THE FUNCTIONS OF TRANSACTION COSTS: RETHINKING TRANSACTION COST MINIMIZATION IN A WORLD OF FRICTION

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INTRODUCTION

Lawyers, of all people, should recognize the value of paying transaction costs. After all, lawyers are transaction costs, at least to the people who pay their fees.[1] When two people making a contract, for example, pay lawyers to draft documents and anticipate potential enforcement problems, the lawyers' fees constitute transaction costs.[2]

One can best understand transaction costs by contrasting them with production and purchase costs. Thus, for example, when a widget maker enters into a contract to supply a customer with widgets, neither the production costs incurred in manufacturing the widgets nor the money the customer pays to purchase the widgets, constitute transaction costs. But the money both sides expend in negotiating and enforcing the supply contract constitutes a transaction cost. Similarly, if one defines the cost of supplying government services as a transaction, as we do for purposes of this Article, then the monies paid to social security recipients do not constitute transaction costs. But the monies government pays to evaluate eligibility for social security or that claimants spend to prove their eligibility constitute transaction costs.

Even though lawyers' fees usually constitute transaction costs, lawyers—including academic lawyers—seem strangely unanimous in arguing that transaction costs are evils that should be minimized or even eliminated.[3] This death wish for lawyers slavishly mimics the writing of some economists, but not the writings of many of those who think most carefully about transaction costs.[4]

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1. *See* Ronald J. Gilson, *Value Creation by Business Lawyers: Legal Skills and Asset Pricing*, 94 YALE L.J. 239, 244 (1984) (describing the role of the business lawyer as a transaction cost engineer); Pierre Schlag, *The Problem of Transaction Costs*, 62 S. CAL. L. REV. 1661, 1685 (1989) (describing an attorney as "nothing but a transaction cost"). *Cf.* Schlag, *supra*, at 1685–86 (explaining that if the market is specified as the market in purchasing knowledge about legal entitlements, than an attorney's fee is not a transaction cost).

2. *See, e.g.*, Ortiz v. Fibreboard Corp., 527 U.S. 815, 867 (1999) (Breyer, J., dissenting) (counting attorney's fees as part of transaction costs in Asbestos litigation).

3. *See, e.g.*, Schlag, *supra* note 1, at 1686–87 (conventional treatment of transaction cost involves treating them as "deadweight losses" that can be eliminated costlessly); Ward Farnsworth, *Do Parties to Nuisance Cases Bargain After Judgment? A Glimpse Inside the Cathedral*, 66 U. CHI. L. REV. 373, 410 (1999) (describing the view that courts should minimize transaction costs as a "usual justification" of "the economist's view of transaction costs"). This negative view of lawyers in the economics literature has its roots in an empirical study from the late 1980's finding a negative relation between economic growth and lawyers per capita. *See* STEPHEN P. MAGEE, WILLIAM BROCK & LESLIE YOUNG, BLACK HOLE TARIFFS AND ENDOGENOUS POLICY THEORY: POLITICAL ECONOMY IN GENERAL EQUILIBRIUM 118–21 (1989).

4. *See, e.g.*, DAVID M. KREPS, A COURSE IN MICROECONOMIC THEORY 744 (1991) ("[T]ransactions tend to be 'placed' in a way that maximizes the net benefits of what they provide, including the costs of the transaction."); John Joseph Wallis & Douglass C. North, *Should Transaction Costs Be Subtracted From Gross National Product?*, 48 J. ECON. HIST. 651, 654 (1988) (disputing the "common but erroneous perception among economists" of transaction cost as sheer waste); Oliver E. Williamson, *Public and Private Bureaucracies: A Transaction Cost Economics Perspective*, 15 J. L. ECON. & ORG. 306, 310

The law reviews and much of the economic literature are full of statements, in a wide variety of contexts, about the need to limit the category of costs upon which most lawyers depend for a living.[5]

The view that transaction costs should always be reduced has played a key role in supporting a movement toward greater reliance upon free markets both in legal practice and in theory. For many years, the imaginary world of perfect competition, perfect information, and zero transaction costs has dominated legal theory.[6] From this vantage point, transaction costs appeared as "deadweight losses" that impeded efficient transactions, deserving elimination if at all possible.[7] This view has not only made transaction cost reduction "a pillar of modern legal scholarship"[8] but has also influenced Congress,[9] courts,[10] and agencies,[11] leading to many legal reforms aimed at reducing transaction costs.

(1999) (discussing writers who have questioned the view that transaction cost considerations should dominate all other considerations).

5. *See* Section I.A., *infra*.

6. *See, e.g.*, Eric A. Posner, *Economic Analysis of Contract Law after Three Decades: Success or Failure*, 112 YALE L.J. 829, 865 (2003) (economic scholarship assumes that individuals are rational and have unlimited cognitive capacity). Ironically, Ronald Coase, the most widely cited economist in the neoclassical law and economics literature that often ignores transaction cost, sought throughout his career to persuade economists to consider the real world, meaning the world that has transaction costs. *See, e.g.*, RONALD COASE, THE FIRM, THE MARKET AND THE LAW 15 (1988) [hereinafter THE MARKET] ("What my argument does suggest is the need to introduce positive transaction costs explicitly into economic analysis so that we can study the world that exists."); Ronald Coase, *The Institutional Structure of Production*, 82 AM. ECON. REV. 713, 717 (1992) (emphasizing the pressing need to "study the world of positive transaction costs"); Ronald Coase, *The Regulated Industries: Discussion*, 54 AM. ECON. REV. 192, 195 (1964) (study of "an optimal system . . . has been pernicious", because "[i]t has directed economists' attention away from" studying "how alternative arrangements will actually work in practice."); Guido Calabresi, *The Pointlessness of Pareto*, 100 YALE L.J. 1211, 1211–12 (1991) (emphasizing the centrality of transaction costs in Coase's work and elucidating its implications for legal theory). *Cf.* Evelyn Brody, *Agents Without Principals: The Economic Convergence of the Nonprofit and For-Profit Organizational Forms*, 40 N.Y.L. SCH. L. REV. 457, 471 (1996) ("A frictionless market does not . . . exist in the real world.").

7. *See, e.g.*, STEPHEN M. BAINBRIDGE, CORPORATION LAW AND ECONOMICS 26–27 (2002) (defining transaction costs as "dead weight losses that reduce efficiency").

8. *See* Peter H. Schuck, *Legal Complexity: Some Causes Consequences and Cures*, 42 DUKE L.J. 1, 18 n. 69 (1992) (calling "analysis of how transaction costs affect legal rules . . . a pillar of modern legal scholarship"). *See also* Schlag, *supra* note 1, at 1662 (claiming that transaction costs play a "significant role" in "Chicago law and economics").

9. *See, e.g.*, *infra* notes 96–97 and accompanying text.

10. *See, e.g.*, United States v. Davis, 261 F.3d 1, 26–27 (1st Cir. 2001) (approving a settlement partly to reduce transaction costs and leave more resources available for cleanup); United States v. Charter Int'l Oil Co., 83 F.3d 510, 520 (1st Cir. 1996) (approving settlement despite dispute about scope of immunity from contribution actions in part because Congress favored settlements as a means of reducing transaction costs); United States v. DiBiase, 45 F.3d 541, 545–46 (1st Cir. 1995) (refusing to reject settlement alleged to unfairly discount the liability of a party because settlements reduce transaction costs, "thereby preserving scarce resources . . . for . . . cleanup"); United States v. Kramer, 19 F. Supp. 2d 273, 289 (D.N.J. 1998) (upholding settlement that serves

We find reliance upon transaction cost minimization arguments as a means of advancing free markets paradoxical because free markets depend upon transaction costs for their very existence. We argue that people and institutions paying lawyers' fees or other transaction costs obtain something of value. They often pay transaction costs to purchase information that will help them evaluate a proposed transaction. For example, a person hiring an auto mechanic to inspect a used car that she might purchase pays the mechanic for information about the vehicle's reliability to inform her decision about whether to purchase the vehicle. People acquire information because the information has functional value to them. We identify three transaction cost functions that motivate these expenditures. Transaction costs expenditures help avoid inefficient transactions, bring about otherwise impossible efficient transactions, or help improve the equity of transactions. While transaction costs have usually been viewed as impediments to efficient transactions, we argue that they often aid the realization of efficient transactions that would never occur without them.

Reducing transaction costs carries risks of reducing the benefits that these costs purchase. Accordingly, we argue that recommendations to reduce or eliminate transaction costs must consider the impact of reductions of transaction costs upon the corollary benefits they purchase. In several non-trivial cases, transaction costs expenditures will produce some corollary benefit[12] that analysts must consider in addressing arguments to reduce transaction costs. Recognition of the functions transaction costs perform casts doubts on the view that policy reforms should always seek to reduce or, if possible, eliminate transaction costs.

The point that transaction costs pay for corollary benefits, while neglected, is not entirely new to the economics literature. The economists John Wallis and Douglass North briefly introduced this point in an article explaining

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"CERCLA's goal of reducing litigation and transaction costs"); Seneca Meadows, Inc. v. ECI Liquidating, Inc., 16 F. Supp. 2d 255, 259 (W.D.N.Y. 1998) (finding that private party may not bring a cost recovery claim because doing so would augment transaction costs); Adhesives Research, Inc. v. Am. Inks & Coatings Corp., 931 F. Supp. 1231, 1244 (M.D. Pa. 1996) (allowing private cost recovery action because of concern that the transaction costs involved in a contribution action might otherwise discourage voluntary cleanup); United States v. Keystone Sanitation Co., 1996 U.S. Dist. Lexis 22573, at *14–15 (M.D. Pa. Apr. 29, 1996) (approving EPA authority to enter into "de micromis" settlements that prevent imposition of transaction costs upon small contributors grossly disproportionate to their potential liability); Town of New Windsor v. Tesa Tuck, Inc., 919 F. Supp. 662, 681 (S.D.N.Y. 1996) (prohibiting PRP's cost recovery action because of concern about increasing transaction costs); United States v. Asarco, Inc., 814 F. Supp. 951, 955–57 (D. Colo. 1993) (declining to authorize cost recovery action against settling parties lest transaction costs rise); Hudson Ins. Co. v. Am. Elec. Corp., 748 F. Supp. 837, 843 (M.D. Fla. 1990) (explaining that making every company self-insure would produce more transaction costs than having expert insurers set premiums in a decision rejecting jurisdiction to create a federal common law of insurance for CERCLA liability claims). *See also* Michigan v. EPA, 213 F.3d 663, 676 (D.C. Cir. 2000) (noting that transaction costs might interfere with emissions trading equalizing control costs between states ordered to clean up through an interstate emissions program).

11. *See, e.g., infra* notes 109–169 and accompanying text.

12. *Cf.* Calabresi, *supra* note 6, at 1220 (arguing that Pareto superior moves eliminating transaction costs are unlikely to exist).

that the transaction sector now forms a significant percentage of the gross national product.[13]

The legal literature, by contrast, does not explicitly recognize that transaction costs pay for discrete corollary benefits. The notion, however, is implicit in statements by Guido Calabresi and Neil Komesar in which they question the notion that transaction costs are waste.[14] Neil Komesar has also made consideration of "transaction benefits" along with transaction costs integral to his analysis of institutional choice.[15] For Komesar, the term "transaction benefits" refers to the entire benefit of a transaction, rather than just the benefits that a transaction cost directly purchases.[16] Most recently, Professors Gideon Parchomovsky and Abraham Bell suggested that transaction costs might have some use as a proxy for costs not otherwise accounted for in defending a proposal to use increased transaction costs to defend a commons.[17] None of these writers, however, explore the nature of the specific benefits that transaction costs purchase in a systematic way, nor do they explicitly defend the point that corollary benefits exist. None of them argue explicitly that policy-makers and academics need to consider the possible impairment of corollary benefits when they consider reducing transaction costs.

We offer a theory of what sorts of benefits transaction costs purchase, an information theory-based explanation of why they offer these benefits, and an analysis of the implications our theory has for a wide variety of important legal issues. Thus, we build on the core insight that transaction costs purchase benefits to explain how legal theorists and policymakers should analyze those benefits in considering solutions to societal problems.

Our analysis aids consideration of transaction cost minimization arguments not only in the private law context, but also in the public law context. Although most legal scholars writing about transaction costs have focused their attention upon contracts, nuisance law, and other private law areas,[18] we show that

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13. Wallis & North, *supra* note 4, at 654 (claiming that transaction costs produce corollary benefits).

14. *See* NEIL K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY 112 (1994) (stating that analysis of transaction cost as waste misses the point); Calabresi, *supra* note 6, at 1220.

15. *See* KOMESAR, *supra* note 14, at 99 (discussing his "explicit focus . . . on transaction benefits").

16. *See id.* at 103 (equating "transaction benefits" with the benefit of participating in a market). The two concepts of "transaction benefits" and the "corollary benefits of a transaction cost" have some overlap but are not the same. So, for example, when a client pays a lawyer's fee to draft a contract for the purchase of widgets (a transaction cost) that payment is not sufficient to procure the benefits of the transaction (the widgets). The benefit of the transaction requires the payment of the purchase price, not just the transaction cost. It follows that the payment to the lawyer must pay for a corollary benefits that is related to, but not always identical with, the purchase of the widgets. This Article elaborates on this notion of corollary benefits.

17. Abraham Bell & Gideon Parchomovsky, *Of Property and Antiproperty*, 102 MICH. L. REV. 1, 5–6, 47 (2003) (discussing the "hidden virtue" of a particular transaction cost as a rough proxy for an externality neglected in the transaction).

18. *See infra* notes 29–61 and accompanying text.

recommendations to reduce transaction costs have influenced public law at least as much as private law.[19]

Our framework contributes to the analysis of institutional choice, such as the decision about whether to employ government or market solutions to solve problems. Thus, it applies to ongoing debates about the appropriate scope of "privatization" of government functions.[20] In both public and private law, the focus on transaction cost minimization has supported arguments for greater reliance on private markets to solve problems.

This Article aids legal scholarship by contributing to the ongoing movement to incorporate the insights of institutional economics into legal theory. Transaction cost economics has gained ground among economists, and prominent legal scholars have argued that institutional economics, which focuses upon transaction cost issues, provides a fruitful framework for legal academic work.[21] Some of the most sophisticated recent writing in the law and economics literature discusses transaction cost problems.[22] But this literature lacks sufficient generalized treatment of the impact transaction costs should have upon legal theory.[23] This Article begins to fill this void.[24]

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19. *See infra* notes 69–118 and accompanying text.

20. *See infra* notes 76–82 and accompanying text.

21. *See, e.g.*, Edward Rubin, *The New Legal Process, The Synthesis of Discourse, and the Microanalysis of Institutions*, 109 HARV. L. REV. 1393, 1413–17 (1996); Sidney A. Shapiro, *Matching Public Ends and Private Means: Insights from the New Institutional Economics*, 6 J. SMALL & EMERGING BUS. L. 43, 45–47, 48–53 (2002) (employing institutional economics to analyze the question of accountability for private actors performing public functions).

22. *See, e.g.*, Posner, *supra* note 6, at 875–77 (discussing bounded rationality and transaction costs as explanation for the failure of economic models to "predict" the content of contracts).

23. Professor Rubin has argued that institutional economics has the potential to unite legal discourse. While transaction costs play a major role in institutional economics, Professor Rubin says little about them. *See* Rubin, *supra* note 21, at 1414–15. His article offers a generalized treatment of the potential of institutional economics as a mode of legal discourse, rather than a detailed theory of how to analyze transaction costs.

Professor Schlag does provide legal theoretical treatment of transaction costs. *See* Schlag, *supra* note 1, at 1672–87. He emphasizes the inadequacy of current treatment of transaction costs, *see id.* at 1699, but says little about how to improve it. We remain more agnostic about the general value of transaction cost analysis than Schlag. We offer a less critical and more constructive perspective, without necessarily denying the validity of any of Schlag's insights. While he focused on the indeterminacy of the transaction cost concept, we offer a definition appropriate to legal theory and a functional theory that might make transaction cost analysis more useful to legal practice and theory.

24. A nice example from Supreme Court litigation illustrates the prevalence and importance of transaction costs. In oral argument before the court on December 9, 2002, Walter Dellinger stated: "[A] world without transaction costs doesn't exist in a Milky Way." He was countering the argument by Charles Fried that his client the Washington Legal Foundation was entitled to compensation equal to the amount of interest on client funds that was taken by the IOLTA program. Professor Dellinger's response was that Professor Fried was assuming zero transaction costs for the bank. When these transaction

This Article's first Part shows the pervasiveness of the transaction cost minimization goal in both private and public law. Despite the ubiquity of the transaction cost minimization goal, definitions of the term "transaction cost" vary.[25] We provide a working definition that makes the concept useful for both public and private law. [26] We also analyze the structure of transaction cost minimization arguments, showing that justifications for private law regimes often rely on an analysis of "phantom transaction costs," the analysis of transaction costs associated with counterfactual transactions. By contrast, public law reforms often aim to reduce existing transaction costs associated with government programs, rather than phantom transaction costs.

The second Part explains the functions transaction costs play. Parties often pay transaction costs to overcome problems of asymmetric information (such as a used car dealer having better information about his cars than a prospective purchaser), the subject of recent Nobel Prize winning work in economics.[27] Payers of transaction costs obtain information that enables them to avoid inefficient transactions, realize opportunities for efficient transactions unavailable without sufficient transaction cost expenditures, and make transactions (defined broadly) more equitable.

The third Part explores the implications of these transaction cost functions for legal and economic theory. In considering proposals to reduce transaction costs, analysts should consider whether eliminating or reducing transaction costs might impair or eliminate the benefits the payers of transaction costs purchase. If the benefits associated with a particular transaction cost are sufficiently important, then retention or even increases in that transaction cost may be justified. This Part explains how one can use information theory as a basis for analyzing the particular benefits associated with discrete transaction costs. This approach will facilitate careful comparative institutional analysis as the basis for addressing transaction cost problems.

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costs were considered, compensation would be zero. *See Method of Legal Services Financing is Challenged Before Supreme Court*, N.Y. TIMES , Dec. 10, 2002, at A32.

25. *See* Schlag, *supra* note 1, at 1674 (characterizing the definition of transaction costs as "elusive and contested"); Williamson, *Transaction Cost Economics: The Governance of Contractual Relations*, 22 J.L. & ECON 233, 233 (1979) (the concept of transaction costs "wants for definition"). *See also* Cento Veljanovski, *The Coase Theorems and the Economic Theory of Markets and Law*, 35 KYKLOS 53, 57 (1982) (stating that there "is at present no theory of transaction costs").

26. *See generally* Paul L Joskow, *Transaction Cost Economics, Antitrust Rules, and Remedies*, 18 J. L. ECON. & ORG. 95, 97 (2002) (transaction cost economic theory has been extended beyond firms and markets to aid understanding of government entities); Williamson, *supra* note 4, at 307 (viewing public agency as a flawed organizational entity in which transaction costs are featured).

27. *See* GEORGE AKERLOF, AN ECONOMIC THEORIST'S BOOK OF TALES: ESSAYS THAT ENTERTAIN THE CONSEQUENCES OF NEW ASSUMPTIONS IN ECONOMIC THEORY 7–22 (1984) (presenting economic theory of lemons). Professor Akerlof, along with Professors Joseph Stiglitz and Michael Spence, was awarded the Nobel Prize in Economic Science in 2001. *See* John Hilsenrath, *Three Americans Win Nobel for Economics—Citing Faulty Information, They Challenge Theory of Efficient Markets*, THE WALL ST. J., Oct. 11, 2001, at A2.

I. TRANSACTION COSTS AND THE MINIMIZATION GOAL

The goal of reducing or eliminating transaction costs has strongly influenced both scholarship and public policy. But despite the ubiquity of the goal, the literature uses inconsistent and widely varying definitions of transaction costs.[28] In this section, we demonstrate the ubiquity of the transaction cost reduction goal and discuss the problem of defining transaction cost. We also explain how a narrow definition of transaction cost can bias legal analysis in favor of private markets.

A. The Transaction Cost Minimization Goal

This subsection demonstrates the ubiquity of the transaction cost reduction goal. It offers examples from private and public law.

1. Private Law

Transaction cost minimization has played a major role in the legal theory of private law. We begin with the most prominent and familiar example, the law of nuisance. We continue with examples from corporate and commercial law and from the law of copyright.

a. The Law of Nuisance

Ronald Coase's article, *The Problem of Social Cost*, claimed that absent transaction costs, landowners would agree to an efficient solution to nuisance problems—interferences with the use or enjoyment of land—regardless of the regime for legal rights.[29] Coase claimed that absent transaction costs, parties could simply bargain around an inefficient decision made by a court in a nuisance case.[30] Subsequently, Guido Calabresi and Douglas Melamed pointed out that courts can

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28. *See* Gideon Parchomovsky & Peter Siegelman, *Selling Mayberry: Communities and Individuals in Law and Economics*, 92 CAL. L. REV. 75, 94 (2004) (transaction costs are "notoriously difficult to define").

29. *See* THE MARKET, *supra* note 6, at 114–115 ("[A] rearrangement [of legal rights] would be made through the market whenever this would lead to an increase in the value of production."). Coase's article first appeared in *The Journal of Law and Economics*. *See* R.H. Coase, 3 J.L. & ECON. 1 (1960).

30. Coase analyzes several well known nuisance cases in his exposition of the problem of social cost, such as *Fountainebleu Hotel Corp. v. Forty-five Twenty-five, Inc.*, 114 So. 2d 357 (Fla. Dist. Ct. App. 1959), *Sturges v. Bridgman*, 1 Ch. D. 852 (1879), and *Delta Air Corporation v. Kersey*, 20 S.E.2d 245 (Ga. 1942). *See* THE MARKET, *supra* note 6, at 104–05, 168.

Coase's influence on nuisance and other land use cases, as well as cases of ordinary negligence, persists today. *See, e.g.*, Rodi Yachts, Inc. v. Nat'l Marine, Inc., 984 F. 2d 880, 888 (7th Cir. 1993) (citing to Coase's *The Problem of Social Cost* in a negligence suit involving a barge); Walgreen Co. v. Sara Creek Prop. Co., 966 F.2d 273, 276 (7th Cir. 1992) (citing to Coase's *The Problem of Social Cost* in a landlord-tenant dispute); Los Angeles County, Metro. Transp. Auth. v. Cont'l Dev. Corp., 941 P.2d 809, 824 (Cal. 1997) (emphasizing the effect of a new setoff rule on minimizing transaction costs); Tazian v. Cline, 673 N.E.2d 485, 492 (Ind. Ct. App. 1996) (Staton, J., dissenting) (transaction cost minimizing role of undivided ownership considered in an action to quiet title).

choose between a property rule and a liability rule.[31] A property rule usually protects an entitlement, such as the right to be free of noise, through an injunction, meaning that the state may not take the entitlement away without the owner's consent.[32] A liability rule usually protects an entitlement through damages, meaning that this rule allows the state to deprive the rights holder of her entitlement without her consent, if the person working the deprivation pays objectively adequate compensation.[33] A long line of scholarship has followed about how to choose between property and liability rules.[34] Much of this scholarship applies Coase's idea of bargaining around legal rules to reach an efficient solution to the problem of choosing between property and liability rules. Scholars debate which rule creates the lowest transaction costs, and therefore the least impediment to bargaining around inefficient judicial decisions.[35] Implicitly, these scholars endorse the view that the choice between property and liability rules should reduce the transaction costs of bargaining around judicial decisions.

Professors Robert Cooter and Thomas Ulen make the link between the Coase theorem and the transaction cost minimization goal more explicit in their often-cited textbook, *Law and Economics*.[36] They present what they call the Positive Coase Theorem and the Normative Coase Theorem, both distilled from Coase's *Social Cost* article. The Positive Coase Theorem states that "if transaction costs are zero, an efficient allocation of resources results from private bargaining, regardless of the initial assignment of property rights."[37] The Normative Coase Theorem states that lawmakers should structure the law "so as to remove the impediments to private agreement," that is to minimize transaction costs.[38] Thus, the Normative Coase Theorem calls for transaction cost minimization.

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31. *See* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972).

32. *See id.*

33. *See id.* at 1093.

34. *See, e.g.*, Ian Ayres & J.M. Balkin, *Legal Entitlements as Auctions: Property Rules, Liability Rules, and Beyond*, 106 YALE L. J. 703 (1996); Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 YALE L.J. 1027 (1995); Richard Epstein, *A Clear View of the Cathedral: The Dominance of Property Rules*, 106 YALE L. J. 2091 (1997); Keith N. Hylton, *A Missing Markets Theory of Tort Law*, 90 NW. U. L. REV. 977 (1996); Louis Kaplow & Steven Shavell, *Property Rules versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713 (1996); James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. Rev. 440 (1995); Saul Levmore, *Unifying Remedies: Property Rules, Liability Rules, and Startling Rules*, 106 YALE L. J. 2149 (1997).

35. For a brief discussion of the debate, see RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 55–56 (6th ed. 2002) ("What is fundamental [to the assignment of legal rights] is the distinction between settings of low transaction costs and of high transaction costs."). Also see Carol Rose, *The Shadow of the Cathedral*, 106 YALE L. J. 2175, 2184–89 (1997) (distinguishing between Type I transaction costs that are incurred prior to bargaining and Type II transaction costs that arise after bargaining has begun).

36. *See* ROBERT COOTER & THOMAS ULEN, LAW & ECONOMICS 82–87 (3d ed. 2000).

37. *Id.* at 85.

38. *Id.* at 93.

Because of the central role this line of scholarship has played in legal theory, this use of the transaction cost minimization rationale alone would demonstrate the importance of the assumption that minimization is always desirable. But its influence extends far beyond the place of its birth.

b. Corporate and Commercial Law

The transaction cost minimization goal has also played a role in corporate and commercial law. Ronald Gilson argued that business lawyers are "transaction cost engineers"—people who work to minimize transaction costs.[39] Relying principally upon examples from mergers and acquisitions, Gilson used the desirability of transaction cost reduction to explain how business lawyers add value to these sorts of commercial transactions.[40] Scholars have explored the corporate lawyer's role as a transaction cost engineer in contexts other than that of corporate acquisitions. For example, Professor Lisa Bernstein has written about how Silicon Valley lawyers minimize transaction costs associated with the identification and acquisition of intellectual property assets in conjunction with the disposition of venture capital.[41]

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39. *See* Gilson, *supra* note 1, at 253–56. While Professor Gilson does not provide a specific definition of transaction costs, his examples of transaction cost engineering illustrate that the corporate lawyer's primary goal is to facilitate the acquisition, transfer, and interpretation of information between an acquirer of a corporate asset and its seller. Professor Gilson describes the corporate lawyer's role as one of ensuring that financial assets are measured accurately according to the terms of the Capital Asset Pricing Model (CAPM). Under CAPM, as characterized by Professor Gilson, assets will be priced correctly if there is homogenous information, consistent time horizon, no transaction costs, and costless information acquisition. The primary transaction costs that corporate lawyers must contend with are ones that arise from imperfect and incomplete information. More importantly, it would be a misstatement to see the corporate lawyer's role as one of minimizing transaction costs. As transaction cost engineers, corporate lawyers are facilitators; they manage transaction costs rather than minimize them. *See id.*

40. It should be emphasized that Professor Gilson's argument is not that the benefits of lawyers outweigh their costs or that the costs of undertaking a transaction are lower with a lawyer than without. In some ways, there may be a presumption that transaction costs are reduced. But the keystone of the argument is that lawyers provide certain functions in light of transaction costs and that these functions benefit transactions. The argument is not that lawyers are necessarily effective reducers of transaction costs when all benefits and costs are taken into consideration. What lawyers do is tap into the need for certain markets necessary for the creation and dissemination of information about corporate acquisitions. By establishing such a market, corporate lawyers provide a service that facilitates other transactions. *See id.* at 254–56 (describing role of business lawyers as value creators by allowing for more accurate asset pricing); 254 n.39 (describing how business lawyers solve technical "legal" problems whose implementation may become delegated to lower cost professionals).

41. Lisa Bernstein, *The Silicon Valley Lawyer as Transaction Cost Engineer?*, 74 OR. L. REV. 239, 241–42 (1995). Although her analysis rests heavily on the work of Professor Gilson, the situation of Silicon Valley lawyers is very different from that of corporate lawyers structuring corporate acquisitions and aiding in the valuation of corporate assets. The Silicon Valley lawyer's role is partly that of a facilitator of corporate acquisitions, but more often she serves in the identification and capture of intellectual property assets. This distinction is important because it is not necessarily the case that the

The goal of reducing transaction costs not only dominates academic explanations of the business attorney's role in organizing private transactions in the capital markets, but also plays a prominent role in justifying the fundamental rules of corporate and commercial law.[42] For example, scholars have employed transaction cost minimization rationales to explain choices between "immutable" and "default" rules in corporate and commercial law.[43] Courts frequently employ default rules to supplement incomplete private bargains with default contract terms not contemplated by the parties. For example, to resolve a dispute regarding a commercial contract for goods lacking a price term, a court will often insert, by default, a "reasonable" price.[44] By contrast, immutable rules flatly prohibit enforcement of certain kinds of bargains. So for example, a court will not enforce a real estate contract lacking a price term. An immutable rule requires a price term in the real estate context, while a default rule supplies one in a contract for the purchase of goods.[45] Scholars usually favor the rule that best minimizes transaction costs.[46]

The goal of transaction cost minimization also figures prominently in explanations of choices between available default rules. For example, scholars often urge legislatures and courts to adopt a majoritarian default rule—a rule imposing contract terms that most parties would agree upon under similar circumstances.[47] The contract rule of a reasonable price as the default rule may offer an example of a majoritarian default rule. On the other hand, courts often

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capital asset pricing model that Gilson uses to analyze corporate acquisitions would suffice to describe all that Silicon Valley lawyers do. The model was developed to understand the pricing of corporate securities and not intangible assets such as intellectual property.

42. *See* Edward A. Bernstein, *Law & Economics and the Structure of Value—Adding Contracts: A Contract Lawyer's View of the Law and Economics Literature*, 74 OR. L. REV. 189, 195–205 (1995) (extending Gilson's transaction cost engineering role of corporate lawyers to commercial and contract lawyers more broadly).

43. *See* Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: an Economic Theory of Default Rules*, 99 Yale L.J. 87, 91 (1989).

44. RESTATEMENT (SECOND) OF CONTRACTS § 204 (1981) (setting default for missing term to be "a term which is reasonable in the circumstances"); Richard E. Speidel, *Restatement Second: Omitted Terms and Contract Method*, 67 CORNELL L. REV. 785, 785 n.2 (1985).

45. *See, e.g.*, Travelco, Inc. v. Chain Locations of Am., Inc., 566 N.Y.S.2d 763, 764 (N.Y. App. Div. 1991) (stating lack of price term made contract for sale of real property unenforceable); Aceste v. Wiebusch, 425 N.Y.S.2d 369, 370 (N.Y. App. Div. 1980) (stating price term not sufficiently definite in real property contract). *But see* Shayeb v. Holland, 73 N.E.2d 731, 734 (Mass. 1947) (implying a reasonable price term in an unusual case involving option contract for purchase of real property). For the treatment of price terms in contracts for the sale of goods, see UCC § 2-303 (1997). Other examples of immutable rules include the rule that contracts require consideration and that corporations enjoy limited liability. *See, e.g.*, Cloud Corp. v. Hasbro, Inc., 314 F.3d 289, 294 (7th Cir. 2002) (stating that UCC § 2-207 "minimizes transaction costs by eliminating a negotiation over the additional term unless the offeror is unwilling to accede to the offeree's desire").

46. *See* Ayres & Gertner, *supra* note 43, at 91.

47. *See* Charles J. Goetz & Robert E. Scott, *The Mitigation Principle: Toward a General Theory of Contractual Obligations*, 69 VA. L. REV. 967, 971 (1983) ("Ideally, the preformulated rules supplied by the state should mimic the agreements contracting parties would reach were they costlessly to bargain out each detail of the transaction.").

employ penalty default rules, such as the rule that courts construe ambiguities against the drafter of a contract.[48] Such a rule supplies terms that penalize one of the parties to a contract. Some scholars argue that a majoritarian default rule reflects the term that a majority of contracting parties would adopt, absent transaction costs.[49] The majoritarian default rule presumes that high transaction costs caused the failure to negotiate over a term. The court minimizes transaction costs by imputing a default term. Scholars sometimes disagree about which rule choice facilitates transaction cost reduction, but many agree that the goal of transaction cost minimization should play a substantial role in choosing the fundamental rules of commercial and corporate law.[50]

c. Fair Use and Copyright

Transaction cost minimization has played a central role in shaping the fair use doctrine in copyright. In the fair use provision of the Copyright Act of 1976,[51] Congress authorized users of copyrighted materials to copy them without paying the copyright holders under limited circumstances.[52] Under this provision, the law sanctions an activity that is otherwise copyright infringement if the activity falls into a particular category of use, such as criticism, research, or scholarship, and this use is deemed fair.[53] The statute provides four factors to consider in determining fairness: the nature of the use; the nature of the work infringed; the amount of the infringed work taken; and the effect on the potential market for the infringed work.[54] Since the passage of the 1976 Act, courts and commentators have struggled to fashion from this list of factors a predictable set of rules that allow users to know which uses are "fair" and which violate the Copyright Act.[55]

A very influential article by Wendy Gordon relied in part on a transaction cost minimization rationale to create guidance for courts on how to apply the fair

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48. *See* Duncan v. Theratx, Inc., 775 A.2d 1019, 1021 n.4 (Del. 2001) (stating that majoritarian rules are desirable because they reduce transaction costs unless penalty defaults are needed to force information disclosure).

49. *See* Ayres & Gertner, *supra* note 43, at 91–93. *See generally* Moreau v. Harris County, 158 F.3d 241, 247 (5th Cir. 1998) (citing Ayres & Gertner for the proposition that default rules should be chosen for efficient and fair results in the majority of cases, rather than fair or efficient results vis-à-vis the parties before the court).

50. *See* Ayres & Gertner, *supra* note 43, at 113 (contesting argument that parties will bargain around a default rule if transaction costs are low); Ayres & Talley, *supra* note 34, at 1033 (discussing divergence of opinions on high versus low transaction costs); Eric Kades, *Windfalls*, 108 YALE L. J. 1489, 1514–17 (1999) (discussing the size of transaction costs and imposition of rules of contractual recovery).

51. Pub. L. No. 94-553, § 107, 90 Stat. 2541, 2546 (1976) (codified at 17 U.S.C.A. § 107).

52. 17 U.S.C.A. § 107 (West 2005).

53. *Id.*

54. *Id.*

55. *See, e.g.*, Educ. Testing Serv. v. Stanley H. Kaplan Educ. Ctr., Ltd., 965 F. Supp. 731, 736 (D. Md. 1997) (describing fair use as an equitable rule of reason). *Cf.* William W. Fisher III, *Reconstructing the Fair Use Doctrine*, 101 HARV. L. REV. 1659, 1668–69 (1988) (discussing changing role of fair use as an equitable doctrine).

use doctrine.[56] Professor Gordon argued that the existence of market failure should count as a justification for considering a use fair.[57] Market failure can occur, explains Gordon, because in some cases transaction costs exceed the value of the work to the user.[58] In such a case, no market would exist for a particular use, because the user would respond to a requirement to pay for a license by simply abandoning the use.[59] For example, copying a page of a book for classroom purposes might be fair use under Professor Gordon's approach. There is a market failure in this situation if the user does not have the time or the ability to obtain permission from the copyright owner.[60] Thus, Professor Gordon's market failure point suggests that fair use avoids excessive transaction costs, and therefore constitutes another instance of a regime justification that relies upon the transaction cost minimization goal.

The courts have made transaction cost minimization even more central to fair use than Professor Gordon recommends. Professor Gordon offers a balanced and nuanced analysis of fair use. She does not argue that "market failure" should be the sole criterion governing fair use.[61] A number of courts have adopted a transaction cost approach to fair use, borrowing either directly or indirectly from Professor Gordon. But they, unlike Gordon, have sometimes employed a transaction cost minimization framework to the exclusion of other factors. For example, the Second Circuit, in *American Geophysical Union v. Texaco*,[62] held that unauthorized copying of scientific articles for research purposes was not fair use because it interfered with an active market for licenses for photocopying of

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56. *See* Wendy J. Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and Its Predecessors*, 82 COLUM. L. REV. 1600 (1982).

57. *Id.* at 1604–05.

58. *Id.* at 1609 (fair use as facilitating a transfer of resources that would otherwise be blocked by high transaction costs).

59. *Id.* at 1610.

60. *Id.* at 1621.

61. Grounded in transaction costs economics, Professor Gordon's approach to fair use emphasizes three factors: (a) the existence of market failure for the use of the copyrighted work, (b) the benefits and costs of the use, and (c) the effects of permitting uncompensated uses of the copyrighted work on the incentive to create. Copying of a copyright protected work should be permitted when there is market failure, when there are net benefits from the copying, and the uncompensated copying does not diminish the incentive to create. *Id.* at 1614–22. For example, copying of a page of a book for classroom purposes would be fair use under Professor Gordon's approach. There is a market failure in this situation because the user may not have the time or the ability to obtain permission from the copyright owner. Further, the benefits derived from disseminating the work for classroom use outweighs any loss of revenue to the copyright owner. Finally, such permitted copying does not diminish incentives to create because the copyright owner can still market her work in other ways. *Id.* at 1628–30. To consider another example, making unauthorized copies of videotapes would not be fair use because (1) an active market for the sale of videotapes exist and hence there is no market failure, (2) the only benefit from such activity is the savings from purchasing an authorized video, and (3) the unauthorized sales deeply cut into the market for the copyright owner and arguably creates disincentives to create. *Id.* at 1654–57.

62. 60 F.3d 913 (2d Cir. 1994).

articles.[63] The Ninth Circuit made a similar analytical move in *Worldwide Church of God v. Philadelphia Church of God*,[64] a case involving the rights of an offshoot faction of a church to photocopy the church's official bible.[65] The court concluded that the offshoot faction's photocopying of the official bible did not constitute fair use because the church was planning to publish an annotated version of the bible. Therefore, the court concluded there was no market failure for distribution of the bible.[66] The *Worldwide Church of God* majority found that the existence of markets demonstrated that the transaction costs associated with bargaining for a license were not too high.[67] Since the need for transaction cost minimization does not justify the exclusion of licensing, the court found no justification for fair use.[68]

The transaction cost minimization goal has influenced nuisance, commercial law, corporate law, and intellectual property. Still, its influence has proven perhaps even stronger in the realm of public law.

2. Public Law

Transaction cost minimization has profoundly influenced legal scholarship in private law areas, but has had less visibility in public law scholarship.[69] In the public law area, however, the transaction cost minimization goal has played a major role in legislative reforms, court rulings, and administrative decisions. Accordingly, legal scholarship should address transaction cost minimization in the public law context. We illustrate these points with examples from public benefit programs, such as workers compensation, and from environmental law.

a. Workers' Compensation and Other Public Benefit Programs

The desire to reduce transaction costs has played a major role in workers' compensation. A transaction cost explanation plays a prominent role in scholarly justifications for the existence of the regime. Scholars have claimed that the nineteenth century tort system compensated workers for injuries only erratically and after expensive litigation.[70] By providing more certain compensation for

63. *Id.* at 931.
64. 227 F.3d 1110 (9th Cir. 2000).
65. *Id.* at 1111.
66. *Id.* at 1119 n.2 (citing Professor Gordon).
67. *Id.* at 1119.
68. *Id.* at 1120–21.
69. But interest in transaction cost analysis of public law has been increasing of late. *See* Eugene Kontorovich, *The Constitution in Two Dimensions: A Transaction Cost Analysis of Constitutional Remedies*, 91 VA. L. REV. (forthcoming June 2005); Eugene Kontorovich, *Liability Rules for Constitutional Rights: The Case of Mass Detentions*, 56 STAN. L. REV. 755 (2004).
70. *See* Martha T. McCluskey, *The Illusion of Efficiency in Workers' Compensation "Reform,"* 50 RUTGERS L. REV. 657, 669 (1998) (tort defenses of assumption of risk, the fellow-servant doctrine, and contributory negligence often prevented compensation of injured industrial workers at common law); Arthur Lawson, *The Nature and Origins of Workmen's Compensation*, 37 CORNELL L.Q. 206, 228 (1951–52) (explaining studies preceding enactment of workers' compensation statutes showed little compensation for workers under common law).

worker injuries regardless of employer fault, the adoption of workers' compensation in the early twentieth century eliminated transaction costs associated with tort remedies.[71]

More recently, policy makers and some scholars have sought to justify "cost containment" reforms on the grounds that they reduce transaction costs.[72] These reforms limit both the size of attorneys' fees and the ability of claimants to shift these costs to insurers or employers.[73] The desire to minimize transaction costs plays a significant role in workers' compensation reform, just as it plays a significant role in the scholarly theory about its creation.

The federal government, like the states administering workers' compensation programs, has sought to contain the cost of public benefit programs by limiting attorney fees.[74] The Supreme Court has addressed controversial rules restricting attorney fees in veterans' programs[75] and in a federal Black Lung Disease compensation program.[76]

Transaction cost concerns have played a role in all manner of decisions to privatize government delivery of social services, lessen their scope, or devolve fundamental policy choices to the states.[77] In these cases, the government and scholars disapprove of the government transaction costs that attend the delivery of benefits.[78] They privatize a function or reduce the scope of a social welfare program, in part, in order to reduce these costs.[79] For example, advocates of

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71. *See* McCluskey, *supra* note 70, at 737 ("Worker's compensation is typically described as efficient . . . on the ground that it" generates less transaction cost than the tort system).

72. *See id.* at 738 ("[R]ecent cost containment reforms in workers' compensation are widely described as [reducing transaction costs].").

73. *See id.* at 863.

74. *See* Walters v. Nat'l Ass'n of Radiation Survivors, 473 U.S. 305, 308, 326 (1985) (limiting fees for attorneys in veteran benefits cases to ten dollars to assure that veterans need not pay for attorneys with benefits money and that proceedings remain simple); U.S. Dep't of Labor v. Triplett, 494 U.S. 715, 718 (1990) (stating regulations forbid contractual arrangements for fee).

75. *See Walters*, 473 U.S. at 308 (describing attorney fee restrictions that limit lawyer involvement in veterans' benefit decisions).

76. *See Triplett*, 494 U.S. at 718 (describing restrictions on attorney participation in Black Lung Disease compensation programs).

77. *See* E.S. Savas, *Privatization and the New Public Management*, 28 FORDHAM URB. L.J. 1731, 1736 (2001) (identifying transaction cost considerations with "New Public Management" and privatization); *see also* ELLIOT SCLAR, YOU DON'T ALWAYS GET WHAT YOU PAY FOR: THE ECONOMICS OF PRIVATIZATION 96 (2000) (applying transaction cost theory to the privatization debate).

78. *See* POSNER, *supra* note 35, at 477–78 (discussing transaction cost in Aid for Families with Dependent Children program); Mathew Diller, *Going Private—The Future of Social Welfare Policy*, 35 CLEARINGHOUSE REV. 491, 493 (2002) (explaining that the technocratic case for privatization rests upon view that government suffers from too much "red tape" and that privatization promises "leaner" service delivery).

79. *See, e.g.*, DAVID OSBORNE & TED GAEBLER, REINVENTING GOVERNMENT: HOW THE ENTREPENEURIAL SPIRIT IS TRANSFORMING THE PUBLIC SECTOR 23 (1992) (advocating changing bureaucratic institutions into "entrepreneurial institutions" in order to "melt the fat"); *Developments in the Law: The Law of Prisons*, 115 HARV. L. REV. 1838,

welfare reform suggest that reducing transaction costs that inhibit someone's ability to have a job, such as the cost of transportation, offers a more fruitful approach than simply redistributing income to the poor.[80] And advocates of devolution and privatization[81] have claimed that these measures drastically reduce administrative costs—which we consider a public transaction cost.[82] President Bush's faith-based initiative—an effort to rely upon religious charities to deliver some social services—provides an example of this sort of reform.[83]

b. Environmental Law

The goal of reducing transaction costs figures prominently in policy debates about environment legal problems. We examine two examples: debates about prevention and cleanup of hazardous waste and debates about the design of emissions trading programs.

(1) *Superfund*

Perhaps the most conspicuous example of the minimization goal's influence involves the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund).[84] Congress enacted this law to address the problem of hazardous waste sites.[85] By 1980, Congress had learned that many parcels of land contained large deposits of harmful chemicals, which might, if not cleaned up, contaminate water supplies or otherwise threaten human health and the environment.[86] Many of these sites had received waste for a long period of time from a wide variety of individuals and firms.[87] Contributors to the

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1868–91 (2002) [hereinafter, *Prisons*] (discussing cost, quality and accountability in private prisons).

80. *See* Martha T. McCluskey, *The Politics of Economics in Welfare Reform*, *in* FEMINISM CONFRONTS HOMO ECONOMICUS (Martha A. Fineman & Terence Dougherty eds., forthcoming 2005) (criticizing this argument). *Cf.* Linda C. McClain, *Care as a Public Value: Linking Responsibility, Resources, and Republicanism*, 76 CHI.-KENT L. REV. 1673, 1686 n.40 (2001) (arguing for the promotion of care, including care of children, as a pubic value); Linda C. McClain, *Citizenship Begins at Home: The New Social Contract and Working Families*, *in* PROGRESSIVE POLITICS IN THE GLOBAL AGE 95–107 (Henry Tam ed., 2001) (same).

81. Privatization embraces a variety of government approaches that give the private sector a greater role in government. *See* Jack M. Beermann, *Privatization and Accountability*, 28 FORDHAM URB. L. J. 1507, 1519–53 (2001) (developing a privatization typology).

82. *See* SCLAR, *supra* note 76, at 47 (privatization proponents often presume that the public sector is "awash in inefficiency").

83. *See* Diller, *supra* note 78, at 498–503 (describing the initiative and its goals).

84. 42 U.S.C.A. §§ 9601–9675 (West 2005).

85. *See* Jerome M. Organ, *Superfund and the Settlement Decision: Reflections on the Relationship Between Equity and Efficiency*, 62 GEO. WASH. L. REV. 1043, 1046 (1994).

86. *See id.* at 1046 n.17; Lynda J. Oswald, *Strict Liability of Individuals Under CERCLA: A Normative Analysis*, 20 ENVTL AFF. 579, 585 (1993) (discussing the magnitude of the hazardous waste disposal problem at the time of CERCLA's enactment and a little under a decade later).

87. *See, e.g.*, New York v. Solvent Chem. Co., 179 F.R.D. 90 (W.D.N.Y. 1998) (adjudicating motion to add fifty-two waste generators and third party defendants to a Superfund case based on activities going back as long as forty years). *See also* United States

mess had often disappeared or become insolvent.[88] Congress addressed this problem by establishing comprehensive liability for cleanup costs for a host of "potentially responsible parties" (PRPs).[89] The PRPs included current owners of waste sites, some previous owners, persons who had arranged for disposal of waste at the site, and transporters of hazardous waste.[90]

Congress created a "Superfund," financed by taxation of the chemical and petrochemical industry, to fund clean up of the dirtiest sites.[91] It authorized the EPA to cleanup these sites with Superfund monies and bill the PRPs for the cost, or to have the PRPs cleanup the sites.[92]

CERCLA has endured frequent and fervent criticism as a generator of high transaction costs, including the costs of investigation, negotiation, and litigation.[93] CERCLA has led to protracted disputes regarding the division of liability among PRPs and between PRPs and insurers.[94] While nobody has produced a definitive study establishing the size of CERCLA transaction costs,

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v. Hooker Chem. & Plastics Corp., 850 F.Supp. 993, 1010 (W.D.N.Y. 1994) (Hooker chemical company placed chemicals in Love Canal site from the early 1940s to 1954); Kenneth S. Abraham, *Essay: The Maze of Mega-Coverage Litigation*, 97 COLUM. L. REV. 2102, 2104 (1997) ("[A] typical CERCLA liability might involve . . . waste that was deposited . . . beginning in 1955 . . . .").

88. *See, e.g.*, Sun Co., Inc. v. Browning-Ferris, Inc., 124 F.3d 1187, 1193 (10th Cir. 1997) (discussing solvent parties' liability for "orphan shares" of liability left by defunct companies); Pinal Creek Group v. Newmont Mining Corp., 118 F.3d 1298, 1303–04 (9th Cir. 1997) (declining to allow PRPs to obtain all of its response costs from defendant PRPs, so as to preserve possibility of equitably apportioning liability for orphan shares); KATHERINE N. PROBST & PAUL R. PORTNEY, ASSIGNING LIABILITY FOR SUPERFUND CLEANUPS: AN ANALYSIS OF POLICY OPTIONS 27 (1992) (explaining that the insolvency or disappearance of PRPs leaves liability for orphan shares with remaining PRPs or the Trust Fund).

89. *See* 42 U.S.C.A. § 9607(a) (West 2005).

90. *See id.* The statute only creates liability for past owners who owned a property at the time somebody disposed of waste on that property. *See id.* § 9607(a)(2). Because of broad statutory definitions of disposal, many previous owners might find themselves liable under this provision. *See, e.g.*, Nurad, Inc. v. William E. Hooper & Sons, 966 F.2d 837, 840 (4th Cir. 1992) (stating liability extends to owners at the time that previously deposited wastes leaks or spills out onto the land). *Cf.* United States v. CDMG Realty, Co. 96 F.3d 706, 711 (3d Cir. 1996) (rejecting liability for ownership during a time of "passive migration" of previously deposited waste).

91. 26 U.S.C.A. §§ 4661, 4671, 59A, 9507(b)(1) (West 2005). *See* Rena I. Steinzor, *The Reauthorization of Superfund: The Public Works Alternative*, 25 ENVTL. L. REP 10078, 10086 (1995) (discussing the amounts raised by various taxes supporting Superfund).

92. *See* 42 U.S.C.A. §§ 9604(a)(1), 9606(a), 9607(a), 9622(a) (West 2005). EPA can secure PRP cooperation through either voluntary agreement or administrative orders. *See* Organ, *supra* note 85, at 1056–57. *See also* Oswald, *supra* note 86, at 588 (summarizing the remedies and documenting some of the regulatory sources governing details).

93. *See, e.g.*, William N. Hedeman et al., *Superfund Transaction Costs: A Critical Perspective on the Superfund Liability Scheme*, 21 ENVTL. L. REP. 10413, 10426 (1991) (calling for "fundamental reform" to address transaction cost problems).

94. *See id.* at 10414.

observers agree that these costs are very high.[95] It is possible, however, that these transaction costs are declining.[96]

Congress has studied the transaction cost issue repeatedly and twice amended the statute, in part to address transaction cost problems.[97] The idea that government should reduce transaction costs continues to play an enormous role in the Superfund debate.[98] We believe it should play a substantial role in the debate.

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95. *See* JAN PAUL ACTON & LLOYD S. DIXON, SUPERFUND AND TRANSACTION COSTS: THE EXPERIENCES OF INSURERS AND VERY LARGE INDUSTRIAL FIRMS xi, xiii (1992) (stating five large industrial firms paid transaction costs of twenty-one percent; four national insurance companies paid transaction costs of eighty-eight percent); PROBST & PORTNEY, *supra* note 87, at x (admitting that magnitude of transaction costs is unknown, but offering speculation that transaction costs range from two to eight billion dollars over ten years); Abraham, *supra* note 87 (describing the causes of insurance related transaction costs and predicting that they will decline over time); John J. Lyons, *Deep Pockets and CERCLA: Should Superfund Liability be Abolished*, 6 STAN. ENVTL L. J. 271, 272 (1987); Robert W. McGee, *Superfund: It's Time for Repeal After a Decade of Failure*, 12 J. ENVTL L. 118, 170 (1993) (claiming that transaction costs "consume" much of the "Superfund budget"); George Van Cleve, *Would the Superfund Response Cost Allocation Procedures Considered by the 103d Congress Reduce Transaction Costs?*, 25 ENVTL. L. REP. 10134, 10134 (1995). Most estimates of transaction costs in the literature are based on the work of Acton and Dixon, published by the Rand Corporation. While the Rand Corporation study offers some hard data (which is in very short supply), researchers should use caution in citing it. It represents a small sample of five large industrial firms and four national insurance companies. *See* ACTON & DIXON, *supra*, at x, xii. *Cf.* Katherine N. Probst, *Reforming Superfund: Who Will Pay*, 8 MD. J. CONTEMP. LEGAL ISSUES, 63, 69 (1996–97) (stating very little is known about transaction costs at sites with fewer PRPs) . Acton and Dixon believe that their sample is representative of the experience of other insurers and large industrial firms. *See* ACTON & DIXON, *supra*, at xiv. But they consider the size of transaction costs for medium and small firms "an open question." *See id.* at xv. Furthermore, this study is now more than a decade old. *See id.* at 50 (stating transaction-cost share may drop as sites move through remediation). Other studies have been made, but some come from biased sources or reflect little data gathering. *See* Lyons, *supra*, at 313–16 (discussing estimates by interested parties and a government projection of future transaction costs).

96. *See* Robert P. Dahlquist, *Making Sense of Superfund Allocation Decisions: The Rough Justice of Negotiated and Litigated Allocations*, 31 ENVTL. L. REP. 11098, 11108 (2001) (claiming that the body of case law that has developed governing allocation of liability now enables counsel to "predict likely outcomes of allocation disputes" and settle cases); GAO, SUPERFUND: TRENDS IN SPENDING FOR SITE CLEANUP 2 (1997) (percentage of government Superfund spending devoted to actual cleanup increased from fifty-four percent in 1987 to eighty-eight percent in 1996).

97. *See* HOUSE OF REPRESENTATIVES COMM. ON GOV'T OPERATIONS, Statement of Carol Browner Before the Subcommittee on Environment, Energy, and Natural Resources Committee on Government Operations *reprinted in* FED. NEWS SERV., June 24, 1994, (discussing several bills designed to reduce transaction costs); Hedeman et al., *supra* note 93, at 10424–25 (statutory amendments authorizing de minimis settlements, mixed funding, and non-binding allocations of responsibility aimed to reduce transaction costs); Lyons, *supra* note 95, at 313 (stating that each congressional committee holding hearings on reauthorization heard testimony addressing the transaction cost problem).

98. *See, e.g.*, S. 8, 105th Cong. (1997) (proposing a binding administrative procedure to allocate liability); Message to the Congress on Environmental Policy, 31 WKLY. COMP. PRES. DOC. 558, 559 (April 6, 1995) (President Clinton's statement that "too

This Article demonstrates in part three, however, that the instinct to reduce transaction costs, while healthy in this context, is not sufficient by itself to ground meaningful reform recommendations.

(2) *Emissions Trading*

Recommendations to minimize transaction costs have also played a significant role in the design of emissions trading programs,[99] which have become quite prevalent[100] and enjoy the support of many academics and policy makers.[101] We use the term "emissions trading" to refer to a broad variety of programs in which parties who have received authorization for pollution or development of property trade these allowances.[102] An example will facilitate explanation of emissions trading. Suppose that a regulator wants a total reduction of one-hundred tons of pollution from two facilities. Under a uniform standards approach, the regulator would require each facility to reduce emissions by fifty tons. Often, however, facilities have unequal compliance costs.[103] If one facility (which we will call Buyer) has a marginal control cost of $10,000 a ton and another facility (which we will call Seller) has a marginal control cost of $1,000 a ton, the total cost of this uniform standards approach would be $550,000 (50 X $10,000 + 50 X $1,000). Economists have criticized this uniform standard approach as inefficient.[104]

Emissions trading allows the regulator to get tailored cost effective outcomes without actually acquiring marginal cost information from each facility.

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many Superfund dollars have been spent on lawyers"); Hedeman, *supra* note 93, at 10426 (calling for fundamental reform to reduce transaction costs); Van Cleve, *supra* note 95 (evaluating the capacity of legislative proposals before the 103d Congress to reduce transaction costs).

99. *See* J.H. DALES, POLLUTION PROPERTY AND PRICES 92–100 (1968); James T.B. Tripp & Daniel J. Dudek, *Institutional Guidelines for Designing Successful Transferable Rights Programs*, 6 YALE J. ON REG. 369, 377 (1989) (stating that buying and selling of use rights "must entail only *minimal transaction costs*") (emphasis original).

100. *See* David M. Driesen, *Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy*, 55 WASH. & LEE L. REV. 289, 291–92, 311–19 (1998) (reviewing some of the history of emissions trading programs).

101. *See, e.g., id.* at 291–92 (detailing policy makers support); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUM. J. ENVTL. L. 171 (1988); Daniel J. Dudek & John Palmisano, *Emissions Trading: Why is this Thoroughbred Hobbled?*, 13 COLUM. J. ENVTL. L. 217 (1988); Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 ECOLOGY L.Q. 1, 15–16 (1991).

102. These programs include wetlands mitigation banking, *see* Royal C. Gardner, *Banking on Entrepreneurs: Wetlands, Mitigation Banking, and Takings*, 81 IOWA L. REV. 527, 532–533 (1996), transferrable development rights, *see* Suitum v. Tahoe Reg'l Planning Agency, 520 U.S. 725, 728–33 (1997) (describing the treatment of transferrable development rights in a case leading to a takings claim), and effluent trading, *see* Ann Powers, *Reducing Nitrogen Pollution on Long Island Sound: Is There a Place for Pollutant Trading?*, 23 COLUM. J. ENVTL. L. 137, 142–43 (1998).

103. *See* Driesen, *supra* note 100, at 307.

104. *See, e.g.*, Hahn & Stavins, *supra* note 101, at 6.

The regulator requires a fifty-ton reduction from each facility as above. But she authorizes the owners of these facilities to trade emission reductions. Presumably, Buyer will pay Seller to reduce its emissions an extra fifty tons and use the purchased credits in lieu of local compliance. Seller eliminates one-hundred tons of emissions, using the first 50 tons to meet its own fifty-ton reduction obligation and selling the 50 tons of extra reductions to Buyer. Buyer will use these fifty tons of purchased reductions to comply with its fifty-ton reduction obligation, in lieu of actually reducing its own emissions. Seller happily earns a little more than $50,000 for its effort, and Buyer happily avoids $500,000 in control costs. The regulator achieves the same one-hundred-ton reduction at a fraction of the cost a uniform standard would impose.

The justification for emissions trading implicitly relies upon public transaction costs.[105] The regulator could, in theory at least, assign efficient non-uniform pollution reduction obligations to each facility. But the time and cost of collecting marginal control cost information for each facility would prove prohibitive.[106] Typically, the regulated facility has information about its control costs that the regulator might find difficult to obtain—causing an information asymmetry.[107] Absent transaction costs, traditional regulation aimed at cost effectiveness would produce cost effective outcomes.[108] Because of public

105. One might argue that we should think of this as a real transaction cost argument. After all, we have substantial experience with traditional regulation and its associated transaction costs. *See, e.g.*, Ackerman & Stewart, *supra* note 101, at 174 (discussing the informational needs of best available technology standard setting). *Cf.* Driesen, *supra* note 100, at 327–32 (explainting that these same problems of complex information gathering can apply to standard setting in conjunction with emissions trading). In general, however, environmental statutes do not direct agencies to tailor each control requirement to the marginal cost of each facility to maximize cost effectiveness. *See* Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms*, 37 STAN. L. REV. 1267, 1302–03 (1985) (describing the current regime as relying upon a technology-based approach not attuned to "particularized costs and benefits"). So, the cost of doing this is a phantom transaction cost, a cost that would arise if such a regime existed.

106. *See* E.I. du Pont de Nemours & Co. v. Train, 430 U.S. 112, 132–33 (1977) (stating that a regime requiring individual consideration of each permitted polluter's individual circumstances would impose an "impossible burden" upon EPA); Latin, *supra* note 105, at 1314–31 (explaining that individualized, rather than uniform, standard setting has proven ineffective because of the huge amount of information for fine tuning individual decisions).

107. *See* THOMAS O. MCGARITY, REINVENTING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY 131–32 (1996) (discussing regulators' dependence on industry cost estimates).

108. *See* Daniel H. Cole & Peter Z. Grossman, *When is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regimes*, 1999 WISC. L. REV. 887, at 889–92 (literature that considers public transaction costs concludes that traditional regulation is not always less efficient than emissions trading). *See generally* Robert N. Stavins, *Transaction Costs and Tradeable Permits*, 29 J. ENVTL. ECON. & MGMT. 133, 144 n.22 (1995) (noting that market transaction costs are basically the counterpart of administrative costs in command and control regulation).

transaction costs, emissions trading often functions better at producing these outcomes.[109]

Arguments to reduce transaction costs have had their greatest practical impact in influencing the design of emissions trading programs, figuring heavily in relevant EPA rulemaking and guidance documents.[110] For example, in proposing an open market trading rule, which spawned a number of state emission trading programs, the EPA noted that its previous trading rules had generated a small volume of trades "perhaps due to high transaction costs."[111] Much of the EPA's open market proposal sought to allow trades "before governmental review and approval" in order to lower transaction costs.[112] And in recent guidance to states designing emissions trading programs, the EPA stated that successful trading programs have "control cost differentials" that "exceed the transaction costs of making a trade."[113]

Many writers addressing emissions trading have recommended that regulators reduce transaction costs associated with emissions trading. To reduce the cost of locating sellers of credits, a number of writers recommended establishing banks where owners of overcomplying facilities could deposit credits for later purchase by owners of polluting facilities.[114] Writers recommended that

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109. *Cf.* Sidney A. Shapiro & Robert L. Glicksman, Comment, *Goals, Instruments, and Policy Choice*, 10 DUKE ENVTL L. & POL'Y FORUM 297, 309–10 (2000) (pointing out that "implementation costs" of market based approaches might, at times, exceed implementation costs of traditional regulation).

110. *See, e.g.*, EPA, Office of Water, Proposed Water Quality Trading Policy 6 (2002), *available at* http://www.epa.gov/owow/watershed/trading/proptradepolicy.pdf (urging states and tribes to use the internet to provide real time information on trades to lower transaction costs).

111. *See* Open Market Trading Rule for Ozone Smog Precursors, 60 Fed. Reg. 39,668, 39,670 (proposed August 3, 1995) [hereinafter Open Market Trading Rule]. While EPA never finalized this rule, a number of states adopted emissions trading proposals based on this "open market" model. *See, e.g.*, Approval and Promulgation of Implementation Plans: Michigan Emission Trading Program, 66 Fed. Reg. 9264, 9266, 9277 (proposed February 7, 2001) (to be codified at 40 C.F.R. pt.52); Approval and Promulgation of Implementation Plan: New Hampshire Discrete Emission Reductions Trading Program, 66 Fed. Reg. 9278, 9279, 9283 (proposed February 7, 2001) (to be codified at 40 C.F.R. pt. 52); Approval and Promulgation of Implementation Plans: New Jersey Open Market Emissions Trading Program, Revised Interpretation of Operating Permit Requirements for Emissions Trades, 66 Fed. Reg. 1796, 1801 (proposed January 9, 2001) (to be codified at 40 C.F.R. pt. 52). The open market trading rules generally follow a basic model proposed by Richard Ayres, a noted pollution control expert. *See* Richard Ayres, *Developing a Market in Emission Credits Incrementally: An 'Open Market' Paradigm for Market-Based Pollution Control*, 25 ENV'T REP. 1522 (1994).

112. *See* Open Market Trading Rule, *supra* note 110, at 39,671.

113. OFFICE OF AIR AND RADIATION, EPA, PUB. NO. 452/R-01-001, IMPROVING AIR QUALITY WITH ECONOMIC INCENTIVE PROGRAMS 25 (2001) [hereinafter OAR GUIDANCE].

114. *See, e.g.*, Perry S. Goldschein, *Going Mobile: Emissions Trading Gets a Boost from Mobile Source Emission Reduction Credits*, 13 UCLA J. ENVTL. L. & POL'Y 225, 236–37 (1994/95) (suggesting that buyers cannot locate sellers easily without banking); Gary E. Marchant, *Global Warming: Freezing Carbon Dioxide Emissions: An*

the government reduce negotiation costs by serving as a broker or auctioning off credits.[115] In order to reduce delays and expense arising out of government approvals, writers recommended eliminating government approval requirements, opportunities for public participation, and reliance upon relationships between reductions and ambient air quality or risk.[116] A later section of this Article will examine some of these proposals. The important point here, however, is that the fundamental form of argument follows a pattern found in many other areas. Scholars point out that the sale of emission reduction credits reduces compliance costs.[117] Transaction costs impede realization of the maximum number of sales.[118] Therefore, government should reduce transaction costs to facilitate trades and cost reduction.[119]

Recommendations to reduce transaction costs dominate the debate about Superfund and play a major role in the design of emissions trading programs, both topics of major significance to environmental law. The minimization goal has profoundly influenced public law, contributing to a movement toward privatization of government functions.

3. Phantom Transaction Costs

Arguments for transaction cost minimization have a discernable structure. In private law, support for transaction cost minimization often comes from theoretical claims that an existing legal rule or body of law performs the function of reducing transaction costs. We refer to this sort of claim as a "phantom transaction cost claim." The argument takes the form of hypothesizing a different legal arrangement than currently exists—a phantom transaction. This hypothetical arrangement would generate high transaction costs. Because nobody actually pays these transaction costs, we refer to these as phantom transaction costs. The writer then claims that the actual legal rule avoids the transaction costs that would arise under the hypothesized alternative regime.[120]

Offset Policy for Slowing Global Warming, 22 ENVTL. L. 623, 668–69 (1992) (recommending banking to address transaction cost problem).

115. *See* David Sohn & Madeline Cohen, *From Smokestacks to Species: Extending the Tradable Permit Approach from Air Pollution to Habitat Conservation*, 15 STAN. ENVTL. L.J. 405, 442 (1996) (associating auction with reduced transaction costs); Stavins, *supra* note 108, at 145–46 (recommending government as broker and auctions).

116. *See* Stavins, *supra* note 108, at 145 (explaining that moving toward risk based trading increases transaction costs); Marchant, *supra* note 114, at 644–48 (suggesting that federal approval requirements for trades should cease); Sohn & Cohen, *supra* note 115, at 431–32 (approving of the RECLAIM emissions trading program's lack of public input in deciding upon individual trades).

117. *See* Tom H. Tietenberg, *Economic Instruments for Environmental Regulation*, *in* ECONOMICS OF THE ENVIRONMENT: SELECTED READINGS 374–76 (2000).

118. *See* Vivien Foster & Robert W. Hahn, *Designing More Efficient Markets: Lessons from Los Angeles Smog Control*, 38 J. L. & ECON. 19, 33 (1995).

119. *See generally id.* at 33, 35, 39 (suggesting disapproval of transaction costs).

120. Coase provides an example of this counterfactual use of transaction costs analysis in his summary of his theory of the firm in the 1960 article:

> It is clear that an alternative form of economic organization which could achieve the same result at less cost than would be incurred by using the

So for example, economists applying Coase to environmental problems imagine breathers bribing a polluter to reduce or eliminate emissions.[121] This phantom transaction would generate transaction costs. Scholars usually claim that avoidance of the transaction costs associated with bribing or negotiating with polluters, phantom transactions, helps justify private nuisance law.[122]

Similarly, some proponents of fair use imagine a teacher paying to use a portion of an article in class—a phantom transaction.[123] They imagine that the transaction costs associated with this licensing, such phantom transaction costs as finding the copyright owner and negotiating a license, would be excessive.[124] This vision helps justify the legal rule not requiring a licensing payment in such cases.[125] Fair use avoids payment of a phantom transaction cost.[126]

By contrast, current public law discussion of transaction costs often involves claims that the existing rule, not the phantom, generates excessive transaction costs. This claim can motivate reform recommendations—such as recommendations to privatize public law.[127] For example, proposals to reform Superfund by eliminating liability for private parties cite the ability of such proposals to eliminate much of the transaction costs that private parties really pay under the existing law. The concept of phantom transaction costs will prove useful in explaining why transaction costs may facilitate, rather than hinder, transactions. In Part III, we will explain how careful even-handed use of phantoms can serve as

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> market would enable the value of production to be raised. As I explained many years ago, the firm represents such an alternative to organizing production through market transactions. Within the firm, individual bargains between the various co-operating factors of production are eliminated and for a market transaction is substituted an administrative decision.

THE MARKET, *supra* note 6, at 115. The costs associated with the "individual bargains" that are "eliminated" through an "administrative decision" are an example of what we call phantom transaction costs.

121. *See* A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 94 (2d ed. 1989); POSNER, *supra* note 35, at 61.

122. *See* Farnsworth, *supra* note 3, at 375–80 (reviewing the role of transaction costs associated with negotiating around nuisance judgments in selecting remedies to nuisance cases). The problem of high hypothetical transaction costs preventing sufficient bribing of polluters can, however, also justify public environmental law. *See* David Wesbrook, *Liberal Environmental Jurisprudence*, 27 U.C. DAVIS L. REV. 619, 650–51 (1994) (explaining that high transaction costs precluding bargains between polluters and their victims justify environmental law).

123. Gordon, *supra* note 56, at 1628.

124. *Id.* at 1618–19 (describing different cases of market failures as tied to costs of bargaining and negotiating).

125. *Id.* at 1621.

126. *See* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 258–64 (1991) (describing photocopying practices among academics and how internalized norms trump federal copyright law and regulate excessive copying).

127. *See* Christopher K. Leman, *Direct Government*, *in* THE TOOLS OF GOVERNMENT: A GUIDE TO THE NEW GOVERNANCE 68 (Lester M. Salamon ed., 2002) (documenting and countering the argument that entrepreneurial government, one motivated by profit, would do a better job of internalizing transaction costs).

a useful analytical technique for evaluating a proposed legal reform's impact upon transaction costs.

B. Defining Transaction Cost

In spite of the pervasiveness of the transaction cost minimization goal, scholars do not share an agreed upon definition of transaction costs. Usually, definitions vary with the subject under analysis.[128] Scholars studying political and legal decision-making processes, such as Neil Komesar and Richard Posner, often describe the costs of government decision-making as transaction costs.[129] Other scholars, such as Ronald Coase, sometimes focus on the costs of negotiating private contracts as a transaction.[130]

This Article uses the term "transaction cost" to refer to the costs of making and enforcing both governmental and private decisions. Such an approach makes the best possible case for the transaction cost minimization rationale. Legal scholarship often involves considerations of institutional choice, such as decisions about whether to employ government or private decision-making to solve a problem. If the proposal to minimize transaction costs means that we should always prefer to minimize private decision-making costs, then the proposal is obviously biased against even efficient government decisions. For this position would imply that proposals minimizing private costs should be preferred, even if they raise government costs by a greater amount. Institutional economics teaches, however, that comparative analysis must consider costs associated with both institutional arrangements being compared.[131] By including both government and private costs as transaction costs, we interpret the transaction cost minimization rationale as one that involves an even-handed comparison of costs as part of institutional analysis.

Because information theory matters to our analysis, we emphasize one corollary of our definition. The costs of acquiring information to inform either government or private decisions constitute a transaction cost for purposes of our analysis. Indeed, the costs of negotiating a contract, a classic example of a

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128. *See, e.g.*, Kenneth J. Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation*, *in* PUBLIC EXPENDITURES AND POLICY ANALYSIS 60 (Robert Haveman & Julius Margolis eds., 1970) (defining transaction costs as the "costs of running an economic system"); Douglass C. North, *Transaction Costs Through Time*, *in* TRANSACTION COST ECONOMICS 149 (Claude Menard, ed. 1997) (defining transaction costs as the "the costs of measuring what is being exchanged and enforcing agreements").

129. *See, e.g.*, KOMESAR, *supra* note 14, at 141–42 (comparing the relative costs of the political process and adjudication); RICHARD A. POSNER, *The Constitution as an Economic Document*, *in* THE ECONOMICS OF PUBLIC LAW 40 (1987) (describing separation of powers as raising the "transaction costs of government"). Cooter and Ulen do consider costs of administering the courts or an agency as a type of transaction cost but one different from the transaction costs of private bargaining. In their view, administrative costs are more like taxes that must be paid when legal or administrative services are obtained. *See* COOTER & ULEN, *supra* note 36, at 320–21.

130. *See* THE MARKET, *supra* note 6, at 38–39.

131. *See* KOMESAR, *supra* note 14, at 4.

transaction cost, consists largely of exchanging information about the value of the good or service being contracted for.[132]

II. THE BENEFITS OF TRANSACTION COSTS

When people pay transaction costs they frequently purchase something of value. In particular, they often purchase information that facilitates efficient transactions, avoids inefficient transactions, or allows for equitable decisions. What are often identified as undesirable transaction costs actually provide transaction benefits, which are often realized through intermediaries, such as lawyers and brokers, who facilitate transactions.

Below we use information theory to better explain transaction costs' role in free markets. We then build on this foundation to explain three functions transaction costs perform in both private and public decision-making. They aid in the avoidance of bad transactions, facilitate efficient transactions, and supply dignity and equity in some settings.

A. Transaction Costs, Information, and Markets

Both economists and academic lawyers recognize that transaction costs often pay for the acquisition and management of information. But they have not developed the implications of this insight for transaction cost functions.[133]

Economists recognize that some people have more information than others.[134] When one party to a transaction has more information than another, an "information asymmetry" arises. But economists have not explained the source of these asymmetries.[135]

Recognition of the role of markets for information can help explain this puzzle. The acquisition of information can be viewed as the acquisition of a commodity, like other products or services. Many market transactions, from purchases of financial services to contracts for legal services, involve purchases of

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132. Professor Allen's claim that information costs are necessary, but not sufficient, for the existence of transaction costs (defined as the cost of protecting property rights) supports this point. Information costs become transaction costs when it is not possible for a transacting party to determine whether the quality of a commodity results from variation in nature or from alteration by the other party. The problem of verifiability of information is the key to the existence of transaction costs. *See* Douglas W. Allen, *What Are Transaction Costs?*, 14 RES. L. & ECON. 1, 6–10 (1991).

133. Professor Komesar explains:

> Although the modern successors of Coase have focused on the costs of information, and in particular, on the implication of differences in endowed information positions of the transacting parties, these problems with information are not traced to low stakes or variations in stakes, or for that matter, to any well-defined source. The analysis simply recognizes that some people are exposed to and possess more information than others.

KOMESAR, *supra* note 14, at 107 n.14.

134. *See id.*

135. *Id.*

information. The recognition of information as a commodity raises many issues for transaction cost analysis.[136]

Indeed, recent Nobel Prize winning work examining markets in information posits that information asymmetries play a key role in creating markets. Grossman and Stiglitz point out that if everyone had common beliefs and expectations in financial markets, then markets for securities would not exist because there would be no basis for trade.[137] Market trades exist because some individuals believe that an asset being traded is overvalued by the market and others believe it is undervalued.[138] If no information asymmetry existed, then no basis for trading the assets assessed in purchased information would exist. Yet neoclassical economists commonly claim that perfect information is a prerequisite for a competitive market.[139] The observation that perfect information markets are impossible is known as the Grossman-Stiglitz paradox.[140] The paradox arises from the idea that a key characteristic of a perfect market—the possession of perfect information by all parties—would extinguish markets.

Markets in information may help explain the paradox. Asymmetries in belief about the value of assets may reflect differences in expenditures to acquire information. But to quote Grossman and Stiglitz, "because differences in beliefs themselves are endogenous, arising out of expenditure on information and the informativeness of the price system, the creation of markets eliminates the differences of beliefs which give rise to them, and thus causes those markets to disappear."[141] Grossman and Stiglitz's argument is directed at the Efficient Market Hypothesis, the proposition that in an efficient market, the market price must reflect all available information about the assets being traded.[142] Contradicting the Efficient Market Hypothesis, Grossman and Stiglitz demonstrate that "because information is costly, prices cannot perfectly reflect the information which is available, since if it did, those who spent resources to obtain it would receive no compensation."[143] In other words, if prices accurately and completely reflected all market information, then markets themselves would not exist.

Nobody has spelled out the implications of markets in information for transaction cost functions. But the idea that purchases of information make markets in the assets about which information is being sought possible helps

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136. For an excellent discussion of the issues raised by markets and information, see JAMES BOYLE, SHAMAN, SOFTWARE, AND SPLEENS: LAW AND THE CONSTRUCTION OF THE INFORMATION SOCIETY 1–25 (1996).

137. Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 404 (1980).

138. *See* BOYLE, *supra* note 136, at 90.

139. *See, e.g.*, PAUL MILGROM & JOHN ROBERTS, ECONOMICS, ORGANIZATION, AND MANAGEMENT 72–73 (1992) (analyzing role of information in perfectly competitive markets).

140. Grossman & Stiglitz, *supra* note 137, at 405.

141. Id. at 404.

142. For a discussion of the Efficient Market Hypothesis, see BURTON G. MALKIEL, A RANDOM WALK DOWN WALL STREET 24–26 (2003) and Eugene F. Fama, *Efficient Capital Markets: II*, 46 J. FIN. 1575, 1617 (1991).

143. Grossman & Stiglitz, *supra* note 137, at 405.

explain that information is valuable. An explanation of why information is valuable provides the basis for understanding the functions that transaction costs serve when they purchase information.

Economists only assume that transactions are efficient under conditions of perfect information, a condition that real markets rarely meet.[144] Transactions based on very good information are likely to be efficient, but transactions based on very poor information are much less likely to be efficient. This would seem intuitively obvious. If an investor buys stock knowing nothing about a company, she is more likely to pay too much than an investor who knows more about the company. While transactions are inherently good in the world of perfect information, in the real world, people can buy things that have less value than they anticipated and paid for.[145]

Since parties to transactions want to make good deals, they tend to incur transaction costs to acquire information about the object of the transaction. Parties to contracts make decisions—decisions to purchase goods, to lend money, to buy shares, to employ workers, and to acquire companies. Governments also make decisions predicated upon information. They too incur transaction costs in obtaining and processing that information. The key to understanding transaction cost functions involves an analysis of precisely why government and private parties spend money to acquire particular kinds of information.[146]

B. Transaction Costs as an Aid in Avoiding Bad Transactions

Recognition of the key role of information leads to identification of an important function of transaction costs—the purchase of information needed to avoid bad transactions. We refer to this function as the avoidance function. Disclosure requirements and due diligence, for example, add to the costs of a transaction; but, each helps the buyer avoid bad transactions. In a transaction costless world, transactions would occur instantaneously at no cost to the parties involved. But such unorchestrated, spontaneous transactions would result in regret, bad deals, and the possibility of misfeasance or malfeasance by the parties involved. Transaction costs slow down the process of transacting and provide a means for parties and the market system to sort out the good transactions from the bad. We illustrate this point with examples from private law and public law.

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144. *See* KREPS, *supra* note 4, at 264 (stating assumption of perfect information in a graduate textbook discussion of neoclassical economic model).

145. *See, e.g.*, E. ALLAN FARNSWORTH, CHANGING YOUR MIND: THE LAW OF REGRETTED DECISIONS 23–27 (1998) (describing lack of information as basis for regret and the reluctance of common law judges to accept this lack as a defense in contract cases).

146. Our point echoes one made by Professor Yoram Barzel almost thirty years ago: "The fact that many information situations have the potential for waste does not necessarily mean that waste occurs. If, in the aggregate, these actions produce a negative product, arrangements that successfully restrain them or reduce their impact will generate a positive return." Yoram Barzel, *Some Fallacies in the Interpretation of Information Costs*, 20 J. LAW & ECON. 291, 292 (1977).

1. Private Law

A real estate transaction offers perhaps the best example of transaction costs incurred to avoid bad deals.[147] Lenders commonly pay for credit checks of purchasers.[148] This delays closing, but it provides the information needed to know whether the buyer will likely repay the loan.[149] Lenders also require title searches.[150] This likewise takes time, but ensures that the homeowner has a clear claim to the real estate purchased, thereby making the collateral secure.[151] Buyers also commonly make their offers contingent upon inspection.[152] They then must undergo delay and expense to carry out this procedure. But the inspection provides sufficient information about the property to make it likely that its purchase will satisfy the buyer.[153] In short, a real estate transaction has a structure designed to transfer information among the parties and provide protection against bad transactions.

Business transactions also often involve fairly high transaction costs in order to avoid bad deals. Gilson argues that lawyers in corporate acquisitions reduce transaction costs.[154] Yet he starts from a premise that the client already has decided to devote significant resources to developing information about the target company.[155] In other words, the client has already made the decision to pay significant transaction costs to acquire the information needed to avoid an inefficient transaction. The lawyer will not suggest eliminating the transaction costs that the client must pay to get the information needed to perform the avoidance function. Rather, the lawyer will design the transaction to reduce the costs of acquiring the information needed. In other words, the client has already made the decision to pay significant transaction costs, and the lawyer then seeks to engineer the transaction so that the information performing the avoidance functions comes in as cheaply as possible.[156]

A good lawyer, however, might encourage a client less sophisticated than Gilson's to get more information than the client initially seemed interested in. If

147. *See* ROBIN PAUL MALLOY & JAMES CHARLES SMITH, REAL ESTATE TRANSACTIONS: PROBLEMS, CASES, AND MATERIALS, 32–34 (2d ed. 2002) (discussing a lawyer's role as a "risk manager" in real estate transactions).

148. *See id.* at 601–03 (discussing credit checks).

149. *See id.* (discussing assessment of ability and willingness to pay).

150. *See id.* at 361–65 (describing title searches and recording of debts).

151. *See id.* at 364 (discussing possibility that owner conveying land may not own it).

152. *See id.* at 170.

153. *See id.* at 169 (parties want a "degree of certainty" about the property's physical characteristics). *See generally id.* at 24–32 (discussing types of risks that real estate lawyers manage).

154. *See* Gilson, *supra* note 1, at 255 (identifying two problems in his analysis, how lawyers minimize transaction costs and how this minimization increases transaction value).

155. *See id.* at 257–70 (examining a typical corporate acquisition agreement that has been negotiated after target has been determined).

156. Gilson's analysis focuses on Type II transaction costs, those that arise in the course of a transaction, rather than Type I transaction costs, those that arise in determining which transaction to pursue. *See* Rose, *supra* note 35.

the client seemed inclined to proceed with an inadequate information base, the lawyer might recommend obtaining certain information needed to avoid problems he has seen in his corporate acquisition practice. This recommendation, if adopted, would raise transaction costs.

Surely, lawyers sometimes add cost to a transaction. Lawyers, however, have experience that enables them to spot potential future problems that a client might overlook. When they do this, they may raise transaction costs, but reduce the chances that the transaction will turn out to be a bad deal. Lawyers can be thought of as creators and providers of information. They serve an important function in the market for information.

The literature on game theory implicitly recognizes that transaction costs can aid the avoidance of inefficiency. For example, Professors Baird, Gertner, and Picker's book on game theory and law points out that the possibility of renegotiating a contract undermines the incentives to perform on a contract.[157] In other words, if each party to a contract knows that the other party may not sue on the contract but may be persuaded instead to renegotiate the terms of the contract, then each party loses some incentive to fully perform. If the parties could reduce or eliminate the possibility of renegotiation, the incentives to perform the original contract would be restored. Transaction costs that make it more difficult to renegotiate the contract would reduce the possibility of renegotiation and hence would be desirable from an efficiency perspective.[158] Baird, Gertner, and Picker point out that the parties can impose these transaction costs by introducing a term in their contract providing that "[i]f either of us seeks to renegotiate, we will pay a third party a large sum of money."[159] The problem with such a term is that the agreement with the third party could also be renegotiated if transaction costs are low enough.[160] One solution to this problem, the authors suggest, is to enter into these side deals with a number of third parties.[161] The authors conclude, "The high transaction costs in reaching an agreement with the diverse parties may provide the deterrent that ensures that renegotiations do not take place."[162] This example from game theory illustrates the theoretical benefits of transaction costs in preserving the efficiency of contract.

2. Procedural Due Process

The suggestion that business lawyers may create value when they raise transaction costs may seem counterintuitive. But the notion that we need more transaction costs at times enjoys a well-established place in our jurisprudence. In adjudicating procedural due process cases, the Supreme Court has repeatedly recognized that at times we need to add more transaction costs—more process—in order to reduce the risk of error.

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157. *See* DOUGLAS G. BAIRD, ROBERT H. GERTNER, & RANDAL C. PICKER, GAME THEORY AND THE LAW 116 (1994).

158. *See id.* at 117–18.

159. *See id.* at 118.

160. *See id.*

161. *See id.*

162. *See id.*

The United States Constitution forbids government deprivation of life, liberty, or property without "due process" of law.[163] The Supreme Court has developed a jurisprudence seeking to answer the question of what process is due before such a rights deprivation can occur.[164] This procedural due process jurisprudence employs a balancing test to answer that question.[165] The balancing test requires judges to assess the weight of the rights deprivation, the potential cost of additional process, and the potential value of additional procedures in deciding whether additional process is due.[166]

The Supreme Court frequently finds that some additional procedure is needed in procedural due process cases.[167] Often, the Court requires a hearing prior to deprivation of a property or liberty interest, even when the government has not required one in the past.[168] A hearing, of course, is a process decision-makers may use to acquire information prior to acting. It differs little from information gathering procedures that buyers might employ before engaging in private transactions. Purchasers of used cars usually hold an informal hearing before purchasing the car. They ask sellers questions about the condition of the car and consider written documents, such as service records and classified advertising, which the sellers have provided to motivate a favorable decision. If a buyer takes a car to a mechanic for inspection prior to purchase, the buyer has done something analogous to listening to an expert witness in a hearing, something which a judge might do before making a decision.

Under the Court's balancing test, a decision to add a hearing requirement or any other additional process involves a decision to raise the cost of potential procedure.[169] In other words, the Court raises transaction costs.

It does this for reasons that should sound familiar to readers of Gilson's pioneering work on transaction costs. If the government does not acquire adequate information, it may make an erroneous decision, just as a potential purchaser of a corporation can make an erroneous decision absent generation of adequate information about the value of a potential corporate acquisition. Indeed, the Court evaluates the "risk of error" in deciding whether to add additional transaction costs.[170] If the consequences of error are sufficiently serious, more transaction cost

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163. *See* U.S. CONST. amend. V, XIV.

164. *See, e.g.*, Mathews v. Eldridge, 424 U.S. 319, 335 (1976) (setting out factors relevant to judgment about what process is due).

165. *See id.*

166. *See id.*

167. *See, e.g.*, Goldberg v. Kelly, 397 U.S. 254, 260–61 (1970) (requiring a hearing prior to deprivation of welfare benefits).

168. *See, e.g.*, Connecticut v. Doehr, 501 U.S. 1, 18 (1991) (requiring a hearing prior to attaching real estate); Cleveland Bd. of Educ. v. Loudermill, 470 U.S. 532, 542 (1985) (requiring hearing prior to discharge of a civil service employee); Bell v. Burson, 402 U.S. 535, 540 (1971) (requiring a hearing prior to revocation of a driver's license); *Goldberg*, 397 U.S. at 260–61 (requiring a hearing prior to revocation of public assistance).

169. *See Mathews*, 424 U.S. at 347 (recognizing the "incremental cost" associated with providing hearings).

170. *See id.* at 335, 343–47 (evaluating the risk of error in decisions terminating disability benefits); *see also Doehr*, 501 U.S. at 12 (finding risk of erroneous deprivation of

may be appropriate in order to make sure that a good transaction results. The jurisprudence recognizes that absent sufficient information gathering, the decision may prove harmful and erroneous.[171]

In the context of due process, the Court has addressed the value of paying an attorney, the transaction cost used to introduce this Article.[172] It has recognized that counsel can help bring legal and factual information before the Court, which can improve the accuracy of the proceedings.[173]

Martha McCluskey, in criticizing recent legislative decisions that reduce transaction costs in worker's compensation schemes through modification of the rules governing attorney fees, points out that attorney fees pay for information about rights to benefits.[174] Limiting access to attorneys in order to reduce transaction costs, she points out, may limit access to benefits.[175] She provides examples of cases in which workers with apparently meritorious and quite serious claims failed to win a compensation award because they lacked the help needed to present a complex case adequately.[176] In other words, a bad transaction, an incorrect adjudication of a worker's compensation claim, occurred. McCluskey suggests that adequate attorney fees would make good transactions, i.e. accurate adjudication of claims, more likely.[177]

This avoidance function exists regardless of who pays the transaction costs. In many of the procedural due process cases, the Court has focused upon government burdens from additional process—i.e. public transaction costs.[178] But as the attorney fee examples suggest, private transaction costs, such as the fees a private party pays an attorney, can purchase information needed to avoid bad

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property interest from prejudgment attachment of real estate in an assault case "substantial"); Santosky v. Kramer, 455 U.S. 745, 764 (1982) (stating "fair preponderance of the evidence standard" creates a risk of erroneous deprivation of parental rights in child neglect proceedings).

171. *See* Jerry L. Mashaw, *The Supreme Court's Due Process Calculus for Administrative Adjudication in* Matthews v. Eldridge*: Three Factors in Search of a Theory of Value*, 44 U. CHI. L. REV. 28, 48 (1976) (stating the Court views "the sole purpose of procedural protections as enhancing accuracy"). *See, e.g.*, *Loudermill*, 470 U.S. at 543–44 (recognizing that firing prior to hearing might deprive employee of a livelihood, even when the inaccuracy on an employment application leading to dismissal turned out to be a mistake, rather than a lie justifying dismissal).

172. *See, e.g.*, U.S. Dep't of Labor v. Triplett, 494 U.S. 715 (1990); Walters v. Nat'l Ass'n of Radiation Survivors, 473 U.S. 305 (1985); Goldberg, 397 U.S., at 270–71.

173. *See, e.g.*, *Goldberg*, 397 U.S. at 270–71 ("Counsel can help delineate the issues, present the factual contentions in an orderly manner, conduct cross-examination, and generally safeguard the interests of the recipient.").

174. *See* McCluskey, *supra* note 70, at 738.

175. *See id.*

176. *See id.* at 864–65 (stating that worker without an attorney was unable to afford medical witnesses needed to win a case).

177. *Cf. id.* at 869–73 (explaining that the question of the appropriate level of attorneys fees depends on underlying normative judgments).

178. *See, e.g.*, *Mathews*, 424 U.S. at 347 (discussing the cost to the government, and thus the public, of providing a hearing).

transactions as well. In *Mullane v. Central HanoverBank & Trust Co.*,[179] the Court added private transaction costs on procedural due process grounds. In that case, the Court adjudicated the constitutionality of a statutory requirement that the trustee of a "common trust fund" provide notice of a judicial settlement of accounts through publication in a local newspaper.[180] The Court found that newspaper publication provided trust beneficiaries with constitutionally insufficient notice.[181] It required the Central Hanover Bank & Trust Company and other similarly situated private trustees to provide more costly and elaborate notice, at least in most situations, to safeguard a trust beneficiary's right to contest the settlement of accounts.[182] Even some of the cases mandating increases of public transaction costs on due process grounds increase private transaction costs indirectly. Cases forbidding state use of ex parte procedures presumably increase creditors' enforcement costs in the name of procedural due process.[183] Thus, the Court has recognized the desirability of increasing, at times, private as well as public transaction costs in order to generate sufficient information for a good decision.[184]

3. *Emissions Trading*

Commentators have often urged the reduction of transaction costs in the emissions trading context, but they often say little about their positive functions.[185]

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179. 339 U.S. 306 (1950).

180. *See id.* at 307–10.

181. *Id.* at 320.

182. *See id.* at 313–30.

183. *See, e.g.*, N. Ga. Finishing, Inc. v. Di-Chem, Inc., 419 U.S. 601 (1975) (invalidating statute authorizing garnishment without a hearing incident to a suit for debt collection); Fuentes v. Shevin, 407 U.S. 67 (1972) (invalidating clerk's sequestration of property on which installment payments were allegedly owed without a hearing); Sniadach v. Family Fin. Corp., 395 U.S. 337 (1969) (invalidating wage garnishment without a prior hearing incident to collection of a promissory note). *Cf.* Mitchell v. W.T. Grant Co., 416 U.S. 600 (1973) (upholding judge's sequestration of property on which installment payments were allegedly owed without a hearing). *See also* Connecticut v. Doehr, 501 U.S. 1, 16 (1991) (analyzing burden on private plaintiff in concluding that a hearing must precede attachment of real estate in an assault case).

184. *See also* Richard A. Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 J. LEG. STUDIES 399, 430 (1973) (reduction in litigation expenses can, at some point, increase error).

185. *See, e.g.*, Foster & Hahn, *supra* note 118, at 33, 35, 39 (suggesting disapproval of transaction costs); Goldschein, *supra* note 114, at 260 (suggesting approval of interstate or regional trades to reduce transaction costs); Robert W. Hahn & Gordon L. Hester, *Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. ON REG. 109, 149 (1989) (recommending reducing certain types of federal oversights of emission trades in order to reduce transaction costs and encourage cost savings); Marchant, *supra* note 114, at 644–45 (recommending eliminating federal approval of trades in order to reduce transaction costs); Sohn & Cohen, *supra* note 115, at 419–20, 431–32 (writing approvingly of efforts to reduce transaction costs in emissions trading); Robert N. Stavins, *Policy Instruments for Climate Change: How can National Governments Address a Global Problem*, 1997 U. Chi. Legal F. 293, 317 (one aim of trading regimes should be to keep transaction costs low); Stavins, *supra* note 108, at 145 (government can avoid creating regulatory barriers, such as preapproval requirements, that drive up the cost of trades).

A number of significant transaction costs arise because of the need to prevent bad transactions. They provide the information needed to distinguish between good and bad transactions.[186]

By a good transaction, we mean one that provides the public with at least as valuable a reduction in environmental harms as it would obtain without the transaction. Most trading proponents justify trading by claiming that it produces the same environmental harm reduction as would arise through non-tradeable permits at less cost.[187] So this definition flows from the underlying theory of trading. It also, in practice, governs many government decisions about the design of emissions trading programs.[188] Since trades rearrange government-imposed obligations to make environmental improvements,[189] one can, in principle, determine the value of the harm reduction the government has planned for. The rearrangement of obligations that parties bring about through trades should produce an equivalent or better environmental result.[190]

The need to avoid bad transactions motivates governments to examine emissions trades with public input before approving them in some contexts.[191] This was common, for example, in the trading programs preceding the 1990 Amendments to the Clean Air Act, which involved volatile organic compounds that are not susceptible to continuous emissions monitoring.[192] The need for government approval of each trade may seem odd to economists with vast experience in free markets and much less regulatory experience. Emissions trading involves a party purchasing a claim to an emissions reduction. But free market incentives would encourage both parties to make false claims as often as possible.[193] If one can exaggerate the value of credits, then buyers can sell credits that cost precious little to produce, and purchasers can get great value out of small outlays. The fundamental problem is that neither the buyer nor the seller care at all

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186. *See* Hahn & Hester, *supra* note 185, at 144 (transaction costs exist because of need to satisfy environmentalists that trades will not adversely affect environmental quality).

187. *See* Ackerman & Stewart, *supra* note 101, at 184 (suggesting estimating current aggregate pollution reduction requirements as the first step in creating a tradeable permit program).

188. *See, e.g.*, Approval and Promulgation of Implementation Plans: Michigan Emission Trading Program, 66 Fed. Reg. 9264, 9267 (proposed February 7, 2001) (to be codified at 40 C.F.R. pt. 52) (stating provisions in state trading program that might lessen environmental quality deemed unacceptable).

189. *See* Driesen, *supra* note 100, at 338 (emissions trading authorizes "trading around" of government-created obligations).

190. *See* Michigan Emission Trading Program, 66 Fed. Reg. at 9275 (emissions trading modifies an existing set of restrictions to authorize alternative restrictions that EPA views as collectively more stringent).

191. *See* Open Market Trading Rule, *supra* note 111, at 39,671.

192. *See id.*; Approval of Promulgation of Implementation Plans: Illinois Emissions Trading Program, 66 Fed. Reg. 52,343, 52,350 (October 15, 2001) (codified at 40 C.F.R. part 52) (recognizing that measurement difficulties create significant uncertainties in trading volatile organic compound emission reductions).

193. *See* Lisa A. Wainger et al., *Wetland Value Indicators for Scoring Mitigation Trades*, 20 STAN. ENVTL. L.J. 413, 420 (2001) (neither buyers nor sellers of credits are "quality-conscious").

about the quality of the product sold.[194] Anything that satisfies the government satisfies them.[195] By contrast, if a buyer purchases a pair of blue jeans, the buyer cares about the quality of the jeans, because she will wear them and experience frustration if they wear out, look bad, or shrink.[196] Manufacturers frequently care about the quality of goods in the ordinary sales context, because buyers will not purchase poor quality goods. But buyers of emission reduction credits will purchase poor quality credits, absent some kind of oversight. Hence, bad deals for the public will arise, unless the government establishes sufficient transaction costs to purchase information needed to distinguish good deals from bad. Insufficient transaction costs will tend to translate into widespread emissions fraud or other deals that may lessen environmental quality.[197] As the EPA explained in a 1995 federal register notice, "up-front" review sought to "avoid quality control problems" in the form of "paper trades."[198] Paper trades allow operators to escape an applicable emission control requirement in exchange for a claimed reduction that reflects no extra actual emission reduction.[199]

The first kind of information needed is quantitative. Does the amount of emissions reduced actually match the claims of parties selling credits?[200] Does the amount of the shortfall a purchaser aims to fill with credits really equal the extent of non-compliance at its facility?[201] Both of these questions require information to answer.[202]

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194. *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, 66 (1998) (emissions trading divorces interest in the quality of goods from desire to purchase).

195. *See id.* ("shoddy" emission credits are adequate for the purposes of companies involved in trades if the government accepts the credits).

196. *See id.*

197. *See, e.g.*, Approval and Promulgation of Implementation Plans: Michigan Emission Trading Program, 66 Fed. Reg. 9264, 9267 (proposed February 7, 2001) (to be codified at 40 C.F.R. pt. 52) (noting that credits for shutdowns and production slow downs can cause overall emissions in a trading program to increase beyond what they would be without trading).

198. *See* Open Market Trading Rule, supra note 111, at 39,671; Emissions Trading Policy Statement: General Principles for Creation, Banking and Use of Emission Reduction Credits, 51 Fed. Reg. 43,814, 43,817 (December 4, 1986).

199. *See* RICHARD A. LIROFF, AIR POLLUTION OFFSETS: TRADING SELLING AND BANKING 22 (1980) (offset policy can be a "meaningless paper game for abating pollution"); Driesen, *supra* note 100, at 314–16 & nn.120–127 (discussing the prevalence of paper credits under state offset, netting, and banking programs).

200. *See* Approval and Promulgation of Implementation Plans: New Jersey Open Market Emissions Trading Program: Revised Interpretation of Operating Permit Requirements for Emissions Trades, 66 Fed. Reg. 1796, 1801 (proposed January 9, 2001) (to be codified at 40 C.F.R. pt. 52) (discussing need to quantify amount of reductions a source may sell).

201. *See id.* (discussing need to determine "the amount of emissions by which a sources may be exceeding . . . its permit limits.").

202. *See id.* (referring to need to quantify emission reductions involved in trading).

At least where good information exists about baseline emissions,[203] continuous monitoring makes it easy to reliably answer both of those questions. For that reason, the acid rain emissions trading program has established a continuous emissions monitoring requirement, which imposes some private transaction costs on parties participating in that program.[204] The public transaction cost of debating and enacting the monitoring requirement, and the private cost of complying with the monitoring requirement, obviate the need for public monitoring of each proposed trade's quantitative value, since good monitoring makes real compliance extremely likely.

When good monitoring has not been available, regulators have sometimes allowed trading anyway.[205] In such cases, the government sometimes authorizes trades based on emissions estimates.[206] In these cases, abundant opportunities often exist to game the estimates. Buyers and sellers of credits have incentives to use estimating techniques that exaggerate the value of credits purchased. While government regulators should recognize that emissions trading is probably a bad tool where accurate emissions measurement is not possible or not required, they often do not.[207] But they sometimes, in such cases, require hearings so that regulators and the public can check the estimates and try to prevent trades based on incorrect quantification of credits or debits. Such hearings, while perhaps insufficient, perform the function of seeking information needed to avoid bad deals.

Another type of information involves qualitative information about the value of credits. While regulators often use quantitative values as the basis for emissions trading, the same quantity of emission reduction, land conserved, or effluent reduction often has different environmental value, depending on qualitative factors.[208] For example, wetlands of equivalent size and type can vary radically in their value as wildlife habitat, contributors to water quality, and as a

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203. In measuring any pollution reduction, one must know the emissions prior to the reduction in order to measure the amount of the reduction. Environmental policy-makers refer to this state prior to a reduction as the "baseline." *See* OAR GUIDANCE, *supra* note 113, at 162 (defining the term "baseline").

204. *See* 42 U.S.C.A. § 7651k(a) (West 2005).

205. *See* Approval of Promulgation of Implementation Plans: Illinois Emissions Trading Program, 66 Fed. Reg. 52,343, 52,350 (October 15, 2001) (codified at 40 C.F.R. part 52) (recognizing that measurement difficulties create significant uncertainties in trading volatile organic compound (VOC) emission reductions, while approving VOC trading).

206. *See* OAR GUIDANCE, *supra* note 113, at 67 (discussing estimation procedures).

207. *See* WILLIAM J. BAUMOL & WALLACE E. OATES, ECONOMICS, ENVIRONMENTAL POLICY, AND THE QUALITY OF LIFE 253 (1979) (stating that a pollution permit approach is only feasible if it is possible to effectively monitor pollution levels).

208. *See* Approval and Promulgation of Air Quality Implementation Plan: New Hampshire Discrete Emissions Reduction Trading Program, 66 Fed. Reg. 9278, 9280–81 (proposed January 9, 2001) (to be codified at 40 C.F.R. pt. 52) (approving of inter-pollutant trades when air quality has shown them to have equivalent impacts); James Salzman and J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607 (2000); Wainger et al., *supra* note 193.

means of controlling floods.[209] Equivalent acreage trades can be bad deals for the public.[210] For that reason, some analysts have recommended public involvement in assessment of qualitative factors when credits are used or banked in wetlands mitigation banking schemes.[211] Absent sufficient transaction costs to generate good qualitative information, bad deals could be very common.[212] Again, one might question the whole idea of allowing emissions trading in this context. But clearly trading in such a context without transaction costs aimed at generating sufficient qualitative information to inform public beneficiaries of the pollution reduction program creates opportunities for bad deals that are worse environmentally than no deals at all.[213]

This issue of quality often arises for geographic reasons.[214] At times, reductions in a pollutant in one area have more value than in another.[215] For example, reductions in urban smog in a big city will probably prevent more cases of lung disease than equivalent reductions in less populated areas.[216] For that reason, regulators have usually employed one of two options when confronted with the possibility of geographically problematic trades. They have sometimes restricted certain kinds of geographically undesirable trades up front.[217] At other times, they have required public approval of trades so that the regulators and the public can consider the geographic effects of particular proposed trades.[218] From

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209. *See* J.B. Ruhl & R. Juge Gregg, *Integrating Ecosystem Services into Environmental Law: A Case Study of Wetlands Mitigation Banking*, 20 STAN. ENVT'L L. J. 365, 366 (2001) (discussing flood control and water quality improvement functions); Wainger et al., *supra* note 193, at 424–26.

210. *See* Wainger et al., *supra* note 193, at 424–26 (explaining how an equivalent acreage trade may produce a bad deal for the public).

211. *See* Salzman & Ruhl, *supra* note 208, at 671–87.

212. *See* Wainger et al., *supra* note 193, at 471–72 (discussing data needs for wetlands mitigation banking).

213. *Cf. id.* at 415 (in practice, wetlands mitigation banking "often fails to provide wetland gains that offset wetland losses").

214. *See* Salzman & Ruhl, *supra* note 208, at 627–28 (discussing "nonfungibilities of space").

215. *See* DALES, *supra* note 99, at 79.

216. *See* Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356, 57,459 (1998) (codified at 40 C.F.R. pts. 51, 72, 75,96) (stating emissions in some areas may cause greater effects upon ozone levels than emissions in another). *See generally* WILLIAM J. BAUMOL & WALLACE E. OATES, THE THEORY OF ENVIRONMENTAL POLICY 179 (1988) (discussing need not to allow one-to-one trades between highly polluted and less polluted locations). *Cf.* Ruhl & Gregg, *supra* note 209, at 388 (discussing up-front geographic and qualitative restrictions for wetlands mitigation banking).

217. *See, e.g.*, 42 U.S.C.A. § 7503(c)(1) (West 2005) (authorizing offsets only from equally dirty areas). The Clean Air Act requires new and modified pollution sources to offset the emissions they add with purchase or production of an offsetting emission reduction. *See id. See also* 42 U.S.C.A. § 7511a(b)(5),(c)(10),(d)(2),(e)(1) (West 2005) (establishing requirements to provide greater offsets than added emissions in certain areas not meeting federal air quality standards for ground level ozone).

218. *See, e.g.*, Approval and Promulgation of Implementation Plans; Michigan Emission Trading Program, 66 Fed. Reg. 9264, 9268–69 (proposed February 7, 2001) (to be

an efficient markets standpoint, an *a priori* restriction might appear the better option, because it minimizes uncertainty. But sometimes a paucity of relevant information precludes making intelligent policy for a host of geographic or other qualitative problems before they arise.[219] Also, regulated parties who only care about reducing the cost of purchased credits often prefer high transaction costs to a restricted market in credits, which might raise prices or make credits unavailable for some projects. But a wide open market with insufficient transaction costs in this context invites bad deals.[220]

Responsible proposals to reduce transaction costs in this context will adequately serve the function that high transaction costs would otherwise serve.[221] For example, the acid rain program allows geographically distant polluters to trade without government approval of each trade. But the program contains several features that serve the functions that review of trades would otherwise perform. The Clean Air Act required the EPA to consider the desirability and feasability of a deposition standard, which could involve geographically specific cuts to address

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codified at 40 C.F.R. pt. 52) (requiring air quality modeling and review to make sure that trades don't cause violation of national ambient air quality standards because of geographic factors).

219. *See, e.g.*, Finding of Significant Contribution, 63 Fed. Reg. at 57,459–60 (declining to employ trading ratios when no party has justified particular trading ratios and geographic boundaries).

220. *See, e.g.*, Michigan Emission Trading Program, at 9269 (requiring public involvement to avoid toxic hotspots through trades of volatile organic compounds). While I write about this issue here in terms of simply having the information to make sure that planned environmental benefits are realized, this poses equitable issues as well. Even if the overall environmental impact of a trade is negligible or even positive, it may create equity issues. For example, trades can exacerbate already high levels of risk in minority communities. *See generally* OAR GUIDANCE, *supra* note 113, at 25–26 (identifying programs where economic efficiency issues do not overwhelm "equity issues among communities" as important to success). This paper contains a separate section on equity that does not use emissions trading examples. But equity does raise important issues in emissions trading. *Cf.* Driesen, *supra* note 194, at 71 (discussing geographic equity problems in emissions trading); David M. Driesen, *Choosing Environmental Instruments in a Transnational Context*, 27 ECOLOGY L.Q. 1, 11–12 (2000) (discussing problems of international equity in international emissions trading); 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); Stephen M. Johnson, *Economics v. Equity II: The European Experience*, 58 WASH. & LEE L. REV. 417 (2001); Stephen M. Johnson, *Economics v. Equity: Do Market-Based Environmental Reforms Exacerbate Environmental Injustice*, 56 WASH. & LEE L. REV. 111 (1999); Rachel Brasso Razon, Comment, *What is Good for the Market Can be Bad for Health: Emissions Trading Under SCAQMD Rule 1610 and the Unjust Environmental Effects*, 29 GOLDEN GATE U. L. REV. 539 (1999); Salzman & Ruhl, *supra* note 208, at 627(discussing toxic hot spot problems); Gerald Torres, *Who Owns the Sky*, 18 PACE ENVTL. L. REV. 227, 281–83 (2001) (raising general equitable issues with emissions trading). Some transaction costs facilitate needed attention to equitable issues in emissions trading.

221. *See generally* OAR GUIDANCE, *supra* note 113, at 21 (simple rules maximize cost effectiveness, but equity, environmental, and enforcement concerns may force "trade off" of some cost-effectiveness); Diller, *supra* note 78, at 495 (observing critics of government "red tape" often fail to examine why red tape is there).

an important local impact.[222] The Clean Air Act also authorizes states to make additional reductions in acid rain precursors to address local and regional health problems associated with these pollutants.[223] Because acid rain is the product of long range transport from far and wide, this solution has been rather satisfactory. A problem where local effects varied significantly depending on the geography of emissions reductions would probably need higher transaction costs to garner information about geographic effects,[224] unless the regulator can foresee and plan for significant geographic problems through trading restrictions.[225]

In short, transaction costs in the emissions trading context often perform important functions. One such function involves developing information to prevent bad transactions, transactions that worsen environmental quality. Transaction costs perform the function of helping their payers avoid bad transactions not just in the emissions trading context, but in a wide variety of contexts.

C. Transaction Costs Producing Efficient Transaction

Transaction costs also facilitate efficient transactions. In part, this facilitative function represents the flip side of the avoidance function. Since nobody wants to make bad deals, people may well eschew a transaction absent sufficient information.[226] Conversely, if transaction costs generate sufficient information to engender confidence in the value of a transaction, this encourages transactions.

Transaction costs facilitate transactions in several ways. First, payers of transaction costs often pay for information needed to realize a transaction. Second, buyers and sellers pay transaction costs that enable them to get together. Absent adequate transaction costs, they cannot get together with sufficient information to realize a transaction.

A variant upon an historical example illustrates our point. For many years, the settlers of Appalachian Kentucky had little contact with the market economy.[227] Because of this, they paid no transaction costs. Transaction costs were

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222. *See, e.g.*, Clean Air Act Amendments of 1990, Pub. L. 101-549, § 404 (codified at 42 U.S.C.A. § 7651(c) (West 2005)).

223. *See* 42 U.S.C.A. §§ 7511a(c)(2)(C), 7513a(e), 7651*l* (West 2005).

224. *See generally* WESLEY A. MAGAT, REFORM OF ENVIRONMENTAL REGULATION 104–05 (1982) (explaining how uncertainty about tradeoffs tends to generate high transaction costs).

225. *See, e.g.*, Approval and Promulgation of Implementation Plans; Michigan Emission Trading Program, 66 Fed. Reg. 9264, 9269 (proposed February 7, 2001) (to be codified at 40 C.F.R. pt. 52) (discussing rules to address unpredictable choices about which hazardous air pollutants to trade in a volatile organic compound emissions trading program).

226. We recognize that in some circumstances buyers may respond to uncertainty about the value of a good or service by offering a lower price. But if the seller knows that the product is worth more than the buyer offers, no deal will result. Also, many buyers will simply forego a purchase to avoid hassle if information is inadequate, regardless of price.

227. *See* HARRY CAUDILL, NIGHT COMES TO THE CUMBERLANDS 36 (1962) (referring to the "ancient . . . agricultural and hunting life" that preceded the development of "a cash economy").

zero, and there was no market. The settlers lived far up in the hills, farmed their land, and generally bought nothing.[228]

Assume at that time that the price of clothing milled in the towns was low enough so that a farmer would gladly buy it if a peddler showed up on his land. Since no peddler showed up, however, the farmers did not know of the possibility, and no market exchange took place.[229]

At some point, however, farmers did begin to purchase clothing made elsewhere. Let us assume that peddlers began to show up, so that farmers became aware of the opportunity to buy clothing.[230] In this scenario, actual expenditures upon transaction costs have risen to the point where a market is possible. Under the prior subsistence regime, actual expenditure of transaction costs (zero dollars) had been too low to permit a market.

Our suggestion that transaction costs can be too low to permit efficient markets will appear very counterintuitive to most economists. They would probably say that during the time of subsistence, transaction costs were too high to permit the development of markets. In saying this, however, they speak not of actual expenditures upon transaction costs, but of phantom transaction costs. That is, they imagine a different market than the one that exists, the market of the peddler and store bought clothing. Since this market does not exist, the cost of trading may be too high to permit it. Phantom transaction costs, not actual expenditures, are too high.

One can make some assumptions that would validate the picture this phantom draws. Travel into the hills of Appalachia was too expensive. Nobody could afford this clothing if the price must also include the cost of paying peddlers to carry the clothing up the rocky sides of rivers to the farms.[231] But once the railroad came (or the cars, or the bicycles), the transaction costs dropped and a viable market came into being.[232]

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228. *See generally id.* (referring to agriculture and the lack of a cash economy).

229. This particular example of peddlers varies from the actual history of peddling in Appalachia in order to provide a hypothetical illustration of this Article's conceptual argument. In *Night Falls Comes to the Cumberlands*, Harry Caudill explains that peddlers became merchants when coal mining gave birth to towns. *Id.* at 108–09. Increased transaction costs devoted to transportation played a significant role in the development of a market economy in the Appalachian economy, as this illustration suggests. MARY JEAN BOWNMAN & W. WARREN HAYNES, RESOURCES AND PEOPLE IN EAST KENTUCKY 256 (1963). But the particular illustration of that concept through peddling comes not from history, but from the desire to provide a concrete example that makes the concepts of the article clear.

230. *See generally* CAUDILL, *supra* note 227, at 108–09 (discussing peddlers in Appalachia).

231. *See* ROBERT S. WEISE, GRASPING AT INDEPENDENCE: DEBT, MALE AUTHORITY, AND MINERAL RIGHTS IN APPLACHIAN KENTUCKY, 1850–1915, at 103 (2001) (discussing poor transportation and rugged terrain as obstacles to "free distribution of goods and hard money").

232. BOWMAN AND HAYNES, *supra*, note 229 at 256 (discussing the relationship between transportation infrastructure and market development in Eastern Kentucky).

If one assumes perfect information and rational profit-maximizing behavior, then this picture must be correct. This phantom comes to us from the world of perfect markets.

But institutional economics teaches that people and organizations live in a world of bounded rationality.[233] They cannot possibly pay attention to everything, so they develop rules of thumb to guide what they will pay attention to.[234] Thus, the merchant in town might pay attention to his neighbors within the town, his suppliers, and his family, but devote no attention at all to the possibilities for peddlers and farmers.

It might be that the phantom cost, the cost the shopkeeper would have paid to send a salesman into the hills during the subsistence period, equals the real transaction cost that a different shopkeeper finally does pay to send a salesperson up into the hills during the time of trade. In that case, the phantom transaction cost remains constant and cannot explain anything. The time of subsistence ended when actual transaction costs rose to a level sufficient to create a market. This means that the market involving the farmers did not exist because actual transaction costs were too low, not too high. Only when transaction cost expenditures became high enough did we have a market involving the farmers.

When Coase defines transaction costs as the costs of using the market mechanism, he understates this point. No market mechanism exists to be used without the expenditure of transaction costs. When transaction costs become too low, markets cease to function. People make transactions across time (contract) and space (peddler) when they spend sufficient transaction costs to realize an exchange.

Another way of appreciating the role of transaction costs in creating markets is to think of transaction costs as part of a side transaction—payment for a good or service that only exists to aid another transaction. The merchant in our example may pay the peddler to carry goods into the hills. This payment, if rational, would imply that the merchant derives some benefit from the payment of this transaction cost. That benefit would be the opportunity to complete beneficial transactions that would not occur but for the payment. Indeed, the traditional assumption of neoclassical economics, perfect information and rationality, if applied to the side transaction, would justify an assumption that transaction costs purchase benefits at least commensurate with the transaction cost. Thus, they aid,

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233. *See* DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE, AND ECONOMIC PERFORMANCE 109 (1990) ("Rational ignorance is not just a buzzword of the public choice literature. Not only could the voter never acquire the information to be even vaguely informed about the myriad bills that affect his or her welfare, but there is no way that the constituent . . . could ever possess accurate models to weight the consequences."); Brody, *supra* note 6, at 472 (stating that because of "bounded rationality one cannot know everything one needs to know in order to make a decision"); KREPS, *supra* note 4, at 744–47, 771.

234. *See* Timothy F. Malloy, *Regulating by Incentives: Myths, Models, and Micromarkets*, 80 TEX. L. REV. 531, 556 (2002) (human attention is a scarce resource, which must be selectively allocated).

rather than impede, efficient bargains, at least under standard neoclassical assumptions.

Information and information asymmetries play a crucial role in both creating markets and showing that transaction costs create markets. If the town merchant is unaware of potential customers in the hills, he might pay the peddler for information about these customers. This payment might be essential to the transaction. Indeed, the peddler, when he shows up in the hills, provides information about the goods to the customers that would be otherwise unavailable. The development of markets in this example rests on the differences in information among parties and intermediaries. Trade was hampered because parties were not aware of the existence of potential trading partners. This variant of our example underscores the basis of transaction costs in problems of acquiring and assessing information. But even where the payer of transaction costs obtains something other than information, such as physical access to known customers, it helps create transactions that otherwise might not exist.

We do not mean to deny that high transaction costs can sometimes impede transactions. But that possibility does not distinguish transaction costs from production costs or any other cost. If production costs for a particular good are high, few people may purchase that good. Nevertheless, nobody argues that we should eliminate production costs. We recognize that we need production costs to produce goods. We also need transaction costs to sell them in a market.

Transaction costs make possible efficient transactions that otherwise would not occur. Indeed, markets would perish without them.

D. Transaction Costs as a Supplier of Dignity and Equity

Because public policy involves more than just efficiency, transaction costs sometimes play a role in realizing other values. Transaction costs aid the realization of equitable goals. For example, transaction costs incurred to provide an individual with a hearing may make the process more fair and help ameliorate the loss of dignity that can occur when the government makes coercive decisions depriving an individual of a significant liberty or property interest.[235] Many transaction costs under CERCLA serve the function of equitably apportioning liability.[236] They pay for information that may influence EPA decisions allocating

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235. *See* Mashaw, *supra* note 171, at 48–50.

236. *See* Dahlquist, *supra* note 96 (discussing in detail the equitable factors that govern apportionment of liability). *See also* Van Cleve, *supra* note 95, at 10134 n.2 (defining transaction costs as costs "incurred in resolving" liability disputes).

responsibility for cleanup among PRPs and/or subsequent contribution actions,[237] which take equitable factors into account.[238]

Understanding that achieving equity often requires payment of transaction costs aids description of legal systems because policy often takes equity into account. Of course, some law and economics scholars have argued that fairness has no value.[239] For scholars who believe that fairness has no value, transaction

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237. Meghrig v. KFC Western, Inc., 516 U.S. 479, 485 (1996) (stating CERCLA authorizes one PRP to sue another for contribution); Key Tronic Corp. v. United States, 511 U.S. 809, 816 (1994) (discussing how Congress incorporated common law contribution actions into CERCLA). *See generally* Lewis A. Kornhauser & Richard L. Revesz, *Settlements Under Joint and Several Liability*, 68 N.Y.U. L. REV. 427, 436–37 n.36 (1993) (citing to cases and statutory provision establishing the right of contribution and comparing it to other federal common law addressing contribution).

238. *See* Carson Harbor Vill., Ltd. v. Unocal Corp., 270 F.3d 863, 884 (9th Cir. 2001) (en banc) (discussing enforcement policy and statutory provisions seeking to avoid a "parade of horribles"); B.F. Goodrich Co. v. Murtha, 958 F.2d 1192, 1205 (2d Cir. 1992) (EPA only enforces against large contributors or PRPs with capacity to pay); *Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) S. 51*, *reprinted in* A LEGISLATIVE HISTORY OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (1990) 468 (testimony of EPA Administrator Lee Thomas) (discussing information gathering to determine the "full *extent* of liability" in the context of settlement (emphasis added)); Many courts employ the "Gore factors," named after a proposal of then-Senator Albert Gore, to apportion liability among PRPs in contribution actions. Dahlquist, *supra* note 96, at 11099. These factors include (1) the ability of the parties to demonstrate that their contribution to a discharge, release, or disposal of hazardous waste can be distinguished; (2) the amount of hazardous waste involved; (3) the degree of toxicity of the waste; (4) the degree of involvement by the parties in generation, transportation, treatment, storage or disposal of the waste; (5) the degree of care exercised by the parties with regard to the waste involved, taking into account the characteristics of the waste; and (6) the degree of cooperation by the parties with government officials to prevent harm to public health and the environment. *See* United States v. Colorado & E.R.R., 50 F.3d 1530, 1536 n.5 (10th Cir. 1995). This list of factors, however, is not exclusive. *See id.* at 1536 (courts may consider the "totality of the circumstances"); Dahlquist, *supra* note 96, at 11099 (describing non-Gore factors frequently considered by district courts). *Cf.* McGee, *supra* note 95, at 174 (suggesting that EPA inequitably pursues large companies with "deep pockets" more agressively than waste generators most responsible for hazardous waste). McGee notes, however, that parties with deep pockets have ameliorated this unfairness by bringing contribution actions against other PRPs, while suggesting that putting big companies in a position where they need to sue is unfair. *See id.*

239. *See* LOUIS KAPLOW & STEVEN SHAVELL, FAIRNESS VERSUS WELFARE 49 ("A priori, a welfare economic approach to policy assessment would seem superior to one based on notions of fairness to the extent that the former reflects a complete consideration of factors that plausibly seem relevant and the latter does not."). For criticisms, see Howard Chang, *A Liberal Theory of Social Welfare: Fairness, Utility, and the Pareto Principle*, 110 YALE L. J. 173, 209–22 (2000) (demonstrating how fairness can be reconciled with welfarism); David Dolinko, *The Perils of Welfare Economics*, 97 NW. U. L. REV. 351, 371–74 (2002) (showing that Kaplow & Shavell's argument is blatantly circular); Daniel A. Farber, *What (If Anything) Can Economics Say About Equity?*, 101 MICH. L. REV. 1791, 1814–21 (2003) (criticizing Kaplow & Shavell's narrow definition of equity and demonstrating a richer tradition within economics that addresses the issue of fairness) Ward Farnsworth, *The Taste for Fairness*, 102 COLUM. L. REV. 1992, 1993 (2002) (arguing that

costs spent to achieve fairness may be considered waste, but they should be explicit that they constitute waste only because of a normative judgment about fairness' value. Many law and economics scholars, however, do not believe that efficiency is the only value that public policy should take into account. For scholars who believe that public policy should sometimes take equity into account, these costs may be purchasing something of value that should be considered. In either case, the clarity of law and economics analysis would benefit from explicit recognition of transaction costs' role in generating information needed to achieve equitable goals.

In sum, transaction costs purchase something of value to the purchaser. They allow the avoidance of inefficient or unfair transactions and increase the likelihood of fair and efficient transactions.

III. WHITHER TRANSACTION COST MINIMIZATION?

Since transaction costs purchase something of value, either access to a welfare enhancing exchange, information necessary to avoid bad deals, or equity, we ought not reflexively eliminate them. Our theory recognizes that elimination of some transaction costs might prove desirable. For example, if a particular transaction cost serves no function at all, it constitutes waste and deserves elimination. But as we have explained, under standard neoclassical assumptions, people usually have reasons for spending money on side transactions, so transaction costs will often perform some function. Even in the government context, people usually create administrative processes to perform some functions.[240] While processes can outlive their usefulness, eliminating them without analyzing their utility for the purposes they were designed for constitutes error.[241] This part addresses the implications for legal theory of taking the transaction cost functions that we have described into account.

We begin by arguing that legal scholars should take the benefits that transaction costs purchase into account. We then explain how identifying the particular functions that transaction costs play can aid analysis. We offer our views on when transaction cost reductions will prove desirable, even when functions are taken into account. Finally, we explain why using a comparative functional transaction cost analysis aids legal theory, while noting some of the limitations transaction cost analysis faces as a method for choosing legal rules.

A. Taking the Corollary Benefits Transaction Costs Purchase Into Account

Legal scholars and policy-makers must take transaction cost functions into account in deciding whether to reduce or increase transaction costs. We have already explained that payers of transaction costs obtain information that allows them to facilitate efficient transactions, avoid inefficient transactions, and make

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notions of fairness and justice have a legitimate place in legal policymaking even within a welfare maximizing perspective).

240. *See* BARRY BOZEMAN, BUREAUCRACY AND RED TAPE 8 (2000) (red tape arises from demands for accountability for government officials).

241. *See id.* at 124 (explaining that the objective a rule is meant to serve can change, thereby making a perfectly good rule into useless red tape).

decisions advancing equity. It follows that policy-makers and scholars should consider the possibility that reducing transaction costs might make transactions less efficient or less equitable because reducing (or eliminating) transaction costs can reduce (or eliminate) the corollary benefits.

B. Identifying the Functions of Particular Transaction Costs

Identifying the functions transaction costs serve involves inquiring into why parties pay these costs and what they hope to get from them. Many transaction costs arise because people decide that they need information in order to make decisions. We can begin by noticing what sorts of information the transaction costs generate. We can then ask ourselves, why are they generating this information? Who will use the information and for what purpose? What values of decision-makers, whether buyers or public officials, create the demand for this information? Answers to these questions will reveal the functions particular transaction costs serve.

For example, a person considering the purchase of a used car may ask an auto mechanic to inspect a promising vehicle. She does this in order to make sure that she knows whether the vehicle has serious defects before purchasing it. She will use this information to decide whether to purchase the vehicle and what price to pay. The prospective purchaser wants to make sure that she gets a vehicle that meets her needs and has a value at least equal to the price. In other words, this sort of transaction cost aids in the avoidance of bad transactions.

Some PRPs involved in Superfund sites spend vast sums of money trying to figure out who dumped what and why. This information can inform equitable decisions apportioning liability in contribution actions. The law makes such information relevant to these actions to facilitate equitable apportionment of liability. This transaction cost aids equitable decision making. This information method facilitates understanding of transaction cost functions for particular transaction costs.

This information method provides a useful framework, but we need to say a little more about its limitations, its needs, and its value. First, it does not directly address transaction costs that have nothing to do with generating information. Since so many significant transaction costs arise from informational needs, this method would prove very helpful, even if this limitation prevented its use in other contexts completely. But analogues to this method will apply even outside of a purely informational context. For example, this method does not address enforcement costs directly. An analog of this method, however, might function adequately in non-informational contexts. Just as we ask who needs information for what purpose, we might ask who needs enforcement and for what purpose.[242] We acknowledge that legal theory needs more work on how to reliably and precisely identify transaction costs functions, but we have offered a useful first cut.

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242. Furthermore, in practice enforcement will involve substantial information acquisition costs.

C. When is Transaction Cost Reduction Desirable

Transaction costs should remain in place, at least when they purchase benefits sufficient to justify them. Eliminating transaction costs poses risks of eliminating or impairing valuable functions. Indeed, at times we may need to raise transaction costs in order to avoid bad transactions.

For example, one could eliminate the transaction costs that contribution actions generate under Superfund by requiring that costs be evenly divided among all solvent parties thereby making costly determination of relative fault irrelevant. But this would impair the capacity of Superfund to adjust unfair outcomes. One could also simply convert Superfund to a public works program with no liability for polluters, but one must consider whether this impairs fairness by shifting the cleanup burden from those with some connection to a particular pollution site to taxpayers. Thus, eliminating transaction costs by purchasing a fairness benefit is only worthwhile if one determines that the fairness benefit is less valuable than the cost reduction.

While scholars sometimes endorse eliminating transaction costs, they more frequently write about the desirability of "minimizing" them or "reducing them as much as possible." We believe that those locutions reflect a view that some level of transaction cost is inevitable. The question then might be what is the optimum level?

Theoretically, the notion that transaction costs are inevitable is wrong. We can, for example, eliminate the licensing costs associated with copyrighted material by eliminating a copyright. This would eliminate the transaction costs by eliminating the transactions that generate them. The inevitability idea must reflect a view that we must pay some transaction costs to realize some benefits. If we wish to trade with people living far away, we must pay the transaction costs necessary to bring them together. If we think that intellectual property rights aid the production of intellectual work, then we must set up regimes generating sufficient transaction costs to make the needed transactions viable.

We want to bring the parties to transactions together as cheaply as possible. In that sense, we do want to minimize transaction costs. But we want to reduce them to the lowest level needed to perform the function of facilitating sufficient communication to realize beneficial transactions. We do not really mean that we want to, or should, eliminate transaction costs. We mean that we want to realize transaction cost functions that we find important at the lowest possible price.

A number of legal rules can be explained by using information tracing to identify the function of a transaction cost, and recognizing why courts or legislatures might choose to increase, rather than minimize, transaction costs. Parties negotiating contracts often use ambiguity to lower transaction costs. Ambiguous language can hide issues that might otherwise require lengthy negotiation to resolve.[243] Yet courts, as a matter of policy, sometimes discourage

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243. *See* Eric A. Posner, *The Parol Evidence Rule, the Plain Meaning Rule, and the Principles of Contractual Interpretation*, 146 U. PENN. L. REV. 533, 560 (1998) (stating that different treatment of ambiguous terms and incomplete terms rests on differences in

such ambiguity by holding that ambiguities will be construed against the drafters of documents.[244] This policy of construing ambiguity against drafters may raise transaction costs by encouraging clearly drafted documents that might raise issues requiring negotiation to resolve. But it promotes beneficial transactions that permit the transfer of information about terms that the non-drafting party may not have recognized as ambiguous. The rule encourages efficient transactions by generating sufficient transaction costs to allow a good deal based on adequate information. Courts raise transaction costs because the corollary benefits may justify the increased transaction costs encouraged by a penalty rule.

This does not negate the value of trying to eliminate useless transaction costs where they exist.[245] But transaction costs often pay for something of value, and therefore may not merit elimination or even reduction in many circumstances.[246]

D. Using Functional Transaction Cost Analysis to Aid Legal Theory

Careful thinking about when a transaction cost minimization rationale justifies existing legal rules or legal reforms requires some additional elements. Neil Komesar has emphasized one such element, the need for comparative analysis. Our functional approach aids that kind of analysis. We also believe that recognition of the limits of transaction cost analysis is needed. We take up both of these issues in turn.

1. On the Need for Comparative Analysis

Transaction cost analysis has often been one-sided. It looks at the desirability of reducing private transaction costs or public transaction costs, but rarely examines the tradeoff between the two. But selection of legal rules often entails raising some transaction costs in order to lower others.

This problem permeates some of the literature on privatizing, devolving, or reducing social services. The literature decries the "red tape" involved in administering social services (what we call public transaction costs), but does not look as seriously at the public or private transaction costs associated with a proposed alternative.[247] In emissions trading, the converse sometimes occurs. The

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transaction costs); Alan O. Sykes, *"Bad Faith" Breach of Contract By First-Party Insurers*, 25 J. LEG. STUD. 405, 430 (1996) (stating that ambiguity in terms of a contract explained by transaction costs).

244. *See* JOHN D. CALAMARI & JOSEPH M. PERILLO, THE LAW OF CONTRACTS § 3.10 (4th ed. 1998) (discussing treatment of ambiguities in contract); Posner, *supra* note 243, at 560 (arguing for strict treatment of ambiguities under parol evidence rule).

245. *See* BOZEMAN, *supra* note 240, at 10–12 (defining red tape as rules serving no function and suggesting that such rules deserve elimination).

246. *Cf.* Calabresi, *supra* note 6, at 1220 (arguing that Pareto superior moves eliminating transaction costs are unlikely to exist).

247. *See, e.g.*, McCluskey, supra note 80 (while advocates of welfare reform touted reductions in "federal red tape," devolution has augmented state "red tape"); *see also* BOZEMAN, supra note 240, at 125–26 (contrasting view of privatization as the only solution to "red tape" with questions about whether private organizations might, in some circumstances, have more red tape than government). *Cf.* Manjusha P. Kulkarni et al.,

literature usually decries the private transaction cost in the trading regime, but evinces little concern about the public transaction cost involved in monitoring trades.[248] The better economists have recognized for many years that these transaction costs justify refusing to establish trading regimes in many contexts.[249] But some trading proponents ignore these concerns.

The analysis of problems on the borderline between public and private functions especially needs the kind of functional analysis we have called for, with a twist. These days, recommendations to privatize formerly public functions abound.[250] But private entities' profit motives may disserve relevant public functions.[251] Thus, for example, privately operated prisons may have much more interest in efficiently warehousing prisoners than in safeguarding constitutional rights or providing rehabilitation.[252] Often efforts to address these problems involve creating public and private transaction costs to align private incentives with public needs.[253]

A similar problem arises in emissions trading. Private parties want the cheapest trade, not the trade that most surely safeguards the environmental harm reduction obligation being traded.[254] Government should impose sufficient transaction costs to address this problem, although transaction costs may appropriately be less for trading of some pollutants than of others.

This need to generate transaction costs to align private incentives with public goals should form part of the analysis of privatization schemes.[255] And

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Public Health and Private Profits: A Witch's Brew, 35 Clearinghouse Rev. 629, 640 (2002)(discussing state payments to a managed care company for administrative expenses).

248. *See, e.g.*, Marchant, *supra* note 114, at 644–48.

249. *See, e.g.*, BAUMOL & OATES, *supra* note 216, at 190 (ideal package includes a mixture of regulatory instruments); DALES, *supra* note 99, at 98 (emissions trading is impracticable for diffuse pollution); Hahn & Stavins, *supra* note 101, at 15 ("The best set of policies will typically involve a mix of market and more conventional regulatory processes.").

250. *See, e.g.*, OSBORNE & GABLER, *supra* note 79 (giving numerous examples of privatization); Savas, *supra* note 77 (advocating and giving many examples of privatization).

251. *See, e.g.*, *Prisons*, *supra* note 79, at 1883–84 (discussing examples of private prisons that suffered loss or threatened loss of their contracts after serious problems surfaced in their prisons).

252. *See id.* at 1887 (citing reports of private prisons housing maximum-security prisoners with the general population). Nevertheless, a recent Harvard Developments note concluded that private prisons perform reasonably well and can prove more responsive to problems than public prisons in some circumstances. *See id.* at 1886–87. But the note linked this to government caring about activities in prison, and to effective monitoring. *See id.* at 1886–90.

253. *See id.* at 1874 (referring to government costs in preparing and monitoring contracts with private prisons).

254. *See* David M. Driesen, *Does Emissions Trading Encourage Innovation*, 33 ENVTL. L. REP. 10094, 10097 (2003); Driesen, *supra* note 194, at 42; Malloy, *supra* note 234, at 542–43.

255. *Cf.* Savas, *supra* note 77, at 1737 (identifying an essential task as managing private participation in delivery of public services in ways that "protect public interests" while still allowing a reasonable return on investment); *cf. also* Beerman, *supra* note 81, at

recognizing the functions that transaction costs perform will help here in reverse. Analysts can identify the information needed to perform crucial public functions and consider the transaction cost that must be added in deciding whether a privatization alternative is worthwhile, and how to design potentially worthwhile privatization initiatives.[256]

Notice that comparative analysis requires the creation of phantoms. One must compare a regime's current transaction costs to those of a proposed reform regime to know whether a recommended reform is desirable. While there has been some criticism of the use of phantoms that are really phantasmas—constructs that would never come into existence in the real world no matter what the legal regime[257]—some careful use of phantoms is essential to comparative analysis.

And in comparing public to private solutions to problems, analyzing the kinds of information public entities and private bodies might need to make good functional decisions constitutes an important first step. Indeed, this approach can explain some fundamental features of public law.

Transaction cost analysis employing the functional information approach that we have developed can help explain the preference for public law in some areas and private law in others, and even choices about which public entities have what roles. In this way, it can extend previous work on comparative analysis by Dixit, Cooter, and others.[258]

For instance, in the nuisance example, if the size of the population affected by the alleged nuisance or the number of entities producing the alleged nuisance is large, the transaction costs of negotiating and resolving the conflict may prevent private bargaining. It may also make judicial resolution awkward because the transaction costs involved in making clear the precise effects of many pollution sources on many people may challenge the capacities of courts.[259] While

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1553–56 (expressing concern that absent application of the Freedom of Information Act and the Administrative Procedure Act to private entities and government contracts with them, government accountability may diminish); Louise G. Trubek, *Old Wine in New Bottles: Public Interest Lawyering in an Era of Privatization*, 28 FORDHAM URB. L.J. 1739, 1746–49 (2001) (describing methods for assuring accountability in privatization). *See also* Barbara L. Bezdek, *Contractual Welfare: Non-Accountability and Diminished Democracy in Local Government Contracts for Welfare-to-Work Services*, 28 FORDHAM URB. L.J. 1559 (2001); Jody Freeman, *The Private Role in Public Governance*, 75 N.Y.U. L. REV. 543 (2000) (discussing accountability issues in privatization from an administrative law perspective).

256. *See, e.g.*, JOHN A. O'LOONEY, OUTSOURCING STATE AND LOCAL GOVERNMENT SERVICES: DECISION-MAKING STRATEGIES AND MANAGEMENT METHODS 31 (1998) (discussing need to design and monitor effective service contracts).

257. *See* Farnsworth, *supra* note 3, at 421 (arguing that courts may have ignored much of the transaction cost thinking in nuisance literature, because they know that litigants will not negotiate away rights after judicial resolution of nuisance claims).

258. *See* ROBERT COOTER, THE STRATEGIC CONSTITUTION 53 (2001) (treating the cost of bargaining among political factions as transaction costs); AVINASH DIXIT, THE MAKING OF PUBLIC POLICY: A TRANSACTION-COST POLITICS PERSPECTIVE (1996) (treating the cost of making and enforcing bargains between voters and elected officials about policy as transaction costs).

259. *See* KOMESAR, *supra* note 14, at 22 (noting that "as the number of parties increase" judicial tasks become "more difficult").

a legislature can develop information to appreciate the broad contours of such a problem, the friction associated with legislative processes and the limits of legislative information gathering may preclude detailed resolutions of such problems. This may help explain both why legislatures have a prominent role in addressing environmental problems and why agencies make a lot of the detailed implementation decisions.[260] A transaction cost analysis of public law using the tools we have developed would extend beyond the question of aggregation to issues of internal dynamics and workings of agencies and other political institutions.

2. On the Limits of Transaction Cost Analysis

Finally, transaction cost analysis cannot tell us whether transactions (including public decisions) are desirable. The idea of undesirable transactions played a key role in our analysis of transaction cost functions in part two. This idea may seem trivial. Everybody who has bought a used car knows about the possibility of transactions that do not bring net benefits to the purchaser. And the literature on externalities recognizes that market transactions can prove socially undesirable, even when they provide net benefits to a limited set of participants.[261] For some consequences of a market transaction do not concern the parties to the transaction and remain external to it (hence, the word externalities). Pollution is often cited as an example of an externality. Public decisions can also go awry and produce counterproductive results. But the idea that market transactions are inherently desirable seems to loom large in the law and economics literature, and plays a large and detrimental role in cutting off critical thought about just when minimization of transaction costs adequately justifies legal rules.

For example, take fair use. We have already pointed out that some courts have treated evidence of a functioning market for a particular use as sufficient to defeat a fair use claim—on the theory that high transaction costs causing market failure do not exist. But the point that transaction costs have dropped to a level where they can function in ways that deliver some benefits to the user and the copyright holder, i.e. that they aid efficient transactions, cannot tell us whether these transactions are desirable for society as a whole. To know this we must know whether efficient market mechanisms serve society's goals well in a particular context.

Transaction cost analysis cannot tell us whether copyright is a desirable institution in general, or in a particular situation. Decisions about fair use implicate fundamental institutional choices. A decision that a use does not fall within the doctrine allows the market, or more precisely, the copyright holder, to regulate the use. A would-be user must pay the copyright holder in order to carry out a desired use. And the copyright holder can employ the power of the state to force a user to desist, unless the use is carried out within the terms of a license. A decision that a use falls within the fair use doctrine's scope removes that use from the control of

260. *See* David M. Driesen, *Loose Canons: Statutory Construction and the "New" Nondelegation Doctrine*, 64 U. PITT. L. REV. 1, 66 (2002) (explaining that information problems often lead Congress to delegate authority to administrative agencies).

261. *See, e.g.*, KOMESAR, *supra* note 14, at 102–05.

the copyright holder and the market, creating a true laissez-faire situation in which the user can make use of the material without interference by the copyright holder or the state. It is a decision between an open access and a private property regime.[262]

While transaction cost analysis can play some role in such a regime choice, it cannot by itself determine when fair use is desirable. Clearly, decisions about the scope of fair use implicate equitable considerations. For example, we may wish to subsidize education or research by exempting some activities associated with it from the expense of copyright licensing.[263] And the question of fair use implicates the broader question of whether a free sharing of information or a regime predicated upon profitable property rights best spurs creativity in a particular realm.[264]

The advent of digital technologies makes the issue of the proper role of transaction cost minimization especially salient. The point is often made that in digital environments the cost of negotiating a copyright license is low, suggesting that fair use should be fairly narrow or perhaps non-existent. In digital environments, courts have seemingly narrowed the scope of fair use, reasoning that the copyright owner has the right of first entry into the digital market for copyrighted works.[265] However, such reasoning assumes that transacting with the copyright owner in a low transaction cost environment facilitates the creation of markets for the digital versions of the copyrighted work. This conclusion ignores the issue of whether courts should limit a copyright owner's power to shape private transactions and markets.

In short, analysts must take transaction cost function into account. Doing so implies that transaction cost reduction is not always justified. Careful comparative institutional analysis, as described above, will aid analysis of the question of when elimination might be justified. Finally, a caveat, neither transaction costs nor transaction cost functions are everything.

CONCLUSION

Transaction costs purchase corollary benefits. This means that we cannot reflexively reduce transaction costs. We should replace the automatic assumption that transaction cost minimization justifies legal rules with a functional analysis

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262. *See* Richard A. Epstein, *Let "The Fundamental Things Apply": Necessary and Contingent Truths in Legal Scholarship*, 115 HARV. L. REV. 1288, 1311–12 (2002) (describing the choice between open access and private property a question "central" to the law of property, including intellectual property).

263. *See* Shubha Ghosh, *The Merits of Ownership; or, How I Learned to Stop Worrying and Love Intellectual Property*, 15 HARV. J. L. & TECH. 453, 475–482 (2002) (discussing the importance of distributive justice concerns in copyright law).

264. The importance of this question supports one of the authors' theses that the economic dynamics of law should matter more than efficiency questions to legal theory. *See* DAVID M. DRIESEN, THE ECONOMIC DYNAMICS OF ENVIRONMENTAL LAW (2003).

265. *See* A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1027 (9th Cir. 2001) (discussing right to prevent entry into a derivative market for the copyrighted work); UMG Recordings, Inc. v. MP3.com, Inc., 92 F. Supp. 2d 349, 352 (S.D.N.Y. 2000) (discussing copyright owner's right of first entry into digital markets for copyrighted work).

based on information theory as described above. We must consider whether reduction of transaction costs might significantly impair corollary benefits.

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