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

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March 17, 2004, Draft

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ABSTRACT

This article critically examines the goal of minimizing transaction costs, including the costs of legal decision-making. This goal permeates the law and economics literature and has profoundly influenced public policy. While most transaction cost scholarship has focused upon private law, the minimization goal has influenced proven especially influential in public law, where it has contributed to a variety of legal changes aimed at reducing public transaction costs, often through privatization.

We argue that transaction costs perform useful functions. They frequently enable those engaging in transactions to obtain information needed to correct for information asymmetries or inadequate information. They facilitate efficient transactions, allow the avoidance of bad transactions, and serve important equitable goals.

It follows that lawmakers must take transaction cost functions into account when deciding whether eliminating them is desirable. We discuss how to identify transaction cost functions and how to take these functions into account in choosing legal rules. In so doing, we extend the transaction cost debate, which has focused predominantly on private law, into the public law arena, or, more precisely, into the debate about the role of private markets in achieving public values. While some transaction costs deserve elimination, we conclude that maintaining or even increasing transaction costs sometimes makes sense. We show that viewing all transaction costs as a simple deadweight loss skews legal theory in both the public and private realms.

This article uses the teachings of the Supreme Court's procedural due process jurisprudence, institutional economics, and theories focusing on information to inform analysis of transaction costs. It examines transaction costs' role in both the legal theory and policy-making in a wide variety of areas, including nuisance law, environmental law, intellectual property, corporate law, contract and the privatization of social services.

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TABLE OF CONTENTS

Introduction	1
I. Transaction Costs and the Minimization Goal	6
A. THE TRANSACTION COST MINIMIZATION GOAL	6
1. Private Law	6
<i>a. The Law of Nuisance</i>	7
<i>b. Corporate and Commercial Law</i>	8
<i>c. Fair Use and Copyright</i>	12
2. Public Law	14
<i>a. Workers' Compensation and Other Public Benefit Programs</i>	15
<i>b. Environmental Law</i>	17
(1) Superfund	17
(2) Emissions Trading	21
3. Phantom Transaction Costs in Private Law	25
B. <i>Defining Transaction Costs</i>	27
II. The Benefits of Transaction Costs	36
A. <i>Transaction Costs, Information, and Markets</i>	36
B. <i>Transaction Costs As an Aid in Avoiding Bad Transactions</i>	39
1. Private Law	39
2. Procedural Due Process	42
3. Emissions Trading	45
C. <i>Transaction Costs Producing Efficient Transactions</i>	53
D. <i>Transaction Costs as a Supplier of Dignity and Equity</i>	56
1. Dignitary Theories of Due Process	56
2. Transaction Costs Under CERCLA	58
III. Whither Transaction Cost Minimization?	64
A. <i>Taking the Benefits Transaction Costs Purchase Into Account</i>	65
B. <i>Reduction of Transaction Cost is not Always Justified</i>	66
C. <i>Improving Transaction Cost Minimization Analysis</i>	68
1. On the Need for Comparative Analysis	68
2. On the Limits of Transaction Cost Analysis	71
Conclusion	74

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INTRODUCTION

Lawyers, of all people, should recognize the value of 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

Yet lawyers- including academic lawyers - seem strangely unanimous in arguing that transaction costs are bads that should be minimized or even eliminated.³ This death wish for lawyers slavishly mimics the writing of some economists, but not of many of those who think

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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) (an attorney is "nothing but a transaction cost"). Cf. Schlag, *supra*, at 1685-86 (if 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., 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."); Schlag, *supra* note 1, at 1686-87 (conventional treatment of transaction cost involves treating them as "deadweight losses" that can be eliminated costlessly). 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. MCGEE, WILLIAM BROCK & LESLIE YOUNG, *BLACK HOLE TARIFFS AND ENDOGENOUS POLICY THEORY: POLITICAL ECONOMY IN GENERAL EQUILIBRIUM* 118-121 (1989).

most carefully about transaction costs.⁴ 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 impediments to efficient transactions, deserving of elimination if at all possible.⁷ This view has made not only made transaction cost

⁴ See, e.g., John Joseph Wallis & Douglass C. North, *Should Transaction Costs Be Subtracted From Gross National Product?*, 48 J. Econ. Hist. 651, 654 (1988) (disputing view of transaction cost as waste); Oliver E. Williamson, *Public and Private Bureaucracies: A Transaction Cost Economics Perspective*, 15 J. L. ECON. & ORG. 306, 310 (1999) (discussing writers who have questioned view that transaction cost considerations should dominate all other considerations); DAVID M. KREPS, A COURSE IN MICROECONOMIC THEORY 744 (1991) (“transactions tend to be ‘placed’ in a way that maximizes the net benefits of what they provide, including the costs of the transaction”).

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 AMER. ECON. REV. 713, 717 (1992) (emphasizing the “pressing need” to “study the world of positive transaction costs”); Ronald Coase, *The Regulated Industries: Discussion*, 54 AMER. ECON. REV. 192, 195 (1964) (study of “an optimal system . . . has been pernicious”, because “[i]t has directed economists’ attention from” studying “how alternative arrangements will actually work in practice.”); Guido Calabresi, *The Pointlessness of Pareto*, 100 YALE L. J. 1211, 1211-1212 (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.S. L. REV. 457, 471 (1996) (“A frictionless market does . . . 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”).

reduction “a pillar of modern legal scholarship”⁸ but also influenced Congress,⁹ courts,¹⁰ and agencies,¹¹ leading to many legal reforms aimed at reducing transaction costs.

We argue that people and institutions paying lawyers’ fees or other transaction costs obtain something of value.¹² They often pay transaction

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 90-91 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 International Oil Company*, 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, 290 (D.N.J. 1998) (upholding settlement that serves “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. American 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, *14-15 (M.D.Pa.) (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.Co. 1993) (declining to authorize cost recovery action against settling parties lest transaction costs rise); *Hudson Insurance Co. v. American Electric Corp.*, 748 F. Supp. 837, 843 (M.D. Flor. 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 103-169 and accompanying text.

¹² This point by itself is not new. See Wallis & North, *supra* note 4, at 654 (claiming that transaction costs produce corollary benefits). Cf. NEIL K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY 98-122 (1994) (arguing that legal scholars should consider transaction benefits along with transaction costs). See also NEIL K. KOMESAR, LAW’S LIMITS: THE RULE OF LAW AND THE SUPPLY AND DEMAND OF RIGHTS (2001) (elaborating Komesar’s views about how to
(continued...)

costs to purchase information that will help them evaluate a proposed transaction. People acquire this 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 realization of efficient transactions that would never occur without them. 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. We argue that recommendations to reduce or eliminate transaction costs must consider the impact of reductions of transaction costs upon corollary benefits.

We admit the possibility that some transactions costs might prove wasteful and deserve elimination. But usually transaction costs expenditures will produce some corollary benefit¹³ that analysts must consider in addressing arguments to reduce transaction costs.

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 of the transaction cost legal scholars have focused their attention upon contracts, nuisance law, and other private law areas,¹⁴ we show that recommendations to reduce transaction costs have influenced public law at least as much as private law.¹⁵

Our framework contributes to the analysis of institutional choice, such as the decision about whether to employ government or market solutions to problems. Thus, it applies to ongoing debates about the appropriate scope of “privatization” of government functions.¹⁶ In both public and private law, the focus on transaction cost minimization has

¹²(...continued)

analyze institutional choice without further elaboration of transaction benefits). Our contribution involves elaboration and application of North’s basic insight about corollary benefits. This elaboration also carries forward Komesar’s work on comparative institutional analysis.

¹³ Cf. Calabresi, *supra* note 6, at 1220 (arguing that Pareto superior moves eliminating transaction costs are unlikely to exist).

¹⁴ See *infra* notes 24-55 and accompanying text.

¹⁵ See *infra* notes 63-112 and accompanying text.

¹⁶ See *infra* notes 70-76 and accompanying text.

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.¹⁷ Some of the most sophisticated recent writing in the law and economics literature discusses transaction cost problems.¹⁸ But this literature lacks sufficient generalized treatment of the impact transaction costs should have upon legal theory.¹⁹ This article begins to fill this void.²⁰

¹⁷ See, e.g., Edward Rubin, *The New Legal Process, The Synthesis of Discourse, and the Microanalysis of Institutions*, 109 HARV. L. REV. 1393, 1413-1417 (1995-96); 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).

¹⁸ See, e.g., Posner, *supra* note 6, at 875-877 (discussing bounded rationality and transaction costs as explanation for the failure of economic models to “predict” the content of contracts).

¹⁹ 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 17, at 1414-1415. 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 1672-1687. 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.

²⁰ 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 costs were considered, compensation would be zero. See *Method of Legal Services Financing is Challenged Before Supreme Court*, THE N.Y. TIMES, December 10, 2002, at A32.

The first part of the article 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.²¹ We provide a working definition that makes the concept useful for both public and private law.²²

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.²³ 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. Simple recommendations to eliminate or reduce transaction costs are usually irresponsible. While wasteful transaction costs exist and deserve elimination, they may be rare. When transaction costs perform a vital function, retaining them is frequently important, to the extent that they perform the crucial functions this article identifies. This part explains how one can use information theory as a basis for analyzing transaction cost functions. This approach will facilitate careful comparative institutional analysis as the basis for addressing transaction cost problems.

²¹ 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 theorem and the Economic Theory of Markets and Law*, 35 KYKLOS 53, 57 (1982) (stating that there “is no theory of transaction costs”).

²² 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).

²³ 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 STREET 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. In this section, we demonstrate the ubiquity of the transaction cost reduction goal and discuss the problem of defining transaction cost.

A. THE TRANSACTION COST MINIMIZATION GOAL

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.

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.²⁴ If a court made an inefficient decision in a nuisance case, for example, the parties could simply bargain around it, absent transaction costs, claimed Coase.²⁵ Subsequently, Guido Calabresi and Douglas Melahmed pointed out that courts can choose

²⁴ See Coase, *The Problem of Social Cost*, in COASE, *THE MARKET*, *supra* note 6, at 114-115 ("a rearrangement [of legal rights] will be made through the market whenever this would lead to an increase in the value of production").

²⁵ Coase analyzes several well known nuisance cases in his exposition of the problem of social cost, such as *Fountainbleu Hotel Corp. v. Forty-five Twenty-five, Inc.*, 114 So. 2d 357 (1959), *Sturges v. Bridgman*, 1 Ch. D. 852 (1879), and *Delta Air Corporation v. Kersey*, 20 S.E. 2d 245 (S. Ct. Ga. 1942). See Coase, *supra* note 6, at 104-105, 168.

Coase's influence on nuisance and other land use cases, as well as cases in ordinary negligence, persists today. See, e.g., *Los Angeles County, MTA v. Continental Development Corp.*, 941 P.2d 809, 824 (Cal. S. Ct. 1997) (emphasizing the effect on a new setoff rule on minimizing transaction costs); *Tazian v. Kline*, 673 N.E. 2d 485, 490 (Ind. Ct. App. 1996) (transaction cost minimizing role of undivided ownership considered in an action for quiet title); *Walgreen Company v. Sara Creek Property Company, B.V.*, 966 F.2d 273, 274 (7th Cir. 1992) (citing to Coase's *The Problem of Social Cost* in a landlord-tenant dispute); *Rodi Yachts, Inc. v. National Marine, Inc. v. Lemont Harbor and Fleeting Services, Inc.*, 984 F. 2d 880, 889 (7th Cir. 1992) (citing to Coase's *The Problem of Social Cost* in a negligence suit involving a barge).

between a property rule and a liability rule.²⁶ A property rule usually protects an entitlement (such as the right to be free of noise) through injunction, meaning that the state may not take the entitlement away without the owner's consent.²⁷ 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.²⁸ A long line of scholarship has followed about how to choose between property and liability rules.²⁹ 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 least transaction costs, and therefore the least impediment to bargaining around inefficient judicial decisions.³⁰ 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 this link between the Coase theorem and the transaction cost minimization goal more explicit in their often cited textbook, *Law and Economics*.³¹ 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

²⁶ See Guido Calabresi and A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972).

²⁷ See *id.* at 1092.

²⁸ See *id.* at 1093.

²⁹ See, e.g., Ian Ayres and Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 YALE L. J. 1027 (1995); Keith N. Hylton, *A Missing Markets Theory of Tort Law*, 90 NW. U. L. REV. 977 (1996); Louis Kaplow and Steven Shavell, *Property Rules versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713 (1996); Ian Ayres and J.M. Balkin, *Legal Entitlements as Auctions: Property Rules, Liability Rules, and Beyond*, 106 YALE L. J. 703 (1996); James E. Krier and 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); Richard Epstein, *A Clear View of the Cathedral: The Dominance of Property Rules*, 106 YALE L. J. 2091 (1997).

³⁰ For a brief discussion of the debate, see RICHARD 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"). See also Carol Rose, *The Shadow of the Cathedral*, 106 YALE L. J. 2175, 2178-82 (1997). (distinguishing between Type I transaction costs that are incurred prior to bargaining and Type II transaction costs that arise after bargaining has begun).

³¹ See ROBERT COOTER & THOMAS ULEN, *LAW & ECONOMICS* 82-87 (2000).

results from private bargaining, regardless of the initial assignment of property rights.”³² 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.³³ Thus, the Normative Coase Theorem calls for transaction cost minimization.

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.³⁴ 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.³⁵

³² Id. at 85.

³³ Id. at 93.

³⁴ 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 Gilson, *supra* note 1, at 253-256.

³⁵ 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 in 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 Gilson, *supra* note 1, at 254-256 (describing role of business lawyers as
(continued...)

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 disposition of venture capital.³⁶

The goal of reducing transaction costs not only dominates academic explanations of the role of business attorneys in organizing private transactions in the capital markets, but also plays a prominent role in justifying the fundamental rules of corporate and commercial law.³⁷ For example, scholars have employed transaction cost minimization rationales to explain choices between "immutable" and "default" rules in corporate and commercial law.³⁸ 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.³⁹ 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

³⁵(...continued)

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).

³⁶ Lisa Bernstein, *The Silicon Valley Lawyer as Transaction Cost Engineer?*, 74 ORE. L. REV. 239, 241-242 (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 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.

³⁷ 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 Ore. L. Rev. 189, 195-205 (1995) (extending Gilson's transaction cost engineering role of corporate lawyers to commercial and contract lawyers more broadly).

³⁸ See Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: an Economic Theory of Default Rules*, 99 YALE L. J. 87, 91 (1989).

³⁹ Restatement (Second) of Contracts § 204 ("Supplying an Omitted Essential Term") (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).

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.⁴⁰ Scholars usually favor the rule that best minimizes transaction costs.⁴¹

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, in other words, a rule imposing contract terms that most parties would agree upon under similar circumstances.⁴² 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 employ penalty default rules, such as the rule that courts construe ambiguities against the drafter of a contract.⁴³ Such a rule supplies terms that penalize one of the parties to a contract. Some scholars argue that a majoritarian default rule would reflect the term that a majority of contracting parties would adopt, absent transaction costs.⁴⁴ 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

⁴⁰ See, e.g., *Travelco, Inc. v. Chain Locations of America, Inc.*, 566 N.Y.S.2d 763, 763 (N.Y.A.D. 3rd Dept. 1991) (lack of price term made contract for sale of real property unenforceable); *Aceste v. Wiebusch*, 425 N.Y.S.2d 369, 370 (N.Y.A.D. 2nd Dept. 1980) (price term not sufficiently definite in real property contract). *But see* *Shayeb v. Holland*, 73 N.E.2d 731, 734 (Mass. 1947) (court 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 Corporation v. Hasbro, Inc.*, 314 F.3d 289, 294 (7th Cir. 2002) (UCC 2-207 minimizes transaction costs “by eliminating a negotiation over an additional term unless the offeror is unwilling to accede to the offeree’s desire”).

⁴¹ See Ayres & Gertner, *supra* note 38, at 91.

⁴² 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.”).

⁴³ See *Duncan v. Theratx, Inc.*, 775 A.2d 1019, 1021 n.4 (Del. Sup. Ct. 2001) (stating that majoritarian rules are desirable because they reduce transaction costs unless penalty defaults are needed to force information disclosure).

⁴⁴ See Ayres & Gertner, *supra* note 38, 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 fairness or efficient results vis a vis the parties before the court).

substantial role in choosing the fundamental rules of commercial and corporate law.⁴⁵

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 1976,⁴⁶ Congress authorized users of copyrighted materials to copy them without paying the copyright holders under limited circumstances.⁴⁷ 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.⁴⁸ The statute provides four factors to consider in determining fairness: (1) the nature of the use, (2) the nature of the work infringed, (3) the amount of the infringed work taken, and (4) effect on the potential market for the infringed work.⁴⁹ Since the passage of the 1976 Act, courts and commentators have struggled to fashion from this multi-part list of factors a predictable set of rules that allow users to know what uses are “fair” and which violate the Copyright Act.⁵⁰

A very important article by Wendy Gordon relied in part on a transaction cost minimization rationale to create guidance for courts on how to apply the fair use doctrine.⁵¹ Professor Gordon argued that the existence of market failure should count as a justification for considering a use fair.⁵² Market failure can occur, explains Gordon, because in some

⁴⁵ See Ayres & Talley, *supra* note 29, at 1033 (discussing divergence of opinions on high versus low transaction costs); Eric Kades, *Windfalls*, 108 YALE L. J. 1489, 1514-1517 (1999) (discussing the size of transaction costs and imposition of rules of contractual recovery) Ayres & Gertner *supra* note 38, at 113 (contesting argument that parties will bargain around a default rule if transaction costs are low).

⁴⁶ Pub. L. No. 94-553, § 107, 90 Stat. 2541, 2546 (1976) (codified at 17 U.S.C. § 107).

⁴⁷ 17 U.S.C. § 107.

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ See, e.g. *Educational Testing Service v. Stanley H. Kaplan Educ. Ctr., Inc.*, 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, 1668-1669 (1988) (discussing changing role of fair use as an equitable doctrine).

⁵¹ 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).

⁵² *Id.* at 1604-1605.

cases transaction costs exceed the value of the work to the user.⁵³ 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.⁵⁴ For example, copying of 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.⁵⁵ 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.⁵⁶ 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 v. Texaco*,⁵⁷ held that unauthorized copying of scientific articles for research purposes was not fair use because

⁵³ Id. at 1609 (fair use as facilitating a transfer of resources that would otherwise be blocked by high transaction costs).

⁵⁴ Id. at 1610.

⁵⁵ Id. at 1621.

⁵⁶ 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 1615-1622. 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 1628-1630. 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 1654-1657.

⁵⁷ 60 F.3d 913 (2d Cir.1994).

it interfered with an active market for licenses for photocopying of articles.⁵⁸ The Ninth Circuit makes a similar analytical move in *World Wide Church of God v. Philadelphia Church of God*,⁵⁹ a case involving the rights of an offshoot faction of a church to photocopy the church's official bible.⁶⁰ 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 and therefore there was no market failure for distribution of the bible.⁶¹ The majority in the *World Wide Church of God* case finds that the existence of markets shows that the transaction costs associated with bargaining for a license are not too high.⁶² Since the need for transaction cost minimization does not justify exclusion of licensing, the court finds no justification for fair use.⁶³

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. In the public law area, however, transaction cost minimization goals have 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.

a. Workers' Compensation and Other Public Benefit Programs

The desire to reduce transaction costs has played a major role in workers' compensation. Transaction cost explanations plays a prominent role in scholarly justifications for the existence of the regime. Scholars have claimed that the 19th century tort system compensated workers for

⁵⁸ Id. at 918.

⁵⁹ 227 F.3d 1110 (9th Cir. 2000).

⁶⁰ Id. at 1114.

⁶¹ Id. at 1119 n.2 (citing Professor Gordon).

⁶² Id.

⁶³ Id. at 1120-1121.

injuries only erratically and after expensive litigation.⁶⁴ By providing more certain compensation for worker injuries regardless of employer fault, the adoption of workers' compensation in the early 20th century eliminated transaction costs associated with tort remedies.⁶⁵

More recently, policy makers and some scholars have sought to justify "cost containment" reforms on the grounds that they reduce transaction costs.⁶⁶ These reforms limit both the size of attorneys' fees and the ability of claimants to shift these costs to insurers or employers.⁶⁷ The desire to minimize transaction costs plays a significant role in worker's compensation reform, just as it plays a significant role in some scholarly theories about its creation.

The federal government, like the states administering worker's compensation programs, has sought to contain the cost of public benefit programs by limiting attorney fees.⁶⁸ The Supreme Court has addressed controversial rules restricting attorney fees in veterans' programs,⁶⁹ and in a federal Black Lung Disease compensation program⁷⁰.

Transaction cost concerns have played a role in all manner of decisions to privatize government delivery of social services, lessen their

⁶⁴ 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 Origin's of Workmen's Compensation*, 37 CORNELL L. Q. 206, 228 (1951-52) (studies preceding enactment of workers' compensation statutes showed little compensation for workers under common law).

⁶⁵ See McCluskey, *supra* note 63, at 737 ("worker's compensation is typically described as efficient . . . on the ground that it" generates less transaction cost than the tort system).

⁶⁶ See *id.* at 738 ("recent cost containment reforms in workers' comp are widely described as reducing transaction costs").

⁶⁷ See *id.* at 863.

⁶⁸ See *Walters v. National Ass'n of Radiation Survivors*, 473 U.S. 305, 308, 326 (1985) (fees for attorneys in veteran benefits cases limited to \$10.00 to assure that veteran 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) (regulations forbid contractual arrangements for fee).

⁶⁹ See *Walters*, 473 U.S. at 308 (describing attorney fee restrictions that limit lawyer involvement in veterans' benefit decisions).

⁷⁰ See *Triplett*, 494 U.S. at 718 (describing restrictions on attorney participation in Black Lung Disease compensation programs).

scope, or devolve fundamental policy choices to the states.⁷¹ In these cases, the government and scholars disapprove of the government transaction costs that attend the delivery of benefits.⁷² They privatize a function or reduce the scope of a social welfare program, in part, in order to reduce these costs.⁷³ For example, advocates of welfare reform suggest that reducing transaction costs preventing employment - transportation, child care, information about jobs - offers a more fruitful approach than simply redistributing income to the poor.⁷⁴ And advocates of devolution and privatization⁷⁵ have claimed that these measures drastically reduce administrative costs - which we consider a public transaction cost.⁷⁶ 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.⁷⁷

b. Environmental Law

⁷¹ 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); 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).

⁷² See POSNER, *supra* note 30, 71 at 477-478 (discussing transaction cost in Aid to Families with Dependent Children program); Mathew Diller, *Going Private-The Future of Social Welfare Policy*, 35 CLEARINGHOUSE REV. 491, 493 (2002) (the technocratic case for privatization rests upon view that government suffers from too much "red tape" and that privatization promises "leaner" service delivery).

⁷³ See, e.g., DAVID OSBORNE & TED GAEBLER, REINVENTING GOVERNMENT: HOW THE ENTREPRENEURIAL SPIRIT IT 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, 1868-1891 (2002) (discussing cost, quality and accountability in private prisons) [hereinafter, *Prisons*].

⁷⁴ See Martha T. McCluskey, *The Politics of Economics in Welfare Reform, in FEMINISM CONFRONTS HOMO ECONOMICUS* ____ (Martha A. Fineman & Terence Dougherty eds., forthcoming 2003) (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 public 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).

⁷⁵ 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).

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

⁷⁷ See Diller, *supra* note 71, at 498-503 (describing the initiative and its goals).

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)⁷⁸. Congress enacted this law to address the problem of hazardous waste sites.⁷⁹ 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.⁸⁰ Many of these sites had received wastes for a long period of time from a wide variety of individuals and firms.⁸¹ Often contributors to the mess had disappeared or become insolvent.⁸²

⁷⁸ 42 U.S.C. §§ 9610-9675.

⁷⁹ 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).

⁸⁰ See *id.* at 1046 n. 17; Lynda J. Oswald, *Strict Liability of Individuals Under CERCLA: A Normative Analysis*, 20 ENV'T'L AFF. 579, 585 (1993) (discussing the magnitude of the hazardous waste disposal problem at the time of CERCLA's enactment and a little over a decade later).

⁸¹ See, e.g., *State of New York v. Solvent Chemical Co., Inc.*, 179 F.R.D. 90 (W.D.N.Y. 1998) (adjudicating motion to add 52 waste generators and third party defendants to a Superfund case based on activities going back as long as 40 years). See also *U.S. v. Hooker Chemical and 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.")

⁸² 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 Min. Corp.*, 118 F.3d 1298, 1303-1304 (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).

Congress addressed this problem by establishing comprehensive liability for cleanup costs for a host of “potentially responsible parties” (PRPs).⁸³ 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.⁸⁴

Congress created a “Superfund,” financed by taxation of the chemical and petrochemical industry, to fund cleanup of the dirtiest sites.⁸⁵ It authorized EPA to cleanup these sites with Superfund monies and bill the PRPs for the cost or to have the PRPs cleanup.⁸⁶

CERCLA has endured frequent and fervent criticism as a generator of high transaction costs, including the costs of investigation, negotiation, and litigation.⁸⁷ CERCLA has led to protracted disputes regarding the division of liability among PRPs and between PRPs and insurers.⁸⁸ While nobody has produced a definitive study establishing the size of CERCLA

⁸³ See 42 U.S.C. § 9607(a).

⁸⁴ 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 42 U.S.C. § 9607(a)(2). Because of broad statutory definitions of disposal, many previous owners might find themselves liable under this provision. See, e.g., *Nurad v. William E. Hooper & Sons*, 966 F.2d 837, 840 (4th Cir. 1992) (liability extends to owners at the time that previously deposited wastes leaks or spills out onto the land). Cf. *United States v. CDMG Realty*, 96 F.3d 706, 711 (3rd Cir. 1996) (rejecting liability for ownership during a time of “passive migration” of previously deposited waste).

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

⁸⁶ See 42 U.S.C. §§ 9604(a)(1); 9606(a); 9607(a); 9622(a). EPA can secure PRP cooperation through either voluntary agreement or administrative orders. See Organ, *supra* note 78, at 1056-57. See also Oswald, *supra* note 79, at 588 (summarizing the remedies and documenting some of the regulatory sources governing details).

⁸⁷ See, e.g., William N. Hedeman, Jonathan Z. Cannon, and David M. Friedland, *Superfund Transaction Costs: A Critical Perspective on the Superfund Liability Scheme*, 21 ENVTL. L. REP. (Envtl. L. Inst.) 10413, 10426 (1991) (calling for “fundamental reform” to address transaction cost problems).

⁸⁸ See *id.* at 10414.

transaction costs, observers agree that these costs are very high.⁸⁹ It is possible, however, that transaction costs are declining.⁹⁰

Congress has studied the transaction cost issue repeatedly and twice amended the statute, in part to address transaction cost problems.⁹¹ And the idea that government should reduce transaction costs continues to play an

⁸⁹ See George Van Cleve, *Would the Superfund Response Cost Allocation Procedures Considered by the 103d Congress Reduce Transaction Costs*, 25 ENVTL. L. REP. (Envtl. L. Inst.) 10134, 10134 (1995); JAN PAUL ACTON & LLOYD S. DIXON, SUPERFUND AND TRANSACTION COSTS: THE EXPERIENCES OF INSURERS AND VERY LARGE INDUSTRIAL FIRMS xi, xiii (1992) (five large industrial firms paid transaction costs of 21%; four national insurance companies paid transaction costs of 88%); PROBST & PORTNEY, *supra* note 81, at x (admitting that magnitude of transaction costs is unknown, but offering speculation that transaction costs range from \$2 to \$8 billion over 10 years); Robert W. McGee, *Superfund: It's Time for Repeal After a Decade of Failure*, 12 J. ENVT'L L. 118, 170 (1993) (claiming that transaction costs "consume" much of the "Superfund budget"); John J. Lyons, *Deep Pockets and CERCLA: Should Superfund Liability be Abolished*, 6 STAN. ENVT'L L. J. 271, 272 (1987); Abraham, *supra* note 80 (describing the causes of insurance related transaction costs and predicting that they will decline over time). Most estimates of transaction costs in the literature are based on ACTON & DIXON, *supra*, 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) (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 (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).

⁹⁰ See Robert P. Dahlquist, *Making Sense of Superfund Allocation Decisions: The Rough Justice of Negotiated and Litigated Allocations*, 31 ENVTL. L. REP. (Envtl. L. Inst.) 11098, 11108 (2001) (claiming that the body of case 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 54% in 1986 to 88% in 1996).

⁹¹ See Hedeman, *supra* note 86, at 10424-10425 (statutory amendments authorizing de minimis settlements, mixed funding, and non-binding allocations of responsibility aimed to reduce transaction costs); Lyons, *supra* note 88, at 313 (each Congressional committee holding hearings on reauthorization heard testimony addressing the transaction cost problem); Federal News Service, June 24, 1994, Statement of Carol Browner Before the Subcommittee on Environment, Energy, and Natural Resources Committee on Government Operations, U.S. House of Representatives (discussing several bills designed to reduce transaction costs).

enormous role in the Superfund debate.⁹² We believe it should play a substantial role in the debate. But we show in part II 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,⁹³ which have become quite prevalent⁹⁴ and enjoy the support of many academics and policy makers⁹⁵. 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.⁹⁶ An example will facilitate explanation of emissions trading. Suppose that a regulator wants 100 tons of pollution total reduction from two facilities. Under a uniform standards approach, the regulator would require each facility to reduce emissions by 50 tons. Often, however, facilities have unequal

⁹² See, e.g., Van Cleve, *supra* note 88 (evaluating the capacity of legislative proposals before the 103rd Congress to reduce transaction costs); Hedeman, *supra* note 86, at 10426 (calling for fundamental reform to reduce transaction costs); 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, 599 (April 6, 1995) (President Clinton’s statement that “too many Superfund dollars have been spent on lawyers”).

⁹³ See James T.B. Tripp and Daniel J. Dudek, *Institutional Guidelines for Designing Successful Transferable Rights Programs*, 6 YALE J. REG. 369, 377 (1989) (buying and selling of use rights “must entail only *minimal transaction costs*”) [emphasis in original]; J.H. DALES, *POLLUTION PROPERTY AND PRICES* 92-100 (1968).

⁹⁴ 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).

⁹⁵ See, e.g., *id.* at 291-92 (detailing policy makers support); 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); Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUM. J. ENVTL. L. 171 (1988).

⁹⁶ 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, 728-733 (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, 142-143 (1998).

compliance cost.⁹⁷ 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.⁹⁸

Emissions trading allows the regulator to get tailored cost effective outcomes without actually acquiring marginal cost information from each facility. The regulator requires a 50 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 50 tons and use the purchased credits in lieu of local compliance. Seller eliminates 100 tons of emissions, using the first 50 tons to meet its own 50 ton reduction obligation and selling the 50 tons of extra reductions to Buyer. Buyer will use these 50 tons of purchased reductions to comply with its 50 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 100 ton reduction at a fraction of the cost a uniform standard would impose.

The justification for emissions trading implicitly relies upon public transaction costs.⁹⁹ 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.¹⁰⁰ Typically the regulated facility has information

⁹⁷ See Driesen, *supra* note 93, at 307.

⁹⁸ See, e.g., Hahn & Stavins, *supra* note 94, at 6.

⁹⁹ 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 94, at 174 (discussing the informational needs of best available technology standard setting). Cf. Driesen, *supra* note 93, at 327-332 (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 "particular costs and benefits"). So, the cost of doing this is a phantom transaction cost, a cost that would arise if such a regime existed.

¹⁰⁰ See *E.I. du Pont de Nemours & Co. v. Train*, 430 U.S. 112, 132-33 (1977) a regime requiring individual consideration of each permitted polluter's individual circumstances

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about its control costs that the regulator might find it difficult to obtain (an information asymmetry).¹⁰¹ Absent transaction costs, traditional regulation aimed at cost effectiveness would produce cost effective outcomes.¹⁰² Because of public transaction costs, emissions trading often functions better at producing these outcomes.¹⁰³

Arguments to reduce transaction costs have had their greatest practical impact in influencing the design of emissions trading programs. They figure heavily in EPA rulemaking and guidance establishing the design of emissions trading programs.¹⁰⁴ For example, in proposing an open market trading rule, which spawned a number of state emission trading programs, EPA noted that its previous trading rules had generated a small volume of emissions, “perhaps due to high transaction costs.”¹⁰⁵

¹⁰⁰(...continued)

would impose an “impossible burden” upon EPA); Latin, *supra* note 98, 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).

¹⁰¹ 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).

¹⁰² 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, 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. & MANAGEMENT 133, 144 n. 22 (1995) (noting that market transaction costs are basically the counterpart of administrative costs in command and control regulation).

¹⁰³ 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).

¹⁰⁴ See, e.g., United States Environmental Protection Agency, Office of Water, Proposed Water Quality Trading Policy 6 (2002) (available at <http://www.epa.gov/owow/watershed/trading/protradepolicy.pdf>) (urging states and tribes to use the internet to provide real time information on trades to lower transaction costs).

¹⁰⁵ See Proposed Open Market Trading Rule for Ozone Smog Precursors, 60 Fed. Reg. 39668, 39670 (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., Proposed Approval and Promulgation of Implementation Plans: Michigan Emissions Trading Program, 66 Fed. Reg. 9264, 9266, 9277 (February 7, 2001); Proposed Approval and Promulgation of Implementation Plan: New Hampshire Discrete Emission Reductions Trading Program, 66 Fed. Reg. 9278, 9279, 9283 (February 7, 2001); Proposed 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 (January 9, 2001). The open

(continued...)

Much of EPA's open market proposal sought to allow trades "before governmental review and approval" in order to lower transaction costs.¹⁰⁶ And, in recent guidance to states designing emissions trading programs, EPA stated that successful trading programs have "control cost differentials" that "exceed the transaction costs of making a trade."¹⁰⁷

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.¹⁰⁸ Writers recommended that government reduce negotiation costs by serving as a broker or auctioning off credits.¹⁰⁹ 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.¹¹⁰ A later section of the paper 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

¹⁰⁵(...continued)

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. (BNA) 1522 (1994).

¹⁰⁶ See Open Market Trading Rule, *supra* note 104, at 39671.

¹⁰⁷ OFFICE OF AIR AND RADIATION, EPA, PUB. NO. 452/R-01-001, IMPROVING AIR QUALITY WITH ECONOMIC INCENTIVE PROGRAMS 25 (2001) [hereinafter OAR GUIDANCE].

¹⁰⁸ 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 Offset Policy for Slowing Global Warming*, 22 ENVTL. L. 623, 668-69 (1992) (recommending banking to address transaction cost problem).

¹⁰⁹ See Stavins, *supra* note 101, at 145-46 (recommending government as broker and auctions); David Sohn & Madeline Cohn, *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).

¹¹⁰ See Stavins, *supra* note 101, at 145 (explaining that moving toward risk based trading increases transaction costs); Marchant, *supra* note 107, at 644-48 (suggesting that federal approval requirements for trades should cease); Sohn & Cohn, *supra* note 108, at 431-32 (approving the RECLAIM emissions trading program's lack of public input in deciding upon individual trades).

compliance costs.¹¹¹ Transaction costs impede realization of the maximum number of sales.¹¹² Therefore, government should reduce transaction costs to facilitate trades and cost reduction.¹¹³

Recommendations to reduce transaction cost 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 IN PRIVATE LAW

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.¹¹⁴

Phantom transaction costs arguments abound in private law, but sometimes can justify creation of public law. So, for example, economists

¹¹¹ See Tom H. Tietenberg, *Economic Instruments for Environmental Regulation*, in *ECONOMICS OF THE ENVIRONMENT: SELECTED READINGS* 374-76 (2000).

¹¹² See Vivien Foster & Robert W. Hahn, *Designing More Efficient Markets: Lessons From Los Angeles Smog Control*, 38 *J. L. & ECON.* 19, 33 (1995).

¹¹³ See generally *id.* at 33, 35, 39 (suggesting disapproval of transaction costs).

¹¹⁴ 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 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.

COASE, *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.

applying Coase to environmental problems imagine breathers bribing a polluter to reduce or eliminate emissions.¹¹⁵ This phantom transaction would generate transaction costs. Scholars have justified both actual rules governing remedies in private suits and public environmental law as means of avoiding these transaction costs associated with the bribery phantom.[cite]

Similarly, some proponents of fair use imagine a teacher paying to use a portion of an article in class - a phantom transaction.¹¹⁶ 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.¹¹⁷ This vision helps justify the legal rule not requiring a licensing payment in such cases.¹¹⁸ Fair use avoids payment of a phantom transaction cost.¹¹⁹

By contrast, public law discussion of transaction costs these days 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.¹²⁰

Both types of analysis - analysis of direct transaction costs from public law and phantom transaction costs of private law - tend to support private markets and private law, while disfavoring established public law. Thus, transaction cost minimization plays an important role in support “free market” solutions to problems.

In spite of the pervasiveness of the transaction cost minimization goal, scholars do not share an agreed definition of transaction costs. We discuss this problem below and propose a working definition useful to

¹¹⁵ See POSNER, *supra* note 30, 71, at 61; A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 94 (1989).

¹¹⁶ Gordon, *supra* note 50, at 1628.

¹¹⁷ *Id.* at 1618-1619 (describing different cases of market failures as tied to costs of bargaining and negotiating).

¹¹⁸ *Id.* at 1621.

¹¹⁹ See ROBERT ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 258-264 (1991) (describing photocopying practices among academics and how internalized norms trump federal copyright law and regulate excessive copying).

¹²⁰ 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).

considering the broad range of policy problems that transaction cost minimization influences- i.e. useful for consideration of both public and private law problems.

B. *Defining Transaction Costs*

The concept of transaction costs has arisen in economic literature comparing institutional arrangements. Legal analysis frequently involves institutional choice, choices about which institution should have the right to make decisions, and therefore also grapples with transaction costs.¹²¹ The choice about whether to allow private markets or government regulators to set utility rates provides an example of the institutional choices frequently subject to legal analysis.¹²² Definitions of transaction costs have tended to vary with the institutional choice issue under consideration

The use of transaction costs as an analytical tool has its roots in the work of Ronald Coase, an early student of institutional choice. In his 1937 article, *The Nature of the Firm*, Ronald Coase used transaction costs to examine firms' choices between purchasing goods and services through contract and integration of the firm - i.e. acquiring other firms or hiring additional employees to extend the firm's output of goods and services.¹²³ Coase concluded that when the costs of contracting for goods and services are too high, firms would choose to integrate and regulate activity through the hierarchy of corporate structure.¹²⁴ He referred to these contracting costs as transaction costs, defining them the "costs of using the price system."¹²⁵ He did not elaborate what these costs were in detail but he suggests that they include the costs of drafting a contract, monitoring

¹²¹ See, e.g., Calabresi, *supra* note 6, at 1213 (suggesting that lawyers were concerned with comparative institutional analysis even in the 1930s); HENRY M. HART & ALBERT M. SACKS, *THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW* (1994); Karl Llewellyn, *The Effect of Legal Institutions upon Economics*, 15 *AMER. ECON. REV.* 665, 678-679 (1925) (illustrating the recognition of legal institutions for economics in the works of a major legal realist thinker).

¹²² See, e.g., JEFFREY L. HARRISON, THOMAS D. MORGAN & PAUL R. VERKUIL, *REGULATION AND DEREGULATION: CASES AND MATERIALS* 353-493 (1997) (materials on the legal and economic issues related to rate setting).

¹²³ See Ronald Coase, *The Nature of the Firm*, in COASE, *THE MARKET*, *supra* note 6, at 38-39.

¹²⁴ *Id.* at 45-47 (identifying costs of organization, factors of production, and decision making as determining the size of a firm).

¹²⁵ *Id.* at 6, 38.

performance, and ensuring fulfillment of contractual obligations.¹²⁶ Yet, at times, Coase seems to suggest that the costs of integrating a firm constitute transaction costs of a sort as well.¹²⁷ When firms acquire other firms or hire employees to perform new functions, firms pay transaction costs to obtain information about the human assets they acquire,¹²⁸ and incur additional costs monitoring the performance of their employees thereafter.¹²⁹ While some analysts refer to these latter costs as agency costs,¹³⁰ they are amenable to classification as transaction costs. After all, an employment relationship generates a contract.¹³¹ And this contract, like a contract for goods and services from an outside firm, has costs associated with its creation, including monitoring and enforcement. One can view employment as a transaction, and the costs associated with it as transaction costs.¹³² Certainly, a goal of minimizing transaction costs cannot guide a question of institutional choice - like the choice between integration of a firm and contacting with outside firms - unless the term encompasses the significant costs of both options.¹³³

Coase expanded his definition when he wrote *The Problem of Social Cost*, to make it useful in addressing the possibility of negotiating around property rules established in nuisance suits.¹³⁴ In this context, Coase interpreted transaction costs to mean the costs of negotiating very broadly,

¹²⁶ See *id.* at 38-39 (discussing cost of arriving at a contract as only one aspect of transaction costs associated with using the “price mechanism”).

¹²⁷ See *id.* at 44 (analyzing costs of hypothetical transaction between Firm A and Firm B, including a hypothetical purchase of B by A).

¹²⁸ Gilson explicitly identifies the cost of acquiring information about prospective employees as a transaction cost. See Gilson, *supra* note 1, at 272. Coase emphasizes the role of uncertainty in explaining the need for the entrepreneur and for the firm, rather than the market system, to coordinate economic activity. COASE, THE MARKET, *supra* note 6, at 47-51 (discussing economist Frank Knight’s idea that the entrepreneur serves to deal with uncertainty and other information problems in production).

¹²⁹ Coase discusses monitoring and other agency costs in the firm directly and by reference to the law of master and servant. See COASE, THE MARKET, *supra* note 6, at 53-55.

¹³⁰ See PAUL MILGROM & JOHN ROBERTS, ECONOMICS, ORGANIZATION, AND MANAGEMENT 254, 256 (1992).

¹³¹ *Id.* at 329-332 (describing employment relationship and the role of contract).

¹³² See COASE, THE MARKET, *supra* note 6, at 53-55 (discussing relationship between employment relationship and firm). MILGROM & ROBERTS, *supra* note 129, at 128-129 (costs of enforcing contracts).

¹³³ See COASE, THE MARKET, *supra* note 6, at 44 (comparing costs of integration to purchase of products and services on open market).

¹³⁴ See *id.* at 114.

including the costs of finding a bargaining partner.¹³⁵ And Coase applies this definition to a very unconventional contract - a bribe. The transaction here involves paying somebody to refrain from a disruptive activity - often pollution.

Subsequently, economists began to move toward defining transaction costs in ways that included government. Professor Kenneth Arrow equates transaction costs with “costs that impede or block the formation of markets” or “costs of running an economic system.”¹³⁶ This latter definition would seem to include at least the costs that governments incur in enforcing contracts or establishing property rights. The economist Douglas Allen explicitly defines transaction costs as “resources used to establish and maintain property rights.”¹³⁷ Taken literally, this definition would include administrative costs associated with government. Surely, government enforcement of trespass laws and recording of deeds, for example, involve using “resources” to “establish” (through deed recording) and “maintain” (through trespass enforcement) property rights.¹³⁸

Douglas North, a leading institutional economist, also implicitly includes government costs within the ambit of transaction costs. In his work exploring the differences between communist and capitalist systems he treats a set of costs associated with communist government as transaction costs in order to facilitate a comparative analysis. He contrasts “costs that go through the market” with “hard-to-measure costs that include time acquiring information, queuing, bribery, and so forth, as well as the losses due to imperfect monitoring and enforcement.”¹³⁹ These hard-to-

¹³⁵ See *id.* Professor Carol Rose offers a useful typology of transaction costs, dividing them into Type I and Type II costs. The first type arise prior to bargaining and encompass the costs of finding the bargaining partner and beginning negotiations. The second are the costs that arise in the process of bargaining. See Rose, *supra* note 30, at 2185. The *Problem of Social Costs* expanded the definition to include Type II costs.

¹³⁶ See Kenneth J. Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-market Allocation*, in PUBLIC EXPENDITURES AND POLICY ANALYSIS 60 (Robert Haveman & Julius Margolis, eds., 1970).

¹³⁷ See Douglas W. Allen, *What Are Transaction Costs?*, 14 *Research in Law & Economics* 1, 18 (1991).

¹³⁸ See *id.* at 11-12. See also HERNANDO DE SOTO, *THE MYSTERIES OF CAPITAL: WHY CAPITALISM TRIUMPHS IN THE WEST AND FAILS EVERYWHERE ELSE* 26-29 (2000).

¹³⁹ DOUGLASS C. NORTH, *INSTITUTIONS, INSTITUTIONAL CHANGE, AND ECONOMIC PERFORMANCE* 68-69 (1990) (internal cites omitted).

measure costs include costs incurred in non-voluntary economic arrangements involving government.¹⁴⁰

Academic lawyers have tended to apply a broad concept of transaction costs, that encompasses the costs of private contracting and some of the costs of creating and implementing government solutions to problems. Richard Posner, Neil Komesar, and others who have written about transaction cost minimization often treat the cost of government decision-making as a transaction cost.¹⁴¹ This treatment appears consistent with some, but not all, of the economists' definitions.¹⁴²

¹⁴⁰ The economics literature, particularly the transaction costs economics literature, has a very thin and weak theory of the state. Douglass North acknowledges this when he characterizes public choice theorists as reducing the state to a leviathan, "something like the Mafia." *Id.* at 140. He concludes, however, that "the traditional public choice literature is clearly not the whole story." *Id.* Sophisticated theories of the state have been developed recently by Yoram Barzel and Mancur Olson. *See* YORAM BARZEL, A THEORY OF THE STATE: ECONOMIC RIGHTS, LEGAL RIGHTS, AND THE SCOPE OF THE STATE 185-197 (2002) (elaborating on the state's role in enhancing market exchange); MANCUR OLSON, POWER AND PROSPERITY: OUTGROWING COMMUNIST AND CAPITALIST DICTATORSHIPS 66 (2000) ("When the idea of transaction costs is used in conjunction with an appreciation of the salience of coercive power, it can provide useful insights into politics and government.").

¹⁴¹ *See, e.g.*, RICHARD A. POSNER, THE ECONOMICS OF PUBLIC LAW 40 (1987) (describing separation of powers as raising the "transaction costs of government"); KOMESAR IMPERFECT ALTERNATIVES, *supra* note 12, at 141-142 (comparing the relative costs of the political process and adjudication). 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 31, at 320-321. So described transaction costs in the public law context will most likely fall into Type II transaction costs, as defined by Carol Rose, costs that arise in the process of bargaining. *See* Rose, *supra* note 30, at 2185.

¹⁴² Indeed, even a narrow definition of transaction costs as costs associated with the free market might count some costs of government coercion as transaction costs, for even this narrow definitions may include the costs of enforcing contracts. *See* COASE, THE MARKET, *supra* note 6, at 38-39 ("The costs of negotiating and concluding a separate contract for each exchange transaction which takes place on a market must also be taken into account."). These costs purchase attempts to secure judicial orders to pay damages or perform contractual obligations. Even contract consists of a mix of a voluntary agreement and government coercion after a party finds compliance undesirable and seeks to break the agreement.

Once one concedes that employment contracts and their enforcement generate transaction costs, (which seems implicit even in *The Nature of the Firm*) then many government administrative costs may be characterized as transaction costs. For government pays people to educate children, pick up garbage, run prisons and perform other functions. Its administrative costs incurred in selecting the people to hire (via
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Professor Neal Komesar argues that Coase's seminal work on transaction costs is part of a program of comparative institutional analysis.¹⁴³ Komesar argues, correctly, in our view, that good institutional analysis must compare the costs of the institutional alternatives, such as the choice between a government solution and a market solution to a problem.¹⁴⁴ Thus, institutional choice requires comparison of the "friction cost" associated with a free market resolution to the friction cost in making government decisions. It makes sense to view both sets of costs as transaction costs.

In addition to Komesar, two prominent scholars in the law and economics arena, Robert Cooter and Avinash Dixit, have broached the issue of a transaction cost analysis of public law, both implicitly employing a very broad definition of transaction costs. Professor Cooter refers to the costs of bargaining among political factions as transaction costs in *The Strategic Constitution*.¹⁴⁵ And Professor Dixit refers to the costs incurred in making and enforcing bargains about policy between voters and politicians as transaction costs.¹⁴⁶ Not surprisingly, as legal analysts expand the concept of a "transaction" into a metaphor for politics and government decisions of many kinds,¹⁴⁷ the definition of transaction costs expands. Scholars who define transaction costs to include costs associated with government decision-making either implicitly or explicitly widen the

¹⁴²(...continued)

contract) to perform these functions and monitoring their performance surely count as transaction cost. It would be nonsensical to consider comparable costs associated with private parties hiring people to perform these functions (as they often do nowadays) to be transaction costs, but not call them transaction costs when government pays for the same things directly. And privatization adds a layer of transaction costs, since government must contract with private firms to perform formerly public services. See SCLAR, *supra* note ?, at 13 (government contracting for services, like private contracting for services, "involves elaborate . . . relationships between" government purchasers and private vendors).

¹⁴³ See KOMESAR, IMPERFECT ALTERNATIVES, *supra* note 12, at 3-4 (discussing comparative institutional analysis).

¹⁴⁴ See *id.* at 22 (discussing the need for analysis of the relative merits of two institutions when compared with each other).

¹⁴⁵ ROBERT COOTER, THE STRATEGIC CONSTITUTION 53 (2001) ("By reducing the transaction costs of bargaining, the constitution increases the probability that political factions will cooperate with each other.")

¹⁴⁶ AVINASH DIXIT, THE MAKING OF PUBLIC POLICY: A TRANSACTION-COST POLITICS PERSPECTIVE ? (1996).

¹⁴⁷ See, e.g., David M. Driesen, *Markets are Not Magic*, 20 ENV'T'L FORUM 19 (November/December 2003) (explaining how cost-benefit approaches to environmental law treat government standard setting as an ordinary transaction to purchase a good).

definition of a transaction so that it includes the making of a government decision.

A broad definition of transaction costs (and of transactions) helps make the best case for the transaction cost minimization goal. If transaction cost minimization means that we should lower the costs of private transactions even when doing so raises government administrative costs by a far greater amount, then the transaction cost minimization goal serves as an ideological construct motivating privatization, rather than as an analytical tool. If, on the other hand, the transaction cost minimization goal means to lower the overall friction costs associated with solving problems, then the goal appears more like an analytical tool. To perform adequately as a tool for legal analysis, transaction cost analysis must include administrative costs.

Because a broad definition aids legal analysis, we define transaction costs to include both administrative costs associated with government actions and private costs associated with market transactions. We also define transaction costs to include the costs of acquiring information needed for a private transaction or public decision.

Thus, for example, the money a prospective purchaser spends to have a mechanic examine a used car, constitutes a transaction cost. Gilson and other writers commonly treat costs of information acquisition as transaction costs. [cite] And many costs commonly included in transaction cost definitions involve information acquisition.¹⁴⁸

¹⁴⁸ Professor Allen's claim that information costs are necessary for the existence of transaction costs (defined as the cost of protecting property rights) supports this point. But he argues that information costs are not sufficient for the existence of transaction costs. See Allen, *supra* note 136, at 6 ("The immediate implication [of the fact that information is costly] is that information costs are a necessary condition for a transaction cost problem. Information costs are not always transaction costs."). As support for the proposition that information costs are not sufficient, Professor Allen points to the costs of searching for the lowest price or the costs of acquiring knowledge about the attributes of certain goods or potential trading partners. These costs are information costs, but not transaction costs, because they arise independent of any specific transactions in which the person seeking the information is involved. *Id.* at 7. Information costs, says Allen, are only transaction costs when information becomes difficult to verify. As Professor Allen explains:

When a good contains attributes that are either alterable or variable, but does not contain both, then transaction costs are zero or negligible. Both alterability and variability are needed in order for transaction costs to arise, because these costs stem from the inability to attribute changes in product quality directly to random events or non-random exploitation.

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Our definition of transaction costs as including “public transaction costs” implies that public acquisition and processing of information for public decisions produces transaction costs. Just as private parties acquire information as they negotiate a contract, public authorities acquire information as they decide how to exercise their decision-making authority. In both cases, people pay to acquire information needed for decisions.

For purposes of this paper, we define transaction costs as “the costs of dealing with people.” These costs include costs associated with both private contracting and government decision-making - including the cost of acquiring information for both sorts of transactions. We offer this definition to indicate the breadth of costs the transaction cost minimization rationale has been applied to in legal theory and practice and as a general aid to the reader. The argument that transaction costs have functions that call into question their reflexive minimization does not rely upon this (or any other) definition of transaction costs. And this definition does not purport to reconcile the many conflicting definitions scholars have offered.

¹⁴⁸(...continued)

Id. at 8. To illustrate this point, Professor Allen recognizes that the quality of a commodity may be both alterable by man and variable in nature. Id. at 10. 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. Id. For example, if the transaction is over a commodity like wheat, the purchasing party may not be able to tell whether the poor quality of the wheat is due to nature or due to the actions of the farmer who is selling the wheat. If the purchaser cannot distinguish between cheating by the other side and random acts of nature, then transaction costs arise and need to be addressed through market intervention. Professor Allen points out that the problem of verifiability of information is the key to the existence of transaction costs. Id. at 8-9. For a discussion of the verifiability issue, see DOUGLAS BAIRD ET AL., *GAME THEORY AND THE LAW* 89-90 (1994).

Costs incurred in developing information about the price and quality of goods and services, however, should count as transaction costs. Parties search for information about the price or quality of a commodity because they contemplate entering into a transaction. We cannot see why else the information would be of value. Furthermore, the time buyers spend discovering readily available information about price and quality does constitute a transaction cost. Transaction cost surely rises when verifying information becomes difficult. Allen would characterize these costs as “information costs.” As he states, “The acts of finding a partner, determining the correct good for a particular need, or searching for the ‘best price’ are information costs, not transaction costs.” Id. at 7. We are not sure that this distinction makes sense. If transaction costs arise when information is both variable and alterable, the characteristics of trading partner, one’s needs, the appropriateness of a good, and price can each be altered and can be affected by random events. Allen’s distinctions make sense only if he is focusing on what Carol Rose calls Type II transaction costs, those that arise in the bargaining process. However, Type I transaction costs also exist. See Rose, *supra* note 30, at 2184.

While this definition may appear inordinately broad, it is plausible, useful, and gets at the heart of a common element in all the disparate definitions scholars have employed to describe transaction costs. To see the definition's plausibility and usefulness, consider the example of Robin Crusoe alone on an island trying to figure out how to best use the available resources, an example frequently used in economic textbooks to illustrate the basic economic problem of allocating scarce resources.¹⁴⁹ Robinson Crusoe would incur production costs from picking fruit or fishing (for example), but not transaction costs, since there is nobody there to transact with.

¹⁴⁹ See HAL R. VARIAN, MICROECONOMIC ANALYSIS 349-353 (1992) (presenting model of Robinson Crusoe economy in standard graduate school textbook); R.A. Radford, *The Economic Organisation of a P.O.W. Camp*, 12(48) *ECONOMICA* 189, 190 (1945) (presenting model of exchange in a P.O.W. camp as alternative to Robinson Crusoe model); Paul A. Samuelson, *The Gains from International Trade*, 5(2) *THE CANADIAN JOURNAL OF ECONOMICS AND POLITICAL SCIENCE* 195, 203-204 (1939)(analytics of one person economies modeled on Robinson Crusoe); Roy J. Ruffin, *Pollution in a Crusoe Economy*, 5(1) *THE CANADIAN JOURNAL OF ECONOMICS* 110, 12-116 (1972) (developing an economic model to assess and address the problem of pollution under the Robinson Crusoe assumption); Milton Friedman, *Choice, Chance and the Personal Distribution of Income*, 61(4) *J. POL. ECON.* 277, 279-281 (1953) (analyzing questions of allocation in a Robinson Crusoe world which is used as a benchmark for analysis of an economy with many persons); Richard Stone, *The Theory of Games*, 58(230) *THE ECONOMIC JOURNAL* 185, 185 (1948) (Robinson Crusoe assumption as background to the theory of games); George J. Stigler, *The Successes and Failures of Professor Smith*, 84 (6) *J. POL. ECON.* 1199, 1211-1212 (1976) (failure of Robinson Crusoe assumption to take account of benefits of division of labor); Paul Streeten, *Economics and Value Judgments*, 64(4) *QUART. J. ECON.* 583, 587 (1950) (likening atomistic competitive system as Robinson Crusoe world); Jack Hirshleifer & John G. Riley, *The Analytics of Uncertainty and Information: An Expository Survey*, 17(4) *J. ECON. LIT.* 1375, 1378 (1979) (by contrast to Robinson Crusoe world, "in the world of affairs studied by economists there are interpersonal arrangements-insurance contracts, futures markets, guarantees and collateral, the corporation and other forms of combined exchange"); Paul A. Samuelson, *Social Indifference Curves*, 70(1) *QUART. J. ECON.* 1, 3 (1956)(brief mention of Robinson Crusoe assumption and welfare economics); N. Georgescu-Roegen, *Economic Theory and Agrarian Economics*, 12(1) *OXFORD ECON. PAPERS* 1, 4 (1960) (Robinson Crusoe assumption and Marxist thinking of agricultural and industrial economies). *But see* Harold Demsetz, *Toward a Theory of Property Rights*, 57(2) *THE AMERICAN ECONOMIC REVIEW* 347, 347-348 (1967) (property rights are meaningless concept in Robinson Crusoe world); Melanie Samson, *Towards a 'Friday' Model of International Trade: A Feminist Deconstruction of Race and Gender Bias in the Robinson Crusoe Trade Allegory*, 28(1) *THE CANADIAN JOURNAL OF ECONOMICS* 143, 144-149 (1995)(challenging biases latent in Robinson Crusoe assumption); Julie A. Nelson., *Feminism and Economics*, 9(2) *THE JOURNAL OF ECONOMIC PERSPECTIVES* 131, 135 (1995) (commenting on Robinson Crusoe assumption in economic theory).

Only when we add people to the desert island does the possibility of transaction costs arise, because this addition creates the possibility of trade, i.e. of transactions. Suppose that Friday can build a shelter more efficiently than Robinson Crusoe. It might be worthwhile for them to agree that Friday should build the shelter that both will share, while Robinson Crusoe supplies the food. This may improve the welfare of both through trade. But to make this arrangement they will have to spend time bargaining about it. We refer to this additional costs (and other costs incurred in their interaction with respect to this transaction) as transaction costs. Unlike the standard economic textbook model of trade, we recognize that trading itself introduces costs into the economy and these costs must be taken into consideration in designing markets and other institutions. The insight that markets and other institutions are not costless is the key contribution of the transaction cost approach. We capture this insight with our definition.

The “dealing with other people” definition’s reach becomes more apparent if by some magic, Robinson Crusoe and Friday multiply and we have the formation of organizations like the family, the firm, and the state. Now the transaction costs, including public transaction costs, multiply, but production costs are still identifiable. They are the costs that Robinson Crusoe would have expended had he lived by himself. So if the state builds housing, the cost of the resources that Robinson Crusoe would have expended to build similar housing by himself on the island would be production costs; the costs that would arise from having to deal with the range of people, both private and public, would be the transaction costs. The comprehensiveness of our working definition enables the definition to work in the many areas where the transaction cost minimization rationale has influenced legal practice.

II. THE BENEFITS OF TRANSACTION COSTS

When people pay transaction costs they frequently purchase something of value. In particular, transaction costs 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. They aid 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.¹⁵⁰

Economists recognize that some people have more information than others.¹⁵¹ 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.¹⁵²

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 information. The recognition of information as a commodity raises many issues for transaction cost analysis.¹⁵³

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

¹⁵⁰ 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, IMPERFECT ALTERNATIVES, *supra* note 12, at 107 n. 14.

¹⁵¹ *See id.*

¹⁵² *Id.*

¹⁵³ 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).

would not exist because there would be no basis for trade.¹⁵⁴ Market trades exist because some individuals believe that an asset being traded is overvalued by the market and others believe it is undervalued.¹⁵⁵ 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.¹⁵⁶ The observation that perfect information markets are impossible is known as the Grossman-Stiglitz paradox.¹⁵⁷ 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 the expenditures 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.”¹⁵⁸ 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.¹⁵⁹ 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.”¹⁶⁰ 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

¹⁵⁴Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 *Amer. Econ. Rev.* 393, 405 (1980).

¹⁵⁵ See BOYLE, *supra* note 152, at 90.

¹⁵⁶ See, e.g., MILGROM & ROBERTS, *supra* note 129, at 72-73 (analyzing role of information in perfectly competitive markets).

¹⁵⁷ Grossman & Stiglitz, *supra* note 153.

¹⁵⁸ *Id.* at 404.

¹⁵⁹ For a discussion of the Efficient Market Hypothesis, see Eugene F. Fama, *Efficient Capital Markets: II*, 46 *JOURNAL OF FINANCE* 1575-1617 (1991); BURTON G. MALKIEL, *A RANDOM WALK DOWN WALL STREET* 24-26 (2001).

¹⁶⁰ Grossman & Stiglitz, *supra* note 153, at 405.

possible helps explain why information is valuable. And that explanation provides the basis for understanding the functions that transaction costs purchasing information serve.

Economists only assume that transactions are efficient under conditions of perfect information, a condition that real markets rarely meet.¹⁶¹ 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 it. While, in the world of perfect information transactions are inherently good, in the real world, people can buy things that have less value than they anticipated and paid for.¹⁶²

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. And they too incur transaction costs in obtaining and processing that information. The key to understanding transaction cost functions involves analysis of why precisely government and private parties spend money to acquire information.

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

¹⁶¹ See KREPS, *supra* note 4, at 264 (assumption of perfect information stated in a graduate textbook discussion of neoclassical economic model).

¹⁶² See, e.g., E. ALLAN FARNSWORTH, CHANGING YOUR MIND: THE LAW OF REGRETTED DECISIONS 23-23 (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).

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.

1. PRIVATE LAW

A real estate transaction offers perhaps the best example of transaction cost incurred to avoid bad deals.¹⁶³ Lenders commonly pay for credit checks of purchasers.¹⁶⁴ This delays closing, but provides the information needed to know whether the buyer will likely repay the loan.¹⁶⁵ Lenders also require title searches.¹⁶⁶ This likewise takes time, but assures that the homeowner has a clear claim to the real estate purchased, thereby making the collateral secure.¹⁶⁷ Buyers also commonly make their offers contingent upon inspection.¹⁶⁸ 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.¹⁶⁹ In short, a real estate transaction has a structure designed to transfer information among the parties and provide protection against bad transactions.

Business transactions often involve fairly high transaction costs in order to avoid bad deals. Gilson argues that lawyers in corporate acquisitions reduce transaction costs.¹⁷⁰ Yet, he starts from a premise that the client already has decided to devote significant resources to developing information about the target company.¹⁷¹ In other words, the client has already made the decision to pay significant transaction costs, and the

¹⁶³ See ROBIN PAUL MALLOY & JAMES CHARLES SMITH, REAL ESTATE TRANSACTIONS: PROBLEMS, CASES, AND MATERIALS, 32-34 (2nd ed. 2002) (discussing lawyer's role as a "risk manager" in real estate transactions)

¹⁶⁴ See *id.* at 601-603 (discussing credit checks).

¹⁶⁵ See *id.* (discussing assessment of ability and willingness to pay).

¹⁶⁶ See *id.* at 361-65 (describing title searches and recording of deeds).

¹⁶⁷ See *id.* at 364 (discussing possibility that owner conveying land may not own it).

¹⁶⁸ See *id.* at 170.

¹⁶⁹ 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).

¹⁷⁰ 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).

¹⁷¹ See *id.* at 257-270 (examining a typical corporate acquisition agreement that has been negotiated after target has been determined).

lawyer then seeks to engineer the transaction so that the information performing the avoidance functions comes in as cheaply as possible.¹⁷²

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 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 which 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 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.¹⁷³ In other words, if each party to a contract knows that the other party may not sue on the contract but may be persuaded 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.¹⁷⁴ Gertner and Picker point out that the parties can impose these transaction costs by introducing a term in their contract providing that, "If either of us seeks to renegotiate, we will pay a third party a large sum of money."¹⁷⁵ The problem with such a term is that the agreement with the third party could also be renegotiated if

¹⁷² 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 30.

¹⁷³ *See* DOUGLAS G. BAIRD, ROBERT H. GERTNER, & RANDAL C. PICKER, GAME THEORY AND THE LAW 116 (1994).

¹⁷⁴ *See* ID. at 117-118.

¹⁷⁵ *See* ID. at 118.

transaction costs are low enough.¹⁷⁶ One solution to this problem, the authors suggest, is to enter into these side deals with a number of third parties.¹⁷⁷ 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.”¹⁷⁸ 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.

The United States Constitution forbids government deprivation of life, liberty, or property without “due process” of law.¹⁷⁹ The Supreme Court has developed a jurisprudence seeking to answer the question of what process is due before such a rights deprivation can occur.¹⁸⁰ This procedural due process jurisprudence employs a balancing test to answer that question.¹⁸¹ 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.¹⁸²

The Supreme Court frequently finds that some additional procedure is needed in procedural due process cases.¹⁸³ Often, the Court requires a hearing prior to deprivation of a property or liberty interest, even when the

¹⁷⁶ See ID.

¹⁷⁷ See ID.

¹⁷⁸ See ID.

¹⁷⁹ See U.S. Const. Amend. V, XIV.

¹⁸⁰ See, e.g., *Mathews v. Eldridge*, 424 U.S. 319, 335 (1975) (setting out factors relevant to judgment about what process is due).

¹⁸¹ See *id.* at 335.

¹⁸² See *id.*

¹⁸³ See, e.g., *Goldberg v. Kelly*, 397 U.S. 254, 260-61 (1969) (requiring a hearing prior to deprivation of welfare benefits).

government has not required one in the past.¹⁸⁴ 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) that 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 (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.¹⁸⁵ 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.¹⁸⁶ If the consequences of error are sufficiently serious, more transaction cost 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.¹⁸⁷

¹⁸⁴ See, e.g., *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); *Cleveland Board of Education v. Loudermill*, 470 U.S. 532 (1984) (requiring hearing prior to discharge of a civil service employee); *Connecticut v. Doehr*, 501 U.S. 1 (1991) (requiring a hearing prior to attaching real estate).

¹⁸⁵ See *Mathews*, 319 U.S. at 347 (recognizing the "incremental cost" associated with providing hearings).

¹⁸⁶ See *id.* at 335, 343-47 (evaluating the risk of error in decisions terminating disability benefits); *Santosky v. Kramer*, 455 U.S. 745, 764 (1982) ("fair preponderance of evidence standard" creates a risk of erroneous deprivation of parental rights in child neglect proceedings); *Doehr*, 501 U.S. at 12 (finding risk of erroneous deprivation of property interest from prejudgment attachment of real estate in an assault case "substantial").

¹⁸⁷ See Jerry L. Mashaw, *The Supreme Court's Due Process Calculus for Administrative Adjudication in Mathews v. Eldridge: Three Factors in Search of a Theory* (continued...)

In the context of due process, the Court has addressed the value of paying an attorney, the transaction cost used to introduce this article.¹⁸⁸ It has recognized that counsel can help bring legal and factual information before the Court, which can improve the accuracy of the proceedings.¹⁸⁹

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.¹⁹⁰ Limiting access to attorneys in order to reduce transaction costs, she points out, may limit access to benefits.¹⁹¹ 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.¹⁹² 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.¹⁹³

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.¹⁹⁴ But as the attorney fee examples suggest, private transaction costs, such as the fees a private party pays an attorney, can

¹⁸⁷(...continued)

of Value, 44 U. CHI. L. REV. 28, 48 (1976) (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 employ 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).

¹⁸⁸ *See, e.g.*, *Walters v. National Ass'n of Radiation Survivors*, 473 U.S. 305 (1985); *U.S. Dep't of Labor v. Triplett*, 494 U.S. 715 (1990); *Goldberg v. Kelley*, 397 U.S. 254, 270-71 (1969).

¹⁸⁹ *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 recipient's interest").

¹⁹⁰ *See McCluskey, supra* note 63, at 738.

¹⁹¹ *See id.*

¹⁹² *See id.* at 864-65 (worker without an attorney was unable to afford medical witnesses needed to win a case).

¹⁹³ *Cf. id.* at 869-873 (explaining that the question of the appropriate level of attorneys fees depends on underlying normative judgments).

¹⁹⁴ *See, e.g.*, *Mathews*, 424 U.S. at 347 (discussing the cost to the government, and thus the public, of providing a hearing).

purchase information needed to avoid bad transactions as well. In *Mullane v. Central Hanover Tr. Co., Inc.*,¹⁹⁵ 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.¹⁹⁶ The Court found that newspaper publication provided trust beneficiaries with constitutionally insufficient notice.¹⁹⁷ It required the Central Hanover Bank and Trust Company (and similarly situated private trustees) to provide more costly and elaborate notice (at least in most situations) to safeguard trust beneficiary’s right to contest the settlement of accounts.¹⁹⁸ 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.¹⁹⁹ Thus, the Court has recognized the desirability, at times, of increasing private as well as public transaction costs in order to generate sufficient information for a good decision.²⁰⁰

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.²⁰¹ A number of significant transaction costs arise because of the

¹⁹⁵ 339 U.S. 306 (1950).

¹⁹⁶ *See id.* at 307-10.

¹⁹⁷ *Id.* at 320.

¹⁹⁸ *See id.* at 313-330.

¹⁹⁹ *See, e.g.,* North Georgia Finishing, Inc. v. Di-Chem, 419 U.S. 601 (1975) (invalidating statute authorizing garnishment without a hearing incident to a suit for debt collection); Sniadach v. Family Finance Corp., 395 U.S. 337 (1969) (invalidating wage garnishment without a prior hearing incident to collection of a promissory note); Fuentes v. Shevin, 407 U.S. 67 (1972) (invalidating clerk’s sequestration of property on which installment payments were allegedly owed without a hearing). *Cf. Mitchell v. W.T. Grant Co.*, 416 U.S. 601 (1973) (upholding judge’s sequestration of property on which installment payments were allegedly owed without a hearing). *See also* Doehr, 501 U.S. at 16 (analyzing burden on private plaintiff in concluding that a hearing must precede attachment of real estate in an assault case).

²⁰⁰ *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).

²⁰¹ *See, e.g.,* Hahn & Hester, *supra* note ?, at 149 (recommending reducing certain
(continued...))

need to prevent bad transactions. They provide the information needed to distinguish between good and bad transactions.²⁰²

By a good transaction, we mean one that provides the public with at least as valuable 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.²⁰³ 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.²⁰⁴ Since trades rearrange government-imposed obligations to make environmental improvements,²⁰⁵ 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.²⁰⁶

The need to avoid bad transactions motivates governments to examine emissions trades with public input before approving them in some

²⁰¹(...continued)

types of federal oversights of emission trades in order to reduce transaction costs and encourage cost savings); Goldschein, *supra* note 107, at 260 (suggesting approval of interstate or regional trades to reduce transaction costs); Sohn & Cohn, *supra* note 108, at 419-20, 431-32 (writing approvingly of efforts to reduce transaction costs in emissions trading); Marchant, *supra* note 107, at 644-45 (recommending eliminating federal approval of trades in order to reduce transaction costs); Robert N. Stavins, *Policy Instruments for Climate Change: How can National Governments Address a Global Problem*, 1997 U. Chi. L. Rev. 293, 317 (one aim of trading regimes should be to keep transaction costs low); Foster & Hahn, *supra* note 111, at 33, 35, 39 (suggesting disapproval of transaction costs); Stavins, *supra* note 101, at 145 (government can avoid creating regulatory barriers, such as preapproval requirements, that drive up the cost of trades).

²⁰² See Hahn & Hester, *supra* note ?, at 144 (transaction costs exist because of need to satisfy environmentalists that trades will not adversely affect environmental quality).

²⁰³ See Ackerman & Stewart, *supra* note 94, at 184 (suggesting estimating current aggregate pollution reduction requirements as the first step in creating a tradeable permit program).

²⁰⁴ See, e.g., Proposed Approval and Promulgation of Implementation Plans; Michigan Emissions Trading Program, 66 Fed. Reg. 9264, 9267 (February 7, 2001) (provisions in state trading program that might lessen environmental quality deemed unacceptable).

²⁰⁵ See Driesen, *supra* note 93, at 338 (emissions trading authorizes “trading around” of government-created obligations).

²⁰⁶ See Proposed Approval of Michigan Emissions 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).

contexts.²⁰⁷ This was extremely 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.²⁰⁸

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.²⁰⁹ 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 about the quality of the product sold.²¹⁰ Anything that satisfies the government satisfies them.²¹¹ By contrast, if a buyer purchases a 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.²¹² 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.²¹³ As EPA explained

²⁰⁷ See Proposed Open Market Trading Rule for Ozone Smog Precursors, 60 Fed. Reg. 39668, 39671 (August 3, 1995).

²⁰⁸ See *id.*; Approval of Promulgation of Implementation Plans: Illinois Emissions Trading Program, 66 Fed. Reg. 52343, 52350 (October 15, 2001) (recognizing that measurement difficulties create significant uncertainties in trading volatile organic compound emission reductions), *codified at* 40 C.F.R. part 52 (2002).

²⁰⁹ See Lisa A. Wainger, Dennis King, James Salzman, and James Boyd, *Wetland Value Indicators for Scoring Mitigation Trades*, 20 STAN. ENVTL. L. J. 413, 420 (2001) (neither buyers nor sellers of credits are “quality-conscious”).

²¹⁰ See David M. Driesen, *Free Lunch or Cheap Fix?: The Emissions Trading Idea and the Climate Change Convention*, 26 BOST. COLL. ENVTL. AFF. L. REV. 1, 66 (1998) (emissions trading divorces interest in the quality of goods from desire to purchase).

²¹¹ See *id.* (“shoddy” emission credits are adequate for the purposes of companies involved in trades if the government accepts the credits).

²¹² See *id.*

²¹³ See, e.g., Proposed Approval and Promulgation of Implementation Plans: Michigan Emissions Trading Program, 66 Fed. Reg. 9264, 9267 (February 7, 2001) (noting that (continued...))

in a 1995 federal register notice, “up-front” review sought to “avoid quality control problems” in the form of “paper trades.”²¹⁴ Paper trades allow operators to escape an applicable emission control requirement in exchange for a claimed reduction that reflects no extra actual emission reduction.²¹⁵

The first kind of information needed is quantitative. Does the amount of emissions reduced actually match the claims of parties selling credits?²¹⁶ Does the amount of the shortfall a purchaser aim to fill with credits really equal the extent of non-compliance at its facility?²¹⁷ Both of these questions require information to answer.²¹⁸

At least where good information exists about baseline emissions,²¹⁹ 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.²²⁰ The public transaction cost of debating and enacting the monitoring requirement and the private cost of complying with the monitoring

²¹³(...continued)

credits for shutdowns and production slow downs can cause overall emissions in a trading program to increase beyond what they would be without trading).

²¹⁴ See Proposed Open Market Trading Rule for Ozone Smog Precursors, 60 Fed. Reg. 39668, 39671 (August 3, 1995); Emissions Trading Policy Statement: General Principles for Creation, Banking and Use of Emission Reduction Credits, 51 Fed. Reg. 43814, 43817 (December 4, 1986).

²¹⁵ 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 93, at 314-16 & notes 120-127 (discussing the prevalence of paper credits under state offset, netting, and banking programs).

²¹⁶ See Proposed 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 (January 9, 2001) (discussing need to quantify amount of reductions a source may sell).

²¹⁷ See *id.* (discussing need to determine “the amount of emissions by which a sources may be exceeding . . . its permit limits.”)

²¹⁸ See Proposed 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 (January 9, 2001) (referring to need to quantify emission reductions involved in trading)

²¹⁹ 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 106, at 162 (defining the term “baseline”).

²²⁰ See 42 U.S.C. § 7651k(a).

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.²²¹ In such cases, the government sometimes authorizes trades based on emissions estimates.²²² 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.²²³ 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.²²⁴ For example, wetlands of equivalent size and type can vary radically in their value as wildlife habitat, contributors to water quality, and as a means of controlling floods.²²⁵

²²¹ See Approval of Promulgation of Implementation Plans: Illinois Emissions Trading Program, 66 Fed. Reg. 52343, 52350 (October 15, 2001) (recognizing that measurement difficulties create significant uncertainties in trading volatile organic compound (VOC) emission reductions, while approving VOC trading), *codified at* 40 C.F.R. part 52 (2002).

²²² See OAR GUIDANCE, *supra* note 106, at 67 (discussing estimation procedures).

²²³ See WILLIAM J. BAUMOL & WALLACE E. OATES, *ECONOMICS, ENVIRONMENTAL POLICY, AND THE QUALITY OF LIFE*, 253 (1979) (Pollution permit approach only feasible if it is possible to effectively monitor pollution levels).

²²⁴ See James Salzman and J.B. Ruhl, *Apples for Oranges: The Role of Currencies in Environmental Trading Markets*, 53 STAN. L. REV. 413 (2000); Wainger, King, Salzman, and Boyd, *supra* note 208; Proposed Approval and Promulgation of Air Quality Implementation Plan: New Hampshire Discrete Emissions Reduction Trading Program, 66 Fed. Reg. 9278, 9280-81 (approving of inter-pollutant trades when air quality has shown them to have equivalent impacts).

²²⁵ See Wainger, King Salzman, and Boyd, *supra* note 208, at 424-26; J.B. Ruhl & R. Juge Gregg, *Integrating Ecosystem Services into Environmental Law: A Case Study of Wetlands Mitigation Banking*, 20 STAN. ENV'T'L L. J. 365, 366 (2001) (discussing flood control and water quality improvement functions).

Equivalent acreage trades can be bad deals for the public.²²⁶ 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.²²⁷ Absent sufficient transaction costs to generate good qualitative information, bad deals could be very common.²²⁸ 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.²²⁹

This issue of quality often arises for geographic reasons.²³⁰ At times, reductions in a pollutant in one area have more value than in another.²³¹ 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.²³² 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.²³³ At other times, they have

²²⁶ See Wainger, King, Salzman, and Boyd, *supra* note 208, at 424-26 (explaining how an equivalent acreage trade may produce a bad deal for the public).

²²⁷ See Salzman & Ruhl, *supra* note 223, at 671-687.

²²⁸ See Wainger, King, Salzman, & Boyd, *supra* note 208, at 471-72 (discussing data needs for wetlands mitigation banking).

²²⁹ *Cf. id.* at 415 (in practice, wetlands mitigation banking “often fails to provide wetland gains that offset wetland losses”).

²³⁰ See Salzman & Ruhl, *supra* note 223, at 627-28 (discussing “nonfungibilities of space”).

²³¹ See DALES, *supra* note 92, at 79.

²³² 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. 57356, 57459 (1998) (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 224, at 388 (discussing up-front geographic and qualitative restrictions for wetlands mitigation banking).

²³³ See, e.g., 42 U.S.C. § 7503(c)(1) (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. § 7511a(b)(5), (c)(10), (d)(2), (e)(1) (establishing requirements to provide greater offsets than added emissions in certain areas not meeting federal air quality standards for (continued...))

required public approval of trades, so that the regulators and the public can consider the geographic effects of particular proposed trades.²³⁴ From 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.²³⁵ 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.²³⁶

²³³(...continued)
ground level ozone).

²³⁴ See, e.g., Proposed Approval and Promulgation of Implementation Plans; Michigan Emissions Trading Program, 66 Fed. Reg. 9264, 9268-69 (February 7, 2001) (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)[hereinafter Michigan Trading SIP].

²³⁵ See, e.g., Finding of Significant Contribution, 63 Fed. Reg. at 57459-60 (declining to employ trading ratios when no party has justified particular trading ratios and geographic boundaries).

²³⁶ See, e.g., Michigan Trading SIP, *supra* note 233, 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 106, 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. Gerald Torres, *Who Owns the Sky*, 18 PACE ENVTL. L. REV. 227, 281-83 (2001) (raising general equitable issues with emissions trading); Salzman & Ruhl, *supra* note 223, at 627 (discussing toxic hot spot problems); Stephen M. Johnson, *Economics and 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); Driesen, *supra* note 209, 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, Michael E. Belliveau, J. Scott Kuhn, and Shipra Bansal, *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 Duke Env'tl. L. & Pol'y F. 231 (1999); 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). Some transaction costs facilitate needed attention to equitable issues in emissions trading.

Responsible proposals to reduce transaction costs in this context will adequately serve the function that high transaction costs would otherwise serve.²³⁷ 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 EPA to consider the desirability and feasibility of a deposition standard, which could involve geographically specific cuts to address an important local impact.²³⁸ And the Clean Air Act authorizes states to make additional reductions in acid rain precursors to address local and regional health problems associated with these pollutants.²³⁹ 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 affects,²⁴⁰ unless the regulator can foresee and plan for significant geographic problems through trading restrictions.²⁴¹

In short, transaction costs in the emissions trading context often perform important functions. One function involves developing information to prevent bad transactions, transactions that worsen environmental quality. Transaction costs aid avoidance of inefficient transaction in a wide variety of contexts.

C. Transaction Costs Producing Efficient Transactions

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

²³⁷ See generally OAR GUIDANCE, *supra* note 106, at 21 (simple rules maximize cost effectiveness, but equity, environmental, and enforcement concerns may force “trade off” of some cost-effectiveness); Diller, *supra* note 71, at 495 (critics of government “red tape” often fail to examine why red tape is there).

²³⁸ See, e.g., Clean Air Act Amendments of 1990, Pub. L. 101-549, § 404.

²³⁹ See 42 U.S.C. §§ 7511a(c)(2)(C); 7513a(e); 7651l.

²⁴⁰ See generally WESLEY A. MAGAT, REFORM OF ENVIRONMENTAL REGULATION 104-105 (1982) (explaining how uncertainty about tradeoffs tends to generate high transaction costs).

²⁴¹ See, e.g., Proposed Approval and Promulgation of Implementation Plans; Michigan Emissions Trading Program, 66 Fed. Reg. 9264, 9269 (February 7, 2001) (discussing rules to address unpredictable choices about which hazardous air pollutants to trade in a volatile organic compound emissions trading program).

transaction absent sufficient information.²⁴² 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.²⁴³ Because of this, they paid no transaction costs. Transaction costs were zero and there was no market. The settlers lived far up in the hills, farmed their land, and generally bought nothing.

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.²⁴⁴

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.²⁴⁵ In this scenario, actual expenditures upon transaction costs have risen to the point

²⁴² 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.

²⁴³ See HARRY CAUDILL, *NIGHT FALLS ON THE CUMBERLANDS* 36 (1962) (referring to the "ancient . . . agricultural and hunting life" that preceded the development of "a cash economy.")

²⁴⁴ 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 ON THE CUMBERLANDS*, Harry Caudill explains that peddlers became merchants when coal mining gave birth to towns. *Id.* at 108-109. Increased transaction costs devoted to transportation played a significant role in the development of a market economy in Appalachian economy, as this illustration suggests. MARY JEAN BOWMAN AND 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.

²⁴⁵ See generally, CAUDILL, *supra* note 242, at 108-109 (discussing peddlers in Appalachia).

where a market is possible. Under the prior subsistence regime, actual expenditure of transaction costs (\$0) 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.²⁴⁶ But once the railroad came (or the cars, or the bicycles), the transaction cost dropped and a viable market came into being.²⁴⁷

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.²⁴⁸ They cannot possibly pay attention to everything, so they develop rules of thumb to guide what they will pay attention to.²⁴⁹ Thus, the merchant in town might pay attention to

²⁴⁶ See ROBERT S. WEISE, *GRASPING AT INDEPENDENCE: DEBT, MALE AUTHORITY, AND MINERAL RIGHTS IN APPALACHIAN KENTUCKY, 1850-1915* 103 (2001) (discussing poor transportation and rugged terrain as obstacles to "free distribution of goods and hard money").

²⁴⁷ BOWMAN & HAYNES, *supra* note 243, at 256 (discussing relationship between transportation infrastructure and market development in Eastern Kentucky).

²⁴⁸ See NORTH, *INSTITUTIONS*, *supra* note 138, at 109 ("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 (because of "bounded rationality" one cannot know everything one needs to know in order to make a decision); KREPS, *supra* note 4, at 744-747, 771.

²⁴⁹ See Timothy F. Malloy, *Regulating by Incentives: Myths, Models, and* (continued...)

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.

When Coase defines transaction costs as the costs of using the market mechanism, he understates his point. No market mechanism exists to use 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 realization of 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, 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 in the hills that would be unavailable otherwise. The development of markets in this

²⁴⁹(...continued)

Micromarkets, 80 TEX. L. REV. 531, 556 (2002) (human attention is a scarce resource, which must be selectively allocated).

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 often pay for processes that affirm individual dignity or aid the realization of equitable goals.

1. DIGNITARY THEORIES OF DUE PROCESS

Jerry Mashaw has criticized the Supreme Court's emphasis on avoiding error as the sole value that due process serves (when the Court considers adding transaction costs to public processes).²⁵⁰ He argues that process must protect individual dignity by satisfying "democratic morality's demand" that an individual have an opportunity to participate in decisions that affect her.²⁵¹

This dignitary approach suggests that transaction costs sometimes purchase legitimacy for a process - a feeling that the process is fair and

²⁵⁰ See Mashaw, *supra* note 186, at 48 (characterizing the Court's emphasis upon accuracy as too narrow).

²⁵¹ See *id.* at 49-50.

respectful.²⁵² This seems especially relevant when an involuntary transaction is involved.²⁵³ For in this situation, the individual cannot affirm her dignity by simply rejecting a proposed transaction. Instead, absent some transaction cost, government may impose an order greatly affecting her life without even hearing what she has to say about it.²⁵⁴

One might analogize the function of transaction costs paying for dignity to some types of preferences for market transactions. It is not clear that everybody prefers the most transaction cost free approach to ordinary market transactions. Some people might prefer to shop at a small store where idle conversation with the owner (a transaction cost in the form of an expenditure of time) forms part of the transaction.²⁵⁵ They may feel less alienation having been heard than they do if they simply make a purchase on the internet or by choosing merchandise alone from a shelf. And in many cultures, haggling over the price, inefficient as that may be, forms part of a ritual affirming the dignity of the participants in the transaction.

This does not deny the value of shopping malls and internet shopping. It just means that buyers shopping with sellers offering lower transaction costs lose the functions that the higher transaction costs associated with more personable transactions might purchase.

But this function of reducing alienation through personal interaction seems especially important when a transaction is involuntary. For in that situation, an especially high risk of alienation exists.

2. TRANSACTION COSTS UNDER CERCLA

Many transaction costs under CERCLA serve the function of equitably apportioning liability.²⁵⁶ This might seem like a paradoxical

²⁵² See *id.* at 49-50 (discussing the need to legitimize state coercion and the ordinary individual's demand to be heard).

²⁵³ *Cf.* *id.* at 49 (associating dignitary theory with state coercion).

²⁵⁴ *Cf.* David M. Driesen, *The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis*, 24 *ECOLOGY L. Q.* 545, 580 (1997) (explaining that Kaldor-Hicks efficient public policy lacks "the attractive consensual" features of "free market exchange.").

²⁵⁵ *Cf.* ROBIN PAUL MALLOY, *LAW AND MARKET ECONOMY: REINTERPRETING THE VALUES OF LAW AND ECONOMICS* 54-55 (2000) (because changes in market structure influence social and cultural relationships, we should view markets as a place of "meaning and value formation.").

²⁵⁶ See Dahlquist, *supra* note 89 (discussing in detail the equitable factors that govern (continued...))

statement, since CERCLA imposes strict, joint and several liability upon PRPs, meaning that EPA can hold any one PRP responsible for the entire cost of cleanup (except in the rare case when a party can demonstrate that harm is divisible).²⁵⁷ In practice, however, EPA does consider the degree of responsibility various PRPs should bear for hazardous waste sites in negotiations apportioning liability and choosing which defendants to aggressively target.²⁵⁸ Moreover, assignment of joint and several liability is only the tip of the iceberg. PRPs can bring contribution actions to avoid cost and fob it off on other PRPs.²⁵⁹ And a variety of equitable factors

²⁵⁶(...continued)

apportionment of liability). See also Van Cleve, *supra* note 88, at 10134 n. 2 (defining transaction costs as costs “incurred in resolving” liability disputes).

²⁵⁷ See *United States v. Chem-Dyne*, 572 F. Supp. 802, 808-810 (S.D. Ohio 1983) (announcing rule of joint and several liability subject to an exception where a party can prove that harm is divisible); H.R. Rep. No. 253, 99th Cong., 1st Sess., pt. 1 at 74 (1985), *reprinted in* 1986 U.S.C.C.A.N. 2835, 2856 (confirming Chem-Dyne principle); *United States v. Monsanto*, 858 F.2d 161, 171 n. 23 (4th Cir. 1988), *cert. denied*, 490 U.S. 1106 (1989) (recognizing that Congress confirmed joint and several liability); *In re Bell Petroleum*, 3 F.3d 889, 901-903 (5th Cir. 1993); *United States v. Alcan Aluminum Corp.*, 964 F.2d 252, 267-269 (3d Cir. 1992) (characterizing CERCLA liability as apparently unfair); *O’Neill v. Picillo*, 883 F.2d 176, 178-79 (1st Cir. 1989), *cert. denied*, 490 U.S. 1106 (1989); *PROBST & PORTNEY*, *supra* note 81, at 9 (“Joint and several liability mean that, generally, any one PRP could be held responsible for the entire scope of a site cleanup.”) [italics omitted]; *Oswald*, *supra* note 79, at 591 (noting that strict liability implies that parties not morally culpable will nevertheless be liable).

²⁵⁸ See *Carson Harbor Village, 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 horrors”); *B.F. Goodrich Co. v. Murtha*, 958 F.2d 1192, 1205 (2nd 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*, October 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]. Cf. *McGee*, *supra* note 88, at 174 (suggesting that EPA inequitably pursues large companies with “deep pockets” more aggressively 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.*

²⁵⁹ See *Key Tronic Corp. v. United States*, 511 U.S. 809, 816 (1994) (discussing how Congress incorporated common law contribution actions into CERCLA); *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 485 (1996) (CERCLA authorizes one PRP to sue another for contribution). See generally Lewis A. Kornhauser and 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).

govern these contribution actions.²⁶⁰ In general, CERCLA seeks to apportion liability among PRPs in a manner at least roughly proportionate to responsibility for waste.

This equitable principle makes it necessary to generate information about a wide variety of past activity, such as arrangements for disposal, amounts of hazardous waste dumped at sites by various parties, and the degree of knowledge various parties had about dumping.²⁶¹ A hazardous waste dump does not tell us who participated in the activities leading to the problem.²⁶² Often figuring out who did what involves enormous expense and only yields partial answers.²⁶³

One can see this equitable function most easily by imagining how one might reduce transaction costs. Suppose that one simply established a rule that each PRP would pay an equal portion of cleanup costs, permitting no right of contribution to reallocate costs based upon equitable principles and no ad hoc adjustment by EPA through settlement.²⁶⁴ If ten parties were potentially responsible for one site's waste, which cost \$1 million to clean up, then each PRP would pay \$100,000. Such a rule would simply and easily eliminate many of the transaction costs arising under

²⁶⁰ 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 89, 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 89, at 11099 (describing non-Gore factors frequently considered by district courts).

²⁶¹ *See* Colorado & E.R.R., 50 F.3d at 1536 n. 5; Eugene Martin-Leff, *The Common Law Ancestry of Superfund Liability*, 8 MD. J. CONTEMP. LEGAL ISSUES 53, 59 (1996-97) (we can achieve a high degree of fairness through extensive discovery and expert analysis, thus raising transaction cost).

²⁶² *Accord* Dahlquist, *supra* note 89, at 11103 (it is "often difficult, or even impossible, to determine each party's relative contribution to the environmental problem.").

²⁶³ *See* David B. Spence, *Imposing Individual Liability as a Legislative Policy Choice: Holmesian "Intuitions" and Superfund Reform*, 93 Nw. U. L. Rev. 389, 430 (1999) (noting "the typical lack of information about Superfund site histories").

²⁶⁴ *See* Martin-Leff, *supra* note 260, at 59 (stating that nobody would support such a solution).

CERCLA.²⁶⁵ Most information about parties' past activities would become irrelevant to liability. So parties would not need to produce information about who brought which waste in what quantity to sites.²⁶⁶ Nobody would care about whether property owners knew about or encouraged dumping. And no debates about who bore the most responsibility would be relevant. So, there would be little need for the elaborate lawyering and negotiating that goes on around apportionment of liability.²⁶⁷

Parties would remain interested in researching the history of non-parties under this rule, because additional parties would reduce pro-rata shares.²⁶⁸ If we did not care about equity, however, we could simply bar contribution actions and eliminate these transaction costs.

²⁶⁵ Cf. PROBST & PORTNEY, *supra* note 81, at 13-14 (discussing transaction costs associated with apportioning liability).

²⁶⁶ Cf. Federal News Service, June 27, 1995 (Prepared Statement of Lois J. Schiffer, Assistant Attorney General Environmental and Natural Resources Division, Department of Justice, before the House Transportation and Infrastructure Committee Subcommittee on Water Resources and Environment Concerning Superfund Reauthorization) (most of the high transaction costs come from contribution actions)[hereinafter, Schiffer Statement].

²⁶⁷ In pointing out that concern for fairness generates significant transaction costs, I do not mean to assert that Superfund sufficiently attends to fairness considerations. There is great controversy about whether Superfund adequately meets fairness goals. See Spence, *supra* note 262. But it remains true that transaction costs finance the difference between the current level of unfairness in Superfund and the much greater unfairness that would result from a proposal that made no attempt to address fairness at all.

Professor Spence argues that joint and several liability generates the transaction costs that arise in disputes at multiparty sites. See *id.* at 419. But I have shown above that with respect to some very significant transaction costs, the possibility of equitable discretion in settlement or contribution, not the joint and several liability, generate most of the transaction costs. Cf. Howard F. Chang and Hilary Sigman, *Incentives to Settle Under Joint and Several Liability: An Empirical Analysis of Superfund Litigation*, 29 J. LEGAL STUD. 205, 231 (2000) (joint and several liability likely encourages settlement and therefore lowers transaction costs). Elimination of contribution and enforcement discretion would leave only the private transaction costs associated with identifying PRPs (excluding the transaction costs surrounding remedy selection, which are, for the most part separable from the liability regime). Cf. Martin-Leff, *supra* note 260, at 60-61 (citing the "Gore" factors and other opportunities for apportionment as the source of significant ambiguity and transaction costs) Indeed, the only category of transaction costs that Spence identifies in this portion of his argument, are "associated with recovering money" from other PRPs. Spence, *supra* note 262, at 419. These costs arise solely from contribution and would not exist if the equitable right to contribution were eliminated, even if joint and several liability were retained.

²⁶⁸ See Lyons, *supra* note 88, at 331.

Nobody has seriously proposed this solution to CERCLA's transaction cost problem.²⁶⁹ But it is worth considering why not. The answer must be that this solution does not meet a basic test that Congress has applied to reform proposals, that of fairness.²⁷⁰ Under this proposal, the owner who was a victim of midnight dumping faces the same liability as the dumper. This profoundly violates one's sense of fairness.²⁷¹ The law recognizes a general principle of personal responsibility, that one should clean up one's own mess.²⁷² While this principle becomes very difficult to apply when many contributors help create a mess over a long period of time, the principle still has strong appeal. And the transaction costs pay for efforts to come close to implementing this principle. If we did not care about this principle, then we could easily eliminate many transaction costs.

Insurers, PRPs and some academics have proposed other solutions to the Superfund transaction cost problem.²⁷³ For example, the government could pay for cleanup and not make PRPs responsible.²⁷⁴ This public works proposal, however, also highlights the fact that transaction costs pay for equity. Congress has debated variants of this proposal, principally a proposal to limit retroactive liability.²⁷⁵ It has concluded, however, that fairness and the personal responsibility principle requires that those most directly responsible for the problem should pay for the cleanup.²⁷⁶ The

²⁶⁹ See Martin-Leff, *supra* note 260, at 59 (nobody would support this solution).

²⁷⁰ See Cleve, *supra* note 88, at 10134 (Congressional debate has focused upon reducing transaction costs while *fairly* and expeditiously resolving liability disputes); Ellen J. Garnber, *Federal Common Law of Contribution Under the 1986 CERCLA Amendments*, 14 *ECOLOGICAL L.Q.* 365, 380 (1987) (Superfund Amendments and Reauthorization Act of 1986 "reinforces policies regarding fairness")

²⁷¹ See PROBST & PORTNEY, *supra* note 81, at 16 (discussing equitable principal that parties handling hazardous waste in similar ways deserve similar treatment).

²⁷² See *ID.* (fairness if often equated with the "polluter pays" principle).

²⁷³ See *ID.* at viii (listing five policy options); Steinzor, *supra* note 84 (discussing the public works alternative).

²⁷⁴ See Lyons, *supra* note 88, at 272-73 (offering public works alternative); Rena I. Steinzor, *The Reauthorization of Superfund: Can the Deal of the Century be Saved?*, 25 *ENVTL. L. REP. (Envtl. L. Inst.)* 10016, 10018 (1995) (discussing industry interest in a public works approach).

²⁷⁵ Representatives have introduced bills to eliminate or limit retroactive liability in many recent Congresses. See Spence, *supra* note 262, at 395 (discussing proposals in the 103^d, 104th, and 105th Congress); John Copeland Nagle, *Cercla's Mistakes*, 38 *WILLIAM & MARY L. REV.* 1405, 1454 (1997) (discussing failed effort to repeal retroactive liability); Chang & Sigman, *supra* note 266, at 205 (all major proposals for Superfund reauthorization would restrict joint and several liability).

²⁷⁶ See Spence, *supra* note 262, at 392-93 (CERCLA's defenders view it as (continued...))

taxpayer should not have to bear the full cost of cleanup.²⁷⁷ Some commentators have challenged this view.²⁷⁸ But the most responsible challenges do not rest on the principle of reducing transaction cost alone.²⁷⁹ Rather, they take into account the equitable argument about who should pay.²⁸⁰

Notice that the Congressional view does not represent a capitulation to special interests. Rather, contrary to the predictions of public choice theory, Congress has consistently denied the special interests the basic relief they seek, in favor of the general public interest in avoiding widespread diffuse taxpayer liability and affirming a personal responsibility norm.²⁸¹ But the main point remains, transaction costs here purchase rough equity.

One cannot claim, however, that all of Superfund's transaction costs come from the liability regime's preference for equity.²⁸² Many of the problems stem from technical difficulties in choosing remedies that must

²⁷⁶(...continued)

approximating the "polluter pays" principle as closely as possible); *United States v. Mexico Feed & Seed Co.*, 980 F.2d 478, 486 (8th Cir. 1992) (CERCLA's prime objective is to place the cost of cleanup on "those responsible for creating or maintaining the hazardous condition."). Fairness has not been the only consideration behind opposition to variants of the public works proposal. Absent vast increases tax expenditures, the elimination of retroactive liability alone would greatly reduce funding of cleanup. *See Spence, supra* note 262, at 396.

²⁷⁷ *See Oswald, supra* note 79, at 593 (strict liability rests on the rationale that the party creating the harm should bear the costs associated with the activity creating the harm). This rests in part on a fairness rationale, *see id.* at 593-94, and in part on an efficiency rationale, *see id.* at 594-95.

²⁷⁸ *See, e.g., McGee, supra* note 88 (calling for a repeal of Superfund).

²⁷⁹ *See Lyons, supra* note 88, at 341-42 (defining the issue raised by a public works proposal as whether the ends of corrective justice and prevention of unjust enrichment justifies the transaction costs of the liability system).

²⁸⁰ *See, e.g., PROBST & PORTNEY, supra* note 81, at 40-41 (noting that public works solution would involve an "enormous reduction in transaction costs," but questioning its fairness); *Spence, supra* note 262, at 429 ("any solution must balance the goal of fairness against transaction cost concerns."); *Lyons, supra* note 88, at 338-42 (proposing to raise taxes on PRPs and arguing about whether fairness requires continued liability in that context).

²⁸¹ *See Jonathan Baert Wiener, On the Political Economy of Global Environmental Regulation*, 87 *GEO. L. J.* 749, 750 (1999) (pointing out that public choice theory has trouble explaining the existence of environmental regulation, which serves diffuse public interests at the expense of well organized groups).

²⁸² *See PROBST & PORTNEY, supra* note 81, at 21 (identifying the site study and remedy selection processes as sources of cleanup delay "factors apart from the liability system.").

vary with site specific conditions that resist easy evaluation.²⁸³ Here, transaction costs serve the function of providing the information needed to allow for an informed remedial decision.²⁸⁴ Evaluation of remedies for large sites filled with “unknown combinations of hundreds of chemicals” sitting on top of “networks of aquifers and other complex geological features” that affect exposure of surrounding (and possibly distant) neighborhoods poses an enormously daunting time-consuming task, regardless of who pays for or conducts cleanup.²⁸⁵ Strict liability in the service of equity, however, does add some incremental transaction costs to the remedy selection process, by giving PRPs an interest in contesting expensive remedies.²⁸⁶

Transaction costs pay for the generation of information that inform the selection of effective and cost effective remedies.²⁸⁷ If one did not care about whether the remedies adequately protect human health or the environment or whether they cost too much, then little analysis would be needed prior to cleanup of Superfund sites. As it is, however, a time consuming investigative and negotiation process precedes the selection of remedies. The transaction costs pay for the selection of reasonably priced but effective remedies.²⁸⁸

²⁸³ See Reina L. Steinzor and Linda E. Greer, *In Defense of the Superfund Liability Scheme: Matching the Diagnosis and the Cure*, 27 ENVTL. L. REP. (Envtl. L. Inst.) 10286, 10287 (1997).

²⁸⁴ These costs can be significant. See Robert H. Abrams, *Using Experience to Improve Superfund Remedy Selection*, 29 U. RICHMOND L. REV. 581, 582 (1995) (the remedy selection process can cost millions of dollars).

²⁸⁵ See Steinzor & Greer, *supra* note 282, at 10288. See also Abrams, *supra* note 283, at 586-86 (explaining why remedy selection is so time consuming and expensive).

²⁸⁶ See Probst, *supra* note 88, at 67 (PRPs conduct their own studies in order to persuade EPA to choose less expensive remedies); Lyons, *supra* note 88, at 319-26; Hilary Sigman, *The Pace of Progress at Superfund Sites: Policy Goals and Interest Group Influence*, 44 J. L. & ECON. 315, 334 (2001) (sites without PRPs clean up more rapidly than other sites). Lyons discusses the need to come to an agreement with EPA about site remediation as a source of transaction costs as well. This transaction cost comes from EPA's tendency to seek PRP cooperation first. It has legal authority to clean up first and then bring a cost recovery action without any discussion of what the remedy should look like. The possibility of the PRP contesting the remedy probably contributes to the tendency to negotiate first and cleanup later (which has been the predominant approach during much, but not all, of Superfund's history).

²⁸⁷ See 42 U.S.C. § 9621(b) (requiring protective and cost effective remedies).

²⁸⁸ That is not to say that reduction of these transaction costs is impossible. See Abrams, *supra* note 283, at 583-584 (discussing the possibility of establishing “generic remedies” as a means of reducing the cost of remedy selection). *Cf. id.* at 597-601 (continued...)

Viewing the selection of remedies as a transaction (albeit an involuntary one), one might say that these transaction costs avoid bad transactions. They avoid selection of inefficient remedies or remedies that do not serve public interests adequately.

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 equity, access to a welfare enhancing exchange, or information necessary to avoid bad deals, 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.²⁸⁹ While processes can outlive their usefulness, eliminating them without analyzing their utility for the purposes they were designed for constitutes error.²⁹⁰ This part addresses the implications for legal theory of recognizing the benefits that transaction costs purchase.

A. Taking the 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 will briefly suggest why this is essential and then develop some suggestions about how to identify transaction cost functions.

We have already explained that payers of transaction costs obtain information that allows them to facilitate efficient transactions, avoid

²⁸⁸(...continued)

(explaining why generic remedies may not help in many situations and themselves generate fairly high transaction costs).

²⁸⁹ See BARRY BOZEMAN, BUREAUCRACY AND RED TAPE, 8 (2000) (red tape arises from demands for accountability of government officials).

²⁹⁰ 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).

inefficient transactions, and make 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.

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 reveal the functions particular transaction costs serve.

For example, some a person considering the purchase of a used cars may ask an auto mechanics 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 avoidance of bad transactions and creation of an efficient bargain.

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.²⁹¹ 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.

B. Reduction of Transaction Cost is not Always Justified

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 wish to raise transaction costs.

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 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 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 we want to realize transaction cost functions that we find important at the lowest possible price.

²⁹¹ Furthermore, in practice enforcement will involve substantial information acquisition costs.

We believe that 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.²⁹² Yet, courts, as a matter of policy, discourage such ambiguity by holding that ambiguities will be construed against the drafters of documents.²⁹³ This policy of construing ambiguity against drafters may raise transaction costs by encouraging clearly drafted documents that may 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.

This does not negate the value of trying to eliminate useless transaction costs where they exist.²⁹⁴ But transaction costs often pay for something of value, and therefore may not merit elimination or even reduction in many circumstances.²⁹⁵

C. Improving Transaction Cost Minimization Analysis

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

²⁹² 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) (different treatment of ambiguous terms and incomplete terms rests on differences in transaction costs); Alan O. Sykes, "Bad Faith" Breach of Contract By First-Party Insurers, 25 J. LEG. STUD. 405, 431 (1996) (ambiguity in terms of a contract explained by transaction costs).

²⁹³ 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 291, at 560 (arguing for strict treatment of ambiguities under parol evidence rule).

²⁹⁴ See BOZEMAN, *supra* note 288, at 10-12 (defining red tape as rules serving no function and suggesting that such rules deserve elimination).

²⁹⁵ Cf. Calabresi, *supra* note 6, at 1220 (arguing that Pareto superior moves eliminating transaction costs are unlikely to exist).

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.²⁹⁶ In emissions trading, the converse sometimes occurs. The literature usually decries the private transaction cost in the trading regime, but evinces little concern about the public transaction cost involved in monitoring trades.²⁹⁷ The better economists have recognized for many years that these transaction costs justify refusing to establish trading regimes in many contexts.²⁹⁸ 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.²⁹⁹ But private entities’ profit motives may disserve relevant public functions.³⁰⁰ Thus, for example, privately operated prisons may have much more interest in efficiently warehousing prisoners, than in

²⁹⁶ See, e.g., McCluskey, *supra* note 73, at ___ (while advocates of welfare reform touted reductions in “federal red tape,” devolution has augmented state “red tape”); BOZEMAN, *supra* note 288, at 125-126 (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, Susan Fendell, and Erica Berry, *Public Health and Private Profits: A Witch’s Brew*, 35 CLEARNINGHOUSE REV. 629, 640 (2002) (discussing state payments to a managed care company for administrative expenses).

²⁹⁷ See, e.g., Marchant, *supra* note 107, at 644-48.

²⁹⁸ See, e.g., DALES, *supra* note 92, at 98 (emissions trading is impracticable for diffuse pollution); BAUMOL & OATES, *supra* note 231, at 190 (ideal package includes a mixture of regulatory instruments); Hahn & Stavins, *supra* note 94, at 15 (“The best set of policies will involve a mix of market and more conventional regulatory processes”).

²⁹⁹ See, e.g., OSBORNE & GABLER, *supra* note 72 (giving numerous examples of privatization); Savas, *supra* note 70 (advocating and giving many examples of privatization).

³⁰⁰ See, e.g., Prisons, *supra* note 72, at 1883-84 (discussing examples of private prisons that suffered loss of threatened loss of their contracts after serious problems surfaced in their prisons).

safeguarding constitutional rights or providing rehabilitation.³⁰¹ Often efforts to address these problems involve creating public and private transaction costs to align private incentives with public needs.³⁰²

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.³⁰³ 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.³⁰⁴ And recognizing the functions that transaction costs form 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.³⁰⁵

³⁰¹ See *id.* at 1887 (citing reports of private prisons housing maximum-security prisoners with the general population). Nevertheless, a recent Harvard Development 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.

³⁰² See *id.* at 1874 (referring to government costs in preparing and monitoring contracts with private prisons).

³⁰³ See David M. Driesen, *Does Emissions Trading Encourage Innovation*, 33 ENV'T L. REP. (Env't L. Inst.) 10094, 10097 (2003); Malloy, *supra* note ?, at 542-43; Driesen, *supra* note 209, at 42.

³⁰⁴ Cf. Savas, *supra* note 70, 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); 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); Beerman, *supra* note 74, at 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); 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); 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)..

³⁰⁵ 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).

Notice that comparative analysis requires 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 use of phantoms that are really phantasmas - constructs that would never come into existence in the real world no matter what the legal regime³⁰⁶ - 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.

For example, 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, for the transaction costs involved in making clear the precise effects of many pollution sources on many people may challenge the capacities of courts.³⁰⁷ While 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.³⁰⁸ A transaction cost analysis of public law using the tools we have developed would extend beyond the question of aggregation to issues

³⁰⁶ 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 away rights after judicial resolution of nuisance claims will not occur).

³⁰⁷ Accord KOMESAR, IMPERFECT ALTERNATIVES, *supra* note 12, at 22 ("as the number of parties increase" judicial tasks become "more difficult").

³⁰⁸ See David M. Driesen, *Loose Canons: Statutory Construction and the "New" Nondelegation Doctrine*, 66 PITT. L. REV. 1 (2002) (explaining why Congress often delegates authority to administrative agencies).

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 showing 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 it provides net benefits to a limited set of participants.³⁰⁹ 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 at least 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 they are desirable. To know this we must know whether other impediments to efficient transactions exist and whether efficient market mechanisms serve societies' goals well in a particular context.

In some situations low transaction costs may not sufficiently justify abandonment of fair use, even if they do signal the possibility of transactions. While it may be relatively costless to obtain a license to create a parody of an existing copyrighted work, there are several reasons why such a license should be unnecessary. First of all, parodies are creative works and comments on existing work. The right to comment is coincident with the right to speak and should not be curtailed by the copyright owner. Furthermore, the copyright owner should not be given

³⁰⁹ See, e.g. KOMESAR, IMPERFECT ALTERNATIVES, *supra* note 12, at 102-105.

the right to veto or shape the manner in which the parody is created. If the point of the parody is to offer criticism and to provide an important and otherwise unexpressed gloss on the work, then the creator of the parody should be free to fashion that expression without the interference of the copyright owner. Therefore, even if the costs of obtaining a license from the copyright owner is relatively low, there are substantive reasons why a transaction with the owner is undesirable and should be avoided. Focusing solely on minimizing transaction costs ignores the reasons to avoid licensing transactions in the parody fair use context.

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 user can employ the power of the state to force a user to desist, unless 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 the copyright holder and the market, creating a true *laissez-faire* situation, where 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.³¹⁰

While transaction cost analysis can play some role in such a regime choice, it cannot by itself determine when fair use is desirable. Indeed, Wendy Gordon, a major architect of the transaction cost minimization approach to this area employs a more nuanced institutional analysis that considers other factors. 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.³¹¹ And the question of fair use implicates the broader question of whether a free sharing on information or a regime predicated upon profitable property rights best spurs creativity in a particular realm.³¹²

³¹⁰ See Richard A. Epstein, *Let "The Fundamental Things Apply": Necessary and Contingent Truths in Legal Scholarship*, 115 HARV. L. REV. 1288, 1311-1312 (2002) (describing choice between open access and private property a question "central" to the law of property, including intellectual property).

³¹¹ 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).

³¹² The importance of this question supports one of the authors' thesis that the
(continued...)

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.³¹³ 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 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 benefits. This means that we cannot reflexively reduce transaction costs. We should replace the automatic assumption that transaction cost minimization justifies legal rules with functional analysis based on information theory as described above.

³¹²(...continued)

economic dynamics of law should matter more than efficiency questions to legal theory. See DAVID M. DRIESEN, *THE ECONOMIC DYNAMICS OF ENVIRONMENTAL LAW* (2003).

³¹³ See *A&M Records, Inc. v. Napster*, 239 F. 3d 1004, 1027 (9th Cir. 2001)(right to prevent entry into a derivative market for the copyrighted work); *UMG Recordings, Inc. v. MP3.com, Inc.*, 92 F. Supp. 2d 349, 351 (S.D.N.Y. 2000)(copyright owner's right of first entry into digital markets for copyrighted work).