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Communicating Entitlements: Property and the Internet

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I. INTRODUCTION

Communication about property rights is essential to our lives. Property rights determine fundamental aspects of our behavior, such as where we can walk, live, and work. For these rights to have meaning, many parties must communicate. For example, potential buyers, potential trespassers, and authorities must understand the nature and extent of an owner's property.[1] This communication involves costs, like the costs of fencing or of surveying the boundaries of a parcel of land before constructing a building.[2] These costs must be balanced against the benefits of successful communication, which include the gains from transferring entitlements[3] and the cost reductions of avoiding infringements of property rights. Prevention of infringement through successful communication may be cheaper than securing redress for infringed entitlements. For example, if the boundaries of a parcel of real property are not accurately communicated, an adjoining owner may construct a building that spans the property line. Even if the encroachment is small, the misplaced building may have to be demolished.[4]

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1. Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The* Numerus Clausus *Principle*, 110 YALE L.J. 26 (2000).

2. *See* Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 10, 12 (1960).

3. *See id.* at 12.

4. In the case of *Baugh v. Bergdoll*, a building foundation constructed by the defendant encroached on the plaintiff's property by six inches beginning at least five feet underground. The defendant claimed that the trespass was necessary for construction and that the trespassing foundation had actually strengthened the plaintiff's own foundation. The Supreme Court of Pennsylvania held that these economic allegations were irrelevant and ruled that "[w]here one intrudes upon the land of another, the latter has choice of remedies; he may compel a withdrawal of the intruder, or he may regard the intrusion as a permanent trespass and recover compensatory damages therefor." 76 A. 207, 208 (Pa. 1910); *see also* Pile v. Pedrick, 31 A. 646, 647 (Pa. 1895) (issuing a similar injunction for the razing of a foundation that trespassed less than two inches onto plaintiff's property); Ochroch v. Kia-Noury, 497 A.2d 1354, 1356-57 (Pa. Super. Ct. 1985) (holding that economic utility is irrelevant to determining the appropriateness of an injunction to destroy encroaching construction); Ventresca v. Ventresca, 126 A.2d 515, 518 (Pa. Super. Ct. 1956) (same). *But see* Yeakel v. Driscoll, 467 A.2d 1342, 1344 (Pa. Super. Ct. 1983) (refusing to order the demolition of a trespassing construction because there was no harm to the plaintiff); Soifer v. Stein, 101 Pa. Super. 135, 1931 WL 3494, *4 (1930) (holding that plaintiff was only entitled to money damages for defendant's building encroachment because of the balance of equities between the parties).

Communication costs are a type of transaction cost,[5] and should be addressed in an efficient manner—that is, additional communication costs should be incurred until the marginal costs exceed the marginal benefits.[6]

Existing scholarship analyzes some of the concerns involved in communicating property entitlements and suggests some techniques for achieving efficient communication. In this Note, I seek to fashion a general framework that supports a more comprehensive analysis of communication costs while also accounting for these existing theories. This approach helps identify and fill both minor and more significant gaps and also suggests that this framework can be applied to some non-property communicative contexts, including the Internet.

In general, two factors determine the costs involved in communicating property entitlements: (1) the messages and methods of communication, and (2) the allocation of the costs of communication. Part II of this Note analyzes two methods for communicating effective messages: boundaries and menus. Although apparently distinct, these methods are similar in that each supports concise, clear, easily understood messages that convey only the data needed for successful communication. Such messages are cheaper and more effective than complicated ones. Part III of this Note analyzes efficiency-enhancing allocations of the burdens of communicating entitlements. I will argue that broad sanctions should be used to place the burdens of communication on the *cheapest communicator* and suggest some characteristics that identify this party.

Using the theory from Parts II and III, I will examine opportunities for reducing communication costs on the Internet in Part IV. The Internet, like the property rights system, involves a vast amount of data that must be communicated to large and diverse groups of people. Because of this informational similarity and because the Internet involves significant amounts of intellectual property, the communicative techniques I develop in Parts II and III can help to reduce communication costs online. Finally, in Part V, I conclude that the strategies for efficiently communicating to large groups of people regarding property entitlements can, and should, be applied to reduce communication costs in many contexts.

II. MESSAGES AND METHODS

Reducing communication costs requires that messages, i.e., the information being communicated, and the methods for conveying these messages be coordinated. For example, restaurant menus and wine lists often label their selections with numbers. A spoken number (message) successfully

5. *See* Coase, *supra* note 2, at 10.

6. *See* Terry L. Anderson & P. J. Hill, *The Evolution of Property Rights: A Study of the American West*, 18 J.L. & ECON. 163, 165-67 (1966).

communicates a patron's selection because of the use of a numbered menu (method). This system is often easier and more accurate than descriptive selections, particularly where the menu uses foreign languages or is otherwise complicated. Message and method are sufficiently connected that analyzing message/method *pairs* instead of focusing on message and method separately may clarify this discussion.[7]

A cheap, effective message/method pair has three properties. First, the message/method should be simple. A distinct "yes" or "no" is easier to communicate than an essay. Brief messages and methods help the sender to convey information[8] and the recipient to digest that message once received.[9] Second, the message/method pair should be clear,[10] so that it is easier to receive, and less effort is wasted through requests for clarification and resending the message. The chances of miscommunication are also reduced. For example, communicating with hand signals in a noisy room may be a clearer method than speaking. Third, even if a message is clearly communicated, the recipient may not understand the content of that message without using other background information. This is particularly true in property communications, which often involve a large and indefinite class of people, perhaps with widely different backgrounds. As a result, the message/method pair should be structured, so that people can understand it without having to know a great deal of additional information.[11]

Unfortunately, maximizing these three characteristics may be difficult because they are often in tension. For example, although simplicity may enhance clarity, a simple message will be unclear if it is garbled.[12] A longer message with more redundancy and clarification would be less prone to such confusion.[13]

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7. Focusing on message/method pairs also reduces the potential confusion of trying to distinguish messages and methods, which is sometimes impossible. For example, a fence can convey the location of a boundary, but the fence can *become* the legal boundary under the doctrine of adverse possession. *See, e.g.*, Cole v. Burleson, 375 So. 2d 1046, 1048 (Miss. 1979) (holding that fencing can be an act of adverse possession); Boone v. Frazor, 1988 WL 77542, *5 (Tenn. Ct. App. July 27, 1988) ("Constructing a fence is an open and notorious act of possession if it is done by the adverse claimant . . . ."). *But see, e.g.*, Buchanan v. Nixon, 43 S.W.2d 380, 382 (Tenn. 1931) (holding that a fence erected by a property owner does not support a neighbor's claim for adverse possession).

8. *See, e.g.*, J.R. PIERCE, SYMBOLS, SIGNALS AND NOISE: THE NATURE AND PROCESS OF COMMUNICATION 25 (1961) (discussing the cost savings of sending shorter messages); *see also* Henry E. Smith, *The Language of Property: Form, Context, and Audience*, 55 STAN. L. REV. 1105, 1148-49, 1160-62 (2003) (analyzing characteristics enhancing the efficiency of messages).

9. *See* PIERCE, *supra* note 8, at 23, 29, 38 (stating that the recipient's uncertainty as to the meaning of a message increases with the complexity of that message).

10. *See id.* at 23, 29-44 (discussing the effects of interference and noise on communications); Smith, *supra* note 8, at 1163-64. For example, a "yes" or "no" is clearer than a mumbled "uh-uh," which could mean either "yes" ("uh-huh") or "no" ("uh-uh").

11. Smith, *supra* note 8, at 1162-63; *see also* DOUGLAS R. HOFSTADTER, GÖDEL, ESCHER, BACH: AN ETERNAL GOLDEN BRAID 159, 162-63, 166, 170 (1979) (describing the importance of a listener possessing background information in communications).

12. *See* PIERCE, *supra* note 8, at 25-26 (discussing the message distortion that occurs when simple electronic messages are transferred over long distances).

13. *See id.* at 9, 146-47 (stating that distortion in electronic messages can be reduced by making the

Similarly, a recipient can more easily understand a message/method pair if it contains much of the necessary background information.[14] For example, a written sentence could contain parenthetical definitions of uncommon words. Though helpful, such definitions would certainly lengthen the sentence and could make it hard to understand.[15] Given these conflicts, effective communication should focus on the aggregate benefits of these characteristics as a group.

To communicate property entitlements, we use (at least) two methods for conveying simple, clear, easily understood messages: (1) boundaries and boundary markers, and (2) menus.

A. *Boundaries*

Communication about property often focuses on the nature and extent of the property entitlements involved. Conveying this information can be complicated because property is highly variable.[16] For example, land can come in an unlimited number of shapes and sizes,[17] and copyrights can be licensed for distribution in different places for different time periods.[18] Despite this variability, only the boundaries of property are relevant to many communications.

Boundary identifiers are a method of communicating short, clear, easily understood messages in the form of conceptual abbreviations for the nature and extent of the property.[19] For real property, the boundary identifiers alone may convey the contours of a parcel of land to a prospective buyer so that she can decide whether to seek out the owner to purchase that parcel. Similarly, third parties who wish to avoid trespassing need only know the outer limits of the property to avoid encroachment. Boundaries also reduce enforcement costs for the owner and authorities.[20] To determine whether a third party has trespassed, the owner and authorities need only determine if the third party has crossed a boundary without the owner's permission. In contrast, monitoring the behavior of

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messages longer). Most analytical writers (and readers) are probably all too familiar with the tension between verbal economy and clarity.

14. *See* Smith, *supra* note 8, at 1132 (stating that a recipient of a message may need more background knowledge to understand a short message); *cf.* HOFSTADTER, *supra* note 11, at 173 (describing a short message that contains very little background information). *But see id.* at 170 (claiming that it is impossible for a message to contain all implicated background information).

15. *See* PIERCE, *supra* note 8, at 23 (discussing the interplay between uncertainty and informational completeness); Smith, *supra* note 8, at 1169.

16. *See* Henry Hansmann & Reinier Kraakman, *Property, Contract, and Verification: The* Numerus Clausus *Problem and the Divisibility of Rights*, 31 J. LEGAL STUD. 373, 382 (2002).

17. *See* Merrill & Smith, *supra* note 1, at 14.

18. Under the "Principal of Divisibility," any subdivision of a copyright may be transferred or licensed. *See* 17 U.S.C. § 201(d) (2000) ("The ownership of a copyright may be transferred in whole or in part.").

19. *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 730 (2002) ("[All property right] boundaries should be clear. This clarity is essential to promote progress, because it enables efficient investment.").

20. *See* Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1327-28 (1993) (describing the reduction in monitoring costs produced by clear boundaries).

a person authorized to enter and use property is more complicated because supervising use is more difficult than watching boundaries.[21]

Boundaries are typically communicated through boundary "markers."[22] Boundary markers are publicly ascertainable indicia of the boundaries, like fences and signs. Similarly, patent specifications filed with the Patent and Trademark Office provide boundary markers in the form of a "written description of the invention, and of the manner and process of making and using it, in . . . clear, concise, and exact terms."[23] These patent boundary markers describe the "metes and bounds" of the patent in clear and brief terms.[24] Although establishing boundary markers may be expensive relative to the value of the property,[25] marking is often a cheap approach because costs may be low *per communication*. This communication cost amortization is more likely when the communicative power of the marker does not diminish with each communication. For example, physical markers of real property boundaries and patent specifications can communicate to a great many people without a reduction in the communicative aspect of the marker.

Boundary markers can be both short and easily intelligible because they usually do not require a great deal of extrinsic information to be understood. Boundary limits and the means of conveying them have widely accepted, consistent interpretations.[26] For example, traditional physical markers like "No trespassing!" signs, fences, and walls always denote a boundary of *some* sort, even if it is not always a *legally significant* boundary.[27] The legal implications and uses of these markers are consistent enough to support reasonable conclusions. Boundary concepts are also consistent across different areas of law. For example, intellectual property has identifiable boundaries that are at least

21. *See id.*

22. When publicly ascertainable boundary markers are not possible, a menu may be a more efficient way of communicating the nature and extent of property entitlements. *See* Merrill & Smith, *supra* note 1, at 34 (advocating the use of menus with "the dimensions of property rights that are least visible"); *infra* Section II.B.

23. 35 U.S.C. § 112 (2000).

24. *See* Brenner v. Manson, 383 U.S. 519, 534 (1966) (suggesting that a patent should not be issued when the "metes and bounds of that monopoly are not capable of precise delineation").

25. Anderson and Hill analyzed the increase in property "definition" that occurred as the value of land and livestock increased in the American West. *See* Anderson & Hill, *supra* note 6, at 169-76. As land values rose, the marginal benefit of effectively communicating ownership also rose. In addition, the marginal cost of visible boundary marking dramatically decreased with the invention and mass production of barbed wire. As a result of these two shifts, during the 1870s, the communication of ownership using barbed wire skyrocketed. In 1874, when barbed wire was introduced, only 10,000 pounds were sold. *Id.* at 175. In 1880, over 80,500,000 pounds of barbed wire were sold. *Id.* Similarly, as livestock became more valuable, the marginal benefit of visible boundary marking by branding also increased. Branding became legally required and significantly regulated. *Id.* at 173-75.

26. *See* Smith, *supra* note 8, at 1161, 1163 (discussing the importance of repetition and consistency in property communication).

27. A fence designed to keep a dog in a landowner's back yard may not mark a legal boundary. Even when people treat a non-legal boundary as legally significant for many years that boundary may not develop legal significance. *See, e.g.*, Buchanan v. Nixon, 43 S.W.2d 380, 382 (Tenn. 1931) (holding that a fence erected by a property owner does not support a neighbor's claim for adverse possession).

analogous to other forms of property.[28] The concept of boundaries will be familiar even if the particular property context is unfamiliar.[29]

Boundary markers that do require more background typically involve specialized audiences that possess such information.[30] For example, people who regularly deal with intellectual property probably have more background knowledge of how to discover and interpret intellectual property boundary markers like copyright registrations and patent specifications. Persons less familiar with more abstract forms of property like intellectual property are less likely to need an understanding of the boundaries of these forms of property.

Because of their capacity for communicating without requiring extensive background information, visible boundary markers are particularly useful with real property.[31] In part because of this utility, visible boundary markers for real property are heavily favored over less tangible delimiters.[32] For example, one way to describe a parcel is with metes and bounds, which use monuments, courses, and distances to describe boundaries.[33] A typical metes and bounds description might start:

> Begin at the southernmost end of the old rock wall. Head due north to the covered bridge. Head east 100 feet to the stream.

Sometimes, conflicts occur within a description. For example, suppose that the covered bridge is northeast and not due north from the end of the rock wall. Should the boundary be traced north as described or traced northeast to the bridge? As a rule, the law favors monuments over courses, courses over distances, and distances over quantities.[34] These preferences likely reduce communication costs because less visible means of boundary description like courses, distances, and quantities may require much external information like a copy of the deed or surveying expertise and equipment. Therefore, the metes and

28. Unfortunately, intellectual property sometimes lacks clear boundaries. For example, the doctrine of fair use blurs the boundary between infringing and non-infringing uses of copyrighted material. *See* 17 U.S.C. § 107 (2000). Likewise, the doctrine of equivalents may extend the scope of a patent beyond the literal description claimed in the patent application. *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722 (2002) (describing the doctrine of equivalents). However, the "fuzziness" of these boundaries is not dramatically different from that of some rights associated with normal property. The use rights for real property are similarly fuzzy. *See infra* notes 76-85 and accompanying text (describing the difficulties of sharply defining the use rights for real property).

29. *See* Richard M. McAdams, *A Focal Point Theory of Expressive Law*, 86 VA. L. REV. 1649, 1651-52 (2000) (describing the capacity of law to create "focal point[s]" that help people coordinate when they have a common interest in coordinating, but have little information regarding the expected behavior of others); *see also* Smith, *supra* note 8, at 1128-30; *infra* Subsection III.A.2.

30. *See* Smith, *supra* note 8, at 1173-77.

31. With chattels, visible signs of ownership, like a cattle brand, may be entirely determinative of ownership. *See* Anderson & Hill, *supra* note 6, at 174. Cattle brands also were directed to a specialized audience.

32. *See* CURTIS J. BERGER & QUINTIN JOHNSTONE, LAND TRANSFER AND FINANCE: CASES AND MATERIALS 642 (4th ed. 1993); LYLE W. MALEY & WILLIAM A. THUMA, LEGAL DESCRIPTIONS OF LAND 36 (1954).

33. MALEY & THUMA, *supra* note 32, at 2.

34. BERGER & JOHNSTONE, *supra* note 32, at 642; MALEY & THUMA, *supra* note 32, at 36.

bounds description would be read to describe a boundary from the end of the rock wall to the covered bridge regardless of the stated course.

Another way of describing a parcel of land is with a rectangular survey description. Beginning in 1785, much of the undeveloped land in the United States was surveyed and divided into plots by the federal government, in part because there were "few natural characteristics suitable for use as monuments in metes and bounds descriptions."[35] This survey system was part of the federal scheme for distributing "uninhabited" land.[36] The rectangular survey divided government land with an imaginary but legally significant grid.[37] Physical monuments were placed at the corners of the grid squares. By necessity and human error, the markers were not always placed on the actual corners of the grid. In 1805, Congress discarded the abstract corners described by the grid in favor of the visibly marked corners, declaring the marked corners to be the legally binding determinants of the dimensions of the parcels.[38] The government perhaps favored these physical markers because they required significantly less extrinsic information than did conceptual boundaries that had to be individually verified through surveys.

Although boundaries and their markers help to efficiently communicate the nature and extent of property, establishing boundaries entails costs. More complicated boundaries typically require more costly boundary marking. Rectangular plots can probably be identified with fewer markers than an octagonal plot would require.[39] Subdividing parcels also increases the number of boundaries to be marked. To promote efficiency, the benefit of increased boundary complexity must be balanced against the cost. Additional savings can be gained by further limiting the potential variability of property through the use of menus.

B. *Menus*

As a result of legal restrictions, many aspects of property rights are not completely customizable. Instead, the choice of rights is limited to selections from a menu.[40] Perhaps the best-known example of a property menu is the doctrine of numerus clausus, under which the possessory estates in land are limited to "five general types of present possessory interests: the fee simple

35. MALEY & THUMA, *supra* note 32, at 3. The lack of preexisting physical monuments prompted the government to develop new means of demarcating land.

36. *Id.*

37. *Id.* at 3-13.

38. *See* 43 U.S.C. § 752 (2000).

39. Parcels that use natural features like streams for boundaries are likewise cheaper to delimit. Costs may be further reduced by aligning boundaries with the points of a compass, as the American government did in its rectangular survey of undeveloped land. *See* MALEY & THUMA, *supra* note 32, at 3.

40. *See* Hansmann & Kraakman, *supra* note 16, at 376-78.

absolute, the defeasible fee simple, the fee tail, the life estate, and the lease."[41] Attempts to create a new interest in land are generally disfavored, and courts will usually force an innovative land interest into one of the established categories.[42]

Property menus reduce communication costs by utilizing a method that communicates with short, clear, easily understood messages. In general, a menu is a list of standardized categories, and the message is short because it references a category from the menu.[43] For example, an exclusive license to copy and distribute a copyrighted work need only refer to the § 106(1) and § 106(3) rights under the copyright. The licensing contract need not describe what activities fall under "copying" and "distributing." The definitions are inherent in the standardized category. Other rights, like the rights to make derivative works and to publicly perform the work, need not be mentioned because they are separate rights under the copyright menu. Likewise, Euclidean zoning employs a menu describing use rights to real property by classifying land into a limited number of categories of permitted uses.[44] If *A* and *B* are negotiating for the sale of *A*'s land and the land is zoned "C" for commercial, all parties can use the zoning ordinance to determine the permitted uses of the property. No other description is required. In contrast, determining permissible land uses under nuisance law may require larger information costs, in the form of legal expertise and litigation, than are required under a zoning system.[45] In addition, using a menu fosters clear communication because the intended recipient of the information need only determine which menu selection has been referenced. Especially when the menu of possibilities is small, the intended recipient can use a process of elimination to deduce the intended message.[46]

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41. Merrill & Smith, *supra* note 1, at 13 (analyzing the informational effects of a fixed menu of interests in real property). The defeasible fee simple and leases can be further subdivided into a limited number of options. *Id.* Copyright law also involves a menu of six separate legally protectible rights, but not all copyrighted works enjoy all six rights. 17 U.S.C. §§ 106(1)-(6) (2000). These six rights can be infinitely subdivided under the principle of divisibility, but no new rights can be created (except by Congress). *See* 17 U.S.C. § 201(d) (2000). *But see* Merrill & Smith, *supra* note 1, at 19 ("The [use of menus] is probably at its weakest in the area of intellectual property.").

42. For example, a lease must be either a term of years, a periodic tenancy, a tenancy at will, or a tenancy at sufferance. *Id.* at 11. A lease "until the end of the war" does not clearly fit into any of these categories, and courts will force such a deviant lease into one of the accepted categories. *See, e.g.*, Nat'l Bellas Hess, Inc. v. Kalis, 191 F.2d 739, 740-41 (8th Cir. 1951) (holding that a lease until sixty days after the end of World War II was to be treated as a tenancy at will); Stanmeyer v. Davis, 53 N.E.2d 22, 25 (Ill. App. Ct. 1944) (ruling that a lease "for the duration of the war" was a tenancy at will); Merrill & Smith, *supra* note 1, at 11. *But see* Smith's Transfer & Storage Co. v. Hawkins, 50 A.2d 267, 268 (D.C. App. 1946) (holding that a lease until the "end of war" with Japan and Germany was a proper term of years because it was "certain to happen").

43. *See* Hansmann & Kraakman, *supra* note 16, at 379.

44. *See* Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926); *see also* ROBERT C. ELLICKSON & VICKI BEEN, LAND USE CONTROLS 95-96 (2000) (describing the workings of Euclidean zoning).

45. Furthermore, the permitted uses under nuisance law may be unclear until *after* litigation. Owners may invest in improvements and uses that are later prohibited. As a result, resources may be wasted developing an impermissible use.

46. *See* PIERCE, *supra* note 8, at 23 ("The more we know about what message the source will

Many menus also reduce the amount of background information a party needs to understand the message. To use a menu with a small number of categories, people need only learn about the few menu options, instead of learning on a case-by-case basis the details of particular property entitlements. However, establishing a property menu involves two types of costs. First, the menu must be created and communicated to enough people that it can be widely referenced. Because the cost of establishing a menu will be amortized over all of the communications in which there are savings, the total communication cost savings often outweigh the startup costs.[47] Second, because the menu limits available property choices, some forms of property may be prohibited.[48] The opportunity costs of submitting to the restraining force of standardization—or "frustration costs"[49]—can be reduced in at least three ways.[50]

First, some menu selections contain variables that allow for limited customization. For example, a term of years can be for any time period, and a life estate can last for the life of any owner.[51]

Second, a menu can be expanded. However, creating new menu selections can significantly increase both the amount of information that must be communicated and the amount of background knowledge needed to understand the menu selection.[52] Increasing the number of choices on a menu of property rights may only trivially increase the communication costs of using that menu if that expansion does not affect the techniques used to verify that an owner possesses a certain property interest.[53] For example, allowing a lease "until the end of the war" for Blackacre would not significantly increase the costs of determining the type of ownership for any parcel of land because the methods for determining the ownership of the land are largely unaffected by the addition of the new type of lease. Ownership would still be verified through public records

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produce, the less uncertainty . . . .").

47. *See infra* Subsection III.A.2. The more widely accepted a menu is, the greater the opportunity for amortizing start-up costs.

48. For example, if the menu of possessory interests in land were reduced to include only the fee simple, then many of the benefits of flexibility would be lost. There are great gains from trade in the many contracts for leases, and these benefits would not be available under a menu that prohibited leasing. *Cf.* PIERCE, *supra* note 8, at 23, 28 (describing the informational shortcomings of communicating with a limited number of options).

49. *See* Merrill & Smith, *supra* note 1, at 35-38.

50. Some menus may be "complete" in that there are no frustration costs. For example, we conceptualize numbers by selecting digits from the fixed menu of numbers from zero to nine. Every number can be described, at least theoretically, by concatenating (perhaps with a decimal) selections from that menu of ten digits (although some numbers, like pi, may be *hard* to physically represent because they require infinite decimal expansions). In *Numerus Clausus*, Merrill and Smith do not posit whether the menu of interests in land is complete. *Id.* at 40.

51. JESSE DUKEMINER & JAMES E. KRIER, PROPERTY 210, 419 (4th ed. 1998).

52. Merrill & Smith, *supra* note 1, at 27.

53. *See* Hansmann & Kraakman, *supra* note 16, at 380-81, 399, 401. In general, adding new categories to a menu that already uses a public registry as a verification system may not significantly increase communication costs. *See id.* at 395.

and private contracts (leases) regardless of the form of ownership of that parcel.[54]

However, adding new menu selections will increase communication costs when the new selection requires a new verification rule.[55] If a new menu option is not accompanied by a required verification rule, then, for *any* property potentially described by the menu, third parties must expend resources to determine whether it falls under the new, difficult-to-verify menu option.[56] Creating a new menu option without a new verification rule thus allows some owners to externalize communication costs to many third parties. Even if the parties establish a new rule, applying it may increase communication costs because the new verification rule must be communicated to all who use the menu.[57] Moreover, to ensure no other property interests burden a piece of property, a party may have to apply the verification rules for *all* potentially conflicting interests.[58] Even if a new menu category does not require a new validation rule, adding that category may significantly increase communication costs when menu categories are defined using other menu selections. For example, a zoning category in Euclidean zoning is often recursively defined by adding additional uses to previous zoning categories.[59] Adding a new category may upset the scheme and create confusion. Thus, adding new options to a property menu may produce additional communication costs, and additions should only be allowed when expansion increases overall efficiency.[60]

The third way to reduce the frustration costs associated with a menu is to allow the government to permit deviations from the standardized options. Allowing limited deviations will reduce frustration costs, and, in evaluating an owner's request to depart from a generally accepted menu, the government can consider the third-party effects and any need for additional verification rules. Requesting and attaining government approval, however, involves additional communication costs that must be balanced against the accompanying benefits.[61]

Finally, frustration costs can be eliminated if participation in a menu is voluntary. With a voluntary menu, owners will not conform to the menu unless

54. *See id.* at 399.

55. *See id.* at 397, 401.

56. Merrill & Smith, *supra* note 1, at 27.

57. *See* Hansmann & Kraakman, *supra* note 16, at 397.

58. *See id.* at 401.

59. *See* Village of Euclid v. Amber Realty Co., 272 U.S. 365, 380-81 (1926) (defining recursively a menu of zoning categories).

60. *See* Hansmann & Kraakman, *supra* note 16, at 397.

61. One example of government-sanctioned menu departures arises with Planned Unit Developments ("PUDs"). A PUD is a custom-designed use designation that does not adhere to the standard zoning menu. *See* ELLICKSON & BEEN, *supra* note 44, at 107. PUDs are typically used with large real estate developments. To apply for PUD designation, a developer must describe in his application such things as the planned uses and densities for the development. The uses and densities outlined in an approved PUD are in effect the "zoning" for the PUD. Unfortunately, for a parcel of land, a third party must expend resources to learn whether the normal zoning schema applies and, if not, the nature of the PUD. In addition, the applicant for a PUD must expend additional resources to request and obtain PUD designation.

the communication gains to the owner from using the menu exceed the entailed frustration costs. A voluntary menu, however, reduces communication costs less than a mandatory one because third parties must determine whether any particular piece of property is classified under the menu, and, if not, the third party must learn non-standardized information regarding that property. Furthermore, although a voluntary menu avoids the bureaucratic costs inherent in a menu in which owners petition the government to depart from the standardized options, voluntary menus can allow owners to externalize communication costs to third parties.[62] Nevertheless, because they can dramatically reduce frustration costs, voluntary menus sometimes lower overall communication costs. For example, although legal interests in land are limited to a mandatory menu, a voluntary menu governs equitable interests in land because trusts allow for substantial customization of equitable rights. When property is placed in a trust, the trustee legally owns and is responsible for managing the property, and the beneficiaries enjoy the benefits flowing from the property. In dividing the benefits of property, owners can adhere to the traditional menu of interests used for legal interests or create new equitable rights. "[I]n virtually any case, the entire terrain of trust law is default law" that can be altered by the terms of the trust.[63] Moreover, rejecting the standard menu for equitable rights does not significantly increase communication costs because many communications are concerned only with the *legal* ownership of the property, which remains limited to the mandatory menu.[64]

Thus, in designing a property menu, the frustration costs of standardization must be balanced against the communication benefits.[65] Different types of menus balance these costs differently and also differently distribute these costs between owners and third parties. This distribution depends, in part, on the amount of customization that the menu allows. Allowing deviation from a menu reduces frustration costs for owners but may increase communication costs for third

62. As with an expanded menu, voluntary menus can increase communication costs. This increase, however, may be lower when there exists a general verification rule for determining when an owner is participating in the menu.

63. RESTATEMENT (SECOND) OF TRUSTS § 128 (1959) (declaring that "[t]he extent of the interest of the beneficiary of a trust depends upon the manifestation of the intention of the settlor"); *see* John H. Langbein, *The Contractarian Basis of the Law of Trusts*, 105 YALE L.J. 625, 651 (1995). *But see* Merrill & Smith, *supra* note 1, at 57 (stating that "the equitable interests of the beneficiaries [to a trust] are described in terms of the common-law estates in land").

64. The communication costs of trusts are particularly small when the trustee has the power to sell the trust property without approval from the beneficiaries. *See* Note, *Dynasty Trusts and the Rule Against Perpetuities*, 116 HARV. L. REV. 2588, 2597 (2003) (noting that trustees often have the power to sell trust assets). Restaurant franchising can also be viewed as a voluntary menu. In opening a restaurant, a restaurateur can pay a fee to obtain a familiar franchise, i.e., select an option from the "menu" of well-known franchises, or open a unique, independent establishment, thereby avoiding the menu of franchises altogether. Customers are familiar with franchises, which reduces the cost of communicating to those customers the types and quality of food offered at the restaurant. Adhering to the franchise requirements, however, may produce some frustration costs. *See also infra* text accompanying note 219 (suggesting the use of a voluntary menu to reduce communication costs).

65. *See infra* notes 83-85 and accompanying text.

parties. A property regime should consider both the costs and benefits of a menu and the allocation thereof. More generally, to promote efficiency, the burdens of communication should be strategically allocated to promote their reduction.

III. ALLOCATING THE BURDENS OF COMMUNICATION

Communication burdens are the direct costs of successful communication, the losses from unsuccessful communication, and the indirect opportunity costs resulting from activities avoided because of excessive communication costs. All three burdens are present with communications regarding property interests. First, costs may be incurred in communicating the nature and extent of property entitlements. Fences, for example, may be expensive,[66] and fences often occupy some of the parcel of land, thereby preventing that portion of the land from being used for other purposes. Second, communications regarding property may be unsuccessful, resulting in infringements of property entitlements.[67] Finally, some communication difficulties may prevent otherwise profitable uses of property. For example, if one hundred persons own a parcel of land in common, the communication costs regarding that property may prevent the property from being sold or developed.[68]

The allocation of communication burdens affects behavior. For example, forcing one party to reimburse another for the loss resulting from failed communication provides an incentive for the liable party to work harder to encourage successful communication.[69] For example, if *A* and *B* share a common border, and *A* is forced to bear any losses resulting from miscommunication of that common border, *A* may erect a fence to identify the boundary. However, as Coase points out,[70] *A* may also decide that the cost of identifying the boundary exceeds the potential losses from miscommunication and choose to incur the losses resulting from *B*'s encroachment on *A*'s land. Therefore, unless one party has a superior ability to lower communication costs,[71] burdens should be

66. The cost of fencing materials may have been prohibitively high in the American West before the introduction of barbed wire. Anderson & Hill, *supra* note 6, at 171-72.

67. For example, two travelers with identical luggage may accidentally pick up each other's luggage in an airport baggage terminal. The appearance of the luggage is, by itself, under-inclusive and thus fails to communicate ownership. The failed communication may produce additional costs if the passengers leave the airport with the wrong luggage. Correcting the error at this point will be difficult and expensive. At the airport, communicating ownership of two identical suitcases without identification tags by opening the suitcases can be time consuming (and potentially embarrassing).

68. Such a parcel of land suffers from a form of the tragedy of the commons. *See, e.g.*, Hodel v. Irving, 481 U.S. 704, 707 (1987) (describing the difficulties of managing property when commonly owned by hundreds of persons). *See generally* Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998) (describing and analyzing the concept of anticommons).

69. *See* Smith, *supra* note 8, at 1166-67 (suggesting that communication burdens should be removed from parties to prevent them from incurring inefficient communication costs).

70. *See* Coase, *supra* note 2, at 6-7.

71. *See infra* Section III.C.

allocated to the party best able to choose between the costs of improved communication and the costs of failed communication.[72]

A. *General Strategies*

Before exploring the mechanisms for shifting communication burdens and the characteristics of the party that can most efficiently reduce costs, I provide in this Section two general strategies for efficiently shifting communication burdens.

1. *Relative Costs and Benefits of Shifting Burdens*

Frequently, one party *initially* shoulders certain communication burdens. The cost of fencing, for example, is initially borne by property owners. Likewise, damage done by a trespasser when property rights are not effectively communicated initially falls on the landowner. These burdens of communication are often shifted through law or agreement. For example, the cost of the damage from a trespass might be passed to the trespasser through litigation.[73] However, such shifting is not free. Passing property laws, developing private agreements, and litigating based on those laws and agreements can be expensive. Therefore, it is important to allocate the burdens of communication in a way that will reduce *overall* communication costs.

For example, the cost of undiscovered encumbrances on a parcel of land reduces its value and thus initially falls on the current owner and not on any prior owner. Property law typically leaves this loss with the current owner. If a seller—without committing fraud—provides a buyer a title with hidden defects, the buyer's remedies are limited to the terms of the deed, even if the sales contract provides for additional remedies.[74] As a result, when a buyer purchases with a quitclaim deed, she is liable for any encumbrances on the property, and the sale price in the quitclaim deed probably reflects this risk. The burdens of imperfect title can be shifted to the seller with a warranty deed, which extends the seller's liability throughout the buyer's ownership.[75] This shift can sometimes lower overall communication costs. The seller may have better knowledge of other interests in the land because the seller has lived on the land for many years. Using this information, the seller may be able to communicate with and quiet those interests more cheaply. When the benefits of a seller's communication advantages exceed the cost of shifting the risk of undetected encumbrances, a

72. *Cf.* GUIDO CALABRESI, THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS 26, 135-73 (1970) (arguing that efficiency in accident cost reduction is maximized by imposing liability on the party best able to choose between accident and safety costs).

73. *See* W. PAGE KEETON ET AL., PROSSER & KEETON ON TORTS § 13, at 75-77 (5th ed. 1984).

74. This concept is known as merger of contract into deed. BERGER & JOHNSTONE, *supra* note 32, at 675.

75. *Id.* at 676.

warranty deed can promote efficient communication. Frequently, however, a quitclaim deed will be more efficient because the gains resulting from shifting the risk to the seller do not exceed the shifting costs.

2. *Rule Utilitarianism*[76]

Allocating the burdens of communication for property entitlements to broad categories of persons, instead of to individuals on a case-by-case basis, may reduce communication costs in two ways. First, allocating these burdens to categories eliminates the higher administrative costs of case-by-case decisions. For example, in a sale of land, parties other than the buyer and seller may have an interest in the land. However, after the closing, the buyer has no claim against the seller for these prior interests (absent fraud or misrepresentation).[77] Because the buyer will be legally connected to the land after the sale, and thus generally easier to find, she is usually in a better position to resolve conflicts with prior interests. Occasionally, the seller can sometimes quiet prior interests more cheaply than the buyer because of actual knowledge of those interests.[78] Because communicating with the buyer is *generally* cheaper, she is liable for prior interests, not the seller. This result is probably efficient because determining which party can most cheaply bear the costs of an inadequate title search may involve a great many factors, and addressing those factors on a case-by-case basis is administratively expensive.[79] Where the administrative costs of individually identifying the party who can most cheaply bear a burden exceed the gains of case-by-case determinations, a categorical rule approach is more efficient.

Second, the categorical allocation of burdens reduces the informational costs of learning who bears certain burdens.[80] Such allocation helps each party understand her *own* burdens. For example, purchasers (and not former owners) of real property often bear the burden of recording their purchase. If the purchaser fails to record, the newly purchased land may be lost.[81] As a result, a buyer is on

76. The goal of rule utilitarianism is to "adopt those rules which lead to the greatest good for the greatest number." NORMAN E. BOWIE & ROBERT L. SIMON, THE INDIVIDUAL AND THE POLITICAL ORDER: AN INTRODUCTION TO SOCIAL AND POLITICAL PHILOSOPHY 42 (1977). When maximizing "good" means being "efficient," rule-utilitarianism advocates seeking broad rules that promote efficiency on the whole. Such rules may be inefficient in particular cases, but those efficiency losses are outweighed by the overall efficiency gains from the rule.

77. *See supra* notes 74-75 and accompanying text.

78. *See id.*

79. Parties may contract around this default as in the case of a warranty deed. Contracting around the default may be evidence that, in a particular case, the cost of identifying which party can best bear certain communicative burdens is exceeded by the gains from reallocation.

80. *See* Thomas W. Merrill & Henry E. Smith, *What Happened to Property in Law and Economics?*, 111 YALE L.J. 357, 388 (2001); *supra* Section II.B.

81. *See* BERGER & JOHNSTONE, *supra* note 32, at 713-16 (describing various recording requirements). There are three types of recording statutes. Under a "race" statute, a recording party has priority over all unrecorded interests. *Id.* Under a "notice" statute, a purchaser has priority over prior interests of which he had no notice. Recordation conveys notice to subsequent purchasers. *Id.* Finally, a "race-notice" statute is similar to a notice statute except that, in order to have priority over a prior

notice of the need to record the transfer quickly. Categorical allocation also helps identify the burdens imposed on others. For example, a person wishing to purchase a parcel of land must find the owner. Even if the potential purchaser has never purchased land before, she knows from experience with property in general that she must reach an agreement with the owner, since many aspects of the category of "owners" are constant across many different types of property.[82] Categorical allocation also promotes efficiency by preventing *both* parties from bearing certain costs. After a sale of land, for example, if the burden for failed communication with the holders of prior interests were determined on a case-by-case basis, then both the buyer and seller could potentially bear the losses from unsuccessful communication. As a result, *both* the buyer and seller might initiate expensive title searches to protect against possible liability for prior interests. Clear allocation avoids this wasteful, unnecessary duplication.

Although allocating communication burdens to categories may reduce communication costs, excessive standardization may raise communication costs.[83] The benefits of categorization and customization must be balanced.[84] For example, if owners and tenants were lumped together into a larger category of "possessors," communication costs would increase because a buyer would have more difficulty locating the party that is able to sell the property. Likewise, imposing the same communication burdens on the same categories of persons across all different types of property would also increase communication costs. Some burdens of communication, like the requirement that purchasers of real property record their purchase, are specific to particular types of property. On the other hand, categories should not be too small. Reducing the size of categories increases the number of categories, which may raise communication costs.[85] Thus, the sizes of the categories and amount of subject-specific modification must be tailored to reduce *total* communication costs.

B. *Preventing Inefficient Behavior by Reducing Externalization*

Imposing communication burdens in a manner that reduces the externalization of communication costs generally improves efficiency. Costs are externalized when one party enjoys the benefits of communication or avoids the costs of failed communication, but does not bear the costs of communication.[86]

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interest of which the purchaser had no notice at the time of purchase, the purchaser must record before that prior unknown interest. *Id.*

82. *See* McAdams, *supra* note 29, at 1651-52 (describing the capacity of law to create "focal points" that help people coordinate when they have a common interest in coordinating but have little information regarding the expected behavior of others); *Merrill & Smith*, *supra* note 80, at 390 ("[T]o keep the information costs . . . low, large numbers of exclusion rights must be bunched together and simple bright-line rules must be adopted for all . . . similar resources.").

83. *See supra* Section II.B.

84. For discussion of this point in the context of menus, see notes 40-65 and accompanying text.

85. *See supra* Section II.B.

86. For simplicity I will assume that there are only negligible externalized benefits. In general,

For example, if a person remains silent about facts that are important in a situation where she will not bear the full costs of that silence, that person externalizes communication costs. To discourage such inefficient silence, a legal regime may impose duties to disclose. For example, section 551(2)(e) of the Restatement (Second) of Torts requires one party to a transaction to disclose facts to the other party if "he knows that the other is about to enter into [the transaction] under a mistake," provided such a disclosure requirement is "reasonabl[e]."[87] The disclosure requirement is generally reasonable when it would be difficult for the mistaken party to learn about the mistake.[88] Requiring disclosure when the costs of silence are great can prevent externalization.[89] If *A* sells a house infested with termites to *B* without informing *B* of the insects, *B* may suffer a loss because the house is worth less than the purchase price.[90] In addition, by the time *B* learns of the termites, significant damage may be done that could have been more cheaply prevented by earlier action. By remaining silent, *A* has externalized the costs of the failed communication about the termite damage to *B*. This externalization is an inefficient approach to communication costs because the owner is likely to know of the termites already and can cheaply inform the buyer, but the buyer cannot discover the problem without spending money for a professional to examine the property.[91] Consequently, *A* is legally liable for *B*'s loss so that externalization can be prevented.

In general, imposing a cost on an otherwise externalizing party, as in the infested house example, will encourage efficiency.[92] When an appropriate cost is

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"costs" and "benefits" are read broadly, so that "costs" includes reduced benefits and "benefits" must include reduced costs. In addition, the relevant costs and benefits are those that result from the activity. As a result, aligning the costs and benefits of an activity requires some notion of causation that is beyond the scope of this Note. *Cf.* CALABRESI, *supra* note 72, at 198-235 (describing the difficulties of matching activities with costs).

87. RESTATEMENT (SECOND) OF TORTS § 551(2)(e) (1977).

88. *See* Wolf v. Brungardt, 524 P.2d 726, 734-35 (Kan. 1974) ("Where one party to a contract or transaction has superior knowledge, or knowledge which is not within the fair and reasonable reach of the other party and which he could not discover by the exercise of reasonable diligence, or means of knowledge which are not open to both parties alike, he is under a legal obligation to speak . . . .").

89. Scholars disagree regarding the optimal level of disclosure. *Compare* KIM LANE SCHEPPELE, LEGAL SECRETS: EQUALITY AND EFFICIENCY IN THE COMMON LAW (1988) (focusing on the possible harm to an ignorant party if disclosure is not required), *with* Anthony T. Kronman, *Mistake, Disclosure, Information, and the Law of Contracts*, 7 J. LEGAL STUD. 1 (1978) (arguing that disclosure requirements reduce the incentives for people to discover and use information).

90. *B* may also suffer a loss if he expends resources to learn the information that *A* can more cheaply learn (e.g., that the house is infested).

91. In *Wolf*, the court said:

> Where one party to a contract or transaction has superior knowledge, or knowledge which is not within the fair and reasonable reach of the other party and which he could not discover by the exercise of reasonable diligence, or means of knowledge which are not open to both parties alike, he is under a legal obligation to speak.

524 P.2d at 734.

92. *See* CALABRESI, *supra* note 72, at 68, 73. *But see* R.G. Lipsey & Kelvin Lancaster, *The General Theory of the Second Best*, 24 REV. ECON. STUD. 11 (1956-1957) (arguing that when inefficiency stems from more than one source, elimination of only one of those sources may not increase overall efficiency).

imposed on the actor, the actor will avoid the inefficient communication (or the activity underlying the communication).[93] The previously externalizing party may also work to reduce the now internalized communication costs by employing a communicative advantage.[94]

1. *Preventing Externalization of Communication Costs with Sanctions*

Though prices and sanctions can both prevent inefficient externalization, they are appropriate in different circumstances.[95] A price "is [a] payment of money" equal to the externalized costs.[96] When an appropriate price is imposed on an activity, the actor realizes the full utility of the activity. As a result, to maximize personal gain the actor will behave efficiently. For example, imposing contract liability on a breaching party can be viewed as an efficiency-enhancing price.[97] Because this liability internalizes the cost to the breaching party, that party will only breach when the benefits from breach exceed the total costs.[98] For a legal regime to impose a price, however, the regime must be able to adequately measure the externalized costs.[99] The legal regime need not be able to evaluate the efficiency of the underlying activity because the actor will make such a determination once the price is imposed. Prices are a market approach that allows an actor to choose the socially optimal behavior.[100]

In contrast, a sanction is a "detriment imposed for doing what is *forbidden*."[101] Sanctions are a collective approach to promote behavior society believes to be efficient and deter activity society considers wasteful.[102] Sanctions encourage two efficiency-enhancing goals. First, where the total costs of an activity exceed its benefits, the activity will be deterred if the imposed sanction, discounted by the probability of enforcement, is larger than the benefits of the activity.[103] For example, some types of pollution are deterred by civil and

93. *See* CALABRESI, *supra* note 72, at 73.

94. *See id.*; Robert Cooter, *Prices and Sanctions*, 84 COLUM. L. REV. 1523, 1526 (1984).

95. Cooter, *supra* note 94, at 1525-26.

96. *See id.* at 1525.

97. *Id.* at 1544-47; *cf.* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (describing a similar effect with liability rules in torts).

98. Cooter, *supra* note 94, at 1544.

99. *Id.* at 1532.

100. *See* CALABRESI, *supra* note 72, at 135-73; Cooter, *supra* note 94, at 1552.

101. *Id.* at 1524.

102. *See* CALABRESI, *supra* note 72, at 174-97. Some activities, like trespassing, are controlled using both prices and sanctions. Compensatory damages impose a price on the trespassers for the damage caused by the encroachment. However, large damages may be imposed on a trespasser even though no actual damage was caused. *See, e.g.*, Jacque v. Steenberg Homes, Inc., 563 N.W.2d 154 (Wis. 1997) (upholding an intentional trespass judgment of $100,000 where no actual damage had been caused to the landowner's property). These punitive damages sanction the trespasser.

103. Cooter, *supra* note 94, at 1527. The activity may be efficient in exceptional circumstances, but the administrative costs of identifying those exceptional cases exceed the gains. *See supra* Subsection III.A.2. Providing subsidies, which increase the benefit of avoiding an inefficient activity, may also

criminal penalties.[104] Second, an act may be sanctioned if the actor can reduce the total costs by changing the manner of conducting the activity.[105] For example, if a power plant can install devices to reduce pollution to acceptable levels, a sanction larger than the cost of the devices will promote this socially optimal cost reduction.[106] The utility of both approaches is constrained by the fact that a legal regime must be able to determine either that the activity is inefficient or that the actor possesses some cost-reducing ability.[107]

Externalized costs are difficult to measure in property communications; therefore, prices are often ineffective in preventing externalization.[108] Measurement is difficult because property rights affect large, indefinite groups of people including owners, trespassers, buyers, and regulators, and these groups may share externalized costs unequally.[109] Furthermore, the number of people implicated by externalization will probably increase over time. To determine total externalized costs, communication costs in the future must be discounted to present value, which further hinders accurate measurement of externalized costs.

Though sanctions also have limits, they are well suited for preventing inefficient property communication externalization in two situations. First, with some property issues, community standards help identify inefficient activity that

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shape behavior.

104. *See* Elizabeth M. Jalley et al., *Environmental Crimes*, 39 AM. CRIM. L. REV. 403 (2002) (describing civil and criminal penalties for violations of federal environmental law). *But see* Louis Kaplow & Steven Shavell, *Property Rules Versus Liabiltiy Rules: An Economic Analysis*, 109 HARV. L. REV. 713, 748-52 (1996) (arguing for the greater use of liability rules in controlling pollution).

105. When the actor can cheaply reduce communication costs, the level of precaution an actor takes to reduce those costs is generally inelastic with respect to changes in the level of sanction. Cooter, *supra* note 94, at 1529, 1540. In contrast, actor behavior is highly elastic with respect to prices. *Id.* at 1529. As a result, even though actors will discount prices and sanctions by the probability of enforcement, lowering that probability affects behavior with sanctions less than with prices. *Id.* at 1551.

106. Sanctions also reduce the administrative costs that are inherent in case-by-case price determinations. *Id.* at 1535. The costs of determining the sanction can also be amortized over a large number of people. *See infra* Subsection III.C.2.

107. *See* CALABRESI, *supra* note 72, at 174-97.

108. However, prices are sometimes effective controls on the externalization of communication costs. For example, an accidental trespasser can cheaply avoid the costs of failed communication by contacting the landowner before causing damage through trespassing. The trespasser can determine the identity of the landowner more easily than the landowner can determine the identity of the trespasser because the trespasser can inspect the land, ask neighbors, or research the title. The landowner frequently has little indication which third parties may become trespassers. If the trespasser does not contact the landowner and causes damage through his trespassing, the landowner initially bears these costs. The trespasser has externalized the costs of failed communication. To prevent such externalization, the costs of encroachment (ascertainable damage to the land) are imposed as a price to the trespasser. This penalty is a price because it is equal to the externalized costs and encourages an efficient level of precaution for trespassers. The price is larger than the cost to the trespasser of avoiding the externalization because the trespasser can cheaply contact the landowner before entering the land. Landowners still bear some of the burden of failed communication in that landowners frequently cannot recover administrative costs incurred when challenging a trespass. That there remains some cost to the landowner does not affect the efficacy of the price on the trespasser because the price is large enough to prevent the trespasser from externalizing. Moreover, those administrative costs to the landowner may encourage him to more clearly mark the boundaries to his property. These administrative costs may serve as sanctions on property owners. *See infra* Section III.C.

109. *See* Merrill & Smith, *supra* note 1, at 26-34.

can be prohibited through sanctions.[110] An example of the use of such standards to limit inefficient externalized communication costs arises with property menus, which have been developed and used by the community over time.[111] Deviations from menus may reduce costs because customization lowers frustration costs.[112] However, because the externalized costs associated with customization are difficult to measure, identifying efficient customization may be infeasible. The long-standing use of property menus provides a community standard, indicating further customization is inefficient. A representative body like the legislature can implement these community standards, and the courts can enforce the menu by converting a non-conforming property interest into a selection from the menu.[113] Converting the non-standard interest to a menu selection destroys the benefits from such customization, and, thus, deters such behavior. For example, courts have often converted non-standard leases, like a lease "until the end of the war," into a selection from the standard menu of leases.[114]

The second scenario where sanctions are well suited for preventing inefficient externalization in property communications is when the externalizing party, because of an advantage that can reduce total communication, is the *cheapest communicator*.[115] A sanction can force this party to utilize its communication advantage. For example, a landowner can often cheaply avoid the costs of failed communication with third parties by recording the title. The owner has a communication advantage because she knows the scope of her ownership and can amortize the costs of recordation over the potentially large number of third parties who will need to learn of that ownership.[116] If the landowner does not record her title, third parties must individually learn of the ownership. To prevent the landowner from externalizing these costs, the owner is threatened with loss of the property if she does not record.[117] Typically, this sanction is larger than the cost to the owner of recording because the cost of recording is significantly less than the value of the land.[118] Thus, sanctioning owners encourages socially

110. Officials can use community standards to decide whether a sanction is appropriate. "A community standard represents a consensus among private individuals about socially optimal behavior. In many circumstances, government officials can observe the community standard, but not the costs and benefits which private individuals took into account when arriving at it." Cooter, *supra* note 94, at 1533.

111. *See, e.g.*, Merrill & Smith, *supra* note 1, at 11-12, 38-40, 58-59 (noting that changes to the legal menu for interests in land come from the legislature and not from the courts); *see also supra* Section II.B.

112. *See supra* Section II.B.

113. *See* Merrill & Smith, *supra* note 1, at 59-60. Euclidean zoning is an example of a menu adopted by ordinance. A PUD provision in the zoning ordinance allows *some* customization, but the customization remains subject to government approval. ELLICKSON & BEEN, *supra* note 44, at 107.

114. *See supra* Section II.B.

115. *See infra* Section III.C; *cf.* CALABRESI, *supra* note 72, at 135-73 (describing the search for the cheapest cost avoider in accident prevention). Prices can also be used to encourage the cheapest communicator to act, but sanctions are more appropriate with property communications.

116. *See infra* Section III.C.

117. *See supra* note 81 and accompanying text.

118. Sanctions are most effective when the cost of avoiding the sanction is small relative to the

optimal behavior.

2. *Setting an Appropriate Sanction: Dispossession*

When the owner of property is the cheapest communicator but fails to use her communication advantage, dispossessing the owner is often an effective sanction to encourage efficient communication for three reasons. First, because of difficulties in determining the externalized costs, it may be administratively infeasible to relate the sanction to the individualized communication costs of different owners.[119] Even a sanction of some percentage of the value of the property may entail expensive valuation and liquidation costs. In contrast, total forfeiture is easily applied to owners of different properties with varied communication skills. Second, because owner communication costs are often low, imposing a penalty of total property forfeiture is likely larger than costs.[120] Thus, owners are encouraged to behave efficiently. Finally, forfeited property can be redistributed to a party that is unlikely to engage in future inefficient communication cost externalization.

Unfortunately, forfeiture is a blunt tool with at least two potentially negative effects. First, if owner communication costs are high, the owner may not be the cheapest communicator, and such a large sanction may encourage inefficient behavior. Fortunately, as previously noted, when sanctions conform to community norms, instances of such inefficiency are infrequent. Second, seizing property can dramatically alter the incentives for developing that property. However, when owner communication costs are low, the sanction will rarely be applied, and owners will retain normal incentives to develop.

The doctrine of adverse possession provides an example of using forfeiture to prevent externalization of communication costs.[121] If *A* meets the statutory requirements of adverse possession,[122] *A* can become the owner in fee simple of

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sanction itself. Cooter, *supra* note 94, at 1530-31, 1535.

119. *See supra* Subsection III.A.2 (describing rule utilitarianism and administrative costs).

120. The owner's communication costs may infrequently be greater than the externalized costs, i.e. externalization may be efficient, but these rare exceptions may be difficult to identify. Because the owner's communication costs are typically less than the externalized costs, categorically allocating the burdens of communication to the owner promotes efficiency. *Cf.* Cooter, *supra* note 94, at 1530-31 (describing the effect of sanctions on actors for whom "nonconformity with the legal standard is cheaper than conformity" and noting that "where a reasonable obligation is backed by a reasonable sanction, most people will find conforming strongly advantageous").

121. Every state has an adverse possession statute. BERGER & JOHNSTONE, *supra* note 32, at 807.

122. *A* can adversely possess *O*'s land if she possesses it continuously, exclusively, hostilely, openly, and notoriously for a time period specified by statute. Jeffrey Evans Stake, *The Uneasy Case for Adverse Possession*, 89 GEO. L.J. 2419, 2423 (2001). In some states, adverse possession may include some of the following additional requirements: payment of property taxes, "color of title," and good faith by the adverse possessor. *See id.* at 2424, 2430-31. In rare cases, courts have required bad faith by the adverse possessor. *Id.* at 2431; *see, e.g.*, Van Valkenburgh v. Lutz, 106 N.E.2d 28, 30 (N.Y. 1952) (ruling against possessor who was unaware of encroachment on neighbor's land). *A*'s possession is open if it would be revealed by a casual inspection and is notorious if it is widely known. *See* Stake, *supra*, at 2423. *But see, e.g.*, Mannillo v. Gorski, 255 A.2d 258, 264 (N.J. 1969) (holding that a concrete walk

another person's property.[123] One explanation for the doctrine of adverse possession is to prevent owners from externalizing communication costs.[124] By leaving her land unattended, *O* reduces her own communications costs relating to the property, but externalizes some communication burdens to parties who wish to use, buy, or avoid encroaching on the land.[125] For example, a neighbor who wishes to clarify a property boundary before constructing a building may have trouble contacting *O*. Likewise, a third party who wishes to rent the land may find it difficult to contact *O* if neither *O* nor *O*'s agent lives on the land.[126] The longer the owner is away from the land, the more difficult it is for a third party to contact the owner and to be sure that *O* is the true owner.[127] Because these third parties form an indefinite, potentially large group of people, externalized costs are both hard to measure and potentially large.

The costs to the owner of avoiding the externalization, and thereby avoiding the adverse possession, are generally low.[128] To prevent adverse possession, the owner need only learn that the land is being possessed and evict this possessor.[129] Because the adverse possession of the land must be open, continuous, and notorious, the owner or her agent is only required to briefly visit the land—or even simply contact a neighbor—*once every five years* or so to learn of the adverse possessor's developing claim. Owner communication costs are also likely to be low because the doctrine of adverse possession does not operate against classes of owners, such as minors[130] or the mentally impaired,[131] who are unlikely to be able to cheaply reduce communication costs.

Dispossession also enhances efficiency in other ways. First, because the seized land is transferred to the adverse possessor, future communication costs are probably reduced. Since the adverse possessor has possessed the land continuously, openly, and notoriously for the statutory period, it will likely be easy for third parties to contact the once-adverse possessor and now owner of the property. Second, rather than blunting development incentives, dispossession through the doctrine of adverse possession encourages the effective utilization of

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encroaching on a neighbor's land was not open and notorious because the boundary violation could only be discovered by a survey). Statutory time periods range from five to twenty years. Stake, *supra*, at 2439.

123. *Id.* at 2422.

124. *But see* Stake, *supra* note 122, at 2436 (arguing that the threat of adverse possession will negligibly improve communications because landowners will only minimally increase monitoring of their land).

125. *Id.* at 2436.

126. *Id.*

127. *Id.*

128. *Id.*

129. Legal costs may be expensive, but summary process will limit the eviction costs for a bona fide owner.

130. A special statutory period for adverse possession begins to run at majority. *See* DUKEMINER & KRIER, *supra* note 51, at 151-52.

131. *Id.*

land by preventing land from being left unused for extended periods of time.[132]

The "plain meaning" rule for reading wills presents another example of how dispossession can sanction the externalization of communication costs. Generally, the "plain meaning of a will is not to be disturbed by extrinsic evidence that another meaning was intended."[133] Evidence of the testator's intent is admissible only if the will is ambiguous once applied to the facts.[134] The force of the plain meaning rule was clearly demonstrated in *National Society for the Prevention of Cruelty to Children v. Scottish National Society for the Prevention of Cruelty to Children*.[135] The case tragically proceeded as follows:

> [A] Scotsman, who had always lived in Scotland and was interested in Scottish charities, leaving a number of bequests to them by will, bequeathed £500 to "The National Society for the Prevention of Cruelty to Children," which was the charter name of a society in London, of which the testator had never heard. Near his home was a branch office of the Scottish National Society for the Prevention of Cruelty to Children, whose activities he knew.... The House of Lords held the remote charity in London should get the money because "he had by name designated it.[136]

Because of such decisions, commentators have sharply criticized the rule of plain meaning.[137] However, the rule internalizes communication costs and thus forces testators to use care in drafting their wills.

When determining the testator's intent requires extrinsic information, the testator has failed to communicate her intent through her will. This can result because the testator did not expend the necessary effort to ensure that she communicated her intent through the will. If the property is allocated according to a complex hearing concerning the testator's intent, the testator's savings increase costs for the beneficiaries and the probate court. These externalized costs are difficult and costly to measure because they are externalized to a potentially large and heterogeneous group, including the beneficiaries and the state.

Usually, the cost to the testator of avoiding externalization through more careful drafting is small, or at least small relative to the externalized costs. Even

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132. *See* Stake, *supra* note 122, 2435-36, 2442-46 (presenting arguments that adverse possession encourages investment and development). *But see id.* (giving counterarguments to those pro-investment and pro-development claims).

133. JESSE DUKEMINIER & STANLEY M. JOHANSON, WILLS, TRUSTS, AND ESTATES 409-10 (6th ed. 2000) ("In construing wills, a majority of jurisdictions follow (or purport to follow) the plain meaning rule: A plain meaning in a will cannot be disturbed by the introduction of extrinsic evidence that another meaning was intended."); *see, e.g.*, *In re* Estate of Smith, 555 N.E.2d 1111 (Ill. App. Ct. 1990) (applying the plain meaning rule); Mahoney v. Grainger, 186 N.E. 86, 87 (Mass. 1933) (same).

134. *Mahoney*, 186 N.E. at 87.

135. [1915] A.C. 207 (H.L.) (appeal taken from Scot.).

136. DUKEMINIER & JOHANSON, supra note 133, at 412-13.

137. *See, e.g.*, JOHN HENRY WIGMORE, 9 A TREATISE ON THE ANGLO-AMERICAN SYSTEM OF EVIDENCE IN TRIALS AT COMMON LAW INCLUDING THE STATUTES AND JUDICIAL DECISIONS OF ALL JURISDICTIONS OF THE UNITED STATES AND CANADA §2462, at 191-96 (3d ed. 1940) (arguing that "words always need interpretation" and that "the 'plain meaning'... is simply the meaning of the people who did not write the document"); John H. Langbein & Lawrence W. Waggoner, *Reformation of Wills on the Ground of Mistake: Change of Direction in American Law?*, 130 U. PA. L. REV. 521, 527 (1982) (supporting Wigmore's view).

the cost of drafting a complicated will is likely to be less than the costs of litigation. These legal battles may not always arise, even when a will is unclear. For example, the beneficiaries may not challenge the court's interpretation of the will if the extrinsic evidence of the testator's intent does not conflict with the court's interpretation. However, where litigation is involved, the plain meaning rule can result in forfeiture. This forfeiture is not the loss of the property itself. Instead, the testator's estate loses its statutory ability to dispose of the property in accordance with the testator's intent. This dispossession fosters efficiency because the threat of such loss encourages testators to avoid latent ambiguities and their accompanying externalization of costs.

C. Identifying the Cheapest Communicator

Using the sanction-based strategies discussed above, the burdens of communication should often be shifted to the "cheapest communicator." In this Section, I analyze some of the characteristics that identify that party.

1. *Allocating Burdens to Parties with Knowledge*

Distributing communication burdens to parties who already possess relevant knowledge or who can easily *learn* it fosters efficient communication.[138] Identifying these parties depends in part on which types of relevant information are involved. The first type of pertinent information is the nature and extent of a property interest involved.[139] Often, the owner of the interest possesses the best knowledge of the property's parameters; consequently, the owner bears the burden of communicating those parameters. For example, the "claims" portion of a patent application describes with words the metes and bounds of the proposed patent.[140] The patentee possesses superior knowledge of the invention and, therefore, bears the burden of accurately describing the invention through the claims.

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138. *See supra* notes 88-92 and accompanying text. This requirement that the burdens of communication be shifted to a party with knowledge does not require broad disclosures by either party. Rather, if two parties desire to communicate some information, then the burdens of that communication should be distributed to encourage the exchange of *that* information. Where the cost of acquiring the information is high, it may be necessary to allow nondisclosure to provide incentives to acquire information. *See* Kronman, *supra* note 89. The discussion above assumes that such incentives are not required.

139. Imposing burdens on a party with knowledge to encourage that party to reveal that information is similar to an information-forcing penalty default. *See* Ian Ayres & Robert Gertner, *Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87 (1989). Penalty defaults are contractual defaults that are intentionally contrary to the intent of at least one of the parties. *Id.* at 91. The parties' interests will only be expressed if they contract around the penalty default. As a result, the penalty default forces parties to reveal information. *Id.* at 94. However, placing the burdens of communication is not a penalty default. If the parties to a contract do not contract around a provision, a contract still exists. If a party to a communication possesses knowledge, but does not use that information, the communication might be unsuccessful or might not occur at all.

140. *See* 35 U.S.C. § 112 (2000); Brenner v. Manson, 383 U.S. 519, 534 (1966).

Claims may be misleading or inaccurate in three ways. First, claims may be narrower than the full contours of the invention.[141] If so, the scope of the patent will be limited to the claims and will not extend to unclaimed aspects of the invention.[142] Second, the claims may be broader than the underlying invention disclosed in the patent application, in which case a patent will not issue.[143] Finally, the scope of the claim may be unclear because of ambiguous language. If so, the claim is limited to the narrower interpretation, even if the patent could have been filed with clearer but broader claims.[144] Imposing these burdens on the patentee promotes efficiency by encouraging the party with superior knowledge to communicate clearly the full metes and bounds of the invention through the claims.[145]

The second type of knowledge relevant to communications is knowledge of the identities of the parties needed for the communication.[146] Communication costs may be reduced by allocating communication burdens to parties with this knowledge or the ability to discover it easily.[147] For example, this burden allocation strategy is one reason trespassers bear the costs of trespassing even if the trespass is accidental.[148] Owners and third parties must communicate regarding the nature and extent of the owner's land, but they are not likely to know each other. Third parties are better able to initiate this communication because they have a superior capacity to learn the owner's identity. The third party knows the location of the land and can probably find the owner by visiting the land or identify the owner by asking neighbors. The owner, on the other hand,

141. Because the claims are to be read in light of the specification, some aspects of the invention that are not literally included in the claims may be covered by the patent. *See, e.g.*, Vitrionics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996) (holding that a patentee may define terms in the specification and use those terms in the claims).

142. However, under the doctrine of equivalents, some material that is not literally covered by a claim may fall within the scope of the patent. *See* Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 732 (2002) ("The scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described.").

143. For example, in his patent application for the telegraph, Morse claimed any machinery that uses electro-magnetism "for making or printing intelligible characters, signs or letters at any distances." O'Reilly v. Morse, 56 U.S. 62, 62 (1853). The Supreme Court affirmed a ruling denying protection for the claim saying that Morse "claims an exclusive right to use a manner and process which he has not described and indeed had not invented." *Id.* at 113. Morse's claim arguably could cover the Internet today.

144. Athletic Alternatives, Inc. v. Prince Mfg., Inc., 73 F.3d 1573, 1581 (Fed. Cir. 1996) ("Where there is an equal choice between a broader and a narrower meaning of a claim, and there is an enabling disclosure that indicates that the applicant is at least entitled to a claim having the narrower meaning, we consider the notice function of the claim to be best served by adopting the narrower meaning.").

145. Other requirements of the Patent Act also encourage the patentee to disclose the details of his invention. *See* 35 U.S.C. § 112 (2000).

146. *Cf.* Coase, *supra* note 2, at 15 (noting that "discover[ing] who it is that one wishes to deal with" is an important transaction cost).

147. Because property communications often involve indefinite groups of people, knowledge of the parties to the communication may initially be lacking.

148. *See* DAN B. DOBBS, THE LAW OF TORTS 99 (2000).

lacks knowledge of third parties, and cannot easily learn this information.[149]

A third category is knowledge of activities relating to the property. For example, a third party may possess superior knowledge about utilizing another's property. With copyrights, independent creation of a work that is similar to the copyrighted work is an adequate defense to a suit for infringement.[150] The alleged infringer often possesses superior knowledge about whether a work was copied or independently created. As a result, if the copyright owner demonstrates that the creator of a substantially similar work had access to the copyrighted work, then the creator bears the burden of showing that the substantially similar work was *not* copied.[151] This communication burden is imposed on the alleged infringer in part because of that party's better knowledge of whether the work was copied.

A final kind of knowledge germane to property communications is expertise. Some parties specialize in certain forms of communication. For example, lawyers have some communication advantages in describing the desires of a client in a will. Lawyers know both the client's legal options and the means of implementing those choices. Consequently, lawyers bear some of the risks of failed communication and may be liable to the beneficiaries for both breach of contract and malpractice.[152]

Property law should be devised in a way that avoids situations where no party possesses needed information. For example, the standard menu of leases is limited to four options: the term of years, the periodic tenancy, the tenancy at will, and the tenancy at sufferance. For each option in this menu, the owner of the property either has the knowledge of when the lease will end or the power to terminate it quickly.[153] Consequently, a person interested in using or buying the land could either learn the date when a tenant's interest will end or encourage the owner to terminate the interest. This restraint on the menu of leases imposes opportunity costs (frustration costs) on parties who would create a different kind of lease, like a lease "until the end of the war."[154] With such leases, an owner

149. Criteria for identifying the cheapest communicator may conflict. Owners have a better knowledge of the extent of their entitlements. Because the owner may get punitive damages where the trespasser knows the boundary and would not recoup attorney fees from an accidental trespasser, the owner has an incentive to use this knowledge and mark the boundary clearly.

150. *See* Ty, Inc. v. GMA Accessories, Inc., 132 F.3d 1167, 1169 (1997) ("The Copyright Act forbids only copying; if independent creation results in an identical work, the creator of that work is free to sell it.").

151. Bright Tunes Music Corp. v. Harrisongs Music, Ltd., 420 F. Supp. 177, 181 (1976).

152. *See, e.g.*, Simpson v. Calivas, 650 A.2d 318, 321, 323 (N.H. 1994) (holding that a lawyer who prepares a will can be liable to the beneficiaries of the will for both breach of contract and malpractice).

153. A term of years is a lease for a fixed period of time. A periodic tenancy is a lease for fixed intervals of time lasting until either the landlord or tenant gives notice of termination. A tenancy at will is lease with no fixed period enduring until either the landlord or tenant give notice of termination. Finally, a tenancy at sufferance develops when a tenant retains possession of the property after a prior lease has expired. The landlord may either evict the tenant or create a new lease. *See* DUKENINIER & KRIER, *supra* note 51, at 419-25.

154. *See supra* Section II.B. *But see* Smith's Transfer & Storage Co. v. Hawkins, 50 A.2d 267, 268

would neither know nor be able to control the temporal dimensions of the lease. The menu imposes these frustration costs to ensure the presence of parties with knowledge, thereby reducing communication costs.[155]

Similarly, the different versions of the rule against perpetuities balance the benefits and costs of ensuring that all vested interests in real property can be determined within a limited time period.[156] Under the traditional common law rule, all contingent interests in land must be logically guaranteed to vest within a time period described by "lives in being plus 21 years."[157] The traditional rule assures the immediate[158] presence of information regarding interests in real property but may frustrate testator intent by invalidating interests that are likely, but not logically guaranteed, to vest within the perpetuities period.[159] Under the wait-and-see rule, a "contingent interest is valid if it actually vests within the common law perpetuities period."[160] By voiding any interests that do not vest in this period, the wait-and-see rule both restrains contingent property interests and reduces frustration costs for testators. To further increase the predictability of contingent interests, some states have adopted the wait-and-see for ninety years rule, under which a contingent interest is valid if it is guaranteed to vest within the traditional perpetuities period or it actually vests within ninety years.[161] Thus, each version of the rule against perpetuities balances the testator and beneficiary frustration costs against the benefits of ensuring the presence of information regarding ownership.[162]

(D.C. 1946) (holding that a lease until the "end of war" with Japan and Germany was a term of years because it was "certain to happen").

155. In *Numerus Clausus*, Merrill and Smith justify the use of a fixed menu in interests in land but do not suggest why we have this particular menu. *See generally* Merrill & Smith, *supra* note 1.

156. Contingent interests in land prevent property from being marketable because the identities of the owners are unclear until the contingencies are resolved. DUKEMINIER & JOHANSON, *supra* note 133, at 854. The rule against perpetuities may also prevent the "concentrat[ion of] wealth to the detriment of society . . . [and] lead to generational inequities." Joel C. Dobris, *The Death of the Rule Against Perpetuities, or the RAP Has No Friends—An Essay*, 35 REAL PROP. PROB. & TR. J. 601, 614 (2000). Despite these apparent advantages, Rhode Island, South Dakota, and Wisconsin have completely abolished the rule against perpetuities. DUKEMINIER & JOHANSON, *supra* note 133, at 854.

157. *Id.* at 793.

158. The rule is a rule of logical proof in that, at the time the interests are created, they must be *guaranteed* to vest before the expiration of the perpetuities period. *Id.* at 794-95.

159. For amusing examples of interests that are likely but not legally guaranteed to vest, see DUKEMINIER & JOHANSON, *supra* note 133, at 798.

160. *See* DUKENINIER & KRIER, *supra* note 51, at 312. Illinois, Iowa, Kentucky, Maine, Maryland, Mississippi, New Hampshire, Ohio, Pennsylvania, Vermont, Virginia, and Washington have adopted some form of the wait-and-see rule. *Id.* at 313.

161. *Id.* at 313. The Uniform Statutory Rule Against Perpetuities (USRAP) introduced the wait-and-see for ninety years rule. Alaska, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Indiana, Kansas, Massachusetts, Michigan, Minnesota, Montana, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, South Carolina, Tennessee, and West Virginia have adopted USRAP. *Id.* at 315.

162. *See id* at 315-16. "Dead hand control" is also undesirable because we want current owners (not former owners) to decide the current uses of property. *See id.* at 291-92.

2. *Amortization*

Property communications frequently involve a large, indefinite group of people,[163] and one party may have a better ability to amortize communication costs over this group and thereby reduce the cost per communication. Law and private agreements encourage the party with this advantage to use it. For example, a purchaser of land risks losing her new land if she does not promptly record in part because she can amortize recordation costs over many communications with third parties, including subsequent purchasers, neighbors who wish to verify property boundaries, and courts who must resolve property disputes.[164] Because of their superior ability to amortize, similar recordation and notification burdens are placed on patent owners, who must describe the metes and bounds of their patent in a separate section of the application.[165] On a more general level, mandatory property menus present enormous opportunities for amortization because the cost of learning the menu is amortized over many uses of the menu.[166]

Private agreements also amortize communication costs. For example, the Broadcast Music Industry (BMI) and the American Society of Composers, Authors, and Publishers (ASCAP) have collectivized the performance rights of many copyrighted musical works.[167] BMI and ASCAP are able to amortize communication costs over copyright owners, licensees, and copyright infringers. With copyright owners and licensees, BMI and ASCAP can amortize the costs of negotiations and communications through standardized licensing contracts. Moreover, because of the primacy and visibility of BMI and ASCAP, licensees and copyright owners do not incur great communication costs in locating each other's agents.[168] In fact, licensees and copyright owners will likely never have to meet. Finally, the costs of communicating to infringers and to authorities regarding those infringements can be amortized over the many copyright contracts that BMI and ASCAP hold.[169]

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163. *See Merrill & Smith*, *supra* note 80, at 395.

164. *See supra* note 81 and accompanying text. Property law sometimes uses sanctions to encourage amortization with chattels. For example, in some Western states, branding of cattle was once "legal proof of ownership." *See* Anderson & Hill, *supra* note 6, at 174. The cost to the ranchers of branding could be amortized over the many times that ownership of the cattle must be determined. The cost of branding could be quite high because rounding up cattle on the open plain was difficult. *Id.* at 175. As a result, cattlemen began to participate in group roundups. *Id.*

165. *See supra* notes 140-145 and accompanying text.

166. *See supra* Section II.B.

167. *See* CRAIG JOYCE ET AL., COPYRIGHT LAW 568-69 (5th ed. 2001).

168. By collectivizing, BMI and ASCAP have reduced the communication costs of licensees determining with whom they should deal. Collectivizing reduces the knowledge needed to find the parties needed for a transaction. *See supra* Subsection III.C.1.

169. The Copyright Clearance Center similarly serves as an amortizing middleman for negotiating licenses to photocopy written works. *See* JOYCE ET AL., *supra* note 167, at 506.

3. *Other Communication Advantages*

Other traits may make a party the cheapest communicator. For example, the neutrality and trustworthiness of some parties may encourage others to communicate with them. Trust beneficiaries, for instance, might be more comfortable communicating with trustees than with each other. Trustees are financially neutral and constrained by their fiduciary duties,[170] while some beneficiaries, like income beneficiaries and remaindermen, have conflicting interests. This criterion is less important than advantages involving amortization and knowledge because most parties to property communications are not neutral. In any case, the list of communication advantages herein is meant to be illustrative, not exhaustive.

IV. INTERNET COMMUNICATION

The Internet is a new and unique forum for property communication and transactions. People buy, sell, trade, and infringe copyrighted works on the Internet. Similarly, people use websites to buy and sell real property and chattels. In many traditional communications regarding property, rules have developed to reduce communication costs to efficient levels. However, because the rules for online property communications are still evolving, this digital environment presents new challenges for applying old techniques to reduce communication costs.

The Internet also involves communication that does not involve property but is similar to property rights communication in that it, too, involves large and indistinct groups of people. A website must communicate with many different parties to attract users interested in its content. Likewise, users must sift through many websites to find those that meet their preferences. Because property and Internet communications both involve communication among many diverse people, the framework developed in Parts II and III of this Note can help to improve Internet communications.[171]

Applying property communication techniques to the Internet requires an understanding of its communicative peculiarities. Three general characteristics of the Internet are particularly important. First, many parties who communicate using the Internet, such as website operators and software-savvy users, are, in essence, experts in using computer programs to communicate. Strategies that encourage these parties to apply their expertise can reduce communication

170. *See* DUKEMINIER & JOHANSON, *supra* note 133, at 929 ("A trustee has the duty to deal with both the income beneficiary and the remainderman impartially.").

171. Indeed, Internet jargon is highly evocative of property. Users "visit" web "sites," which in turn are organized into "domains." This parallel between the Internet and real property is deeper than linguistic convenience.

costs.[172] Second, the Internet connects vast numbers of parties. These large numbers allow for significant amortization of communication costs.[173] These numbers, however, can also support inefficient free-riding, and some parties are likely to attempt to engage in such behavior. Locating these externalizing parties to communications can be difficult. Finally, because the Internet is built on computers, much communication can be automated, which can eliminate some costs.

A. *Copyright Protection and Peer-to-Peer File Sharing Software*

Illegal copies of copyrighted works like software and music are easily created and distributed on the Internet.[174] Peer-to-peer file sharing software, which helps users locate each other and exchange files over the Internet, is often used to distribute these illegal copies.[175] Not all files exchanged through this software infringe copyrights. For example, some musicians and programmers encourage the online dissemination of their works.[176] Nevertheless, because many of the traded files do infringe copyrights, some companies have been enjoined from providing and supporting their file sharing software. For example, in the highly publicized case of *A&M Records, Inc. v. Napster, Inc.*, the Ninth Circuit upheld an injunction preventing Napster.com from supporting peer-to-peer file sharing.[177] The Court held that Napster was liable for contributory copyright infringement because Napster had either actual or constructive knowledge of primary copyright infringement by users[178] and because Napster had materially contributed to those users' infringements.[179] The liability of other peer-to-peer software companies is unclear, however, because the software packages of those companies are significantly different from those of Napster.com.[180]

Peer-to-peer exchange software implicates a basic communication problem. A company providing such software may not want or intend to support copyright infringement by users.[181] However, because the company cannot cheaply contact and communicate with copyright owners, the peer-to-peer network must treat

172. *See supra* note 152 and accompanying text (discussing the communication advantages of expertise).

173. *See supra* Subsection III.C.2 (describing amortization of communication costs).

174. *See* Assaf Hamdani, *Who's Liable for Cyberwrongs?*, 87 CORNELL L. REV. 901, 910, 914 (2002).

175. Giovanna Fessenden, *Peer-to-Peer Technology: Analysis of Contributory Infringement and Fair Use*, 42 IDEA 391, 393 (2002); *see also* Joseph A. Sifferd, Note, *The Peer-to-Peer Revolution: A Post-*Napster *Analysis of the Rapidly Developing File-Sharing Technology*, 4 VAND. J. ENT. L. & PRAC. 92, 104-06 (2002).

176. Fessenden, *supra* note 175, at 404-05; Sifferd, *supra* note 175, at 100.

177. 239 F.3d 1004 (9th Cir. 2001).

178. *Id.* at 1021-22.

179. *Id.* at 1022.

180. Fessenden, *supra* note 175, at 402-05; Sifferd, *supra* note 175, at 105-07.

181. Such an assumption is inappropriate with Napster.com because it had constructive knowledge of copyright infringement through its network.

copyrighted and un-copyrighted files similarly. Under the current system, either the software companies must be enjoined or file sharing allowed.[182]

Unfortunately, both options maintain the communication failure and, consequently, produce difficult-to-measure externalized costs. First, some authors who desire the dissemination of their work will be unable to do so.[183] Because infringing files cannot be effectively separated from non-infringing ones, measuring the amount of these losses is difficult. Second, the injunction imposes costs on the users who cannot exchange non-infringing files. Finally, an enjoined company may lose advertising revenues, user membership fees, and opportunities to negotiate copyright licenses between copyright owners and users.[184] However, if copyright owners are not given additional protection, then file-sharing companies and users will enjoy the benefit of file sharing while externalizing the hard-to-measure costs of infringements to the copyright owners.[185] As I noted in Subsection III.B.1, prices cannot effectively deter the externalization of communication costs when those costs are difficult to measure. Instead, to prevent externalization, lower communication costs, and encourage efficiency, sanctions should be used to induce all parties to employ their respective communication advantages.

Communication costs between owners and peer-to-peer software companies may be reduced under the following sanction-oriented proposal.[186] First, software companies should be prohibited from supporting the exchange of any files that lack a digital "tag" containing copyright identification information. The data tag should include the name of the file, the author or artist, a data field that indicates whether the file should be available for online sharing, and, if so, a price (if any) for downloading.[187] A company should be liable for contributory copyright infringement for supporting the exchange of untagged copyrighted material.[188] Second, if a user wishes to exchange a file that lacks a tag, the user who desires

182. I decline to suggest which alternative is more likely or more efficient.

183. Fessenden, *supra* note 175, at 404-05; Sifferd, *supra* note 175, at 100.

184. Fessenden, *supra* note 175, at 401.

185. Indeed, the music industry blames peer-to-peer file sharing software for much of the recent decline in music sales. Justin Oppelaar, *Biz Seeks Music ID*, DAILY VARIETY, Feb. 11, 2003, at 7.

186. This proposal focuses on the communication cost ramifications of peer-to-peer file sharing. This problem is legally quite complicated, and a full discussion of the issues is beyond the scope of this Note. This application is meant to highlight the informational dimensions of the problem rather than to provide an all-encompassing solution.

187. Alternatively, the data tag could just be a number that allows a person to locate the listed information in a database.

188. This proposal would expand the software companies' copyright liability by making them liable for contributory infringement despite having no notice that the exchanged files were copyrighted. Despite *Napster*, the vicarious liability of the websites before notification by copyright owners is unclear. *See* Sifferd, *supra* note 175, at 103. Without some knowledge of the infringing files, a peer-to-peer software company has little ability to prevent infringement by users. In *Napster*, the injunction imposed no duty on Napster.com to limit file sharing until the plaintiffs "provide notice to Napster of copyrighted works and files containing such works available on the Napster system." A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1027 (9th Cir. 2001). Consequently, this proposal would require some change to the laws governing contributory infringement of copyrighted works.

to download the file can request that the software company attach a tag. The software company may either refuse the request or attempt to contact the copyright owner to gain approval for attaching a tag. The requesting user can suggest a copyright owner for the software company to contact, but the user cannot create or manipulate a tag.[189] Alternatively, a user may be able to request a tag directly from a copyright owner or his agent. If the user's request for a tag is granted, that user can download the file under the terms of the license from the copyright owner. Third, copyright owners who wish to share their works should all provide licensing information (or contact information) to a centralized contact list that software companies can access. Software companies and users would use this contact information to request the copyright owner's permission to support file sharing for untagged files. Finally, peer-to-peer software companies would only allow users to search each other's files on the basis of the information contained in the tags.

This proposal lowers communication costs and fosters efficiency by encouraging copyright owners, users, and peer-to-peer software companies to employ their communication advantages.[190] Copyright owners possess two communication advantages. First, unlike the software companies and the users, the copyright owners possess superior knowledge about the cost of copying the work. Second, copyright owners can amortize communication improvement costs over the potentially large group of people interacting with the work, including the software companies, potential copyright infringers, and future licensees. Copyright owners who do not facilitate the provision of data tags for their digital works face a mild sanction because their works will not be disseminated (and licensing fees will not be collected) through peer-to-peer software.[191] Fortunately, these new communication costs for the copyright owners are probably small. For example, data tags could be automatically included with every digital musical recording. Responding to requests for licenses to share files from software

189. In fact, the Digital Millennium Copyright Act (DMCA) already prohibits users from tampering with Copyright Management Information (CMI). 17 U.S.C. § 1202 (2000). The proposed digital tag is a form of CMI. The DMCA does not require copyright owners to include any type of CMI, perhaps because copyright owners may not have originally presented their works for online exchange. For example, a photograph in a magazine can be scanned into a computer and then exchanged on the Internet. Because the photograph came from the magazine, it does not have a digital tag. Likewise, many copyrighted digital works were created before the need for CMI arose. Some commentators argue that the use of CMI should be limited because it could be used to track user behavior and invade user privacy. *See, e.g.*, Julie E. Cohen, *A Right To Read Anonymously: A Closer Look at "Copyright Management" in Cyberspace*, 28 CONN. L. REV. 981, 1038 (1996) (arguing that CMI might be used to invade user privacy). However, the legislative history of the DMCA demonstrates that Congress "does not include digital information used to track or monitor usage of copyrighted works." Pamela Samuelson, *Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need To Be Revised*, 14 BERKELEY TECH. L.J. 519, 531 n.64 (1999).

190. *See generally supra* Section III.C (discussing communication advantages).

191. *See generally supra* Subsection III.B.1 (describing the use of sanctions to deter the externalization of communication costs).

companies can likely be automated to a great extent.[192] Copyright owners' desire to receive licensing fees and to have their works disseminated should prompt them to use their superior knowledge and their amortization abilities. Copyright owners who do not wish for their works to be exchanged are free to remain inactive.

Users also possess communication advantages because users know which files they want to download and also know whether those files possess identification tags.[193] User participation costs in the above schema are likely small enough to encourage users to use this superior knowledge. For tagged files, users may have to pay a licensing fee.[194] Nevertheless, because downloading music is likely cheaper than purchasing physical media like CDs, the licensing fee probably will not deter users from supporting peer-to-peer networks. Users may also be reluctant to request tags for untagged files because of the effort involved. However, software companies and copyright owners can probably streamline the request process to reduce these user communication costs. In addition, users may not have to make many requests. Because copyright owners can benefit from the online licensing and sharing of their works, they would probably include data tags on their files, thereby reducing the importance of the request process.

This proposal also encourages software companies to use two competitive advantages. First, software companies have expert knowledge of computer programming and the exchange of files over the Internet. As a result, these companies can more easily develop software to require tags for file sharing, to allow file searching only based on information in the tags, and to streamline the request process for new tags. Second, file-sharing companies can amortize their communication costs by spreading costs over the large number of users who use their software to exchange a large number of files. Peer-to-peer software companies would be encouraged to adopt the above proposal and employ their

192. The copyright owners' participation costs can be further lowered through collectivized organizations. A collectivized copyright pool (like BMI and ASCAP) could amortize over many copyright owners some of the costs of registering with the contact list and responding to requests for new tags. A tag provision service might be similar to the music information services provided by Gracenote's CDDB. When clients convert compact discs into alternative file formats, like mp3s, this service allows clients to automatically download information about those files, like artist name, song title, and album title. Without such a service, the user might need to enter that information manually. CDDB currently contains information on over 1.8 million albums and twenty million songs. *See Gracenote CDDB*, *at* http://www.gracenote.com/gn_products/cddb.html (last visited Apr. 14, 2003).

193. Because the file sharing software will not allow sharing for untagged files, inability to share a file indicates that the file lacks a tag.

194. A licensing fee can be paid electronically to the copyright owner with a credit card or to a collective organization (like BMI or ASCAP). Alternatively, users could pay a fixed fee to download any copyrighted work. The Copyright Act already requires mandatory licenses in certain areas. *See* 17 U.S.C. §§ 111, 114-16 (2000). These mandatory licenses serve as liability rules and, therefore, lower communication costs. *See generally* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972) (describing the use of liability rules). The costs of establishing a mandatory licensing scheme can also be amortized over many transactions. *See supra* Subsection III.C.2.

competitive advantages through the threat of a major sanction: the full injunctions currently sought by copyright owners.[195]

This proposal may allow users to illegally exchange copyrighted works through two deceptions. First, the user could request and receive a tag for the file by mislabeling the file. Thus, the file would have a legitimate but inaccurate data tag and be available for free downloading. However, such a deception would be short-lived under the proposal because file-sharing software can only index files using the information in the data tag. A user may be able to make an unapproved copyrighted work available for downloading, but few other users will be able to learn of the file's true contents. Second, users may be tempted to register as copyright owners under names very similar to legitimate copyright owners in order to obtain tags that are informative to other users. For example, a user may register as "The Beetles" in order to approve his own requests for songs by The Beatles. Such tags would allow other users to find songs by the Beatles if those users were clever enough to search under deviant spellings. If copyright owners are required to provide contact information to register on the contact list, users may be reluctant to engage in such deception. Verification of user contact information will increase the likelihood that the user will be liable for those infringements.[196]

The music industry has taken the first steps towards implementing this proposal by developing a new international system for tagging digital files.[197] These tags, called "Global Release Identifiers" (GRids), can be attached to many types of digital files, including sound recordings, text, images, video, and software.[198] The tags are coordinated by a central agency that allows copyright owners to register basic information (like the copyright owner's name) with a GRid tag. The goal of the GRid system is to "identify what music has been created, assigned, licensed, distributed and exploited." The music industry considers the GRid system "an important step in developing legitimate and

195. Even some peer-to-peer companies that have been considered immune to infringement actions are now facing suit. *Compare* Sifferd, *supra* note 175, at 105-06 (claiming that the peer-to-peer software company Kazaa is "well outside the grasp of U.S. copyright laws"), *with* Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd. 243 F. Supp. 2d. 1073, 1080 (C.D. Cal. 2003) (holding that the federal court for the Central District of California has jurisdiction to hear a copyright infringement suit against Kazaa even though Kazaa is a Netherlands corporation and its key assets are owned by "a company organized under the laws of the island-nation of Vanuatu").

196. Contact information might automatically be verified through credit information. Though illegal under this proposal, users may also attempt to manipulate data tags themselves without permission from the copyright owners. Even if the tags were protected through technological measures like encryption, it is likely that some software-savvy users would learn to circumvent such protections. If the number of users who impermissibly tamper with tags is small enough, however, this proposal may still promote efficiency.

197. International Federation of the Phonographic Industry, *New Electronic Identifier Helps Develop Legitimate Online Music Market*, *at* http://www.ifpi.org/site-content/press/20030210.html. (Feb. 10, 2003) [hereinafter *New Electronic Identifier*]. The new system augments a pre-existing tagging system. *Id.*

198. International Federation of the Phonographic Industry, *GRid Handbook Part 4: GRid System Operation*, *at* http://212.134.114.163/grid/grid_handbook_4.html (last visited Apr. 15, 2003).

efficient delivery of music online."[199]

Despite progress toward implementing the proposal, it is unclear whether the frustration costs of the proposal would render it inefficient. If peer-to-peer software companies are restricted to tagged file sharing, there may not be enough file sharing for those companies to profit.[200] Notwithstanding the progress made by the music industry, the administrative costs of establishing the tagging system described in the proposal could also render it infeasible.[201] Empirical facts regarding costs and benefits of the proposal are not available. As discussed in Subsection III.B.1, sanctions are usually designed around community norms regarding cost-effective behavior.[202] Such norms may not have developed yet in the new and rapidly changing online environment. Nevertheless, the above proposal will likely reduce the costs of successful communication. If the gains from successful communication exceed the losses from frustration costs, then the above proposal would encourage cheaper communication and efficient behavior.

B. *Managing Website Content on the Internet*

Communication problems often arise when Internet users want to determine the content provided by websites to avoid websites with certain content, like pornography or obscenity.[203] Websites possess information regarding their own content, but high communication costs often prevent successful communication

199. *New Electronic Identifier*, *supra* note 197. However, the music industry has "no plans as yet to use the system to track songs that have been uploaded to free file-sharing networks." Oppelaar, *supra* note 185.

200. Instead, record companies may develop their own software for online music delivery. Indeed, record companies have licensed much music for downloading, and the number of websites that offer music for downloading for a fee is increasing. However, these websites do not provide peer-to-peer networks; they allow downloading from a centralized source. Maryanne Murray Buechner, *Too Legit*, TIME ONLINE EDITION, *at* http://www.time.com/time/techtime/200304/sites_angel.html (April 7, 2003). The success of these centralized and lawful websites may limit the financial viability of peer-to-peer software.

201. *See* Hansmann & Kraakman, *supra* note 16, at 397; *supra* text accompanying notes 55-60.

202. *See supra* note 110 and accompanying text.

203. "[E]xplicit sexual and violent content has become rampant on the Internet." Elizabeth M. Shea, Note, *The Children's Internet Protection Act of 1999: Is Internet Filtering Software the Answer?*, SETON HALL LEGIS. J. 167, 168 (1999). Because the number of websites and the number of people using the Internet are both growing rapidly, the need for effective Internet content management is also increasing. Moreover, local governments are now in the market for "technical protection measures" that can render offensive web pages inaccessible. Children's Internet Protection Act of 1999 (CIPA), Pub. L. No. 106-554-Appendix D, 114 Stat. 2763A-335. Under the Children's Internet Protection Act (CIPA), public libraries must install filters on publicly accessible Internet terminals to receive federal funding. The District Court for the Eastern District of Pennsylvania declared CIPA facially unconstitutional because the under- and over-inclusiveness of current filters violated the First Amendment. Am. Library Ass'n v. United States, 201 F. Supp. 2d 401, 495 (E.D. Pa. 2002). The Supreme Court reversed. United States v. Am. Library Ass'n, 123 S. Ct. 2297, 2309 (2003). A plurality argued that the over-inclusive filters did not violate the First Amendment rights of adult viewers. *Id.* However, the two concurring votes completing the majority explicitly based their decisions on the Solicitor General's claim that the filters would be deactivated at the request of an adult library patron. *See id.* at 2309, 2310. Requiring adults to use current Internet filters is likely unconstitutional.

of that information.[204] This communication is similar to property communications because the website must communicate the nature of its content to a large and indefinite group of people. For example, a children's website might want to communicate to users (or their parents) that the site does not include adult material, does not allow anonymous chatting, does not sell products, and does not contain links to websites with adult material. Because website content is highly variable, a user may be unable to determine the nature of a website's content without first studying the website, possibly thwarting the user's efforts to avoid such content.[205]

Internet filters, a type of computer software, can significantly reduce the costs involved when websites and users communicate. Current Internet filters work by compiling a "control list" that divides websites into categories, like "Adult/Sexuality," "Advertising," and "Chat."[206] The user selects which of the predefined categories to block.[207] When a user attempts to enter a website, the filter compares the entered website to the control list to determine the website's category. If the category is blocked, the filter prevents the user from visiting the website. Filters significantly lower communication costs because the filtering process is quick and automatic, and the software companies can amortize the cost of writing software and assembling the control list over a vast number of communications.

Unfortunately, current filters also create new communication costs because they are both under-inclusive (by not blocking undesired websites) and over-inclusive (by blocking desired websites).[208] One source of under-inclusive blocking is that most of the Internet is not categorized in control lists. As of 2002, there were approximately two billion web pages on the Internet, and 1.5 million new pages are added each day.[209] Control lists generally contain less than a million entries.[210] To try to keep pace with this growth, many filters use automated software to expand their control list, but automated classification is substantially inaccurate with current technology.[211] Filter companies try to

204. A website may benefit from this failed communication by attracting visitors who would otherwise avoid the site. For example, a person interested in learning more about national landmarks may visit www.whitehouse.com, a pornography website. However, many websites advertise their services offline, which indicates that some sites would benefit from successful communication.

205. *See Am. Library Ass'n*, 123 S. Ct. at 2306 (discussing the difficulties of evaluating visual content on websites); *Am. Library Ass'n*, 201 F. Supp. 2d at 431 (same).

206. *Am. Library Ass'n*, 201 F. Supp. 2d at 428-29.

207. Users can unblock or block specific sites.

208. *See Am. Library Ass'n*, 123 S. Ct. at 2302, 2306; *Am. Library Ass'n*, 201 F. Supp. 2d at 448-49. The Journal of the American Medical Association recently evaluated blocking products used in schools, libraries, and home computers. Caroline R. Richardson et al., *Does Pornography-Blocking Software Block Access to Health Information on the Internet?*, 288 JAMA 2887 (2002). The test found that at their most restrictive settings, the filtering programs blocked twenty-four percent of medical websites and only ninety-one percent of pornography websites. *Id.* at 2887.

209. *Am. Library Ass'n*, 201 F. Supp. 2d at 436.

210. *Id.* at 428.

211. *Id.* at 432. For example, many filters would like to block offensive images, and current

remedy this computer inaccuracy through human review. However, because of the enormous volume of websites that must be processed, human review is plagued by human error.[212] Also, reviewers may base the categorization of a large number of websites on the review of only a few web pages. For example, one filter classified as "Sex, Profanity" all of the pages on Salon.com, which is a site containing much innocuous material, because one page on the site contained a regular column on sex.[213] It is difficult to identify and remedy classification errors because control lists containing the classifications are trade secrets of the software companies.[214] If a website learns that it has been misclassified, it can request reclassification, but no filter undertakes systemic reclassification, even though website content changes over time.[215] Finally, even when a filter has accurately classified a website, the filtering company's criteria may not reflect the tastes and values of a particular user.[216]

Using a menu of categories of website content could reduce the communication costs that arise with flawed filters.[217] The information that a website must convey to the user would dramatically decrease because the website would only need to communicate a selection from the menu in order to communicate the general nature of the website's content.[218] Admittedly, because website content is highly variable, the menu will likely need to be voluntary to reduce frustration costs, which will diminish the communication cost savings of the menu.[219] Nevertheless, the menu selections will likely reduce communication costs for communications regarding participating websites. Just as Euclidean zoning reduces the costs of learning permitted uses of land, software could easily use a menu to determine a website's content.

A website content menu could be implemented using two technological techniques. Under the first method, new domain name suffixes could be created that indicate the menu selection, and thus effectively establish a scheme of "Internet zoning."[220] For example, pornography sites could be identified with a ".prn" suffix. Websites providing anonymous chat rooms could use a ".who" suffix. In fact, the U.S. government recently created a new domain ".kids.us" with the hope that the domain would be voluntarily populated by websites that promote "positive experiences for children and families using the Internet."[221]

"[i]mage recognition technology is immature, ineffective, and unlikely to improve substantially in the near future." *Id.* at 431.

212. *Id.* at 433.

213. *Id.* at 434.

214. *Id.* at 430.

215. *Id.* at 435-36. Internet filters update the control lists with new websites.

216. Some filters employ limited feedback from users. *Id.* at 431.

217. *See generally supra* Section II.B (discussing the use of menus).

218. *See id.*

219. *See supra* note 62 and text accompanying notes 61-64 (discussing voluntary menus).

220. *See* Shea, *supra* note 203, at 200-01.

221. Dot Kids Implementation and Efficiency Act of 2002, Pub. L. No. 107-317, 116 Stat. 2766.

Similarly, a private corporation has created a new .kids domain to "establish and promote the development of a complete network of kid-friendly websites."[222] These new domains will help parents control the content viewed by their children because web browsers can easily be confined to websites with certain domain suffixes. Although websites catering to children may migrate to these new domains, many children's websites worry that changing their names, i.e., their website addresses, will dramatically reduce the number of visitors to their sites.[223]

The second approach to implementing a website menu avoids the costs and confusion resulting from websites changing their names. Under this approach, each web page has a digital "zoning tag" that indicates the content category for the page. This schema could use zoning tags like "pornographic," "violent," "commercial," and so on.[224] Using zoning tags may also foster communication because a website could simultaneously use numerous tags. For example, a website's content could be designated "violent" *and* "pornographic." Thus, the second approach may produce fewer objections and support more expressive communication.

Regardless of which approach is used, website content classification may be problematic because of the difficulty of separating the content into discrete categories. For example, art can be hard to distinguish from pornography, and a website may claim that its pornography is art. These classification problems can be avoided by adopting Internet zoning categories and then utilizing users' superior knowledge of their *own* opinions regarding website content. Under this scheme, all websites would initially be placed in a general-purpose catch-all category.[225] Users who desire to use the zoning system would categorize websites that they visit, and only users who provide feedback would be able to use the

222. *About Us*, .kids Domain, Inc., *at* http://www.kidsdomains.org/kdi/about_us.htm (last visited Dec. 27, 2003). Content standards for the .kids domain is determined based on a wide variety of international guidelines. *Content Guidelines*, .kids Domain, Inc., *at* http://www.kidsdomains.org/kdi/content_guidelines.htm (last visited Dec. 27, 2003).

223. *See, e.g.*, Anick Jesdanun, *Not Everyone On Line with Kid-Safe Domain*, TULSA WORLD, May 12, 2002, at 10 (stating that some websites feel that users are "so accustomed to '.com' that any alternative would mean 'zero traffic'"). At present, there are only ten websites in the .kids.us domain. *See* kids.us *at* http://www.kids.us/ (last visited March 22, 2004). A link from the .com website to the .kids.us or .kids website could likely reduce the concern that the investments in the .com domain name would be lost.

224. Current filtering programs use a classification schema similar to this proposal, but existing filters poorly classify websites. *See* Am. Library Ass'n v. United States, 201 F. Supp. 2d 401, 428-29 (E.D. Pa. 2002) (listing categories of exclusion currently employed by four major content filtering programs). Utilizing user evaluations would improve classification. *See infra* notes 225-227 and accompanying text.

225. Efforts to create kid-friendly domains are simplified examples of a voluntary menu with a catch-all category. Currently, most websites are in the "general" category except for those sites in the .kids or .kids.us domains. Some websites are in preexisting categories like the .gov and .mil domains, for government and military websites, respectively. I decline to suggest whether it would increase efficiency to extend this menu to include additional categories.

zoning schema.[226] This feedback could then be used to shift websites from the "general" categories to a more specific zoning category after users complete a statistically significant number of evaluations. Each user could also set a personal level of protection by requiring a certain percentage of evaluations to agree in order for a website to leave the "general" category. For example, a parent may configure his Internet browser to access only websites that have more than a ninety percent rating in the categories "education" and "children" and have a less than fifteen percent rating in "shopping." Users may also be able to exclude evaluations from distant communities. A parent in Nebraska might not want the votes of users in Europe to determine the content viewed by his children.[227]

Efficient implementation of Internet zoning will require the cooperation of websites, which possess two advantages in communications with users.[228] First, as noted earlier, website managers are experts in web design and can modify their websites to support user classification relatively cheaply. Innovative programmers might also be able to sell their software to other web companies. Second, websites can amortize the cost of modifying their websites over a large number of communications. Market forces may encourage websites to use these communication advantages to implement a user categorizing system because many websites would benefit as specific classifications attract more users interested in their content.[229] For example, a children's website could attract more children if their parents believe that the website is particularly child-friendly.[230] More specific menu classification would also prevent websites from wasting resources on users who are not interested in their content. If users can more easily avoid a website that does not interest them, the website's servers will need to support fewer disinterested users. Websites that do not support user-feedback categorization will remain in the "general" category where they will only be viewed by users willing to operate in such an open environment.

226. Moreover, using the filter could also improve Internet search engines. A user could search for terms with a typical searching tool and then only view responses that fall within certain filter classifications. The dual benefits from using the zoning system would, thus, encourage users to evaluate websites.

227. Restricting the focus to those users in the same "community" would protect filters from some of constitutional attacks that the filters currently face. *See Am. Library Ass'n*, 201 F. Supp. 2d at 429.

228. *See generally supra* Section III.C (discussing communication advantages).

229. In general, a mandatory classification scheme backed by government force is problematic for two reasons. First, a website's First Amendment rights to free speech may prevent rigid classification. For example, an art website may object to being labeled a pornography site on free speech grounds. *See generally* Am. Civil Liberties Union v. Reno, 929 F. Supp. 824 (E.D. Pa. 1996) (declaring the Communications Decency Act of 1996 unconstitutional on First Amendment grounds). Second, the United States has little control over websites hosted in foreign jurisdictions. Those websites could not be forced to migrate to more restrictive domains. Thus, a voluntary menu is more feasible than a mandatory one.

230. Even a voluntary menu will require an enforcement mechanism to prevent websites from misrepresenting their content. Such an enforcement mechanism is beyond the scope of this Note.

V. CONCLUSION

Property and Internet communications are only two examples of communications involving large numbers of parties. Such mass communication is not limited to these contexts. For example, communications between the government and the citizenry are often mass communications. The government has often adopted many of the above-described techniques to improve communication, and the Homeland Security Advisory System, i.e., the federal government's menu of terror threat levels, is just the latest example. That menu helps people, most importantly law-enforcement personnel, easily understand the government's threat assessment and helps law enforcement personnel quickly coordinate their actions.[231] However, this system may increase policing costs and limit security. Officials either do not respond to small increases in threat levels or must respond dramatically by raising the threat level. Likewise, when reporting taxes, citizens generally need only communicate the "boundaries" of their yearly gains and losses. Only during an audit does the government examine the full details of an individual's finances. Some commonplace non-property communications are also mass communications, such as communicating marital status, which is traditionally limited to a menu: "single," "married," "divorced," and "widow/widower." Expanding that menu may entail increased communication costs, but refusal to do so may similarly increase communication costs if the typical menu ineffectively maps onto society.

These examples show that the techniques for reducing communication costs about property are generally effective means of promoting efficient mass communication. To promote efficiency, the content of mass communications should be reduced to the bare essentials so that it can be conveyed in clear messages that are cheaper and more effective than complicated ones.[232] Mass communication costs may be large because the participants are numerous. However, efficiency gains can be similarly large—small savings per person may be magnified into significant reductions in overall communication costs. Moreover, because many parties are involved in mass communications, costs can often be substantially amortized to reduce overall costs. To promote efficiency, the burdens in mass communication should be allocated to limit inefficient externalization and to encourage parties to use communication advantages. With mass communications, it may be difficult to efficiently prevent externalization

231. President George W. Bush established the Homeland Security Advisory System "to provide a comprehensive and effective means to disseminate information regarding the risk of terrorist acts to Federal, State, and local authorities and to the American people." Press Release, White House Office of the Press Secretary, Homeland Security Presidential Directive-3 (March 2002), http://www.whitehouse.gov/news/releases/2002/03/20020312-5.html; *see also* 33 C.F.R. § 101.205 (2003) (coordinating maritime security with the Homeland Security Advisory System).

232. *Cf.* Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 779 (2001) (comparing property communications with the comparatively personal communications involved in contracts).

because the externalized costs may be spread over a great many people and thus may be hard to measure. As a result, externalization can best be avoided by threatening to sanction a potentially externalizing party, perhaps by threatening to transfer the benefits of the communication to a party less likely to externalize communication costs in the future.