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## Resource Movement and the Legal System

Herbert Hovenkamp\*

### Introduction

In *The Problem of Social Cost* Ronald Coase identified transaction costs as the main impediment to the free and efficient flow of resources. Transaction costs were what made a legal system important to private ordering. Coase wrote about several common law disputes among neighbors whose economic activities conflicted with one another.<sup>1</sup> One of them was *Sturges v. Bridgman*, the nineteenth century British nuisance case between the two occupants of a duplex building sharing a party wall.<sup>2</sup> Octavius Sturges was a prominent London pediatrician who specialized in childrens' respiratory diseases, such as pneumonia. Frederick Horatio Bridgman was a prominent confectioner to Queen Victoria, whose process for making sweets required him to use a mechanical mortar & pestle to pulverize substances such as chocolate.<sup>3</sup> The nuisance dispute arose when Sturges complained that Bridgman's machine, with its repetitive pounding, made it impossible for Sturges to use his stethoscope to diagnose his patients.

Coase argued that if high transaction costs did not interfere, private bargaining would provide a solution to the problem of conflicting uses which he characterized as efficient -- namely, the right to continue would be given to the person who valued it most.<sup>4</sup> For example, if the pediatrician valued the right to relative silence at £100, while the confectioner valued the right to conduct his business at £60, the efficient solution would preserve the pediatrician's £100 value over the confectioner's £60 value.

Alternative solutions might preserve the ability of *both* parties to operate, however, generating a social value of £160. Coase did not consider these, because the tiny market he focused on was too small to include them. His was concerned with transaction costs, and on his assumptions the only parties who could transact were Sturges and Bridgman, and only with each other. This tiny microcosm was a market because Sturges and Bridgman were locked together by virtue of their own previous investments.

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<sup>1</sup> Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

<sup>2</sup> *Sturges vs. Bridgman*, LR 11 Ch. D. 852 (1879).

<sup>3</sup> For more on the players and the facts, see A.W.B. Simpson, *Coase v. Pigou Reexamined*, 25 J.LEGAL STUD. 53 (1996).

<sup>4</sup> Coase, *Social Cost*, *supra* note \_\_ at 16

But transaction costs are only a portion of the costs of locating the best place for resources. Considering all relevant costs usually requires us to focus on larger markets and longer time periods than the micromarkets that inhabit Coase. This has occurred in the law and economics of automobile accidents, where assumptions about the high costs of bargaining have turned attention to the overall markets where automobiles operate rather than individual pairwise conflicts.<sup>5</sup> When we refocus our attention in this way, the results that Coase described as efficient are frequently suboptimal.

Further, one important source of cost savings is determining where resources should be assigned initially, thus limiting the occasions and costs for further movement. These costs are higher as initial resource investment is less coordinated, more costly, and more specialized as to activity and location. Further, determining the initial location of resources invariably requires us to consider the interests of larger numbers of players, encompassing the entire market in which resources move around. Markets like those envisioned in *The Problem of Social Cost*, which move resources only by unanimous consent, work more poorly as the number of participants increases.<sup>6</sup> Coase himself realized that in such cases government intervention may be preferable even for relatively simple conflicts traditionally analyzed under the common law of nuisance or trespass.

### **The Costs of Movement**

Moving things from one place to another is costly. I may have a second television that would be of better use in my son's apartment, because he has none. If he values it there more than I value it here, moving it might be a good idea. But I live in Iowa City while he is in New York. Moving the television to New York might cost \$150, and he could buy a good used one or perhaps a small new one in New York for less. In that case moving the television actually decreases net value even though he values my television by more than I do.

Most people spend substantial time considering the costs of moving resources around, such as when we decide where to live in relation to work, where to go on vacation, where to shop and how to organize a multistore trip, or whether to shop in person or online. The best course of action is usually to get our plan right the first time, for fixing it later costs more.

A great deal of classical and neoclassical economics paid surprisingly little attention to the idea that the movement of resources is

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<sup>5</sup> See discussion *infra*, text at notes \_\_\_\_.

<sup>6</sup> See discussion *infra*, text at notes \_\_\_\_.

costly.<sup>7</sup> In economic models resources often move without friction from lower value to higher value positions until the economy is in equilibrium, or a steady state in which no further gains from resource movement are possible. Cambridge economist Arthur Cecil Pigou, writing in the 1920s and 1930s, was deeply concerned about the costs of moving resources,<sup>8</sup> but prior to the time of Coase he was somewhat exceptional.

Coase's work turned people's attention to "transaction costs," particularly to Coase's theory that transaction costs are what account for the legal system. Transaction costs are only a subset of the costs of moving resources, however, and often are a fairly small subset. If I loaded my TV into my van and drove it to New York, getting it there would be costly. These would not be "transaction costs," however, except for those involving the gasoline, tolls, and perhaps a motel room that I purchase along the way. Indeed, Coase argued in his well known 1937 article on "The Nature of the Firm" that minimization of all kinds of costs, including transaction costs, determines which things a firm will do for itself internally and which it will purchase on a market.<sup>9</sup> For example, cleaning the office windows could be done by the firm's own employees or else by contracting with a window washing service. When it makes this decision the firm really does not care that one of these is a "transaction" cost while the other is not. The only thing that really matters is which costs less.

The term "transaction costs" is overused in law and economics. In particular, it should not describe costs that have nothing to do with transactions. For me to wash my own windows is costly, but using my own labor is not a transaction cost. Often nontransaction costs are wrapped up

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<sup>7</sup>See DOUGLASS C. NORTH, *STRUCTURE AND CHANGE IN ECONOMIC HISTORY* 5 (1981), who complained that the neoclassical approach avoided "all of the interesting questions," because

The world with which it is concerned is a frictionless one in which institutions do not exist and all change occurs through perfectly operating markets. In short, the costs of acquiring information, uncertainty, and transactions costs do not exist.

SEE ALSO MARTIN HOLLIS AND EDWARD NELL, *RATIONAL ECONOMIC MAN: A PHILOSOPHICAL CRITIQUE OF NEO-CLASSICAL ECONOMICS* 233 (Cambridge: Cambridge Univ. Press 1975); Charles K. Rowley, "Rent-Seeking Versus Directly Unproductive Profit-Seeking Activities" 18, in *THE POLITICAL ECONOMY OF THE EDUCATIONAL PROCESS* (Charles K. Rowley, Robert D. Tollison, Gordon Tullock, eds. 1988).

<sup>8</sup> See discussion *infra*, text at notes \_\_\_\_.

<sup>9</sup>Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* (n.s.) 386 (1937).

into a bargain in such a way that the entire bargain looks like transaction costs. For example, if I am an apple grower selling to a buyer 50 miles away, they will need to be shipped. Shipping could clearly be part of our negotiated transaction. Shipping in this case is not a "transaction" cost, however, but rather a cost of resource movement. If I grew my apples in one place and owned a fruit stand 50 miles away I would still have to ship them, even though no transactions are necessarily involved. I might load them onto my own truck and drive them to the fruit stand myself. Whether or not I "transact," the apples must still be moved.

For Pigou, "transaction costs" were only a subset of the "costs of movement," or of getting resources from one place to another.<sup>10</sup> Nevertheless, his conclusions were the same that Coase would come to later about transaction costs. Coase observed that if the costs of making a transaction were greater than the increase in value that resulted from transfer of a legal entitlement to a higher value position, then the transaction would not occur. He began with the traditional economic observation that resources under free choice move from lower to higher value uses. But then he added the important qualifier that this "assumed costless market transactions." Further,

Once the costs of carrying out market transactions are taken into account it is clear that such a rearrangement of rights will only be undertaken when the increase in the value of production consequent upon the rearrangement is greater than the costs which would be involved in bringing it about. When it is less, the granting of an injunction (or the knowledge that it would be granted) or the liability to pay damages may result in an activity being discontinued (or may prevent its being started) which would be undertaken if market transactions were costless. In these conditions the initial delimitation of legal rights does have an effect on the efficiency with which the economic system operates. One arrangement of rights may bring

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<sup>10</sup> ARTHUR CECIL PIGOU, *THE ECONOMICS OF WELFARE*, pt. II, ch. III, §3 (4th ed. 1932). See Herbert Hovenkamp, *The Coase Theorem and Arthur Cecil Pigou*, 51 *ARIZ. L. REV.* 633 (2009); Herbert Hovenkamp, *Antitrust and the Costs of Movement*, 78 *ANTITRUST L.J.* 67 (2012); Herbert Hovenkamp, *Coase, Institutionalism, and the Origins of Law and Economics*, 86 *IND.L.J.* 499, 504 (2011). Cf. Lee Anne Fennell, *The Problem of Resource Access*, 126 *HARV. L. REV.* 1471, 1483-93 (2013) (using the term "resource allocation costs"); Harold Demsetz, *The Problem of Social Cost: What Problem? A Critique of the Reasoning of A.C. Pigou and R.H. Coase*, 7 *REV. L. & ECON.* 1, 7 (2011) (acknowledging the differences between transaction and other resource movement costs).

about a greater value of production than any other. But unless this is the arrangement of rights established by the legal system, the costs of reaching the same result by altering and combining rights through the market may be so great that this optimal arrangement of rights, and the greater value of production which it would bring, may never be achieved.<sup>11</sup>

Pigou had made exactly the same point, but he spoke more globally of the "costs of movement," which encompassed all the costs of getting a resource from one use to another:

Suppose that between two points A and B the movement of a unit of resources can be effected at a capital cost equivalent to an annual charge of  $n$  shillings for every year during which a unit that is moved continues in productive work in its new home. In these circumstances the national dividend will be increased by the movement of resources from A to B, so long as the annual value of the marginal social net product at B exceeds that at A by more than  $n$  shillings....<sup>12</sup>

Many of the things that Pigou included as costs of movement were ones that Coase later characterized as transaction costs.<sup>13</sup> In addition, however, were many other costs, including lack of information, education,<sup>14</sup> transportation,<sup>15</sup> and commuting distances and times for workers.<sup>16</sup> He also observed that reducing these costs of movement enabled a division of labor, resulting in cheaper or better quality goods.<sup>17</sup> Pigou noted that machine production reduced the demand for skilled labor, and that unskilled laborers could generally be redeployed at lower cost than skilled workers. This

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<sup>11</sup>Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15-16 (1960). See also Coase's Nobel Prize lecture. Ronald H. Coase, *The Institutional Structure of Production*, 82 AM. ECON. REV. 713 (1992).

<sup>12</sup>PIGOU, *ECONOMICS OF WELFARE*, Pt. II, ch. III, §3 at 138.

<sup>13</sup>*E.g.*, *id.* at Id. pt. II, ch. VII, § 1, at 158:

[P]ayments that have to be made to various agents in the capital market, promoters, financing syndicates, investment trusts, solicitors, bankers, and others, who, in varying degrees according to the nature of the investment concerned, help in the work of transporting capital from its places of origin to its places of employment.

<sup>14</sup>*Id.* at pt. II, Ch. 6 ("Hindrances to the Equality of Returns Due to Imperfect Knowledge" \_)

<sup>15</sup>*Id.* Part II, Ch. 17, and Ch. 18 on the effect of railroad rate structures.

<sup>16</sup>Part III, Ch. 9, §10.

<sup>17</sup>*Id.*, Part III., Ch. 9, 10.

enabled workers to be shifted more cheaply as product needs changed.<sup>18</sup>

#### *Relative Deadweight Loss*

The costs of movement in general, or transaction costs in particular, are sometimes described as an economic deadweight loss.<sup>19</sup> But that conclusion is meaningless unless we ask "compared to what?" For example, we speak of the deadweight loss of monopoly only by comparing it to a competitive economy, or else to some alternative market thought to be more competitive.<sup>20</sup> If the norm is a frictionless economy in which everything moves costlessly from one use to another, then any cost of movement is a deadweight loss. But no one lives in such an economy. A more useful definition is that a cost of moving a resource is a deadweight loss to the extent that it is more costly than equally good and available alternatives. *Ceteris paribus*, going from more to less costly means of moving resources will generally produce gains that exceed any losses, provided that nonparties are not adversely affected. An important corollary is that a search for greater efficiency, assuming that is our goal, requires us continuously to seek out lower costs of moving resources around.

#### *The Choice of an Initial Position*

Another important corollary, stressed by Pigou and later Calabresi but not by Coase, is that it is often efficient to ensure that resources are *initially* placed in their highest value use, making further movement unnecessary.<sup>21</sup> For example, Pigou was particularly concerned about the extent to which workers were often initially assigned to low value occupations, largely because of family tradition or lack of education.<sup>22</sup>

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<sup>18</sup>*Ibid.*

<sup>19</sup>Ronald J. Colombo, *The Role of Trust in Financial Regulation*, 55 VILL.L.REV. 577, 579 (2010); Jeff Sovern, *Toward a New Model of Consumer Protection: The Problem of Inflated Transaction Costs*, 47 WM. & MARY L. REV. 1635, 1683-84 (2006); Frieder Frasch, *Transaction Costs of the EU Emissions Trading Scheme in German Companies*, 7 SUSTAINABLE DEV. L. & POL'Y 48 (2007).

<sup>20</sup>*See, e.g.,* HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE §1.3 (4th ed. 2011).

<sup>21</sup>*See* PIGOU, ECONOMICS OF WELFARE, Pt. II, ch. 3, §3.

<sup>22</sup>*Id.*, Pt. III, Ch. 9, §§5-7:

The most fundamental way in which the first of these causes, ignorance, operates is by impairing the initial distribution of new generations of workpeople as they flow into industry. Those persons who direct the choice of avocations made by young men and

Coasean efficiency is undermined by externalities whose costs cannot be internalized because transaction costs are too high. For example, the noise of Bridgman's machine is a resource conflict the parties will have to resolve by bargaining. If the legal system assigns the right to the wrong person, high transaction costs may prevent it from being transferred to the correct one. For an individual making a resource choice, the cost of a bad initial decision can be a negative externality if it does not fall upon the person who made it but the cost of movement away from the initial position are high.

To illustrate, suppose that upon entering the confection trade Bridgman could have chosen between two equally suitable buildings that cost the same. He chose the one that later created the conflict with Sturges. The other building would be occupied by a different noise making business that was not bothered by Bridgman's mortar & pestle. At this point relocating to the alternative place would cost £25, but initially it would have cost Bridgman the same amount to move into either location. That lost £25 shows up now to the extent that reciprocal bargaining obliges either Bridgman or Sturges to pay it, depending on how the law assign's liability. For example, if the law finds against Sturges, holding that there is no nuisance, then Sturges must pay Bridgman at least £25 to get him to move. On the other hand, if Bridgman had moved into the correct place to begin with, neither would have to pay and society would be £25 richer.

The law and economics of traffic accidents takes a very different approach to this problem. It considers the full market in which automobiles operate rather than the relationship between two automobiles approaching each other.<sup>23</sup> For example, the nationwide American rules requiring driving on the right side of the road, or that automobiles must yield to trains at grade crossings, ensure that operators do not have to engage in pairwise bargaining later. These are basically "zoning" rules for the road, which rely on conventions or cost avoidance as a surrogate for bargaining. Their goal is to get people into the right place from the beginning, so that subsequent

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women entering industry are ignorant both of the level at which the demand price for any given quantity of labour of any given grade will stand in different occupations at a later period of those young persons' lives, and also of what the quantity of labour offering itself in those different occupations at that period will be.

On the problem today, see AYTEK ERDIL and HALUK ERGIN, "Improving Efficiency in School Choice," 170-188, in *THE HANDBOOK OF MARKET DESIGN* (Nir Vulkan, et al., eds. 2013).

<sup>23</sup>Mainly in GUIDO CALABRESI, *THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS* (1970). See discussion *infra*, text at notes \_\_\_.



bargaining will not be necessary. The premise for state enforced traffic rules is that greater government intervention is needed because individual bargaining is less likely to be effective. When all the relevant costs of land use externalities are considered, however, including the cost of not being in the right place from the beginning, the differences between traffic rules and zoning rules become relatively insignificant.

### **Coasean Markets**

Ronald Coase's name is widely associated with the role of transaction costs in the economy, and their relationship to the legal system. Those who have peered into Coase have seen a variety of things, many of which Coase himself did not see or would have rejected. But the markets that are central to the functioning of the legal system in Coase's analysis have some distinctive features. One is Coase's quite narrow conception of "efficiency."<sup>24</sup> A second is that Coasean markets are very small. How small they are is determined by the costs of movement, both transactional and nontransactional, from a given starting position.<sup>25</sup> A third feature of Coasean markets is that moving resources within them requires unanimous agreement of the relevant participants. As Coase himself acknowledged more than once, this fact has important implications for the efficacy of bargained solutions as the number of bargainers increases.<sup>26</sup>

#### *Identifying the "Efficient" Outcome*

Traditional markets typically have large numbers of buyers and sellers, but a single buyer and a single seller are sufficient to make a trade. For example, if I buy a loaf of bread in a competitive market from my grocer, both the grocer and I are better off. The market for bread contains many other buyers and sellers who did not participate in this transaction. They are largely indifferent to my particular deal, except to the extent that one or more of them had been competing for my trade, or that I took the last loaf on the shelf. In some cases others will use information about my trade to inform their own choices. They will go on to make their trades with others. While a particular transaction occurs at the "micro" level, the overall market could be very large, perhaps even nationwide or worldwide.

These traditional markets are not the ones contemplated in *The Problem of Social Cost*. There, the trade and the market are the same size.<sup>27</sup> Think back to *Sturges v. Bridgman*, which Coase used to illustrate how

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<sup>24</sup>See discussion *infra*, text at notes \_\_\_\_.

<sup>25</sup>See discussion *infra*, text at notes \_\_\_\_.

<sup>26</sup>See discussion *infra*, text at notes \_\_\_\_.

<sup>27</sup>See discussion *infra*, text at notes \_\_\_\_.

private bargaining could resolve the dispute without the intervention of the legal system. Rather than thinking of one party as a victim of a wrongdoer's negative externality, Coase argued, we should treat each as having a tradeable property interest that conflicts with the interest of the other. They are like two people vying to park their cars in the same spot. Assuming that they bargain, the winner will be the person who places the higher value on the right. Suppose Sturges values the right to be free of the noise by £100, while Bridgman values the right to use his noisy machine by £60. Suppose also that the law said Sturges would lose his lawsuit because the noise from the mortar & pestle is not sufficient to constitute a nuisance. In that case Sturges would pay Bridgman a sum between £60 and £100, Bridgman would shut down the machine, and both parties would be better off. For example, if Sturges paid Bridgman £75, Bridgman would be £15 better off and Sturges would be £25 better off. Suppose, however, that the law of London provided that the machine was a nuisance, entitling Sturges to an injunction shutting it down. Bridgman might wish to settle with a money payment, but the most he would pay is £60 and the least Sturges would accept is £100. No settlement would occur and the injunction would shut the machine down.

This story illustrates both the "invariance" corollary and the "efficiency" corollary of the Coase Theorem.<sup>28</sup> The invariance corollary is somewhat counterintuitive and its domain has been controversial.<sup>29</sup> The decision whether Bridgman's mortar & pestle continues to operate is not determined by whether it is an unlawful nuisance, but rather by the respective values that the two parties place on the right in question. In its strongest form, the theorem states that in the absence of transaction costs common law rules have nothing whatsoever to do with how resources are allocated, although they may force some money to change hands. In the nuisance jurisdiction the mortar & pestle is shut down and neither party pays anything to the other. In the no-nuisance jurisdiction the mortar &

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<sup>28</sup> See STEVEN SHAVELL, FOUNDATIONS OF ECONOMIC ANALYSIS OF LAW 100-104 (2004).

<sup>29</sup> For example, under declining marginal utility or an "endowment" effect, it may not hold true, at least not for human actors or firms that are not risk neutral. See Herbert Hovenkamp, *Legal Policy and the Endowment Effect*, 20 J. LEGAL STUD. 225 (1991); Herbert Hovenkamp, *Marginal Utility and the Coase Theorem*, 75 CORNELL L. REV. 783 (1990); Daniel Kahneman, et al., *Experimental Tests of the Endowment Effect and the Coase Theorem*, 98 J. POL. ECON. 1325 (1990). See also Russell Korobkin, *The Endowment Effect and Legal Analysis*, 97 Nw. U. L. Rev. 1227, 1228 (2003).

pestle is also shut down, but this time physician Sturges pays Bridgman a settlement payment between £60 and £100. In order for the invariance thesis to apply the rights in question have to be "alienable," which means that they can be traded through private settlement of a lawsuit. Common law rights are generally alienable in this fashion. However, most statutory rights or public regulations are not. For example, if a zoning ordinance forbade operation of noisy machinery in this neighborhood, the parties would not be able to negotiate to the efficient settlement because a neighbor typically has no right to "waive" his neighbor's obligations under the zoning statute.

The efficiency corollary of the Coase theorem states that in a well functioning market the outcome will be "efficient," which means that it maximizes the wealth of the two parties, and thus social wealth assuming that no one else is affected. The Coasean bargain assigns the disputed interest to the person who values it most highly. In the given example, the physician's right to be free of the noise is worth £100, while the confectioner's right to create the noise is worth only £60. Forcibly granting the right to the confectioner would destroy £100 in resources in favor of a value of only £60. Thus the "efficient" outcome is defined as the one that produces the £100 right.

Describing this as the "efficient" outcome is idiosyncratic, however, in one important sense. Again, we must ask "compared to what?" Clearly an even more efficient outcome would be one in which *both* Sturges and Bridgman could conduct their business without interference from the other. This would generate total value of £160. Coase did not consider this a viable alternative because he took the location of Sturges and Bridgman in the same building as a given.

#### *Micromarkets, Resource Movement, and Efficiency*

Coasean thinking focused economic analysis of law on "micromarkets," or situations involving very small groups of traders who are locked together by some preexisting commitment, whether it be tenancy in a duplex, neighbors in a subdivision, automobiles speeding toward one another, an unhappy marriage, or disputes between shareholders and managers in a single corporation.<sup>30</sup>

One problem with these Coasean markets is that they are rarely very competitive. Sturges and Bridgman have only each other to bargain with, and bilateral monopolies of this sort often lead to difficulty in reaching

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<sup>30</sup>See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* (8th ed. 2010) at Ch. 5 (family law), ch. 6 (torts), Ch. 14 (Corporations and other business organizations); Ch. 15 (financial markets).

outcomes. One problem with bilateral monopolies is that they *increase* transaction costs because there is no competition to discipline each person's ask or offer prices. Joint maximization may be frustrated by each person's incentive to hide information from the other.<sup>31</sup> These problems are exacerbated as Coasean markets more actors because unanimity is a precondition to trading. Such markets are not strictly speaking "bilateral" monopolies. Nevertheless, they have all the efficiency challenging characteristics of bilateral monopolies, often magnified.<sup>32</sup>

London in 1879 undoubtedly had hundreds of physicians, hundreds of confectioners, and thousands of duplexes or other buildings suitable for business. Ordinarily we would think of these things when talking about markets. Physicians compete with each other, as do confectioners and landlords. But the "market" at issue in Coase's article was a peculiar one, limited to a single physician, a single confectioner and a single building.

What makes this relationship between solitary Sturges and solitary Bridgman a "market"? The answer is that prior commitments plus the costs of movement define this market's boundaries. Sturges and Bridgman are stuck together by virtue of a previous investment each of them had made in the same building.<sup>33</sup> For example, suppose as before that Sturges valued the right to be free of Bridgman's noise at £100, while Bridgman valued the right to make it at £60. But suppose that for £35 Bridgman could move to an equally good location with no noise or other conflict and no harm to his business. No matter how liability was assigned, Bridgman would move. In a nuisance jurisdiction he would move rather than shut down. In a no

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<sup>31</sup> See Roger D. Blair, David L. Kaserman, & Richard E. Romano, *A Pedagogical Treatment of Bilateral Monopoly*, 55 S.ECON. J. 831 (1989). On bilateral monopoly and the Coase Theorem, see Robert Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1 (1982). Among the earliest observations of indeterminacy in strictly bilateral trading is F.Y. EDGEWORTH, *MATHEMATICAL PSYCHICS: AN ESSAY ON THE APPLICATION OF MATHEMATICS TO THE MORAL SCIENCES* 29-33 (1881); Fritz Machlup & Martha Taber, *Bilateral Monopoly, Successive Monopoly, and Vertical Integration*, 27 ECONOMICA 101 (1960).

<sup>32</sup> See discussion *infra*, text at notes \_\_\_\_.

<sup>33</sup> Cf. "lock in" as a theory justifying very small markets in antitrust cases. For example, those who already own a Kodak photocopier are locked in to an ongoing supply of service and repair parts, thus making "Kodak parts" or "Kodak service" a relevant market as to them. See *Eastman Kodak Co. v. Image Tech. Services, Inc.*, 504 U.S. 451, 458-459 (1992) (accepting this theory), critiqued in 2B PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶564 (4th ed. 2013).

nuisance jurisdiction Sturges would pay him to move, which would require less than paying him to shut down. If Bridgman had moved to a location with less conflict to begin with, however, his moving costs would be zero.

Coase had actually recognized this in 1937, in *The Nature of the Firm*. A profit-maximizing firm would compare the cost of operating in its current location against the cost of moving elsewhere, and choose the value maximizing solution.<sup>34</sup> The message of Coase's 1937 article is that when we consider the problem of Sturges and Bridgman, focusing exclusively on transaction costs and on the micromarket that their dispute created can lead us astray. Rather, we should consider all of the costs of moving resources, including transaction costs, as well as the full range of places and times where movement can occur. The differences can be important. Coase's approach in *The Nature of the Firm* compared the cost of transacting against the cost of getting something done by any other means, not limited to transactions. A value maximizing firm would do exactly that. For those purposes, the cost of redeploying resources initially invested badly would also be a cost. The cheapest cost avoider gets it right the first time.

By focusing exclusively on transaction costs from a position defined by previous investment, Coasean thinking shifted our attention to micromarkets. In each case, however, the situation creates a market because a previous choice (whether cooperative or unilateral) binds the two actors together and extraction is costly. Sturges and Bridgman had a conflict because they were already established in their locations. If the costs of movement were sufficiently low, however, the optimal outcome could be for one of the parties simply to move away. But suppose that we had been able to steer one of them to a different location to begin with, a policy that Pigou advocated strenuously.<sup>35</sup> In that case the cost of movement could have been even lower, certainly less than the cost of moving to one address and then relocating to another. This observation is relevant to many of Coase's examples. The truly efficient solution to *Sturges v. Bridgman* is the one that permits each of them to operate without interference by the other. Further, the most efficient version of that choice is likely to be one that defines their property interests in such a way that they never become neighbors in the first place.

In an example that Coase used frequently, once a polluting smokestack and a residential neighborhood are constructed and in place, bargaining assigns the right to the highest value set of participants.<sup>36</sup> But an even higher value could obtain if a zoning law forbade smokestacks and

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<sup>34</sup>Coase, *Nature of the Firm*, note \_\_\_\_.

<sup>35</sup>See discussion *supra*, text at notes \_\_\_\_.

<sup>36</sup>Coase, *Problem of Social Cost*, note \_\_ at 1-2, 11-13.

homes from locating in close proximity to begin with -- or perhaps if the parties had the foresight to see into the future and bargain about location before making any initial investment. The Coasean reasoning forces us to think of the "market" as the relationship between neighbors whose uses are already in place, in the process ignoring a larger market that presented a greater array of choices.

In his writing about automobile accidents, Guido Calabresi took a fundamentally different approach. In one of the first articles to cite "The Problem of Social Cost" Walter Blum and Harry Kalven from the University of Chicago had noted the importance of Coase's work in assessing resource conflict. They concluded that it could not be applied to automobile accidents, however. In traffic collision cases people do not know in advance who their bargaining opposites are until it is too late, and there are significant other limitations to their ability to bargain over such issues as the right of way.<sup>37</sup> Calabresi responded that the way to think about the problem is to imagine who *would* have won the bargain in a regime in which bargaining had been possible. Under bargaining in a well functioning market, the person who ends up taking the precaution is the one in a position to avoid the accident at the lowest cost. Thus the "cheapest cost avoider" entered the lexicon of law and economics.<sup>38</sup>

While Calabresi was responding to a problem of extremely high transaction costs, his solution to the traffic accident problem is not about transaction costs at all, but about the generally nontransactional costs of movement. For example, consider the common law rule that at grade level railroad crossings trains have the right of way over cars. The rationale is fairly simple: it costs a great deal more to stop and restart a train than to stop and restart a car. If the train would incur costs of \$2.00 while the car

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<sup>37</sup>Walter J. Blum and Harry Kalven, *Public Law Perspectives on a Private Law Problem -- Auto Compensation Plans*, 31 UNIV. CHI.L.REV. 641 (1964). See Steven G. Medema, "Rethinking Market Failure: 'The Problem of Social Cost' Before the 'Coase Theorem'" (SSRN working paper, Jan. 25, 2013), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2188728](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2188728).

<sup>38</sup>GUIDO CALABRESI, *THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS* 135 & n.1 (1970). Calabresi observed that these costs were not transaction costs at all, but rather alternatives, or substitutes, for transacting. See Guido Calabresi, *Transaction Costs, Resource Allocation and Liability Rules -- A Comment*, 11 J.L. & ECON. 67, 69 (1968). Coase had observed in relation to pairwise bargaining that when transaction costs are high the legal system should assign the right initially to the person who placed the highest value on it. Coase, *Social Cost*, note \_\_ at 15-17.

would incur costs of 20 cents, then the parties would bargain for an outcome in which the train would have the right of way. If payment were necessary, the amount would be somewhere between 20 cents and \$2.00.

But while this problem can be recast as one in transaction costs, it is not really a transaction cost problem at all, but a problem related to the mechanical and energy costs of stopping and restarting heavier vs. lighter vehicles. Indeed, the fact that the problem relates to engineering or mechanical costs rather than bargaining costs is what permits us to generalize across the full range of similar conflicts. Thinking of the problem as one in bargaining is an interesting metaphor, but it does not add anything to the solution. It indicates only the truism that the costs of movement that require a bargain are always at least as great as the costs of movement alone. If we required a transaction, then the higher total costs of reaching the right result would make the good outcome less certain, but that is only because we have added the complexity of a completely unnecessary bargain. Or to say this differently, in the railroad/automobile grade crossing situation the correct rule is determined by assessing the cost of moving resources, and imagining a hypothetical bargain adds only an unnecessary complication.

Neither can this problem be reduced to one about the correct assignment of default rules. Default provisions are critical in situations where the parties must bargain but high transaction costs or an endowment effect obstructs trading to a higher value. In that case it makes sense to assign the default in favor of the person who would end up with the right.<sup>39</sup> In other situations, such as most of those involving traffic rules or zoning restrictions, the legal entitlements are inalienable, and thus they stay with the person to whom they are originally assigned.

On the other hand, a type of default rule can also apply to a government's decision about how to allocate resources when initial decisions might be erroneous. For example, the variance system in zoning ordinances creates a limited default rule with a relatively high burden. Zoning might separate industrial from residential uses but then give individual owners relief from provable mistakes that render the government's initial decision suboptimal.<sup>40</sup> In general, the legal system's

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<sup>39</sup> See Hovenkamp, *Marginal Utility and Coase Theorem*, *supra* note \_\_; Cass R. Sunstein, *Switching the Default Rule*, 77 N.Y.U.L.REV. 106, 110-112 (2002); Russell Korobkin, *The Status Quo Bias and Contract Default Rules*, 83 CORNELL L.REV. 608 (1998).

<sup>40</sup> E.g., *Nectow v. City of Cambridge*, 277 U.S. 183 (1928) (municipality acted unconstitutionally when it zoned petitioner's property in such a way as to make it worthless, and thus required to grant individual

provision of constitutional or legislative challenges to government decisions that would otherwise create inalienable rights or burdens operate as default rules.

One important difference between transaction costs and non-transactional costs of movement is that the latter typically relate to engineering, transportation, or sometimes social convention (such as driving on the right side of the road). These are all processes that are capable of evaluation by outsider observers. By contrast, transaction costs depend on willingness-to-pay and willingness-to-accept -- numbers that are subjective and much more difficult to observe, particularly if we are talking about natural persons rather than business firms. When we think about good traffic rules, casting the problem in terms of one person's willingness-to-pay and another's willingness-to-accept simply misses the important point and overly subjectifies what is fundamentally a problem in risk management. For example, a civil engineer's observations about appropriate rules for trains and cars at grade crossings gives us much better and more useful information than any notion about the states of mind or the bargaining strategies of the operators.

Nontransactional costs of movement can more easily be predicted across categories of persons or technologies when our thinking is not complicated by the need to consider hypothetical bargains. Actual bargaining can involve us with noneconomic values or behavioral issues that often serve to interfere with efficient bargaining outcomes.<sup>41</sup> It can also be subject to disguising of information or strategic behavior.<sup>42</sup> Coase ignored these issues, even as he insisted that the problem be cast as one of bargaining. A much more direct route to the same result is to ignore bargaining altogether in situations where bargaining is unnecessary or bargaining metaphors unhelpful. If what we really mean by efficient outcomes is competitive market value, a social concept based on observed costs, then assuming a bargain only gets in the way.

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relief). For a bargaining perspective, see Erin Ryan, *Zoning, Taking, and Dealing: the Problems and Promise of Bargaining in Land Use Planning Conflicts*, 7 HARV.NEGOT.L.REV. 337 (2002).

<sup>41</sup> See, e.g., Cass R. Sunstein, *The Storrs Lectures: Behavioral Economics and Paternalism*, 122 YALE L.J. 1826 (2013); Ryan Bubb & Richard H. Pildes, *How Behavioral Economics Trims its Sails and Why*, 127 HARV.L.REV. \_\_\_\_ (forthcoming 2014).

<sup>42</sup> On these problems in bilateral monopoly, see Blair, et al., note \_\_\_\_.



*The Role of Liberty of Contract*

When we think of legal conflicts in terms of the cost of moving resources rather than simply the costs of bargaining, the link between liberty of contract as an ideology and outcomes in the legal system becomes weaker. This is not to say that bargaining or the right to bargain is not important. In many situations the legal system does and should defer to parties' contractual judgments rather than the objectively defined costs of moving resources. Buyers and sellers in competitive commercial markets make highly individual choices about who to transact with, what to buy, and how much to pay. People who are of age have a right to select each other for marriage, even if friends believe that this particular resource movement is a bad idea and may lead to costly re-movement in the future.

But imagining bargains in situations where they are unnecessary, as the Coasean analysis sometimes does, may force us to identify particular solutions as desirable even though more satisfactory solutions are available. On the illustrative numbers given above, the "efficient" solution to *Sturges v. Bridgman* is for Bridgman to shut down his mortar & pestle, thus preserving Sturges' more valuable interest. But this solution is efficient only because we are viewing it myopically, within the context of a micromarket that the parties' own prior decisions had created. Once we look at the bigger market where the services of physicians and confectioners are sold, then solutions are likely to emerge in which both Sturges and Bridgman can continue to operate.

This observation extends to a wide variety of circumstances, such as the proverbial smokestack industry and the downwind home owners. Once the parties have invested in their position they become the relevant market for bargaining purposes, and the efficient solution will prefer one use over the others. But earlier, before their positions have been established, a range of much more competitive solutions is available that can permit both uses to survive. This helps to explain why more than a half century of Coasean analysis has not placed a noticeable dent in the prevalence of basic zoning rules that segregate polluting industry from residential uses. When we think about the initial assignment in such settings, pairwise bargaining is not in the cards. The relevant actors are not the established smokestack and the established home owner. Rather, they are more like the random pair of automobiles driving in the same county, not yet aware that they may later be in a position of conflict.

When we examine the cost of traffic collisions and the cheapest way of avoiding them, the imaginary bargain that we use to identify who would have won the right of way is only a "bargain" in a loose metaphorical sense. Ultimately these questions reduce to ones of engineering, technical ability or superiority, or some other factor that has nothing to do with a bargain.

Deciding whether the train or the car should yield the right of way is fundamentally not a problem in bargaining. Making it into one involves many behavioral and transactional complexities, while giving nothing in return.

Such solutions do limit property and contract rights to the extent that they forbid individuals from creating harmful externalities in the first place. Perhaps land occupants should have a property right or liberty of contract to invest in any activity and resolve externality issues later, perhaps by making a costly divestment. It's more difficult to make an argument that automobile drivers should have a right to drive on whichever side of the road they please, bargaining to yield whenever traffic approaches. Drivers don't own the roads and consent to traffic rules are a price of admission. But that answer is unsatisfactory. One characteristic of most externalities is that they have no respect for property lines, whether it is Bridgman's noise or the polluter's smoke. Accepting the Coasean analysis, however, entails that we have already subordinated these liberty rights to concerns about efficiency.

#### *Many Player Coasean Markets*

Making a trade requires at least two people but typically not more. In the traditional markets that have dominated classical and neoclassical economics, the number of people who make a trade is only a small subset of the market's total participants. For example, the competitive market for bread contains thousands of buyers and sellers, but a trade requires only one of each, and the rest of the market is largely indifferent.

Coasean markets are different because trading requires an agreement of all market participants. Even in the two person setting, such as Sturges and Bridgman, this market functions less well than a competitive market because it is a bilateral monopoly. Each one can trade only with the other.<sup>43</sup> When Coasean markets have more than two participants, additional complications emerge. No deal will be made unless all participants agree. As the number of bargainers necessary to make a trade increases and their individual interests are more diverse, reaching a bargain becomes much more difficult.<sup>44</sup>

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<sup>43</sup>See discussion *supra*, text at notes \_\_\_\_\_. See also OLIVER E. WILLIAMSON, *MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS* 238-247 (1975) (on numerous difficulties of trading in less than competitive markets).

<sup>44</sup>On the relevance of diversity to transaction costs, see Carol M. Rose, *The Shadow of the Cathedral*, 106 *YALE L.J.* 2175, 2184 (1997); Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 *YALE L.J.* 1027 (1995).

When three or more participants are involved, Coasean bargaining can yield cycling problems, although they are somewhat different from the cycling problems encountered in political (majority vote) markets. In political markets a common problem is that any nonunanimous but initially winning coalition can be defeated by a different nonunanimous coalition, as developed in Condorcet's Paradox and later formalized by Arrow's Impossibility Theorem.<sup>45</sup> As a result, purely democratic markets can be unstable unless the vote is unanimous.<sup>46</sup>

In the Coasean market an agreed upon solution is stable because it would take unanimous consent to change it. The cycling problem shows up in reaching the decision in the first place. Suppose a smokestack factory belches smoke that injures 100 home owners but is in a non-nuisance jurisdiction. The home owners must pay the smokestack if they want to shut it down. That payment will theoretically occur if the aggregate value that the home owners place on freedom from smoke is greater than the value that the factory places on continued operation. But how will the payment be divided among the home owners? A coalition of the most nearby home owners may agree on an equal payment for everyone, but more remote home owners will object that they are injured less by the smoke and thus place a lower value on its removal. Or those who have property interests that are less valuable or less vulnerable to smoke damage will argue that payments should be proportioned to harm. Or some home owners may object that the prevailing winds force the smoke into a path that injures some home owners more than others. The result could be an endless set of proposals, coalitions and counterproposals, with no proposal ever achieving the unanimous consent that is needed. The same thing could

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<sup>45</sup>KENNETH J. ARROW, *SOCIAL CHOICE AND INDIVIDUAL VALUE* (2d ed. 1963). On the Theorem's relation to governance, see Herbert Hovenkamp, *Arrow's Theorem: Ordinalism and Republican Government*, 75 IOWA L. REV. 949 (1990).

On voting cycles in democratic nonunanimous decision making, see DENNIS C. MUELLER, *PUBLIC CHOICE III* at 67-179 (2003).

<sup>46</sup>See Saul Levmore, *Ambiguous Statutes*, 77 UNIV. CHI.L.REV. 1073 (2010); Robert D. Tollison, *Public Choice and Legislation*, 74 VA.L.REV. 339 (1988); DANIEL A. FARBER & PHILIP P FRICKEY, *LAW AND PUBLIC CHOICE: A CRITICAL INTRODUCTION* 23, 38-39 (1991). On the implications of Condorcet's paradox on democratic institutions, particularly where preferences are not naked but are arrayed around specific policies or ideologies, see WILLIAM V. GEHRLEIN & DOMINIQUE LEPELLEY, *VOTING PARADOXES AND GROUP COHERENCE: THE CONDORCET EFFICIENCY OF VOTING RULES* (2013)

happen in a nuisance jurisdiction where the value of operating the factory is greater than the injury to the home owners. In that case the factory would be willing to compensate the home owners, but only after they agree on how the compensation should be divided. The same problems emerge.

Even when unanimous consent is initially achieved, Coasean bargaining rules are suboptimal when they make it more difficult to account for changed circumstances. Rules initially established by unanimous consent might later become inefficient. If unanimous consent is required to change them, however, there will be holdouts that prevent the change from taking place. That is, the Coasean market produces excessive stability. Some residential subdivisions whose uses are controlled by private servitudes have attempted to solve this problem by permitting nonunanimous voting to change an existing restriction that is no longer desirable. But switching to nonunanimous rules simply substitutes one cycling problem for another. The nonunanimous rules have all the defects of democratic voting systems generally.<sup>47</sup>

Coase himself recognized the problem of bargaining in markets with large numbers of players. He was particularly concerned with smoke pollution, writing about it in both his 1959 article on the Federal Communications Commission and a year later in *The Problem of Social Cost*. One can speculate that his interest resulted from his earlier life spent in heavily polluted London. In *The Federal Communications Commission*, Coase observed that "when large numbers of people are involved, the argument for the institution of property rights is weakened and that for general regulations becomes stronger." Speaking of smoke pollution in particular, he acknowledged that "if many people are harmed and there are several sources of pollution, it is more difficult to reach a satisfactory solution through the market." As a result, "in these circumstances it may be preferable to impose special regulations...."<sup>48</sup>

In *The Problem of Social Cost* a year later Coase returned to smoke pollution.<sup>49</sup> Interestingly, his most extensive discussion was of *Bryant v. Lefever*, a dispute between a single defendant and a single plaintiff. Coase himself acknowledged that the situation was "novel." The nuisance dispute arose when the defendant rebuilt his house, giving it a higher roofline that prevented the plaintiff's chimney from clearing its smoke.<sup>50</sup> Coase later

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<sup>47</sup>See Herbert Hovenkamp, *Bargaining in Coasean Markets: Servitudes and Alternative Land-Use Controls*, 27 J.CORP. L. 519 (2002).

<sup>48</sup>Ronald H. Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 1, 27, 29 (1959).

<sup>49</sup>See Coase, *Problem of Social Cost*, 3 J.L. & ECON. 1 at 1-2, 11-13.

<sup>50</sup>*Id.* at 11, discussing *Bryant v. Lefever*, 4 C.P.D. 172 (1878-1879).

addressed the "standard case of a smoke nuisance ...[that] may affect a vast number of people engaged in a wide variety of activities." Coase conceded that private bargaining might not be able to determine the result and that we might wish to call upon the "government" as a "super-firm" to use an "administrative decision" to solve the problem.<sup>51</sup>

Coase also discussed the problem of railroad trains that throw sparks from their engines, sometimes causing fires on nearby land.<sup>52</sup> The relevant cost to the individual land owners is the probability that a fire will occur on their property multiplied by the expected amount of damage. The relevant cost to the railroads is the cost of minimizing the sparks, perhaps by proceeding more slowly or installing spark suppressing technology or switching fuels, or perhaps even by ceasing operation or relocating.

A single railroad line might pass by hundreds of landowners, and a deal with any one of them will not bind the others. Suppose that the cost of eliminating the sparks is less than the risk-adjusted cost of expected injury to the land owners. In a well functioning Coasean market the parties would bargain to a solution in which the railroad eliminated the sparks by some means. If the parties are in a nuisance jurisdiction the outcome is fairly simple: no deal will result. The most the railroad is willing to pay will be less than the value the land owners place on being free from the risk imposed by the sparks. The railroad will have to take whichever avoidance mechanism is effective and cheapest.

But what if the parties are in a no-nuisance jurisdiction. The land owners will have to pay off the railroad. We can assume that the gross amount of the payment is easy to compute because it applies to the railroad alone. For example, if effective spark arresting technology cost \$1 million, the railroad would accept any amount in excess of that. But how is the payment to be divided up among the, say, 1000 landowners adjoining the tracks? First, they are very likely quite diverse. Some have grazing land adjoining the tracks, making the expected cost of spark-induced fire relatively small. Others may have houses or other buildings close by, and for them the expected cost of a fire will be much greater. Some may have 100 feet of frontage along the tracks while others have 500, greatly increasing their exposure. Some may be in a direction that is persistently upwind while others are downwind.

The result will be either underinvestment in efficient technologies or

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The *Bryant* court used the type of "wrongdoer" analysis that Coase rejected -- namely that while making smoke and injuring a neighbor might be a nuisance, in this case the plaintiff was being injured by his own smoke.

<sup>51</sup>Coase, *Social Cost*, note \_\_\_ at 17.

<sup>52</sup>*Id.* at 29-32

activities, or else a great deal of negotiating and cycling through various alternatives. For example, the land owners may form coalitions whose members can be siphoned off by alternative coalitions. Small owners might agree to pay \$2000 each, leaving large land owners with \$5000. But then a subgroup of the large land owners might reform as a coalition of those having houses along the tracks, asking others to join them and offering \$4000 each.

In such a situation Coasean bargaining under a unanimous consent rule can turn into endless cycling, with no agreement ever being reached. The story is a little like Charles Dickens' *Bleak House*, where numerous potential heirs and devisees contested a will, each asking for more than someone else or trying to exclude others until the entire estate was consumed by litigation costs. The parties would have been much better off if they had been able to agree, but an agreement would have required unanimous consent among all of those with a colorable claim.

Each land owner will have a tendency to understate his exposure, thus making his share of the payment smaller. In addition, each landowner knows that once the spark arrester is installed it will benefit everyone, so they may be able to get away without paying anything at all.<sup>53</sup> That is to say, some many player Coasean markets effectively become markets for public goods in the sense that a costly but efficient fix, once installed, benefits the entire affected population. The railroad cannot insist on individual payment by selectively denying protection.<sup>54</sup>

Coase himself recognized the public goods character of some Coasean markets. In his article on "The Lighthouse in Economics" he noted a history in which lighthouses were privately financed with harbor taxes charged against ships who came and went.<sup>55</sup> But Coase never adequately addressed the problem of ships that simply passed by, benefitting from the lighthouse but not required to pay the tax. The lighthouses were never really private, and to the extent they were they failed.<sup>56</sup> In any event, the harbor tax was assessed by a government agency or its equivalent.

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<sup>53</sup>On whether the problem of nonpayment by free riders is a "transaction cost," see HAROLD DEMSETZ, FROM ECONOMIC MAN TO ECONOMIC SYSTEM 116-117 (2008) (arguing that it is not).

<sup>54</sup>See DAVID D. FRIEDMAN, LAW'S ORDER: WHAT ECONOMICS HAS TO DO WITH LAW AND WHY IT MATTERS 49-50 (2000) (noting the public goods problem in some Coasean markets).

<sup>55</sup>Ronald H. Coase, *The Lighthouse in Economics*, 17 J.L. & ECON. 357 (1974).

<sup>56</sup>See Elodie Bertrand, *The Coasean Analysis of Lighthouse Financing: Myths and Realities*, 30 CAMBRIDGE J. ECON. 389 (2006).

Bargaining problems in many player Coasean markets have numerous real world manifestations. Most obviously is the question whether land uses are best allocated legislatively through the zoning system or else by private bargaining. In the first two decades after "The Problem of Social Cost" was published, several writers advocated private restrictive covenants as efficient alternatives to legislative zoning.<sup>57</sup> Pairwise resolution of disputes among people who have already made their investments will always be suboptimal, however, if the investments themselves are suboptimal and extraction is costly. If we want maximizing solutions -- the kind where *both* Sturges and Bridgman can conduct their business without costly mistaken investments -- then we must identify the problems before the conflict arises. This entails a system more like the one for traffic rules, which focuses on the entire area in which resource conflicts arise, on classes of users rather than individuals, and on the overall costs of moving resources. In general, the more costly it is to move a poorly located resource (such as a smokestack factor), the greater the value in getting it right the first time.

Once we decide to allocate land uses over classes rather than individuals, however, then the bargaining metaphor becomes no more than that -- just a metaphor in which we substitute objective value, usually based on market prices or historical costs, for subjective willingness to pay or accept. Zoning and subdivision servitude decisions typically fall into this category, involving questions such as how far commercial and noncommercial uses should be separated from one another, whether polluting or noise producing industry should be segregated, whether to have separate professional and industrial parks, and so on. Assuming we can predict correctly or even partially correctly, the costs of making the right decisions before investment occurs are almost certain to be significantly lower than the costs of fixing things later.

An alternative approach that is applied to *private* land use controls is to re-conceptualize the problem of multi-player bargaining as a time series

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<sup>57</sup>E.g., Robert C. Ellickson, *Alternatives to Zoning: Covenants, Nuisance Rules, and Fines as Land Use Controls*, 40 UNIV. CHI.L.REV. 681 (1973); BERNARD H. SIEGAN, *LAND USE WITHOUT ZONING* (1972). See also Robert H. Nelson, *Privatizing the Neighborhood: A Proposal to Replace Zoning with Private Collective Property Rights to Existing Neighborhoods*, 7 GEO. MASON L. REV. 827 (1999); Robert H. Nelson, *Contracting for Land Use Law: Zoning by Private Contract*, in *THE FALL AND RISE OF FREEDOM OF CONTRACT* (F.H. Buckley ed., 1999); Douglas W. Kmiec, *Deregulating Land Use: An Alternative Free Enterprise Development System*, 130 U. PA. L. REV. 28 (1981).

of pairwise contracts. That is what frequently happens when residential subdivisions are initially developed. The developer draws up a list of land use restrictions for a particular subdivision, typically by making an economic prediction concerning the uses that will maximize subdivision value. It places these restrictions into the chain of title. The developer then sells homes individually, with each buyer agreeing to the restrictions. Once the restrictions are in place and buyers have begun to purchase, acceptance of the restrictions is largely mandatory -- take them or leave them. This avoids the problem of dozens or hundreds of home owners having to bargain at once. This “vertical” series of pairwise transactions must eventually turn into a “horizontal” arrangement among the home owners, who eventually take it over and operate it themselves under contract rules. It would be as if Sturges and Bridgman had been obligated before making their purchase (or lease) to agree to a covenant restricting the use of noisy machinery. If such a covenant had been in place Bridgman would presumably have decided to go elsewhere, where his machinery would not interfere with Sturges' stethoscope.

However, this approach would not solve the problem of previously created servitudes that no longer serve their social purpose.<sup>58</sup> We can still expect post-agreement hyperstability. Restrictions remain enforceable even after they serve to reduce rather than increase value. For example, if a neighborhood has changed and surrounding areas gone commercial, a significant majority may wish to profit by selling off their property for commercial use. But a small number, perhaps those in the interior, want to maintain the residential restrictions because they like where they are living and the surrounding, similarly restricted homeowners provide a buffer.<sup>59</sup> In many such cases the courts have provided relief, but of course in so doing they are imposing a judicial judgment that conflicts with the contract-based judgment of the homeowners, and often where there is no obvious injury to outsiders.<sup>60</sup>

In sum, while servitudes create a default rule, changing the default requires unanimous consent. In general, this is a problem with many player Coasean markets. Because the entitlements are alienable resources they can

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<sup>58</sup> See discussion *supra*, text at notes \_\_\_\_.

<sup>59</sup> See, e.g., *Redfern Lawns Civi Ass'n v. Currie Pontiac Co.*, 328 Mich. 463, 44 N.W.2d 8 (1950) (refusing to apply doctrine of changed conditions to grant relief from a servitude where maintenance of single-family harm restriction operated as buffer benefitting interior lots). See also *Matthews v. Winstanley*, 2003 WL 22976411 (Mich. App. 2003) (similar).

<sup>60</sup> For a critique, see Richard Epstein, *Notice and Freedom of Contract in the Law of Servitudes*, 55 S. CAL. L. REV. 1353 (1983).



be re-assigned. If re-assigning them requires unanimous consent, however, that promise can be illusory, sort of like a zoning ordinance with no provision for variances.

It also does not add much to say that efficient outcomes will emerge when gainers from a certain rule can compensate the losers, who stand to lose less than the gainers gain. If actual bargains were at issue, the recipients would still have to agree with each other about how the compensation is to be divided, or the payors would have to agree about how the size of each person's obligation. The same cycling problems re-enter.<sup>61</sup>

Some private residential covenant schemes permit landowners to amend servitudes by a non-unanimous vote -- often a supermajority such as two thirds. But now we have substituted a legislative, or political market for a contract market, and there is no obvious reason why it is not subject to all of the difficulties of coalition formation that characterize such markets. As a result the courts have frequently had to intervene to protect minority rights. For example, several courts have held that even where a set of restrictions permit changes by less-than-unanimous voting, unanimity would be required for a proposed change that would affect only a single lot in the subdivision.<sup>62</sup>

One might be tempted to say that the problem of reaching and maintaining efficient outcomes in many player Coasean markets is simply one of transaction costs. These costs may become higher, even insurmountable, in markets that have a large numbers of participants and

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<sup>61</sup> Cf. Francesco Parisi, *Political Coase Theorem*, 115 PUB. CHOICE 1 (2003) (Coasean markets with zero transaction costs, single-peaked preferences, and side payments could yield stable outcomes). In the illustrations discussed in the text the preferences of individual land owners are not single peaked because they divide different groups into different categories that cannot be arrayed along a single line. For example, if one considered only each landowner's distance from a smokestack, the array of preferences might be single peaked. But different landowners might also be engaged in different types of activity that is more or less harmed by smoke, and this array might be uncorrelated with distance from the smokestack. The aggregation of these two preference sets is not single peaked. In any event, bargaining depends on *declared* willingness to pay or accept, not on objective measurement of cost or profit. If we use the latter, then we are no longer relying on a bargaining metaphor.

<sup>62</sup> *E.g.*, *Maata v. Dead River Campers, Inc.*, 263 Mich. App. 604, 689 N.W. 2d 491 (Mich.App. 2004); *Licker v. Harkleroad*, 225 Ga.App. 872, 558 S.E.2d 31 (Ga. App. 2001); *Walton v. Jaskiewicz*, 317 Md. 264, 563 A.2d 382 (Md. 1989).

that give rise to the formation of alternative coalitions. The issue is more complex than that, however. If bargaining were in fact costless it could go on forever. A rational decision maker would continue to bargain as long as the expected value of improving one's position exceeded the cost of continuing to bargain, which would be zero. Under zero cost bargaining any possibility of an improvement would yield a further offer. Indeed, in such situations it is more likely that positive, although manageable, bargaining costs serve to induce equilibrium by making continued bargaining costly.

#### *Market Efficiency and the Long Run*

Using the nuisance case of *Sturges v. Bridgman* as one illustration, Coase's social cost analysis identified the efficient solution as the one where the high value activity is preferred while the lower value user's activity is shut down or perhaps ameliorated.<sup>63</sup> This solution is "efficient," however, only if we confine our analysis to the "micromarket" involving *Sturges* and *Bridgman*, which is much smaller than the markets in which these activities operate.<sup>64</sup> Once we look at this broader market for confectioning, doctoring, or small business generally, then it may be quite possible to have solutions in which both activities can continue without harming one another. In order to do that we would need to consider all of the costs of moving resources, not merely those that are involved in transacting. We must also examine the longer run, because an important part of the cost of moving resources is correcting for previous mistakes. In most situations the optimal course is to put them into the correct place to begin with.

Blum and Kalven were correct in 1964 that pairwise bargaining would not work as between two automobiles facing an impending collision.<sup>65</sup> Calabresi responded with a solution that re-focused the automobile accident question on the *entire* market in which such collisions are likely to occur.<sup>66</sup> Because bargaining is possible between neighbors with stable relationships and predictable disputes, Coase was able to focus on tiny markets that told us a great deal about bargaining but said little about optimal allocations of resources in the greater markets in which these activities occurred. The efficient solution to the *Sturges v. Bridgman* problem is to separate their activities sufficiently that both can operate. But

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<sup>63</sup>See discussion *supra*, text at notes \_\_.

<sup>64</sup> See Oliver E. Williamson, *Hierarchies, Markets, and Power in the Economy: An Economic Perspective*, 4 *INDUS. & CORP. CHANGE* 21, 24 (1995) (noting partial equilibrium nature of Coasean analysis).

<sup>65</sup>Blum and Kalven, *supra* note \_\_.

<sup>66</sup>CALABRESI, *COST OF ACCIDENTS*, *supra* note \_\_.

that requires broadening our vision to take into account the entire set of market choices that these two people faced before they made their investments in a particular location. That necessarily includes a much larger area that encompasses both of their uses, as well as a longer period of time. In the process, we will have involved a much greater number of persons in the negotiating process.

As between two parties in a resource conflict, the person who places the greatest value on a right after interests are in place is not necessarily the one who would have valued it most highly before they moved in. For example, our hypothetical numbers assumed that Sturges' use of his stethoscope was more valuable than Bridgman's use of his mechanical mortar and pestle. However, looking *ex ante* it may also be true that it costs Bridgman much more to relocate his bulky machine than it would cost Sturges to relocate his lightweight stethoscope. In addition to assuming that Sturges valued use of his stethoscope at £100 while Bridgman valued use of his mortar & pestle at £60, suppose that it would cost Sturges only £25 to relocate while it would cost Bridgman £40. In that case a more efficient outcome occurs when Sturges moves and both parties continue their operations. If the jurisdiction finds a nuisance, Bridgman will have to pay Sturges to move. If there is no nuisance Sturges must pay his own moving costs. It's a point that should not be lost. While professionals often have highly valuable occupations, they also frequently have highly mobile assets. The cost of moving a law office might be considerably less than the cost of re-locating a cement production plant.

The most efficient solution to the Sturges/Bridgman problem is to allocate property rights in such a way that the problem never arises in the first place. Then we can have both confectioners and physicians. This means that the initial position must be one from which further movement is least likely to be necessary. For example, if we can assign Sturges' right to a place where he will be free to practice without interference we would have the social value of his activity, or £100. If we can do the same thing with Bridgman we will also have the social value of his activity, or £60. Making such decisions, however, almost always requires looking beyond Sturges and Bridgman. While each building has only one actual owner, it may have a very large number of potential owners. One relatively private approach to the problem would be a set of servitudes that segregated business activities by the amount of interference that they caused. For example, relatively noisy activities such as confectioning could be assigned to one land area, while "professional" activities such as practicing medicine could be assigned to a different area. That immediately puts us into territory that involves multi-player negotiating, however, and all of the problems attending such markets, as discussed *supra*.

At this point subjective bargaining analogies fail us, but there are alternatives. The Arrowian theory of political markets and endless cycling assumed "naked" voter preferences that were noncomparable from one actor to another.<sup>67</sup> But identification of the "cheapest cost avoider" in accident law makes no such assumption. Instead of inferring "preferences," as bargaining theory does, it looks directly at the problem of the cost of moving resources, typically focusing on engineering costs, health costs, productivity, or other factors that can be estimated directly from market prices without using individual preference as a surrogate.

To be sure, such assignments can interfere with individual liberty in ways that many would find offensive. For example, ex ante the market for marriage is reasonably competitive, but the market for divorce is a bilateral monopoly. This serves to explain why most divorces are more costly than most weddings. But the long run fix would require the State to intervene in the marriage market so as to ensure that only those couples married who were likely to stay together.

In more purely economic settings the cheapest cost avoider analogy works much better, and liberty rights do not need to encompass rights to cause harm to others, particularly when the harm occurs outside of a property owner's own boundaries. The State can act to prevent uses likely to harm one another from ever coming into too close proximity in the first place. This requires greater use of "objective" welfare judgments, made not by assuming hypothetical agreements but rather by looking at the market costs and benefits of specific courses of action.

### Conclusion

We don't usually expect highway drivers to bargain over the right of way. By the time the bargaining relationship is set up, it is too late. People bargain in markets, but the market for optimal rules about rights of way does not consist of a single pair of drivers confronting each other at the danger point. Rather, it consists of all those driving on a jurisdiction's roads who are in a position to have a resource conflict with one another. The "cheapest cost avoider" solution is not a bargaining solution at all, but one driven by engineering or safety concerns, or else it is simply a convention that must be consistent over a larger number of transactions. For example, driving on the right may not be inherently safer than driving on the left, but a uniform rule for either side is certainly safer than permitting drivers to negotiate with one another on a pairwise basis as they are approach.

Are markets involving more established pairwise relationships any different? Coase thought so, because he accepted previously locked-in

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<sup>67</sup>See Hovenkamp, *Arrow's Theorem*, *supra* note \_\_.

commitments as his starting point. Once Sturges and Bridgman are locked into place, a bargaining analogy is helpful because it helps us determine which is the least harmful among the alternatives available at that point. In fact, however, a cheaper solution overall may be for one of the parties to move, and an even cheaper solution may be an ex ante rule that forbids them from locating in close proximity in the first place. Coase underestimated the number of times that the State would have to be involved in that choice.