supra* note 129; O'Brien & Gunning, *supra* note 99, at 1078-83; Sax, *supra* note 111. See also Cereceda & Wormold, *supra* note 74, at 33-37; Mark Drakeford, *Water Regulation and Pre-Payment Meters*, 25 J. LAW & SOC'Y 588 (1998); Harbison, *supra* note 26, at 553-59; Hendrix, *supra* note 17; Klein-Robbenhaar, *supra* note 111; O'Hara & Dougan, *supra* note 43; Charles K. Rowley, *Wealth Maximization in Normative Law and Economics: A Social Choice Analysis*, 6 GEO. MASON L. REV. 971 (1998); Mark S. Stein, *Rawls on Redistribution to the Disabled*, 6 GEO. MASON L. REV. 997 (1998); Mark Honhart, Note, *Carrots for Conservation: Oregon's Water Conservation Statute Offers Incentives to Invest in Efficiency*, 66 U. COLO. L. REV. 827 (1995). Champions of the water bank tend to make light of these and other problems. See, e.g., David J. Guy, *A Model Water Transfer Act for California: An Agricultural Perspective*, 4 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 75, 77 n.24 (1996) (praising the California water bank system).

¹⁶² See Victor Brajer & Wade Martin, *Allocating a "Scarce" Resource, Water in the West: More Market-Like Incentives Can Extend Supply, but Constraints Demand Equitable Policies*, 48 AM. J. ECON. & SOC'Y 259 (1989); Dunning, *supra* note 77; Getches, *supra* note 132, at 590-607; Hamre, *supra* note 95, at 99-100; Charles Howe, *Water Resource Planning in a Federation of States: Equity versus Efficiency*, 36 NAT. RESOURCES J. 29 (1996); Helen Ingram et al., *Replacing Confusion with Equity: Alternatives for*

more, the means used to achieve these goals did not involve the functioning of a true market—and hardly had anything to do with private property rights in water either.¹⁶³

IV. THE PUBLIC PROPERTY OPTION

Unlike the nineteenth century, when the eastern and western states moved in very different directions to escape the strictures of the “natural flow” version of riparian rights,¹⁶⁴ both eastern and western states today increasingly are turning to active public management for surface water exploitation,¹⁶⁵ surface drainage,¹⁶⁶ and groundwater.¹⁶⁷ The states of the United States that have adopted a public property approach for water management have either determined that, despite the considerable difficulties in defining appropriate public goals or in making the right decisions to achieve those goals,¹⁶⁸ a transition to public property appears to offer significant advantages over both common property and private property in terms of efficient allocation of the resource and in terms of distributive justice.¹⁶⁹ Such a judgment is plausible whether measured in terms of economic values or in terms of noneconomic values.

Water Policy in the Colorado River Basin, in NEW COURSES FOR THE COLORADO RIVER: MAJOR ISSUES FOR THE NEXT CENTURY 177 (Gary Weatherford & F. Lee Brown eds., 1986); Klein-Robbenhaar, *supra* note 111.

¹⁶³ See Gray, *supra* note 7, at 296-308. See generally Brown & Holahan, *supra* note 17.

¹⁶⁴ See the text *supra* at notes 80-85. See also Dellapenna, *Dual Systems*, *supra* note 78, at § 8.02.

¹⁶⁵ See Dellapenna, *Regulated Riparianism*, *supra* note 47.

¹⁶⁶ See Dellapenna, *Related Systems*, *supra* note 52, at § 10.03(b)(5).

¹⁶⁷ See Earl Finbar Murphy, *Groundwater Law and the Appropriative Doctrine*, in WATERS AND WATER RIGHTS, *supra* note 18, at § 24.02(a)(1).

¹⁶⁸ See generally Daniel Farber, *Democracy and Disgust: Reflections on Public Choice*, 65 CHI.-KENT L. REV. 161 (1989); David Freeman, *A Social Well-Being Framework for Assessing Resource Management Alternatives*, in WATER NEEDS FOR THE FUTURE, *supra* note 20, at 153; Jeffrey Harrison, *Egoism, Altruism, and Market Illusions: The Limits of Law and Economics*, 33 UCLA L. REV. 1309 (1986); Jerry Mashaw, *The Economics of Politics and the Understanding of Public Law*, 65 CHI.-KENT L. REV. 123 (1989). For a particularly touching example, see R. Michael M'Gonigle, *The 'Economizing' of Ecology: Why Big, Rare Whales Still Die*, 9 Ecology L.Q. 119 (1980).

¹⁶⁹ See, e.g., TECLAFF, *supra* note 67, at 78-270; Frefoyle, *supra* note 20; Ingram et al., *supra* note 162. See also MARK SAGOFF, *THE ECONOMY OF THE EARTH: PHILOSOPHY*,

Over the past fifty years, about half of the states that formerly followed the common property approach of riparian rights have changed to a system of public property now coming to be called "regulated riparianism."¹⁷⁰ Perhaps the leading example of such a system available today is the *Regulated Riparian Model Water Code* prepared by the American Society of Civil Engineers.¹⁷¹ Because these new regulatory statutes represented a coherent system distinct from the system followed under both riparian rights and appropriative rights, there is not even a generally accepted name for the system. Some years back, Peter Davis suggested that the new regulatory system should be called "non-temporal priority permit systems."¹⁷² This certainly aptly describes the systems, but it is a bit too much of a mouthful to expect people to say or write very often. Others have simply given up trying to use a name that tells you anything about the system, calling the system simply "Eastern permit systems."¹⁷³ I coined the term "regulated riparianism" some years ago,¹⁷⁴ arguing that it captures the two significant elements of the new approach, at the risk perhaps of offending those who believe the words "regulate" and "riparian" inherently contradict each other.¹⁷⁵

While the details of these new systems vary more highly than the administrative systems under appropriative rights, there is a common core to the new systems which enables us to describe the system as it appears to be evolving. The most fundamental departure from common law riparian

LAW, AND THE ENVIRONMENT (1988); Symposium, *Efficiency as a Legal Concern*, 8 HOFSTRA L. REV. 485 (1980).

¹⁷⁰ See Abrams, *supra* note 66; Ausness, *supra* note 47; Davis, *supra* note 66; Dellapenna, *Regulated Riparianism*, *supra* note 47; Hines, *supra* note 66; Looney, *supra* note 47.

¹⁷¹ See REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47. See also MALONEY ET AL., *supra* note 47; Dominic B. King et al., *Model Water Use Act*, in WATER RESOURCES AND THE LAW 533 (U. Mich. 1958).

¹⁷² See Peter Davis, *Australian and American Water Allocation Systems Compared*, 9 B.C. INDUS. & COM. L. REV. 647, 697-705 (1968).

¹⁷³ See, e.g., A SUMMARY DIGEST OF STATE WATER LAWS 22-23 (Richard Dewsnup & Dallin Jensen eds., 1973) (discussing states' differing attempts to control and divide water rights).

¹⁷⁴ Joseph W. Dellapenna, *Owning Surface Water in the Eastern United States*, 6 PROC. E. MIN. L. FOUND. 1-1, at 1-33 to 1-40 (Cyril A. Fox, Jr. & Patrick C. McGinley eds., 1985).

¹⁷⁵ See, e.g., Trelease, *supra* note 15, at 211-13 (arguing the contradictions in the term regulated riparianism).

rights in regulated riparian statutes is the requirement that, with few exceptions, water cannot legally be withdrawn from a water source except pursuant to a permit issued by the state in which the withdrawal occurs.¹⁷⁶ The permit requirement, the "regulated" part of "regulated riparianism," has been upheld against constitutional challenge based upon a state's power to regulate water withdrawal and use in order to protect the public health, safety, and welfare.¹⁷⁷ The rights of water users are determined by the permits, not by the riparian nature of a use. The "riparian" element comes from the criterion by which permit applications are judged, namely whether the proposed use is "reasonable."¹⁷⁸ Some states substitute terms such as "beneficial," or "reasonable-beneficial," or "equitable" for the term "reasonable."¹⁷⁹ The factors considered in determining whether a particular use is reasonable under such statutes are virtually identical with the factors considered under the discredited reasonable use theory of traditional riparian rights.¹⁸⁰ Nonetheless, the criterion of "reasonable use" is applied very differently than at common law. An administering agency decides before a use begins whether a use is reasonable, both in terms of general social policy and in terms of the effects of the proposed use on other permitted uses.¹⁸¹

If the decision-making process were to continue to be a crisis-response process that comes into play only after significant interference arises between competing uses, the regulated riparian statutes could be indicted for the same faults that have bedeviled common law riparian rights.¹⁸² The regulated riparian statutes, however, all provide a process whereby the decision whether a proposed use is reasonable is made before

¹⁷⁶ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.03(a); REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47, at § 6R-1-01.

¹⁷⁷ See *Village of Tequesta v. Jupiter Inlet Corp.*, 371 So. 2d 669 (Fla. 1979); *Crookston Cattle Co. v. Minnesota Dep't Nat. Resources*, 300 N.W.2d 769 (1981). See generally Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.04 (discussing various constitutional challenges to states' powers to regulate water).

¹⁷⁸ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.03(b); REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47, at §§ 2R-1-01, 6R-3-01.

¹⁷⁹ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.03(b)(2).

¹⁸⁰ See REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47, at § 6R-3-02. For the common law approach, see Dellapenna, *Riparian Rights*, *supra* note 64, at § 7.03.

¹⁸¹ See REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47, at §§ 6R-2-01 to 6R-2-08, 6R-3-02, 6R-3-05.

¹⁸² See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.01, at 414-16.

investment in the use takes place through the issuance or denial of a permit. The existence of the permit process thus fundamentally transforms the operation of the concept of "reasonableness" from that known under traditional riparian rights.¹⁸³

Under traditional common law riparian rights, a judicial determination of whether a particular use is reasonable has always been essentially relational, focusing on the relative social utility of the particular competing uses before the court.¹⁸⁴ While generalized interests widely diffused among the public could always theoretically be included in the traditional process of judicially weighing one use against another, such inclusion rarely occurred except perhaps in the form of unarticulated intuitions.¹⁸⁵ The administering agency is, on the other hand, composed of experts who devote their professional life, at least during their service at the agency, to studying just such questions, if only to undertake the planning called for in the controlling statute.¹⁸⁶ This knowledge, or at least any resulting plans, will shape the weighing process in a manner which is at once more abstract and more responsive to the total reality surrounding the use of water drawn from a particular source.¹⁸⁷ Such an ambitious program of public management might very well fall short of the goals set for it. It might be improved by the introduction of various economic incentives as part of the public management scheme.¹⁸⁸ But, as this article has shown, one simply should not confuse economic incentives with markets.

Even with economic incentives, the enterprise of moving fundamental decisions concerning the use of water by private parties from the actors involved into the hands of experts working in an administrative agency poses daunting challenges to those charged with responsibility for administering the program.¹⁸⁹ Novelist George Eliot perhaps best summed

¹⁸³ Cf. Freyfogle, *supra* note 20, at 499-509, 514-19.

¹⁸⁴ See Dellapenna, *Riparian Rights*, *supra* note 64, at § 7.02(d)(2).

¹⁸⁵ See *id.* at § 7.05(a).

¹⁸⁶ See REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47, at §§ 4R-2-01 to 4R-2-04; Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.04(a).

¹⁸⁷ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.05.

¹⁸⁸ See generally the authorities collected *supra* at note 42.

¹⁸⁹ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.03(a)(5)(D). See also David Holtz & Monica Heitzman, Comment, "Primary Purpose" Pollution Control Tax Incentives: Is the Public Getting What It's Paying for?, 31 LAND & WATER L. REV. 401 (1996).

up the very problem with words she put more than a century ago into the mouth of a fictional Felix Holt:

Suppose certain men, discontented with the irrigation of a country which depended for all its prosperity on the right direction being given to the waters of a great river, had got the management of the irrigation before they were quite sure how exactly it could be altered for the better, or whether they could command the necessary agency for such an alteration. Those men would have a difficult and dangerous business on their hands; and the more sense, feeling, and knowledge they had, the more they would be likely to tremble rather than to triumph.¹⁹⁰

The foregoing assumes the best of the possible motives underlying the adoption and administration of a public property system in water. It is possible, as public choice theorists would have it, that the transition to a public property system can be explained, however, either as a simple error on the part of state governments (but so many?),¹⁹¹ or as yet another form of rent-seeking by those who are powerful in the government yet not powerful (or at least not powerful enough) in the marketplace.¹⁹² If the ad-

¹⁹⁰ GEORGE ELIOTT, 3 WORKS 37 (1867).

¹⁹¹ See KENNETH ARROW, SOCIAL CHOICE AND INDIVIDUAL VALUES 46-60 (2d ed. 1963); DANIEL FARBER & PHILIP FRICKEY, LAW AND PUBLIC CHOICE: A CRITICAL INTRODUCTION 38-42 (1991); DENNIS MUELLER, PUBLIC CHOICE II, at 384-99 (1989); William Mayton, *The Possibilities of Collective Choice: Arrow's Theorem, Article I, and the Delegation of Legislative Power to Administrative Agencies*, 1986 DUKE L.J. 948.

¹⁹² See FARBER & FRICKEY, *supra* note 191; JERRY MASHAW, GREED, CHAOS, AND GOVERNANCE (1997); FRED MCCHESENEY, MONEY FOR NOTHING: POLITICIANS, RENT EXTRACTION, AND POLITICAL EXTORTION (1997); MUELLER, *supra* note 191; PUBLIC CHOICE THEORY (Charles Rowley ed., 1993); Jules Coleman, *Afterword: The Rational Choice Approach to Legal Rules*, 65 CHI.-KENT L. REV. 177 (1989); B. Delworth Gardner, *Water Pricing and Rent Seeking in California Agriculture*, in WATER RIGHTS, *supra* note 7, at 83; Joskow & Schmalensee, *supra* note 91; David Luban, *Social Choice Theory as Jurisprudence*, 69 S. CAL. L. REV. 521 (1996); Jonathan Macey, *Public Choice: The Theory of the Firm and the Theory of Market Exchange*, 74 CORNELL L. REV. 43 (1988); Bradford Mank, *Protecting the Environment for Future Generations: A Proposal for a "Republican" Superagency*, 5 N.Y.U. ENVTL. L.J. 445, 446-54 (1996); Charles Rowley, *The Common Law in Public Choice Perspective: A Theoretical and Institutional Critique*, 12 HAMLINE L. REV. 355 (1989); Randal Rucker & Price Fishback, *The Federal Reclamation Program: An Analysis of Rent-Seeking Behavior*, in

ministration of the public property system will be less than perfect (as it certainly will, regardless of the motivations behind its introduction), we must ask whether we should prefer it to a private property system once a common property system becomes unworkable.

Whether the resulting permit process is superior to either traditional riparian rights, to appropriative rights, to a purely market system, or to some other regulatory system has been, and continues to be, hotly debated.¹⁹³ How one resolves these questions is largely a function of how much confidence one has in the ability of a bureaucratic structure to manage a common pool resource compared to the alternatives.¹⁹⁴ Ronald Coase—one of the modern gurus of market theory¹⁹⁵—concluded that:

WATER RIGHTS, *supra*, note 7, at 45; David Skeel, *Public Choice and the Future of Public-Choice-Influenced Scholarship*, 50 VAND. L. REV. 647 (1997); Thomas Stratmann, *The Market for Congressional Votes: Is Timing of Contributions Everything?*, 41 J.L. & ECON. 85 (1998); Symposium, *Positive Legal Theory and Law*, 68 S. CAL. L. REV. 1503-1740 (1995); Symposium, *The Puzzle of Environmental Politics*, 9 DUKE ENVTL. L. & POL'Y F. 1-133 (1998); Theme Issue, *Public Choice*, 6 GEO. MASON L. REV. 709-1012 (1998).

¹⁹³ See, e.g., Robert Abrams, *Replacing Riparianism in the Twenty-First Century*, 36 WAYNE L. REV. 93 (1989); Abrams, *supra* note 66; Anderson, *supra* note 18, at § 16.04; Ausness, *supra* note 47; Butler, *supra* note 47; Chinn, *supra* note 124; Dahlstrom, *supra* note 43; Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.03(a)(5)(D); Norman Dudley, *Water Allocations by Markets, Common Property and Capacity Sharing: Comparisons or Completions?*, 32 NAT. RESOURCES J. 757 (1992); Forum, *Is the Market Working?*, 13 ENVTL. F., May/June 1996, at 28; Freyfogle, *supra* note 20, at 510-19; Gensler, *supra* note 43; Neil Gunningham & Darren Sinclair, *New Generation Environmental Policy: Environmental Management and Regulatory Reform*, 22 MELBOURNE U. L. REV. 592 (1998); James Klebba, *Water Rights and Water Policy in Louisiana: Laissez-Faire Riparianism, Market-Based Approaches, or a New Managerialism*, 53 LA. L. REV. 1779 (1993); Korobkin & Ulen, *supra* note 88; Looney, *supra* note 47; O'Hara & Dougan, *supra* note 43; Carol Rose, *Energy and Efficiency in the Realignment of Common-Law Water Rights*, 19 J. LEGAL STUD. 261 (1990); Shelanski & Klein, *supra* note 88; Trelease, *supra* note 15; Michelle Walsh, *Achieving the Proper Balance between the Public and Private Property Interests: Closely Tailored Legislation as a Remedy*, 19 WM. & MARY ENVTL. L. & POL'Y REV. 317 (1995); Williams, *supra* note 26. See also Donald J. Pisani, *Enterprise and Equity: A Critique of Western Water Law in the Nineteenth Century*, 18 W. HIST. Q. 15 (1987).

¹⁹⁴ See, e.g., PHILIP HOWARD, *THE DEATH OF COMMON SENSE: HOW LAW IS SUFFOCATING AMERICA* (1994); WATER QUANTITY/QUALITY MANAGEMENT AND CONFLICT RESOLUTION: INSTITUTIONS, PROCESSES, AND ECONOMIC ANALYSES (Ariel Dinan & Edna Tusek Loehman eds., 1995); Eric T. Freyfogle, *Repairing the Waters of the National Parks: Notes on a Long-Term Strategy*, 74 DENV. U. L. REV. 815 (1997); Ellen

[T]here is no reason to suppose that the restrictive . . . regulations, made by a fallible administration subject to political pressures and operating without any competitive check, will necessarily always be those which increase the efficiency with which the economic system operates. Furthermore, such general regulations which must apply to a wide variety of cases will be enforced in some cases in which they are clearly inappropriate. . . . But . . . there is no reason why, on occasion, . . . governmental administrative regulation should not lead to an improvement in economic efficiency. This would seem particularly likely when, as is normally the case with the smoke nuisance, a large number of people are involved and in which therefore the costs of handling the problem through the market or the firm may be high.

. . . .

. . . All solutions have costs and there is no reason to suppose that government regulation is called for simply because the problem is not well handled by the market or the firm. Satisfactory views on policy can only come from a patient study of how, in practice, the market, firms and governments handle the problem of harmful effects.¹⁹⁶

One need not adopt a radical anti-economics stance such as James Boyd White has advocated in order to agree with Coase's point that mar-

Siegler, *Regulatory Negotiations and Other Rulemaking Processes: Strengths and Weaknesses from an Industry Viewpoint*, 46 DUKE L.J. 1429 (1997).

¹⁹⁵ See the text *supra* at notes 35-36.

¹⁹⁶ Coase, *supra* note 30, at 18. See also Daniel Cole, *When Is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 WIS. L. REV. 887; Daniel Esty, *Toward Optimal Environmental Governance*, 74 N.Y.U. L. REV. 1495 (1999); Irene Henriques & Perry Sadosky, *The Determinants of an Environmentally Responsive Firm: An Empirical Approach*, 30 J. ENVTL. ECON. & MGT. 381 (1996); Mank, *supra* note 192; Carol Rose, *Given-Ness and Gift: Property and the Quest for Environmental Ethics*, 24 ENVTL. L. 1 (1994).

kets do fail.¹⁹⁷ Economists who seek to reject Coase's point find themselves forced to introduce "invisible, indeterminate, (heaven forbid) soft factors" to explain why actors in the market place do not behave in ways that economic theory predicts.¹⁹⁸ This simply will not do. To suggest that the sellers of strawberries, for example, who refuse to lower their price to clear their shelves rather than see the strawberries spoil overnight have a predilection for rotten strawberries simply does nothing but reduce economic theory to meaningless circularity.¹⁹⁹ When we find that even in such a classic setting as among Bedouin horse dealers, markets can simply fail to reach the most economically efficient outcome²⁰⁰ we must begin to question when markets can be expected to achieve the most socially desirable outcome, even if we define "most socially desirable" in the narrowest of economic terms.²⁰¹

In the context of water management, one cannot have much confidence in a more purely market system given the scarcity of actual empirical experience with such a system and given the enormous complexities of transaction costs and externalities present as barriers to a successful market for water rights.²⁰² As we have seen, such markets as have arisen have done so either as minor exchanges among shareholders of "mutual ditch companies" or through the rather heavy-handed intervention of the state.²⁰³ When the latter happens, it is hard to argue that the "invisible hand" of the market place is at work, or that we are not observing in reality simply a form of public management only moderately different from the overtly public systems described here. And as for any hypothetically new model beyond those considered in this article, one hardly knows where to begin.

In the eastern United States, the problem of riparian rights as vested property rights in a mature economic system is likely, as a practical

¹⁹⁷ See JAMES BOYD WHITE, JUSTICE AS TRANSLATION 48-85 (1990). See also BARBARA FRIED, THE PROGRESSIVE ASSAULT ON LAISSEZ FAIRE: ROBERT HALE AND THE FIRST LAW AND ECONOMICS MOVEMENT (1998); HALE, *supra* note 21; SAGOFF, *supra* note 169; Cotter, *supra* note 122, at 2114-29.

¹⁹⁸ See Steven Lubet, *Notes on the Bedouin Horse Trade or "Why Don't the Markets Clear, Daddy?"*, 74 TEX. L. REV. 1039, 1054 (1996).

¹⁹⁹ See *id.* at 1053-54.

²⁰⁰ See *id.*

²⁰¹ See *id.* at 1053-57.

²⁰² See the text *supra* at notes 80-126.

²⁰³ See the authorities collected *supra* at note 18, and the text *supra* at notes 127-63.

matter, to preclude recourse to appropriative rights rather than regulated riparianism.²⁰⁴ Because of the growing shortages of water relative to demand in most eastern states, the trend towards regulated riparianism is likely to strengthen because the system has at least three demonstrable advantages over traditional riparian rights. First, so long as water is treated as a common pool resource, we face the "tragedy of the commons";²⁰⁵ only active public management can avoid the utter destruction of the resource.²⁰⁶ Second, having a permit in advance of investment provides the security of right, so lacking under common law riparian rights, necessary for intelligent planning or investment decisions.²⁰⁷ Finally, the emphasis on comprehensive planning under regulated riparianism enables problems to be dealt with more rationally by creating the possibility that a problem will be recognized and responded to before it becomes a crisis.²⁰⁸

Accepting the public managerial impulse has, of course, substantial costs, both in terms of money and in terms of the risk of poor decisions by the managers. Monetary costs include not only the salaries and other expenses of the administering agency and of any reviewing agencies, but also the costs of applicants and permittees in complying with the numerous procedures and requirements imposed by the agency. Some of these costs can be avoided by exempting users, who consume only small quantities of water or who make low-valued uses, from the administrative process,²⁰⁹ but only by leaving out of the system uses that in the aggregate can amount to a major limitation on the administrative process. Small or low-valued uses might be included in the process with subsidies through lower fees or complete exemptions from fees,²¹⁰ but these users must still incur the expenses of preparing any necessary information to apply for or to

²⁰⁴ See Dellapenna, *Dual Systems*, *supra* note 78, at § 8.05(a).

²⁰⁵ See Dellapenna, *supra* note 61, at § 6.01(b); Hardin, *supra* note 68.

²⁰⁶ Consider, for example, Arizona's experience with groundwater before and after the state introduced public management. See Murphy, *supra* note 167, at § 24.02(a)(1).

²⁰⁷ See Abrams, *supra* note 66, at 261-65; Dellapenna, *Riparian Rights*, *supra* note 64, at §§ 7.02(d)(3), 7.03; Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.01, at 414-16; Freyfogle, *supra* note 20, at 508-10.

²⁰⁸ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at §§ 9.05(a), 9.05(d); Freyfogle, *supra* note 20, at 514-19.

²⁰⁹ See REGULATED RIPARIAN MODEL WATER CODE, *supra* note 47, at § 6R-1-02; Dellapenna, *Regulated Riparianism*, *supra* note 47, at §§ 9.03(a)(1), 9.03(a)(3).

²¹⁰ See Dellapenna, *Regulated Riparianism*, *supra* note 47, at § 9.03(a)(5)(C).

comply with a permit. Furthermore, fee subsidies also only increase the burdens of the system on those permittees who have to pay fully for their uses or the general taxpayer who in fact funds most regulated riparian systems.

The occurrence of poor management is more difficult to assess, in part because there is considerable disagreement about what is the test of good management. If one takes a purely economic approach, almost any subsidy to a low-valued use will appear as poor management,²¹¹ as will any management at all if the hydrologic system generally supplies a surplus to all foreseeable potential users.²¹² Yet to others, such policies will appear to be merely the management of a major public resource in a socially responsible manner, a manner that does not simply "surrender" to the marketplace.²¹³ Still, some who favor such management precisely because of a desire for social equity, as well as those who argue for economic efficiency as the primary, if not only, criterion for social policy, have raised serious questions about whether the experts at any administering agency can realistically be expected to acquire the necessary information ever to arrive at the right conclusions.²¹⁴ When one adds the unrepresentative nature of the bureaucratic process²¹⁵ and the tendency of any

²¹¹ See, e.g., HIRSHLEIFER ET AL., *supra* note 46, at 36-37; POSNER, *supra* note 13, at § 3.11, at 87-88; Johnson, *supra* note 46, at 350-54.

²¹² See Abrams, *supra* note 66, at 264-65.

²¹³ See, e.g., Butler, *supra* note 47, at 458-80; Freyfogle, *supra* note 20, at 514-19; Pisani, *supra* note 193, at 33-37; Rose, *supra* note 193, at 288-96. See also Freyfogle, *supra* note 25; Stein, *supra* note 161.

²¹⁴ See, e.g., HIRSHLEIFER ET AL., *supra* note 46, at 254; Amy Whritenour Ando, *Waiting to Be Protected under the Endangered Species Act: The Political Economy of Regulatory Delay*, 42 J.L. & ECON. 29 (1999); Butler, *supra* note 47, at 452-53; Dahlstrom, *supra* note 43; Gensler, *supra* note 43; Frank Matthews & Gabriel Nieto, *Florida Water Policy: A Twenty-Five Year Mid-Course Correction*, 25 FLA. ST. U. L. REV. 365 (1998); O'Hara & Dougan, *supra* note 43.

²¹⁵ For arguments about the state of representation in administrative decisions, see PUBLIC PARTICIPATION IN ENVIRONMENTAL DECISIONMAKING (Elissa C. Lichtenstein & William T. Dunn eds., 1994); WE SPEAK FOR OURSELVES: SOCIAL JUSTICE, RACE AND ENVIRONMENT (Dana Alston ed., 1990); John Applegate, *Beyond the Usual Suspects: The Use of Citizen Advisory Boards in Environmental Decisionmaking*, 73 IND. L.J. 903 (1998); Vicki Been, *Locally Undesirable Land Uses in Minority Neighborhoods: Disproportionate Siting or Market Dynamics?*, 103 YALE L.J. 1383 (1994); Vicki Been, *What's Fairness Got to Do with It? Environmental Justice and the Siting of Locally Undesirable Land Uses*, 78 CORNELL L. REV. 1001 (1993); Butler, *supra* note 47, at 453-54;

error to be enormously magnified when applied uniformly through a bureaucratic mechanism,²¹⁶ one might well wonder why the public managerial impulse is so popular in eastern United States.

The question is not, however, whether a public property system creates an ideal model of water allocation, but whether it creates a better model for water allocation than is otherwise available.²¹⁷ The rarity of

Luke Cole, *The Theory and Reality of Community-Based Environmental Decisionmaking: The Failure of California's Tanner Act and Its Implications for Environmental Justice*, 25 *ECOLOGY L.Q.* 733 (1999); Sheila Foster, *Justice from the Ground Up: Distributive Inequalities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement*, 86 *CAL. L. REV.* 775 (1998); Eileen Gauna, *The Environmental Justice Misfit: Public Participation and the Paradigm Paradox*, 17 *STAN. ENVTL. L.J.* 3 (1998); Jonathan Poisner, *A Civic Republican Perspective on the National Environmental Policy Act's Process for Citizen Participation*, 26 *ENVTL. L.* 733 (1999); Trelease, *supra* note 15, at 410-11. Unfunded mandates carry somewhat similar risks. See THOMAS DILORENZO, *UNFUNDED FEDERAL MANDATES: ENVIRONMENTALISM'S ACHILLES HEEL?* (1993); Robert Adler, *Unfunded Mandates and Fiscal Federalism*, 50 *VAND. L. REV.* 1137 (1997); David Dana, *The Case for Unfunded Environmental Mandates*, 69 *S. CAL. L. REV.* 1 (1995); Elizabeth Garrett, *Enhancing the Political Safeguards of Federalism? The Unfunded Mandates Reform Act of 1995*, 45 *U. KAN. L. REV.* 1113 (1997); Paul Gillmor & Fred Eames, *Reconstruction of Federalism: A Constitutional Amendment to Prohibit Unfunded Mandates*, 31 *HARV. J. LEGIS.* 395 (1994); Susan Lekrone, *Turning Back the Clock: The Unfunded Mandates Reform Act of 1995 and Its Effective Repeal of Environmental Legislation*, 71 *IND. L.J.* 1029 (1997); Julie Roins, *Reconceptualizing Unfunded Mandates and Other Regulations*, 92 *NW. U. L. REV.* 351 (1999); Rena Steinzor, *Unfunded Environmental Mandates and the "New (New) Federalism": Devolution, Revolution, or Reform?*, 81 *MINN. L. REV.* 97 (1996); Edward Zelinsky, *Unfunded Mandates, Hidden Taxation, and the Tenth Amendment: On Public Choice, Public Interest, and Public Services*, 46 *VAND. L. REV.* 1355 (1993); Paul Weiland, Note, *Unfunded Environmental Mandates: Causes, Burdens, and Benefits*, 22 *HARV. ENVTL. L. REV.* 283 (1998).

²¹⁶ See Butler, *supra* note 47, at 452; C. Boyden Gray, *Obstacles to Regulatory Reform*, 1997 *U. CHI. LEG. F.* 1; Robert Hahn, *Achieving Real Regulatory Reform*, 1997 *U. CHI. LEG. F.* 143; Rena Steinzor, *The Legislation of Unintended Consequences*, 9 *DUKE ENVTL. L. & POL'Y F.* 95 (1998).

²¹⁷ See *MEDIATING ENVIRONMENTAL CONFLICTS: THEORY AND PRACTICE* (J. Walton Blackburn & Willa Marie Bruce eds., 1995); GLEN ROBINSON, *AMERICAN BUREAUCRACY: PUBLIC CHOICE AND PUBLIC LAW* (1991); Gary Amacher & Arun Malik, *Bargaining in Environmental Regulation and the Ideal Regulator*, 30 *J. ENVTL. ECON. & MGT.* 2233 (1996); Lee Breckenridge, *Nonprofit Environmental Organizations and the Restructuring of Institutions for Ecosystem Management*, 25 *ECOLOGY L.Q.* 692 (1999); Cary Coglianese, *Assessing Consensus: The Promise and Performance of Negotiated Rulemaking*, 46 *DUKE L.J.* 1255 (1997); William Funk, *Bargaining toward the New Millennium: Regulatory Negotiation and the Subversion of the Public Interest*, 46 *DUKE L.J.*

markets for water rights, coupled with the deficiencies of either common property or private property systems in water, suggests that the allocation of water is not particularly efficient under those models either, and that the loss, if any, from adopting public property system is not likely to be high, and might well prove to be a gain.²¹⁸ In fact, as more than one commentator has noted, the attempt to rely on private property concepts as the primary means for managing water as a resource has resulted in freezing uses in the pattern of their first use long after those uses have become relatively uneconomic rather than opening up a path to relatively easy transfer from less valuable uses to more valuable uses.²¹⁹ Thus, while one would be hard pressed to prove whether treating water as private property or as public property was more likely to result in the economically efficient use of the resource, one could easily conclude that water is one resource where privatization and markets are not likely to promote the economically efficient use of the resource. Furthermore, one should take into account that the United States already has the most unequal distribution of income of any industrialized nation in the world.²²⁰

The problem of using water management to further social justice while preventing too much power from accumulating in the hands of an unelected elite is, of course, part of the central political problem of our

1351 (1997); Philip Harter, *Fear of Commitment: An Affliction of Adolescents*, 46 DUKE L.J. 1389 (1997); Jason Scott Johnston, *Bargaining under Rules versus Standards*, 7 J.L. ECON. & ORG. 256 (1995); Rosemary Lyster, *Should We Mediate Environmental Conflict: A Justification for Negotiated Rulemaking*, 20 SYDNEY L. REV. 579 (1998); Michael Ochsner, *Pollution Prevention: An Overview of Regulatory Incentives and Barriers*, 6 N.Y.U. ENVTL. L.J. 586 (1998); Barry Rabe, *The Politics of Environmental Dispute Resolution*, 16 POL'Y STUD. J. 585 (1988); Pablo Spiller, *A Positive Political Theory of Regulatory Instruments: Contracts, Administrative Law or Regulatory Specificity*, 68 S. CAL. L. REV. 477 (1996); Symposium, *Negotiated Rulemaking*, 46 DUKE L.J. 1255-1443 (1997); Symposium, *Second-Best Theory and Law and Economics*, 73 CHI.-KENT L. REV. 3-274 (1998); Micheala Moore, Comment, *Thinking Outside the Box: A Negotiated Settlement Agreement for the Remediation of the General Electric/Housatonic River Site Ensures Environmental Health and Economic Prosperity for Pittsfield, Massachusetts*, 26 B.C. ENVTL. AFF. L. REV. 577 (1999).

²¹⁸ See Butler, *supra* note 47, at 454-55. See also Neil Duxbury, *Do Markets Degrade?*, 59 MOD. L. REV. 331 (1996).

²¹⁹ See Gaffney, *supra* note 20, at 139-40; Graff & Yardas, *supra* note 7, at 165-66.

²²⁰ See Cotter, *supra* note 122, at 2107; Keith Bradsher, *Gap in Wealth in the U.S. Called Widest in the West*, N.Y. TIMES, Apr. 17, 1997, at A1. See generally EDWARD WOLFF, TOP HEAVY: A STUDY OF THE INCREASING INEQUALITY OF WEALTH IN AMERICA (1995).

time in the face of increasingly administrative states.²²¹ Like the problem of efficiency, there is no easy or certain means of resolving the problem. An active legislative involvement which provides considerable concrete guidance would provide a partial solution.²²² Such an approach, however, perhaps increases the chances of what the public choice theorists have warned of: Manipulation of the legislative process to enable particular social groups to capture rents for themselves.²²³ Furthermore, progress through legislative involvement depends on a rather unlikely outbreak of political courage as well as near omniscience on the part of the legislators.²²⁴

As this brief discussion suggests, there is no clear answer to whether a public property system is worth the cost, or whether a private property system would work better or at less cost. It all depends on how one appraises certain ineffable questions. Perhaps at bottom, one can do no better than rely on one's general attitude towards markets versus bureaucracy generally. I would simply caution one to examine carefully whether the actual experience of water markets really suggests that such a system is workable; if not, one is left with little else than to attempt to make a public property system work effectively and equitably, in part through recourse to economic incentives and in part through administrative command.

²²¹ See Paul Stephen Dempsey, *Market Failure and Regulatory Failure as Catalysts for Political Change: The Choice between Imperfect Regulation and Imperfect Competition*, 46 WASH. & LEE L. REV. 1 (1989).

²²² See Butler, *supra* note 47, at 454.

²²³ See the authorities collected *supra* at notes 191 & 192.

²²⁴ See Abrams, *supra* note 66, at 283; Cotter, *supra* note 122, at 2111-14.