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Donald J. Boudreaux and Roger Meiners\*

## EXTERNALITY: ORIGINS AND CLASSIFICATIONS

### INTRODUCTION

Externalities are ubiquitous in academic writing<sup>1</sup> and, by definition, in the life of everyone. As economist Bryan Caplan explains, “positive externalities are benefits that are infeasible to charge to provide; negative externalities are costs that are infeasible to charge to not provide.”<sup>2</sup> Economists and other policy advocates often urge governments to adopt policies that internalize an externality, so that costs and benefits will affect mainly parties who choose to incur them.<sup>3</sup>

Decisions by people and facts of nature affect us physically and mentally in positive and negative ways. People born with good looks earn a beauty premium that is largely independent of occupation.<sup>4</sup> While we cannot do much about the faces we were born with, we can send signals to others by wearing stylish clothing and driving prestige cars. Such things create “positional externalities” causing resources to be frittered away on needless spending.<sup>5</sup> Some argue that public policies should be considered to deal with such things.<sup>6</sup>

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1. A search of “Law Reviews” in Nexis Uni shows an average of almost a thousand articles per year that mention externalities. Economics journals are similarly rife with discussion of externality issues. This is not so in court opinions; courts rarely use the term. See Roger Meiners, *Externalities: Bad Economics, Good Law*, in EXPLORATIONS IN PUBLIC SECTOR ECONOMICS: ESSAYS BY PROMINENT ECONOMISTS 61-91 (J. Hall ed., 2017).

2. Bryan Caplan, *Externalities*, LIBR. ECON. & LIBERTY, <https://www.econlib.org/library/Enc/Externalities.html?highlight=%5B%22externality%22%5D> (last visited Jan. 20, 2019).

3. See, e.g., Tyler Cowen, *Public Goods and Externalities*, LIBR. ECON. & LIBERTY, <http://www.econlib.org/library/Enc1/PublicGoodsandExternalities.html> (last visited Jan. 20, 2019).

4. This is true of men and women. Daniel S. Hamermesh & Jeff E. Biddle, *Beauty and the Labor Market*, 84 AM. ECON. REV. 1174 (1994); see also Chris Warhurst et al., *Lookism: The New Frontier of Employment Discrimination?*, 51 J. INDUS. REL. 131 (2009).

5. Michael A. Lewis, *The Spending Explosion: Positional Externalities and Exponential Consumption Growth*, 7 J. APPLIED QUANTITATIVE METHODS 25 (2012).

6. Robert H. Frank, *Should Public Policy Respond to Positional Externalities?*, 92 J. PUB. ECON. 1777 (2008) (We are not making light of the matter, we have no doubt such things are real. The list of problems is nearly endless and parties devise interesting ways to handle them. For example, sex bias in orchestra auditions may be reduced by having candidates behind a curtain when they perform.); see Claudia Golden & Cecilia Rouse, *Orchestrating Impartiality: The Impact of ‘Blind’ Auditions on Female Musicians*, 90 AM. ECON. REV. 715 (2000).

Economists also worried about consumption externalities: “keeping up with the Joneses.”<sup>7</sup> That is, people feel bad about the nifty things their neighbors buy, so they make purchases to compensate for self-perceived deficiencies. This leads to a “misallocation” of resources that might be corrected by taxes.<sup>8</sup> Going further, we may compare ourselves to people in other countries (global positional externalities) that could be solved by a “Pareto-efficient tax policy in a cooperative framework” (i.e., transnational) that will produce “large welfare gains.”<sup>9</sup>

Public-policy interventions in most aspects of existence may be justified on the grounds that externalities impose harms on society that can be reduced, or create benefits that can be increased, by edicts that address the issues. For example, if you own an old house you might find it subject to regulations that restrict what you may do with it.<sup>10</sup> Why do we have such interventions? The rationale is that they are good for society. Property values are higher when historical houses are forced to be preserved; they are “positive externalities” some argue.<sup>11</sup> Such policies promote “revitalization” without “gentrification.”<sup>12</sup> The same was found to be the case in London, where preservation requirements lead to “positive heritage externalities” so people “acknowledge the need for planning control, and execute their right to object to neighbour’s planning request.”<sup>13</sup>

Evaluating the pervasive role of externalities in the academic literature requires that we understand what it means. In this introductory section, we give an idea of the extent of the use of externality.<sup>14</sup> In the following section, we work through the history of the development of the concept during the past century,

7. Thomas Aronsson & Olof Johansson-Stenman, *Keeping Up with the Joneses, the Smiths, and the Tanakas: On International Tax Coordination and Social Comparisons*, 131 J. PUB. ECON. 71 (2015) (“[P]eople’s reference consumption is increasingly determined by consumption levels in other countries than their own.”).

8. “Corrective” taxes are commonly posited as the solution to the externality problem. See, e.g., Paul Eckerstorfer & Ronald Wendner, *Asymmetric and Non-Atmospheric Consumption Externalities, and Efficient Consumption Taxation*, 106 J. PUB. ECON. 42 (2013).

9. Aronsson & Johansson-Stenman, *supra* note 7. “Keeping up with the Joneses” can mean overconsumption, which could lead to obesity, which is an externality. See Roberta Mann, *Controlling the Environmental Costs of Obesity*, 47 ENVTL. L. 697 (2017).

10. A homeowner in Santa Monica learned to her dismay at the designation when she put her house on the market. Due to the designation, the house sold for 20 percent less than it would have otherwise. See R. Daniel Foster, *L.A. Discovers Historic Preservation, and Promptly Goes Overboard*, WALL ST. J. (Sept. 1, 2017), <https://www.wsj.com/articles/l-a-discovers-historic-preservation-and-promptly-goes-overboard-1504303407>.

11. Andrew Narwold, *Estimating the Value of the Historical Designation Externality*, 1 INT’L J. HOUSING MKTS. & ANALYSIS 288 (2008).

12. N. Edward Coulson & Robin Leichenko, *Historic Preservation and Neighbourhood Change*, 41 URB. STUD. 1587 (2004). The same authors found “significant, positive externalities associated with historic designation” in Abilene, Texas. N. Edward Coulson & Robin M. Leichenko, *The Internal and External Impact of Historical Designation of Property Values*, 23 J. REAL EST. FIN. & ECON. 113 (2001).

13. Nancy Holman & Gabriel Ahlfeldt, *No Escape? The Coordination Problem in Heritage Preservation*, 47 ENV’T & PLAN. 172, 172 (2015).

14. No doubt readers know externality in the environmental context. The discussion above indicates that the concept has been applied in nearly every conceivable area of human action. Simply asserting something to be an externality commonly leads to the presumption that policy intervention is justified. As such, the concept becomes tautological and adds little of value.

focusing on leading architects of the concept such as A.C. Pigou. Next, we examine how Pigou affected the development of externality concepts in subsequent decades. Then, in the next major section, we argue that the term has become nearly meaningless due to its ubiquity, so we develop a classification for the major categories of externalities based on economic and legal logic. We contend that the instances in which policy actions are justified to deal with what are purported to be externalities are very small.

### ORIGINS AND DEVELOPMENT OF EXTERNALITY: MARSHALL AND PIGOU

The earliest developers of the concepts of external economies and diseconomies were Alfred Marshall, a major economist who wrote the leading text in economics from 1890 to 1920, and Arthur Cecil Pigou, one of his students, and the successor to his chair at Cambridge, who was a major figure in the profession in the first half of the 20<sup>th</sup> century.<sup>15</sup>

Marshall, in his oft-cited 8<sup>th</sup> edition of his *Principles of Economics*, explained that *external economies* were factors relevant to a firm that were from the outside, such as better technology that could be adopted. *Internal economies* were factors under the control of those running a firm, for example, a clever manager figuring out how to run a firm better. “External economies,” Marshall wrote, are related to scale of production; they are “those dependent on the general development of the industry,” whereas “internal economies” are “those dependent on the resources of the individual houses of businesses engaged in it [a particular kind of production].”<sup>16</sup> External economies grew as technology improved and large-scale production came to dominate industry. This was valuable knowledge “beyond the reach of anyone who could not afford to have well-paid agents in many distant places.”<sup>17</sup> That is, small producers had access to valuable information that allowed them the possibility of more efficient, larger-scale production. This knowledge enhanced the “efficiency of capital and labour.”<sup>18</sup>

Improved knowledge allows greater efficiencies in production, so supply can be expanded at lower per unit cost. However, there is a downside to such productivity. Marshall worried that large-scale efficiency could result in what is called a “natural monopoly”—when one firm can serve the market at lower cost than could two or more smaller firms. Natural monopolies require government intervention so as to maximize social welfare.<sup>19</sup> However, Marshall opposed “collective ownership of the means of production” as it would “deaden the energies of mankind, and arrest economic progress.”<sup>20</sup>

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15. See EDWIN S. MILLS & PHILIP E. GRAVES, *THE ECONOMICS OF ENVIRONMENTAL QUALITY* 2 (2d ed. 1986).

16. ALFRED MARSHALL, *PRINCIPLES OF ECONOMICS* 266 (8th ed. 1920).

17. *Id.* at 284-85.

18. *Id.* at 314.

19. *Id.* at 503.

20. *Id.* at 713. That is the closing statement in his text, likely in opposition to Marxist thought much in vogue at the time.

Marshall did not discuss pollution; however, he noted that “waste”—things thrown away in the production process—is reduced by large-scale producers who make more efficient use of inputs. “No doubt many of the most important advances of recent years have been due to the utilizing of what had been a waste product.”<sup>21</sup> Fifty years later, the Marshallian view of external economies still held sway. In a leading microeconomic theory text, external economies were still discussed in terms of greater industrial efficiency resulting from technical improvements that force competitors to operate more cost-effectively.<sup>22</sup> Diseconomies are external effects that *raise* firms’ costs; pollution is not mentioned in this text.

While Marshall mentioned the notion of external impacts on production, the modern form of externality as a pervasive concept began with Pigou.<sup>23</sup> We review his work at some length as his view is similar to how externality is now employed. Pigou acknowledged that private-property-based free markets often work well. However, “even Adam Smith had not realized fully the extent to which the System of Natural Liberty needs to be qualified and guarded by special laws, before it will promote the most productive employment of a country’s resources.”<sup>24</sup>

According to Pigou, the price system and legal and social institutions fail to cause all to act in ways that maximize *social* welfare. This failure justifies government intervention to correct the imperfections. Widespread market failures prevent a community’s resources from being distributed among different uses or occupations in the most effective way. The study [of this problem] . . . seeks to bring into clearer light some of the ways in which it now is, or eventually may become, feasible for governments to control the play of economic forces in such wise as to promote the economic welfare, and, through that, the total welfare of their citizens as a whole.<sup>25</sup>

Pigou explains how economists should deal with this problem:

[W]e have next to distinguish precisely between the two varieties of marginal net product which I have named respectively *social* and *private*. The marginal social net product is the total net product of physical things or objective services due to the marginal increment of resources in any given use or place, no matter to whom any part of this product may accrue. It might happen, for example, as will be explained more fully in a later chapter, that costs are thrown upon people not directly concerned, through, say, uncompensated damage done to surrounding woods by sparks from railway engines. All such effects must be included - some of them will be positive, others negative elements - in reckoning up the social net product of the

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21. *Id.* at 279.

22. JAMES M. HENDERSON & RICHARD E. QUANDT, MICROECONOMIC THEORY: A MATHEMATICAL APPROACH 111 (2d ed. 1971).

23. ARTHUR CECIL PIGOU, THE ECONOMICS OF WELFARE (4th ed. 1932).

24. *Id.* at 128.

25. *Id.* at 129-30.

marginal increment of any volume of resources turned into any use or place.<sup>26</sup>

Pigou explains further:

[I]f private and social net products everywhere coincide, the free play of self-interest, so far as it is not hampered by ignorance, will tend to bring about such a distribution of resources among different uses and places as will raise the national dividend and, with it, the sum of economic welfare to a maximum. . . . The essential point for our present purpose is that, when marginal private net products and marginal social net products coincide, any obstacles that obstruct the free play of self-interest will, in general, damage the national dividend [income]. In real life, of course, marginal private and marginal social net products frequently do not coincide.<sup>27</sup>

Much of the market's failure to produce maximum national income arises from "imperfect knowledge on the part of those in whose hands the power to direct the various branches of the stream [of resources] resides."<sup>28</sup> Pigou argues that private resource owners will not maximize social value:

In general industrialists are interested, not in the social, but only in the private, net product of their operations. . . . [Self-interest] will not tend to bring about equality in the values of the marginal social net products except when marginal private net product and marginal social net product are identical. When there is a divergence between these two sorts of marginal net products, self-interest will not, therefore, tend to make the national dividend a maximum; and, consequently, certain specific acts of interference with normal economic processes may be expected, not to diminish, but to increase the dividend.<sup>29</sup>

While Pigou does not call the divergence between social and private cost an externality, what he explains is the essence of the concept as now employed.<sup>30</sup>

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26. *Id.* at 134 (Pigou recognized that transportation cost played a role in determining where resources would be allocated. He took such costs as a fact that prevented what might otherwise be a superior allocation of resources. *Id.* at 138-39. He did not discuss other transaction costs that "limit" the "best" distribution of resources. It fell largely to Ronald Coase later to note the prevalence of transaction costs and their effects on resource allocation. Part of the genius of successful organizations is to reduce such costs. *See generally* Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386 (1937)); *see also* OLIVER E. WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM* (1985).

27. *See* PIGOU *supra* note 23 at 143 (Pigou's presumption appears to be that scientifically minded state planners know better how to use resources than do self-interested individuals making decisions about resource allocation. Pigou was not much interested in pollution *per se*; his focus was on optimal resource use to maximize the productive value of given resources.).

28. *Id.* at 149. That is, the fact of imperfect knowledge causes wealth production to be lower than it could be. This conclusion is much like saying engines would work better if friction did not exist.

29. *Id.* at 172. Pigou understood incentives. He noted that tenants would treat property differently than would property owners. *Id.* at 183.

30. *Id.* at 134.

He saw the problem as being widespread.<sup>31</sup> Pigou gave numerous examples of what we would call negative and positive externalities, all of which are explained to be a form of market failure that warrants consideration of state intervention to close the gap between private and social costs. For example, lighthouses provide benefits for ships that do not pay for their services.<sup>32</sup> Public roads may provide higher real-estate values for adjoining landowners.<sup>33</sup> Inventors produce valuable knowledge that can be exploited by others for their personal and social gain.<sup>34</sup> While new production may add wealth, factory smoke may dim sunlight and inflict filth on buildings and laundries. Intoxicating beverages that we enjoy may also lead to the need for more prisons and policemen.<sup>35</sup> In all such situations, social and private costs and benefits diverge and are not easy to resolve due to “technical difficulty of enforcing compensation for incidental disservices.”<sup>36</sup>

There is much in the world not to like, both today and in Pigou’s time. He explained what he saw as the single worst social cost:

[T]he crowning illustration of this order of excess of private over social net product is afforded by the work done by women in factories, particularly during the periods immediately preceding and succeeding confinement; for there can be no doubt that this work often carries with it, besides the earnings of the women themselves, grave injury to the health of their children. The reality of this evil . . . .<sup>37</sup>

One deals with such evil by legislation and regulation:

It is plain that divergences between private and social net product . . . cannot . . . be mitigated by a modification of the contractual relation between any two contracting parties, because the divergence arises out of a service or disservice rendered to persons other than the contracting parties. It is, however, possible for the State, if it so chooses, to remove the divergence in any field by ‘extraordinary encouragements’ or ‘extraordinary restraints’ upon investments in that field. The most obvious forms which these encouragements and restraints may assume are, of course, those of bounties and taxes.<sup>38</sup>

31. *See generally id.* at 129.

32. The scholar credited with first introducing lighthouses as supplying a good that cannot be adequately supplied in free markets is the British economist Henry Sidgwick. *See* HENRY SIDGWICK, *THE PRINCIPLES OF POLITICAL ECONOMY* (1883).

33. PIGOU, *supra* note 23, at 184.

34. *Id.* at 184-85.

35. *Id.* at 186. Pigou did not mention the health injuries that might be inflicted by pollution; the injury was to vegetables, laundries, and buildings. Perspectives change with knowledge, but the essential point is unchanged. *Id.* at 184.

36. *Id.* at 185. Later, Coase encouraged us to think of these as transaction costs.

37. *Id.* at 187.

38. *Id.* at 192.

His call for subsidies and taxes to reduce the gaps between social and private costs is a bedrock in modern externality analysis as we will see in later literature.

### THE 1950S AND 1960S

Building on Pigou, the next generation of work on externalities included an influential 1954 article by Professor Tibor Scitovsky of Stanford. He explained that “external economies are a cause for divergence between private profit and social benefit and thus for the failure of perfect competition to lead to an optimum situation . . . .”<sup>39</sup>

In discussing when externalities arise, Scitovsky identified “four types of direct interdependence”: 1) when one’s satisfaction is related to the satisfaction of another person; 2) when one’s satisfaction is affected by inconveniences, such as smoke from production; 3) when producers learn to offer goods and services at lower cost, so as to offer more satisfaction at lower cost; and 4) when the output of a producer depends on the activities of other firms.<sup>40</sup>

Scitovsky explained that economists generally have little to say about the first kind of externality, the “interdependence of consumers’ satisfaction,” even though they know it is extremely important.<sup>41</sup> Economists are not good at understanding interpersonal utility or satisfaction.

As an indication of how times change (many pollution levels were much higher in the 1950s than they are to today<sup>42</sup>), Scitovsky thought that the second kind of externality, such as emissions from production, were “unimportant” as they could be handled by zoning rules (move producers to industrial areas) or regulations for public health and safety.<sup>43</sup>

Similarly, the third kind of externality, which as noted by Marshall and Pigou is the one that occurs as more efficient methods of production cascade through to other production processes, was also regarded by Scitovsky as unimportant. He regarded it as unimportant in a policy sense because patents for innovations allow innovators to capture gains and so encourages such productive activities. Innovators sell their output to buyers who benefit by using the new technology in their production. Other innovations result from research sponsored by the public, such as in agriculture, where the research results are made available to all.

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39. Tibor Scitovsky, *Two Concepts of External Economies*, 62 J. POL. ECON. 143, 143 (1954).

40. *Id.* at 144. The article is called “two concepts” but the first four fit into the general notion of externality; the second concept he discussed relates to “industrialization of underdeveloped countries” where economists worry about incentives for savings tied to investment opportunities and about the desired amount of public investment in roads and such. It also mattered in a general equilibrium analysis of an economy where investment in industry A could spill over to benefit the development of industry B. One can see the impetus such work could produce for those concerned with central planning of an economy, but we will ignore this kind of externality. *Id.* at 145.

41. *Id.*

42. Although the population almost tripled, SO<sub>2</sub> emissions in 2010 were less than half of what they were in 1950 in North America. See Hannah Ritchie & Max Roser, *Air Pollution*, OUR WORLD IN DATA (last modified Oct. 2017), <https://ourworldindata.org/air-pollution/>.

43. Scitovsky, *supra* note 39, at 144.



The fourth kind of externality, interdependence among producers, seemed to Scitovsky to be “few” and so of little import.<sup>44</sup> Such an externality can involve unpaid factors of production. Scitovsky recalled an earlier paper by James E. Meade, in which Meade gave the example of apple orchards benefiting from bees, which allowed beekeepers to benefit from apple blossoms, even though the two may not have contact with each other.<sup>45</sup> If one or both of these parties fail to take adequate account of the effects of his actions on the output of the other party, there will be a sub-optimal production of apples and of honey. This divergence from optimality could justify a subsidy paid by apple growers to the beekeepers to encourage beekeepers to produce more honey.<sup>46</sup>

Similarly, the relationship among outputs as one firm’s knowledge or product spills over to others, as noted by Marshall, played a role in the literature on network externalities. The benefit one receives from a good, such as the telephone or the Internet, depends on how many other users there are. Without a network of other users who rely on products of others, phones or the Internet have little or no value.<sup>47</sup>

Economists have long distinguished “technical” from “pecuniary” externalities.<sup>48</sup> This distinction originated with Jacob Viner. Within a firm, “technological internal economies would be savings in the labor, materials, or equipment requirements per unit of output resulting from improved organization or methods of production” whereas pecuniary internal economies “consist of advantages in buying, such as ‘quantity discounts’ . . . .”<sup>49</sup>

While distinctions are made between technical and pecuniary economies, the form does not matter to the firm or the individual decision maker because both results represent financial benefits or losses. A gain is a gain, and a loss is a loss. Economists, however, continue to distinguish technical from pecuniary

44. *Id.* at 145. In contrast, in more recent times much has been made of “agglomeration externalities” that arise as groups of educated people benefit from each other. Acknowledging that this is obviously true does not justify government intervention. See Edward L. Glaeser & Joshua D. Gottlieb, *The Wealth of Cities: Agglomeration Economies and Spatial Equilibrium in the United States*, 47 J. ECON. LITERATURE 983, 1014-15 (2009).

45. James E. Meade, *External Economies and Diseconomies in a Competitive Situation*, 62 ECON. J. 54, 56 (1952). (Meade was awarded the 1977 Nobel Prize in economics, but not for this work).

46. *Id.* at 61. Meade later came to think subsidies and taxes may not be as justified as he thought earlier, as he expressed in a course that one of us took from him on externalities in 1974. Meade’s example of beekeepers and orchardists benefiting each other but not through formal arrangements was dismissed by Stephen N. S. Cheung. Stephen N. S. Cheung, *The Fable of the Bees: An Economic Investigation*, 16 J. L. & ECON. 11, 12 (1973).

47. S. J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSP. 133, 133-34 (1994). Network externalities generally provide positive benefits—for example, the more people who are connected to telephones or the Internet, the more useful these are to others. The authors say we should think of “network effects” not “externalities” that imply something being imposed on someone against their will.

48. For an overview of the issue, see Randall G. Holcombe & Russell S. Sobel, *Public Policy Toward Pecuniary Externalities*, 29 PUB. FIN. REV. 304, 307 (2001).

49. Jacob Viner, *Cost Curves and Supply Curves*, 3 ZEITSCHRIFT FÜR NATIONALÖKONOMIE 23, 36 (1931).

diseconomies, contending that the former matter to society while the latter do not.<sup>50</sup> The reason is that technical externalities are believed to reduce social welfare while pecuniary externalities do not. Put differently, technical externalities result in physical production that is either too much or too little while pecuniary externalities merely redistribute wealth among economic actors without diminishing it.<sup>51</sup>

Following Scitovsky, F.M. Bator of the Massachusetts Institute of Technology (MIT) published an influential article.<sup>52</sup> Bator's article likely forms the basis for the now-common notion of externality as demonstrated in the following discussion of the modern literature. Bator uses the notion of Paretian efficiency. If Pareto optimality<sup>53</sup> is achieved in a society, no improvement in utility or efficiency is possible because no one can be made better off without making someone else worse off. Thus, society has achieved its "bliss point."<sup>54</sup>

Bator's primary concern was with income redistribution via taxation to achieve social bliss, but his analysis applies to all economic matters. He notes that bliss is impossible due to "imperfect information, inertia and resistance to change, the infeasibility of costless lump-sum taxes, businessmen's desire for a 'quiet life,' uncertainty and inconsistent expectations, the vagaries of aggregate demand, etc."<sup>55</sup>

Bator discusses multiple sources of market failure:<sup>56</sup>

- *Failure of existence* due to lack of perfect marginal rates of substitution as related to input-output points or production needed to generate optimal prices);
- *Failure by signal* concerning proper levels of profit for each producer where having too much profit leads to over-allocation of resources in some areas and, on the converse side;

50. The Schoolmasters' Case (1410) YB 11 Hen IV 47 pl 21 (republished in LAWRENCE A. SULLIVAN & ELEANOR M. FOX, CASES & MATERIALS ON ANTITRUST 18-19 (1986).

51. The economic view that pecuniary externalities are not things that should be of policy concern is consistent with the common law. There is no cause of action by an existing firm that suffers an income loss due to a new competitor. That rule goes back at least 700 years, as illustrated by the "Schoolmaster Case," Hamlyn v. Moore, Court of Common Pleas, 11 Henry IV 47 (1410). In that case, two schoolmasters sued a new schoolmaster who opened in competition, drawing students and their tuition away. Revenues fell by more than two-thirds at the existing school. The court rejected the claim. As Judge Hank explained: "if my neighbor built a mill and those accustomed to patron my mill went instead to his, whereby my profits were diminished: I would have no action. But if a miller disturbed the water running to my mill, or performed some other such nuisance, I would have recourse such as the law provides." *Id.*

52. Francis M. Bator, *The Anatomy of Market Failure*, 72 Q.J. ECON. 351 (1958). According to Google Scholar, the article has been cited almost 2,000 times.

53. An allocation of resources is Pareto optimal if it cannot be changed without making at least one person worse off. In contrast, if the current allocation of resources can be rearranged in such a way as to improve the welfare of at least one person without making anyone worse off, this allocation is not Pareto optimal. In this case, the possibility exists for a "Pareto-superior" move - namely, reallocating resources in that way that makes at least one person better off without making anyone worse off. *See, e.g.*, HENDERSON & QUANDT, *supra* note 22, at 255.

54. Bator, *supra* note 52, at 353-54. (The term "bliss point" must not be taken literally. An allocation of resources can be Pareto optimal even though many, or even most, individuals in society are poor and miserable.).

55. *Id.* at 352.

56. *Id.* at 353-54.

- *Failure by incentive* stemming from inadequate profits for some producers who should have higher levels to stimulate investment in their output;
- *Failure by structure* because in the absence of perfect information and pure competition, prices and output will deviate from optimality, as we observe in many markets where a few firms dominate; and
- *Failure by enforcement* due legal and organizational imperfections.

Bator explains that the Lange-Lerner model<sup>57</sup> of socialist directions (scientific planning of an economy) faces many difficulties and that the literature on all these issues is complex and convoluted.

As explained by Marshall and Pigou, the existence of market imperfections requires that industries and individuals should be taxed and subsidized to bring society closer to bliss.<sup>58</sup> Bator noted that economists who wrote soon after Marshall and Pigou, including Dennis Robertson, Piero Sraffa, Frank Knight, and Jacob Viner, demonstrated that the conclusion that such taxes and subsidies are necessary is mistaken.<sup>59</sup> Changes in ownership arrangements can internalize many technological economies, while pecuniary external economies in competitive markets are simply the evidence and consequences of competition.<sup>60</sup> Bator explains that this conclusion leaves as problems only those technological external economies (“externalities”) that cannot be handled by a change in ownership arrangements. Those markets, and this description applies generally, “will be efficient if, and only if, this *private* marginal cost ratio reflects the true marginal cost to society of an extra apple in terms of foregone honey[.]”<sup>61</sup> This class of externalities, however, is huge. In them, market prices “diverge from true, *social* marginal cost.”<sup>62</sup> Bator’s explanation of social marginal cost in case of external technological economies is what economists have worried about ever since.

To illustrate the point about social marginal costs and technical externalities, Bator gives examples of bridges and radio.<sup>63</sup> Bridges face lumpiness in use not resolved by pricing.<sup>64</sup> We have limited options in what we hear on the radio—including advertisements. Bator notes that many functioning markets are

57. Oskar Lange and Abba Lerner argued that socialist central planners could govern a socialist economy so that it achieves the optimal pattern of resource allocation that would be achieved by perfectly competitive free markets but without the wastes and imperfections of actual competition. Lange and Lerner agreed with prominent critics of socialism that optimal resource allocation is impossible without reliance on prices. But Lange and Lerner - contrary to the critics of socialism - believed that an appropriately designed and operated system of central planning could set prices with even greater accuracy than could real-world competition among private sellers and buyers. *See generally* DON LAVOIE, RIVALRY AND CENTRAL PLANNING: THE SOCIALIST CALCULATION DEBATE RECONSIDERED (1985).

58. Bator, *supra* note 52, at 357.

59. *See generally* Frank H. Knight, *Some Fallacies in the Interpretation of Social Cost*, 38 Q.J. ECON. 582 (1924).

60. Bator, *supra* note 52, at 357.

61. *Id.* at 360.

62. *Id.*

63. *Id.* at 361-62.

64. *Id.* at 362.

afflicted with externalities that justify consideration of state-imposed improvements.<sup>65</sup> Externality, therefore, should mean “any situation where some Paretian costs and benefits remain *external to* decentralized cost-revenue calculation in terms of prices.”<sup>66</sup> That is, we are not at bliss points due to “uncompensated services” and “incidental uncharged disservices” that are the essence of market failure.

Bator then argues that there are three, sometimes overlapping, categories of externalities:

First are *ownership externalities*. Even if markets work perfectly (“an Adam Smith dream world”), due to “circumstances of institutions, laws, customs, or feasibility, competitive markets would not be Pareto-efficient.”<sup>67</sup> This problem exists in private venues, such as beekeepers’ interactions with orchardists, and in the public sector, such as in public-domain fishing waters.

Second are *technical externalities*. These arise from lumpiness or indivisibility in many goods, such as bridges. These would benefit from “a set of shadow-prices which, if centrally quoted, would efficiently ration among consumers the associated (fixed) total of goods.”<sup>68</sup>

Third are *public good externalities*. A pure public good is one where consumption by one person does not affect consumption by another (e.g., the benefits I receive from national defense against North Korean missiles do not affect your ability to “consume” or to enjoy the same benefits).<sup>69</sup> As the price mechanism cannot work for demanders and suppliers, administered prices are required.<sup>70</sup> He cites lighthouses, schools, and open-air concerts among many examples, but not pollution.<sup>71</sup>

About the time Bator’s article was published, Ronald Coase argued that the radio spectrum could be privatized to improve its efficiency.<sup>72</sup> At that time, the Federal Communications Commission (FCC) granted licenses to use bits of the spectrum. It was asserted that regulation was the only way to prevent one spectrum user from disturbing the use of another spectrum user, otherwise, broadcasts would spill over into each other. Scientific control by the FCC was needed to prevent chaos, cut-throat competition, and allow for the orderly development of radio and then television. Private enterprise could not work.<sup>73</sup> Coase testified before the FCC

65. *Id.* at 357.

66. *Id.*

67. *Id.* at 364.

68. *Id.* at 368.

69. *Id.* at 370. Bator drew on Paul Samuelson, *Diagrammatic Exposition of a Theory of Public Expenditure*, 37 REV. ECON. & STAT. 350 (1955).

70. *Id.* at 372.

71. Bator was writing when air pollution was likely at its worst in the United States. Pollution was so bad in Los Angeles that crops were injured and many people suffered from the effects. Air pollution is now a tiny fraction of what existed in the 1950s and 1960s but, given the paucity of notice by economists anyway, must have been considered an unavoidable part of economic progress. *See, e.g.*, David Parrish & William Stockwell, *Urbanization and Air Pollution: Then and Now*, EOS EARTH & SPACE SCI. NEWS (Jan. 8, 2015), <https://eos.org/features/urbanization-air-pollution-now>.

72. *See generally* Ronald H. Coase, *The Federal Communications Commission*, 2 J. L. & ECON. 1 (1959).

73. *Id.* at 13.

in 1959 and argued that the spectrum could be efficiently privatized.<sup>74</sup> Apparently, commissioners were scandalized by this strange notion proposed by a professor with a British accent; one commissioner even asking him if the proposal was a “big joke.”<sup>75</sup>

The broadcast spectrum fits Bator’s definition of technical limitations that require government intervention. However, Coase noted that, among other things, because the government controlled the licensing, valuable licenses were not handed out randomly; they went to favored interests allowing them to obtain “extraordinary” gains.<sup>76</sup> Coase explained the then-revolutionary idea that spectrum can be made private property just as land is owned by private parties.<sup>77</sup> The fact that there is a fixed quantity of land does not mean it must be in public hands to ensure its efficient use. “The advantage of establishing exclusive rights to use a resource when that use does not harm others (apart from the fact that they are excluded from using it) is easily understood.”<sup>78</sup> Once private rights exist, parties may bargain over how the property is used, with the party who values a piece of property most highly being the one who ends up owning it.

In the FCC paper, Coase explained what has come to be called the Coase Theorem,<sup>79</sup> although his more famous paper of the following year is more commonly cited as the source of this Theorem.<sup>80</sup> Coase used an 1879 case, *Sturges v. Bridgman*<sup>81</sup> to illustrate.<sup>82</sup> A confectioner used his property for years for business. A doctor later came to occupy adjoining property. There were no problems until eight years later when the doctor built a consulting room that abutted the confectioner’s premises. Noise and vibration from the confectioner’s machinery disturbed the doctor’s consulting room. The doctor sued and obtained an injunction against the machinery.<sup>83</sup>

Coase did not address Bator’s concerns about market imperfections from lumpiness, dominant firms, and other external effects in either paper; rather Coase focused on the importance of property rights and the ability to exchange these

74. Ronald H. Coase, *Testimony to the Federal Communications Commission*, 2 MAN & ECON. 1 (2015).

75. Dieter Bohn, *Ronald Coase, the ‘Father’ of the Spectrum Auction, Dies at 102*, VERGE (Sept. 3, 2013), <https://www.theverge.com/2013/9/3/4691908/ronald-coase-the-father-of-the-spectrum-auction-dies-at-102>.

76. Coase, *supra* note 72, at 23.

77. *Id.* at 15, 17-18.

78. *Id.* at 26.

79. While Coase objected to this formulation being called “the Coase theorem,” this is a standard version: “Formally, the theorem states that in a competitive economy with symmetric information and zero transaction costs, the allocation of resources will be efficient and invariant with respect to legal rules of entitlement, or property rights.” When these conditions hold, “The implication of the theorem is that there is no need for policy intervention with regard to externalities except to ensure that property rights are clearly defined and protected.” See *Coase Theorem*, A DICTIONARY OF ECON. (3d ed., 2013); see Henry Mohrman, *Coase on the Coase Theorem, ‘The Social Cost Controversy*, 2 MAN & ECON. 215 (2015) (For a discussion of how Coase viewed the Coase Theorem).

80. See generally Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. ECON. 1 (1960).

81. *Sturges v. Bridgman*, 11 Ch. D. 852 (1879).

82. See Coase, *supra* note 72, at 26.

83. *Id.* (noted that owning a bit of the radio spectrum would be the same. The owner could sue for interference.).

rights. His more famous “Social Cost” paper is, for most readers, difficult to comprehend as a whole. However, it is cited to support many propositions and is said to be the most cited publication in law and economics.<sup>84</sup>

In his papers, Coase did not use the terms externality or external costs, although many economists directly associate the Coase Theorem with those concepts. His non-use of the term externality was intentional. He explained:

But, as employed today, the term carries with it the connotation that when “externalities” are found, steps should be taken by the government to eliminate them. As already indicated, the only reason individuals and private organizations do not eliminate them is that the gain from doing so would be offset by what would be lost (including the costs of making the arrangements necessary to bring about this result). If with government intervention the losses also exceed the gains from eliminating the “externality,” it is obviously desirable that it should remain. To prevent being thought that I shared the common view, I never used the word “externality” in “The Problem of Social Cost” but spoke of “harmful effects” without specifying whether decision-makers took them into account or not.<sup>85</sup>

Coase directly addressed Pigou’s welfare economics and its concern with the divergence of social and private costs.<sup>86</sup> Coase used Pigou’s example of sparks from a railroad causing fires to adjoining farmland.<sup>87</sup> Pigou saw the cost of fire as a social cost—that is, uncompensated damage that injured the social optimum. But as Coase explained, statutory law in Britain often exempted railroad from liability for fires caused by sparks from engines.<sup>88</sup> Pigou was apparently ignorant of the law but, more importantly, viewed the matter as a cost imposed unilaterally by the railroad on adjacent property owners.<sup>89</sup> The divergence between social and private cost could, given Pigou’s logic, be reduced if the railroad is forced to pay compensation and, thus, is forced to “internalize” the cost it imposes on landowners.

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84. See Fred R. Shapiro & Michelle Pearce, *The Most-Cited Law Review Articles of All Time*, 110 MICH. L. REV. 1483, 1487 (2012) (Citation numbers are a bit dubious; nevertheless it is highly cited. “Social Cost” may be the most cited paper in law reviews.) It should be noted that his 1937 paper presaged the later papers in that it made the point that transaction costs are critical to many things, including the existence of firms. In a world of zero transaction cost there would be no need for organizations such as firms. Ronald H. Coase, *The Theory of the Firm*, 4 ECONOMICA 386 (1937).

85. RONALD H. COASE, *THE FIRM, THE MARKET, AND THE LAW* 26-27 (1988). Therefore, Herbert Hovenkamp, in an article critical of Coase’s harsh treatment of Pigou, errs when he writes that “Coase uses the term ‘externality’ to signify the difference between marginal social and marginal private net product.” Herbert Hovenkamp, *The Coase Theorem and Arthur Cecil Pigou*, 51 ARIZ. L. REV. 634, 635 (2009).

86. Coase, *supra* note 80, at 1 (beginning his article by noting Pigou’s concern with the divergence between private and social costs).

87. *Id.* at 29-31.

88. *Id.* at 30.

89. See *generally id.* at 29.

Coase's celebrated insight is that it does not matter who has the liability so long as a property-rights assignment exists and the parties are able to bargain.<sup>90</sup> Another key insight is that costs are reciprocal; each party's action, or inaction, contributes to the problem. Therefore, if bargaining is possible, the parties can be expected to choose to minimize the costs of their interactions regardless of who is initially assigned the right.<sup>91</sup>

Suppose, for example, the expected value of the damage from fires is greater than the cost of limiting sparks by investing in spark arresters. Hence, if the railroad has the right to emit fire-causing sparks, sparks will be emitted despite the fact that the damage caused by the sparks is greater than the cost of preventing the damage. After all, the cost of fire damage is borne by landowners and not by the railroad.<sup>92</sup> Coase's insight is that the ability to bargain is sufficient to internalize this cost. Landowners will offer to pay the railroad to prevent sparks from flying. The landowners will offer an amount greater than the railroad's cost of preventing the sparks. If the railroad stubbornly refused the landowners' offer, the cost of the resulting fire damage would be internalized on the railroad in the form of foregone payments from landowners.<sup>93</sup> Seeking to avoid this cost, which is, by assumption here, higher than the cost of using spark arresters, the railroad's self-interest will likely prompt it to accept the offered payments and install spark arresters.

The outcome would be no different if the landowners owned the right to be free of fire from railroad sparks. Then, the railroad would have to compensate landowners for fire damage caused by railroad sparks. Using its lower-cost option, the railroad would install spark arresters rather than pay to landowners the higher-cost damages for fires caused by sparks.

On a separate matter than the exposition of what is now called "the Coase Theorem," Coase criticized Pigou for not bothering to investigate the law regarding railroad liability before decrying what he concluded was the obvious injustice of the rule.<sup>94</sup> Pigou, like modern welfare economists, seems to presume that enlightened government leaders will get the rules right if economists point out to them defects in the rules that cause social waste. Parliament knew very well what it was doing when it passed the Railway (Fires) Act of 1905, which was amended various times, likely at the behest of affected parties.<sup>95</sup> Coase's point was that, like the rule or not due to its legislative origins, which may well reflect political special interests, it established a property right that parties were free to take into account as they organized their economic activity.

Coase knew that Pigou understood that government agencies might not always perform as well as their champions wished.<sup>96</sup> But Coase dismissed Pigou's warning of poorly performing government agencies as formulaic and unreflective of Pigou's confidence in such agencies. For evidence, Coase cites Pigou's

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90. *See generally id.* at 34.

91. *Id.* at 2.

92. *See generally id.* at 30.

93. Landowners could take other action, such as keeping a barren strip along the railroad so sparks would be less likely to cause fires.

94. Coase, *supra* note 80, at 31.

95. *Id.* at 30; *see also* COASE, *supra* note 85, at 22-23 (elaborating on his criticism of Pigou).

96. COASE, *supra* note 85, at 20.

optimism that improvements in democracy and in public administration, especially the advent of the independent regulatory commission, are sufficient to ensure that government (at least in the United Kingdom and the United States) will generally execute market-correcting tasks in the apolitical and scientific manner prescribed by economists such as Pigou.<sup>97</sup> The bottom line, for Coase, of Pigou's optimism about government's capacity to correct market "imperfections" is that neither economists nor government officials take seriously enough the alternatives to regulatory intervention, including the alternative of what Coase described as "inaction."<sup>98</sup>

Besides a naïve view that politicians and other government officials will devise "optimal" solutions to "correct" the divergence of private from social cost, those who adopt this Pigouvian stance also fail to consider the social costs of *government* actions. The externality literature is overwhelmingly about private actors who allegedly need to be turned in other directions by corrective taxes, bans, limitations, or subsidies. For Coase, state-imposed rules also create costs that are unnecessary when judged by an inappropriate ideal that fails to account for the reality of transaction costs.

Coase uses the example of a red light installed at an intersection.<sup>99</sup> Drivers stop at red lights even when no crossing traffic or pedestrians are visible because the cost running a red light, a combination of the risk of getting a traffic ticket and of getting into an automobile accident, is too high. State-imposed rules, such as traffic laws, are inefficient when judged by the same standard of perfection against which private rules are typically judged. The social costs imposed by such imperfect state controls are largely ignored.<sup>100</sup> When welfare economists and others prescribe "fixes" to social cost problems, they should, at a minimum, investigate the practicality of the consequences, including consequences of the proposed remedies, rather than *assume* that social planners know best.

Government agencies routinely engage in cost-benefit analyses to assure us of the high value of rules that are imposed, but the analyses are often suspect.<sup>101</sup> Estimates by excellent economists about costs of economic events and government programs can vary wildly. The 2010 BP oil spill in the Gulf of Mexico caused many people to change their vacation plans that resulted in litigation. One estimate of loss suffered by recreationalists due to changes in plans resulting from the oil spill was \$661 million; another group estimated the same loss to be 26 times

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97. *Id.* at 21-22.

98. *Id.* at 24.

99. Coase, *supra* note 80, at 34.

100. Public-sector decision makers, especially politicians, are rife with perverse incentives, from the viewpoint of economic efficiency. They will allocate resources that provide current benefits to election supporters and divert resources from spending that may not have much current support as the benefits for the spending are too distant.

101. See, e.g., Roger Meiners & Rafal Czajkowski, *Making Cost-Benefit a Political Tool*, 3 LA. ST. U. J. ENERGY L. RESOURCES 225, 226, 247 (2014) (showing EPA takes credit for trillions of dollars worth of GDP).



greater.<sup>102</sup> Imaginary numbers (or wild assumptions employed in devising numbers) are routinely made to bolster alleged values.<sup>103</sup>

Pigou and Bator were among the many economists who believed that corrective taxes could align social and private costs so as to reduce undesirable behavior and compensate supposed aggrieved parties. That is, those suffering from smoke or railroad sparks would be compensated by the party that “caused” the externality. The notion of ownership, exchange, and liability apparently escaped attention. Presumably, if Pigou had understood that railroads had legislation in their favor, he would have objected and proposed reversing the rule. However, any imagined response by Pigou misses the point that the result, and costs, would be much the same regardless of the rule if bargaining is allowed.

Welfare economists often argue that actual compensation of externality “victims” is not needed because corrective taxes, accurately set, are sufficient to adjust the behavior of the party engaged in the disfavored act to improve social productivity.<sup>104</sup> The tax revenues can go to the general treasury.<sup>105</sup> This conclusion ignores the social costs created by government use of resources. As explained by Armen Alchian and William Meckling: “The problem is identical with the familiar problem of divergence between private and social costs. Once tax receipts reach the Treasury, they are owned by no one. To the individuals entrusted with their expenditure, the costs of using these funds are not equal to their value. They are not required as a condition of survival to see that value of output exceeds the value of inputs.”<sup>106</sup> The non-optimal use of resources<sup>107</sup> moved to political control compounds the problem by charging imperfect government officials with the task of correcting “imbalances” between social and private cost imbalances. Real resources are always at stake and are entrusted to the tender mercies of politicians for distribution.

To return to the evolution of economic thinking on externalities, next came two papers by James Buchanan. In the first paper, Buchanan begins by putting aside the notion that welfare economists can make meaningful policy prescriptions to solve the problems of market failure.<sup>108</sup> He acknowledges that competitive markets do not satisfy the conditions for optimality.<sup>109</sup> That is, bliss points - allocations of resources that cannot be improved upon - are constructs not

102. See Richard Bishop et al., *Putting a Value on Injuries to Natural Assets: The BP Oil Spill*, 356 SCI. 253, 254 (2017) (showing the \$17.2 billion estimate); see also Eric English et al., *Estimating the Value of Lost Recreation Days from the Deepwater Horizon Oil Spill*, 91 J. ENVTL. ECON. & MGMT. 26, 27 (2017) (showing the \$661 million estimate).

103. See generally Donald Boudreaux, Roger Meiners & Todd Zywicki, *Talk Is Cheap: The Existence Value Fallacy*, 29 ENVTL. L. 765 (1999).

104. See, e.g., Eytan Shekhinski, *On Atmosphere Externality and Corrective Taxes*, 88 J. PUB. ECON. 727 (2002).

105. Again, economists are not to be concerned with personal distribution of resources but with helping achieve optimal outcome for society.

106. William Meckling & Armen A. Alchian, *Incentives in the United States*, 59 AM. ECON. REV. 55, 59 (1960).

107. Resources are allocated non-optimally if they can be reallocated in a way that makes at least one person better off without making any one worse off. See Bator, *supra* note 52.

108. James M. Buchanan, *Politics, Policy and the Pigouvian Margins*, 29 ECONOMICA 17 (1962).

109. *Id.*

related in any operational way to the real world. Economists cannot explain how to get society to nirvana; however, they talk as if such engineering is possible “to justify their own professional existence.”<sup>110</sup> When Buchanan was writing in 1962, economists had devised the many prescriptions we hear today—“tax-subsidy schemes,” “multi-part pricing,” “collective stimulation of ideal market processes,” and other notions alleged to enhance economic efficiency.<sup>111</sup>

Buchanan asked the question that if economists think their prescriptions are not, in fact, policy relevant, then why should they bother to advance such notions? To argue that the existing order is imperfect, and then to advance “solutions” that are recognized as unattainable is not as useful as focusing on what is likely to emerge in a majoritarian democracy.<sup>112</sup> Each decision maker, including the politician and the polluter, balances social and private costs against social and private benefits as they understand the world. Cost margins in a world of private and political decision-makers are very different from those in the Pigovian world of universal benevolence.

Buchanan said to think of a world in which all activity is organized privately except for things involving genuine public goods, where consumption by one person does not affect use by another person.<sup>113</sup> Assume further that taxes for public goods are based on marginal benefits, so each person must pay a tax proportional to his own marginal rate of substitution between the collective good and all other goods. Different people would pay different taxes as the marginal utilities of these public goods would vary across people. Such a world is filled with externalities as each citizen “buys” public goods based on her evaluation of it. She considers her marginal benefit in her decision making, which includes whatever value she might assign to benefits others receive.<sup>114</sup>

That paper was quickly followed by another in which Buchanan and Craig Stubblebine worked through the mechanics (math and graphs) of the notion of externalities and social equilibrium. They note that discussions of Pareto-relevant externalities are common but vague. They dispose of pecuniary externalities, focusing on technical externalities where the actions of an actor—an individual or a firm—impacts others.<sup>115</sup> The discussion in the paper is precise, concerning equilibrium conditions, but it adds little that is relevant to our discussion here.

Several years later, Buchanan added to the growing discussion in the 1960s about how externalities could be internalized, or resolved, by the use of corrective taxes and subsidies.<sup>116</sup> He demonstrates that imposing corrective taxes to

110. *Id.* at 18.

111. *Id.*

112. *Id.* at 21 (Buchanan was writing at the time he was working on *The Calculus of Consent* with Gordon Tullock, the primary reason he won the Nobel prize. He was explaining something that seems obvious now, that politicians are not angels but actors who respond to special interests relevant to their self-interests. There is no reason to believe politicians will devise “optimal” policies.)

113. See generally Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REV. ECON. & STAT. 387 (1954) (foundational article).

114. See Buchanan, *supra* note 108, at 25-26.

115. James M. Buchanan & Wm. Craig Stubblebine, *Externality*, 20 ECONOMICA 371 (1962).

116. See generally James M. Buchanan, *External Diseconomies, Corrective Taxes, and Market Structure*, 59 AM. ECON. REV. 174 (1969) (noting that the discussion is what may be called the Pigovian tradition rather than what Pigou himself discussed or advocated).

deal with, say, pollution emitted by a firm in a less than purely competitive industry will reduce consumer welfare.<sup>117</sup> The trend in welfare economics to divine proper taxes and subsidies is not beneficial. “Even if we disregard all problems of measurement, making the marginal private cost as faced by the decision-taking unit equal to marginal social cost does not provide the Aladdin’s Lamp for the applied welfare theorist.”<sup>118</sup> With this piece concluding his work in the 1960’s, Buchanan left little room, based on economic theory, for externalities to be seen as policy relevant.

The “Pigovian tradition” soon replied. William Baumol led the charge, contending that Coase, Buchanan, and others cast aspersions on Pigovian prescriptions “that might prove effective in practice.”<sup>119</sup> While one-on-one bargaining cases need not be addressed as they are “relatively unimportant.”<sup>120</sup> In large-number cases, such as air pollution or traffic congestion, “taxes upon the generator of the externality are all that is required.”<sup>121</sup> The fact that the resulting allocation of resources is not optimal does not matter. Taxes and subsidies improve upon what exists even if they do not achieve bliss points.

Baumol takes the classic example of the smoky factory that damages a neighbor’s laundry. Forget party-to-party bargaining, Baumol explains, the smoke is a public bad that should be taxed.<sup>122</sup> When it is taxed, the smoke will be reduced and the laundry business will be in a better position, as will everyone else in society, due to the reduction in smoke. The laundry owner does not need to be compensated via the tax scheme; social benefits arise from the tax because the smoke is reduced to a reasonable level. If we want more output from a smoky factory, keep the tax low and there will be more factory output and laundries will not locate nearby, thereby producing a superior allocation of resources.

While Baumol knows the tax/subsidy scheme will work, he admits that discovering the exact correct level of, say, smoke emissions, is difficult. After all, “a very substantial proportion of the cost of pollution is psychic;” and differs across people, so the measurement problems are immense.<sup>123</sup> A process of trial and error of different tax rates might need to be worked through to iterate toward the socially optimal level of output.

As optimal tax rates are unknowable in practice, Baumol recommends setting satisfactory levels of emissions.<sup>124</sup> There needs to be a balance between emissions and production. He likens the matter to macroeconomic stabilization policy “where it is decided that an employment rate exceeding  $w$  percent and a rate

117. *See id.* at 176.

118. *Id.* at 177 (coming to this conclusion using the same theoretical models employed by welfare theorists).

119. William J. Baumol, *On Taxation and the Control of Externalities*, 62 AM. ECON. REV. 307, 307 (1972).

120. *Id.* at 308. Baumol ridicules Coase, noting that murder victims were in small number situations but did not come to an acceptable bargain. He then asserts that, in the cases Coase discussed, a tax on pollution would have controlled the problem, so bargaining need not even occur. *Id.* at 309.

121. *See id.* at 307.

122. *Id.* at 311-14.

123. *Id.* at 316.

124. *Id.* at 312, 314.

of inflation exceeding  $v$  percent per year are simply unacceptable, and fiscal and monetary are then designed accordingly.<sup>125</sup> Such a policy avoids heavy administrative costs and does not use the police or the courts much. It is a system of direct controls “to achieve decreases in pollution . . . at minimum cost to society.”<sup>126</sup> Policymakers should not be “paralyzed by councils of perfection”<sup>127</sup> in an effort to achieve optimality, so we should have flexible rules that head us in the right direction.

Baumol set the stage for how much of environmental economics has progressed since that time.<sup>128</sup> In his view, economists could play a role in crafting “solutions” to assorted problems, including pollution.<sup>129</sup> On the other side, Coase spawned a literature that focuses on property law and other institutional arrangements, formal and informal, that serve to resolve disputes over the use of resources without the need for top-down edicts.<sup>130</sup>

Harold Demsetz explained this divide.<sup>131</sup> He notes that Marshall’s primary concern about external impacts on industry efficiency, important in Marshall’s time, is rarely discussed now.<sup>132</sup> The externalities that matter now are those in which one party inflicts costs on another party. These cases can be divided into two categories: the first is where bargaining between the parties is possible; the second is where such bargaining is too costly.

The first of these two categories is illustrated by a tenant-landlord situation.<sup>133</sup> The tenant has a short time horizon so little incentive to make long-term investments that the landlord would like. Pigou thought legislation could help correct this situation; he ignored the ability of landlords and tenants to solve problems through the contracts that they strike with each other. It is now generally understood that Coasean bargains will resolve such problems.<sup>134</sup> Of greater relevance are situations in which bargaining is too costly. In such cases, bargaining will not resolve differences between the parties, thereby leaving a gap between

125. *Id.* at 318 (This is a major issue in macroeconomic policy: whether or not there should be stimulus spending or a change in the money supply to attempt to achieve a policy objective.).

126. *Id.* at 319.

127. *Id.* at 320.

128. The field now known as environmental economics was just beginning to emerge at that time; prior to 1970 there was little federal intervention in the environmental area. The major statutes we know today were largely passed between 1970 and 1980.

129. See Baumol, *supra* note 119, at 314 (advocates crafting taxes as needed to find the “global optimum”).

130. Informal arrangements often handle problems, in some instances contrary to formal rules. See ROBERT C. ELLICKSON, *ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES* (1994). Even richer is the work of Elinor Ostrom on the evolution of ground-up institutions that resolve many resource conflicts. See generally ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (1990).

131. Harold Demsetz, *The Core Disagreement between Pigou, the Profession, and Coase in the Analyses of the Externality Question*, 12 *EUR. J. POL. ECON.* 565 (1996).

132. *Id.* at 568.

133. See *id.* (Demsetz refers to the situation posed by Pigou regarding the different time horizons of landlords and tenants as explained next.).

134. Throughout his “social cost” paper, Coase uses disputes among property owners and users to illustrate how bargaining resolves differences in incentives thereby eliminating the notion of an unresolved issue, which many would call an externality, but Coase did not. Coase, *supra* note 80.

private and social cost, and, hence, leaving open the possibility that taxes or subsidies are the best means for achieving optimal outcomes.<sup>135</sup>

Demsetz explains that Pigou, Meade, and others presumed too much when they asserted that bargaining will not resolve problems.<sup>136</sup> Beekeepers and lighthouses were common examples used to show the market was limited in application. But those examples have been shown not to be descriptive of reality. Private parties discerned how to strike mutually beneficial deals or to otherwise devise efficiency-enhancing institutional arrangements.<sup>137</sup>

Transactions entail transaction costs. Economists often assert that the Coasean world is one of zero transaction costs—when parties will surely reach a bargain. But Coase never meant a world of zero-transaction costs to be the center of analytic or policy attention.<sup>138</sup> Zero transaction cost is much like a frictionless world; it is practically irrelevant. What is instructive is to understand how parties achieve resolution of problems in the real world of positive transaction costs. Transaction costs are why firms exist and why bargains are struck all the time, everywhere. The fact that transaction costs are pervasive is taken by the advocates of regulatory intervention as justification for “an expanded government role in resource allocation.”<sup>139</sup> Coase’s acceptance of transaction costs, and the focus on the study of these costs, is what can help us challenge the presumption that the mythical state interested in perfecting the world, under the wise direction of learned economists, is required to resolve problems.<sup>140</sup>

To briefly summarize, Marshall and, especially, Pigou launched the notion of external costs as a concern for economic analysis. Marshall saw these costs mostly in terms of what might now be called industrial policy; Pigou saw them more in terms of social issues, such as the problem of women working in factories. In the 1950 and 1960s, externality analysis was formalized more into the manner it is known today. Buchanan and others found the notion to have little analytic merit; in contrast, Baumol and others saw it as a tool for advancing policies to rectify social problems.

### WHERE WE ARE NOW

By the 1970s, the notion of externalities had become entrenched and became particularly popular in the area of environmental economics. The notion now, at root, is normative, as Professor Carl Dahlman of the University of Wisconsin explains; it concerns assertions of market failure.<sup>141</sup>

135. Demsetz, *supra* note 131, at 569-70.

136. *Id.* at 571-73.

137. See generally Ronald H. Coase, *The Lighthouse in Economics*, 17 J. L. & ECON. 357 (1974) (Bee keepers were noted previously; explaining how lighthouses were privately provided.).

138. Mohrman, *supra* note 79, at 221.

139. See Demsetz, *supra* note 131, at 573.

140. *Id.* at 576.

141. “[T]he concept of externalities - insofar as the word is intended to convey, as Buchanan and Stubblebine would have it, the existence of an analytically proven market failure - is void of any positive content but, on the contrary, simply constitutes a normative judgment about the role of government and the ability of markets to establish mutually beneficial exchanges. That is to say, it cannot be shown with purely conceptual analysis that markets do not handle externalities; any such

The argument can be summarized as follows. Market failure implies that there exists a reallocation of resources, such as a change in the structure of market activities that will enrich society. In more-formal economic terms, market failure exists whenever the existing resource allocation is declared to be Pareto-inefficient. As noted above, Pareto-efficient allocation of resources exists when no person can be made better off without making at least one other person worse off. Any Pareto-inefficient allocation of resources, therefore, implies the possibility of changing resource allocation in a way that improves the well-being of at least one person without making anyone else worse off. Whenever a Pareto-inefficient allocation of resources persists, then the market is said to fail because the current arrangement leaves potential social gains on the table.

Any failing market necessarily contains the opportunity for profit; that is, the possibility of converting unexploited “social gains” into exploited private gains.<sup>142</sup> Whoever works successfully to improve the allocation of resources (say an “entrepreneur”) can profit from efforts: the person or persons who gain from the improved allocation will be willing to pay the entrepreneur for the results of his effort. The amount paid will be large enough to allow the entrepreneur not only to cover his costs (which might include compensating people who are harmed by his resource-reallocation efforts) but also to reap profit for his successful effort to improve the structure of resource allocation.

Of course, the entrepreneur will undertake such efforts only if his expected cost of doing so falls short of his expected gain. This qualification is as it should be. Suppose, if we ignore whatever costs the entrepreneur must bear to change the pattern of resource allocation, the gain to society of changing the resource-allocation pattern is \$100. If the cost to the entrepreneur is greater than \$100, then efforts to change resource-allocation pattern are not worthwhile. If the entrepreneur who successfully changes the allocation pattern discovers that it costs \$101 to do so, not only does he suffer a loss, society does too. It is wasteful from society’s perspective to use \$101 worth of resources to generate \$100 of benefit. Put differently, if the cost of improving the resource-allocation pattern is greater than the benefit from doing so, the unimproved pattern is optimal. The unimproved structure of resource allocation, it turns out, was Pareto efficient. The existing pattern did not reflect market failure.

This logic prompts three different sorts of responses; responses from analysts we will call Stiglerians, Hayekians, and Stiglitzians.<sup>143</sup> When Stiglerians<sup>144</sup>

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assertion necessitates an *assumption* that the government can do better. That this assumption is valid cannot be proved analytically, and it follows that market failure is an essentially normative judgment.” See generally Carl Dahlman, *The Problem of Externality*, 22 J. L. & ECON. 141 (1979).

142. *Id.* at 156. Dahlman explains that this view does not get us far. When transaction costs are lower, more deals will be consummated and the economy will grow, but making deals is costly as information costs and other issues come into play in the real world. Transaction costs are much like transportation costs. They are real costs; it would be nice if transportation costs were zero, but they are not, so fewer goods are shipped than if the costs did not exist. Hence “transaction costs per se have nothing to do with externalities.” *Id.*

143. These are over simplifications but help make the point about viewpoints that often color analysis.

are confronted by an Observer (one who makes observations about the state of the economy) with allegations of a market failure, Stiglerians reject the allegations. They argue that whatever exists is optimal, otherwise some profit-seeking party would have already acted to improve the situation. The Stiglerians assert, therefore, that the current situation only appears to the Observer to be suboptimal because the Observer fails to see and to account for some of the costs that must be incurred to rearrange the resource-allocation pattern. Because such costs cannot legitimately be ignored when assessing the propriety of rearranging the resource-allocation pattern—and because any worthwhile change will be brought about by economic agents—any assertion of market failure is a myth.

When Hayekians<sup>145</sup> are confronted by an Observer with assertions of some market failure, they acknowledge that the market may be failing. But Hayekians have confidence that the profit motive prompts people to discover ways to earn a profit by improving the pattern of resource allocation. Profit-seeking entrepreneurs can be relied upon to improve the matter soon enough. Like Stiglerians, Hayekians reject the notion that government officials, economists or not, are better than entrepreneurs and other economic actors at assessing the costs and benefits of resource allocation. Yet unlike Stiglerians, Hayekians believe that human error is real. Time is required to discover suboptimal patterns of resource allocation and to accomplish improvements.

Although the details of their analyses differ, Stiglerians and Hayekians reach identical policy conclusions when confronted with claims that some putative market failure must be corrected by the state. That policy conclusion is almost always that alleged market failure does not benefit from state action. The claim is dismissed as being false by Stiglerians, or as one that fails to appreciate the superiority of the entrepreneurial market process over the political process in discovering and correcting market failures by Hayekians.

When Stiglitzians<sup>146</sup> are confronted by an Observer with allegations of some market failure they are generally sympathetic. Stiglitzians have no great confidence in the ability of private parties to correctly assess the state of the market or to competently act in pursuit of profit to improve resource allocation. They have confidence in the ability of government officials, especially economists, to assess the state of the market and to competently design and carry out effective interventions that generate improved resource allocation. Stiglitzians' policy conclusions are very different from that of Stiglerians and Hayekians.

144. Named for George Stigler, who argues that markets are hyper-efficient and, therefore, are almost never marked by Pareto-inefficient patterns of resource allocation. *See, e.g.,* George J. Stigler, *The Xistence of X-Efficiency*, 66 AM. ECON. REV. 213, 216 (1976).

145. Named for F.A. Hayek, who argues that free markets generally *tend* toward optimal patterns of resource allocation but, because of imperfections in human knowledge and because of dynamic changes in the economy, this tendency is always a work in progress. Put differently, Hayek believes that the market is a *process* of constantly discovering and correcting error, but a process that is never complete. *See, e.g.,* F.A. HAYEK, *Competition as a Discovery Procedure*, in *THE MARKETS AND OTHER ORDERS* 304-13 (Bruce Caldwell ed., 2014).

146. Named for Joseph Stiglitz, who argues that imperfect information, human weakness, and institutional imperfections generate a great deal of market failure - failure that can be reliably corrected only by government officials. *See, e.g.,* Joseph E. Stiglitz, *Markets, Market Failures, and Development*, 79 AM. ECON. REV. 197 (1989).

By exploring the strengths and weaknesses of these three dispositions we demonstrate that these positions, and others that might exist or be imagined, are just that: dispositions. None can be proven analytically to be correct or even to be better than the others. Where any person comes down—as a Stiglerian, a Hayekian, or a Stiglitzian—is determined by that person’s judgment, or even by his or her priors, about the competence of people acting privately compared to that of people acting politically.

Despite the differences that separate Stiglerians from Hayekians, and both of these tribes from Stiglitzians, all three accept the reality of externalities. Stiglerians insist that almost all externalities are what Buchanan and Stubblebine labeled “Pareto-irrelevant externalities”—that is, externalities that, while real, are not worth the cost of internalizing. Hayekians agree with Stiglerians that many externalities about which politicians, professors and pundits complain, are Pareto-irrelevant, but Hayekians disagree with Stiglerians’ insistence that *all* externalities are such. Hayekians concede the reality of Pareto-relevant externalities, but argue that these will reliably and cost-effectively be corrected, sooner or later, by private market forces. Stiglitzians, of course, agree with the Hayekians that Pareto-relevant externalities exist in the real world, but disagree that many alleged externalities are Pareto-irrelevant. Stiglitzians insist also, contrary to Hayekians, that few, if any, Pareto-relevant externalities can be corrected adequately by market forces. Unlike the Hayekians, Stiglitzians believe that government officials can correct Pareto-relevant externalities in cost-effective ways.

We agree more with the Hayekians than with either the Stiglerians or the Stiglitzians. However, we part company with all three in our understanding of the nature of externalities and offer a different conception of externalities, one based upon expectations. We argue that nearly all discussions of externalities proceed from a flawed understanding of third-party effects, whether they are negative or positive. As we will discuss, we conclude that externalities are far less common than is commonly asserted.

A standard description of an externality is to say that it is an unbargained-for “third-party” effect. That is, it is a “spillover” effect that arises whenever an actor fails to take account of the cost or the benefit that an instance of her action has on a third party.

Our objection is to the typical Pigouvian manner of reckoning social costs. The common assertion of externalities fails to take adequate account of expectations. Assertions of externalities—of “market failure”—pay insufficient attention to the fact that real-world economic actors form reasonable expectations about the likelihood that they or their properties will encounter spillover effects from other people’s actions. When people expect certain consequences, either physically or to their own properties’ market values, from other people’s actions, they adjust their own actions to minimize the costs they bear, or to maximize the benefits they receive, from the expected actions of others. These expectations and the adjustments they spark “internalize” the consequences of spillover effects that appear as externalities in standard market-failure analyses. The internalized reasonable expectations of spillover effects are reflected in, and incorporated into,



property rights and the value placed on them.<sup>147</sup> Once incorporated, these expectations render many spillover effects that appear on casual observation to be externalities to be, in fact, part of the structure of property rights.

A common example: someone who buys land located near a busy airport should reasonably expect to regularly hear noise from airplanes.<sup>148</sup> That person's property right to her land does not include the right to be free of airport noise. In the language of the common law, the person "comes to the nuisance."<sup>149</sup> The price that she pays for this land is discounted to reflect the absence of this particular "stick" in the bundle of rights received when she purchased the land. This price discount reflects the internalization of this landowner of airport spillover effects.

### DEFINING CLASSES OF EXTERNALITIES

Given that expectations constantly adjust to the changing state of the world, property rights, and the prices attached to them, constantly adjust in an on-going process of internalization. In a world in which people can and do change activities to reflect their evolving expectations, externalities exist only when spillover effects are unexpected. The following examples help to demonstrate this principle.

**(1a)** Smith owns a piece of land. Jones offers Smith \$10,000 for an easement allowing Jones to lawfully drive his truck to and fro across Smith's unpaved land for the next ten years. Smith accepts. Jones then drives across Smith's land according to the agreement. Although Jones's truck leaves tire marks on Smith's land, which is unsightly to Smith, there is no externality.

Why isn't Jones' crossing Smith's land an externality? One answer is: because Jones bought the right to drive his truck across Smith's land. While true, this answer doesn't reveal the essence of the situation. This essence is that Smith should expect Jones to drive across his land and that driving will likely leave unsightly tire marks.

The moment Smith sold the easement to Jones, Smith expected Jones would drive across his land and to leave tire marks that trucks typically make. The price Smith received for the easement reflects his expectations of such negative spillovers. Smith internalized Jones' infliction of physical damage to Smith's land when he reasonably came to expect such damage. There is, therefore, no externality despite one person (Jones) physically damaging property belonging to another person (Smith).

**(1b)** Changing the example slightly yields a different outcome. If Jones owns no easement over Smith's land but drives his truck across the land and leaves unsightly tire marks, then Smith may suffer a negative externality.

More to the point, his expectation of not having his property invaded and damaged by another has been violated. A court would be expected to grant Smith's

147. See, e.g., M. Rahmatian & L. Cockerill, *Airport Noise and Residential Housing Valuation in Southern California: A Hedonic Pricing Approach* 1 INT'L J. ENVTL. SCI. & TECH. 17, 18 (2004) (showing that the greater the exposure of homes to airport noise the lower are the prices of the homes).

148. *Id.*

149. See, e.g., Roy E. Cordato, *Time Passage and the Economics of Coming to the Nuisance: Reassessing the Coasean Perspective*, 20 CAMPBELL L. REV. 273, 273 (1998).

request to enjoin Jones's damaging actions, as well as hold Jones liable for damages inflicted on Smith.

**(2a)** Johnson's suburban residence is ten miles from downtown, where she works. She drives to and from her office on open-access roads. Her route, were she to drive it at 3:00 am, would take 15 minutes, but during rush hour the drive typically takes an hour. The standard economist's assessment of this situation is that it is rife with negative externalities.<sup>150</sup> The economist reasons that, when deciding whether or not to drive on particular roads each driver considers only the costs and benefits that she experiences by driving. Drivers do not account for the costs their driving imposes on other drivers. But there is no externality.

Each day as she sets out to drive during rush hour, Johnson is aware of the likely traffic conditions. Although she's unhappy with those conditions, she chooses to drive on the traffic-jammed roads. She *expects* to encounter heavy traffic during rush hour. She internalizes the effects of the actions of the many other drivers who share the roads with her. Moreover, her internalization of traffic congestion causes Johnson to alter her behavior. Where she chooses to live might be closer to her place of work than it would be if she didn't expect to encounter congestion.

The price of her abode reflects expectations of congestion. *Ceteris paribus*, the prices of homes any given distance from a city center is usually lower the greater the expected amount of traffic from that location. Suppose that Johnson would have paid \$200,000 for a home ten miles from the city if she expected little traffic during rush hour. If she expects heavy traffic, however, the value of that home to her falls. The market value of the home also falls because most people share Johnson's expectations of heavy traffic. So Johnson purchases the home for, say, \$180,000 rather than the \$200,000 that she would have paid in the absence of traffic congestion. The lower price of her home compensates her for the congestion she expects to endure during the commute.

**(2b)** Suppose instead that Johnson bought a home that, although it is ten miles from where she works, is just off of a privately owned, restricted-access highway on which tolls are charged at market rates. The tolls are scientifically designed to ensure that traffic volume are always socially "optimal." Given that traffic congestion on an identical open-access road imposes unnecessarily high costs on drivers—that is, given that the cost to each driver of the congestion is assumed to be inefficiently high—the cost to Johnson of paying tolls to drive on the uncongested restricted-access highway is lower than is the cost to Johnson of enduring the congestion that regularly slows her commute on an identical open-access highway. In this example, Johnson's daily commute is not inefficiently slow. The cost to her of using the tolled, restricted-access highway is lower than is the cost to her of using the open-access highway, justifying to her the \$200,000 price she paid for her home just off the restricted-access highway.

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150. Economists often advocate addressing the externality by pricing highway use, especially at peak hours, so as to close the gap between private costs and social costs—those imposed by a driver on other drivers. The assertion that raising the costs of driving will result in less driving is obviously correct. 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, 3 (2011) (discussing the congested roads example).

Unexpectedly, a year after Johnson bought this home, the government uses eminent domain to seize the restricted-access highway and convert it into a public open-access highway. Johnson's commute suddenly becomes much longer. We might say that the government's conversion of the highway from restricted- to open-access imposes an externality on Johnson. Not only does she find herself confronting a longer commute than she reasonably expected when she bought the home, but the market value of her home will fall to reflect the increased inefficiency of the commute.<sup>151</sup> Because the government's action was unexpected, Johnson could not reasonably have adjusted to that action to shield herself from these losses. As in example (1b) above, a party here suffers an *unexpected* loss, or cost, because another party acted in a way not reasonably expected.

**(3a)** Williams has worked since she was 18 years old in a factory making furniture. Williams loses her job at age 50 because consumers' preference for lower-priced furniture imports causes her employer to go bankrupt. Williams suffers a loss.

Economists classify Williams's loss as a "negative pecuniary externality." That is, she incurs a real loss but its value is more than offset by pecuniary gains to consumers from the lower prices paid for furniture. That is, negative pecuniary externalities are offset by positive pecuniary externalities of at least the same value. Because there is no net social loss with pecuniary externalities, economists conclude that corrective action by government is neither necessary nor appropriate.

That is, with pecuniary externalities there is no market failure. The failure of consumers, when buying furniture, to account for the consequences of their decisions on Williams and other domestic furniture producers is not a failure of consumers to take adequate account of the marginal social costs of their decisions. With pecuniary externalities, there is no divergence between the marginal private cost and the marginal social cost of a decision. Although consumers do not account for the cost that purchases of imports imposes on workers in domestic furniture factories, the consumer *does* account for gains from lower prices. Because the gains to consumers from competition-driven economic change can be shown to be at least as large as the losses the changes cause producers, there is no net *social* cost of competition-driven economic change.

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151. Alternative parties can be said to cause the negative externality: one is the government; the other is the set of drivers whose actions create congestion. We can blame one or the other but not both. If the government had not converted the highway into an open-access road, the congestion would not occur. On the other hand, if each driver would altruistically and accurately take into consideration the effects that her use of the road has on other drivers, the congestion likewise would not occur. Deciding which of these two parties to 'blame' likely reflects (*a la* Dahlman, *supra* note 141) the analysts' normative position rather than any objective or scientific principle. Nevertheless, because the government in this example actively altered an existing property-rights arrangement—and because, in doing so, it reasonably should have expected that one result would be traffic congestion—the government seems is the party appropriately identified as imposing the externality on Johnson (and on others similarly situated). In contrast to the government, none of the drivers on the now-congested, open-access highway took active steps to alter the property-rights arrangement. Each driver simply continues to behave consistently as a rational, utility-maximizing private actor. Given the choice of identifying one or the other of these parties as the 'cause' of the externality, choosing the party that actively *and unexpectedly* altered the property-rights arrangements makes most sense.

We agree with the standard economic analysis that in this example there is neither economic inefficiency nor any need for corrective intervention by government. But we disagree with those who contend the furniture worker suffers an externality. In a market economy, particularly one in which employment contracts are at-will, no worker reasonably expects that she will keep her job for as long as she wants it. Put differently, Williams expects, or should expect, that she might lose her job for any number of regularly occurring reasons, including changes in market conditions.

Williams reasonably *expected* the prospect of job loss and, therefore, internalized the prospect. She adjusted to it or reasonably should have adjusted to it. For example, she and other furniture workers likely earned wages higher than for work at similar jobs in industries less likely to be subject to increased import competition. When the job loss occurs, Williams suffers no externality; because there are no spillover effects from other people's actions that are not already internalized. She suffers nothing that "ought" to be compensated or that other people ought to be taxed for or prevented from imposing on her.

**(3b)** Williams at age 18 is unusually forward-looking and unusually economically risk-averse. She seeks the most secure employment possible.<sup>152</sup> She avoids employment in "tradable-goods" industries (ones likely to suffer competition from imports). She instead seeks employment in an occupation unlikely to be destroyed by imports. Williams moves to Nevada and begins work as a prostitute. After twenty years of working legally as a prostitute, the State of Nevada unexpectedly outlaws prostitution statewide.<sup>153</sup> Williams might be said to suffer an externality. Having no good reason to expect that her occupation would be outlawed, Williams loses the opportunity to earn a living in that particular occupation, but, more to our point, she had no opportunity to adjust her actions to protect against this unexpected change.

Each of these examples features a person who experiences negative consequences, spillover effects, as a result of the actions of others. Yet in examples (1a), (2a), and (3a) the person *expects or should expect* to experience these consequences. These expectations lead each to adjust his or her actions to compensate for the expected negative effects. These expectations and the adjustments they spark internalize the spillover effects on the individuals. In contrast, in examples (1b), (2b), and (3b), none of the individuals expects, or has reason to expect, the negative spillovers. The individuals had no opportunity to adjust actions to such negative spillover effects. The spillover effects in these cases can sensibly be called "externalities."

Example (1a) describes an obvious case of a spillover effect not being an externality on the person suffering that effect. Landowner Smith gave Jones

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152. The most secure employment possible, in fact, is one that we rule out here: self-sufficient existence, which necessarily involves subsistence farming. A truly self-sufficient person, one with no economic contact with others beyond his or her immediate family, will never want for work. His very survival requires constant toil and effort. The fact that almost no one today chooses such an existence implies that almost everyone today chooses to incur the risks of market variations in exchange for the benefits made available to those who participate in the market economy.

153. As of this writing, that appears to be a possibility. See Jim Carlton, *Is the Party Over for Nevada's Legal Brothels? Possibility of a Ban Looms*, WALL ST. J., June 16, 2018.

permission to take the actions that generate some negative effect on Smith.<sup>154</sup> The absence of an externality in (2a) is less obvious. Nevertheless, no externality exists in (2a) because commuter and homeowner Johnson, expecting long commutes, takes other drivers' actions into account and changes her behavior accordingly. Given the existing property-rights structure of the roads (open-access), Johnson has no property or other legal interest that is damaged, obstructed, or taken from her by other drivers. In (3a), Williams has no legal right to continued employment at any particular job and, thus, when she loses her job making furniture, has no legal interest is upended.

Matters differ in each of the "b" parts of the examples. In (1b) Smith suffers a violation of a legal right long recognized and enforced at common law. The violations in (2b) and (3b) are less straightforward but real. The expectations of Johnson in (2b) and Williams in (3b) were grounded in the existing structure of law and legislation. There was no reason to expect to change. While unlike in (1b) neither of the individuals in (2b) and (3b) suffer an infringement of a right recognized at common law, each of the individuals in (2b) and (3b) suffer as a result of a legal change that no reasonable person had cause to expect.

In sum, in a world in which people adjust activities<sup>155</sup> to reflect their expectations, externalities exist only when spillover effects are unexpected. When expected, spillover effects are incorporated into the structure of property rights. Transactions such as the purchase and sale of property and creation of contracts and protection of those interests from tortious interference result in market prices for those rights that reflect expected spillover effects. In the example of Jones buying an easement across Smith's land, Smith knows his enjoyment of his property will be affected. If after six years, Smith sells his land to Wilson, the property right that Wilson acquires does not allow him to unilaterally prevent Jones from crossing the land according to the terms of the easement. When the easement was created, the nature of the property changed.

In the example of Johnson driving on open-access roads, she has no reasonable expectation of enjoying exclusive use of the roads. Even if Johnson, when suing to reduce the number of drivers, proves that when she began to use the roads they were not as clogged with traffic, the court would deny her claim to possess a right to less traffic on those roads. Johnson should have expected the possibility that open-access roads could become clogged with traffic. If, in contrast, she had built and operated the roads privately, reserving to herself the right to decide who uses the roads and on what terms, matters would differ. Drivers who use the roads, without Johnson's permission, even if she was not using the road, violate her property right.

In the case of Williams who works in a furniture factory, her agreement to work at-will means that she should reasonably expect the possibility that one day she will lose her job. She has no property right in her job. If Williams's employer

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154. In the example, Smith received from Jones payment for this permission. Yet such a payment is not necessary. The essence of the example would be unchanged if Smith had given the easement to Jones free of charge.

155. These activities include the expression of valuations through decisions to buy and to sell (and to not buy and to not sell).

contractually agreed never to fire her for as long as the employer remained in business, then Williams would have, by contract, certain property rights in her job.

### A WORLD FILLED WITH SPILLOVERS

Prices, wages, and other market values adjust to reflect expectations of spillover effects. Although obvious when stated, this conclusion is more substantive than it first appears. Most discussions of externalities begin mid-stream. Landowners are assumed to exist and are assumed to use their lands in certain ways. Factories are assumed to exist and are assumed to produce certain outputs using certain production methods. Drivers are assumed to exist driving wherever they happen to drive. Residential areas are assumed to exist in locations particular distances from factories. The analyst then identifies spillovers across parties.

In a common example, a factory pollutes the air used by a nearby laundry to clean the clothes of its customers, thereby inflicting a spillover on the laundry. A Pigouvian or Stiglitzian draws a graph showing that the marginal private cost confronted by the factory owner is less than the marginal social cost of the factory's production activities. The Pigouvian concludes that the factory produces too much output that results in too much pollution. Therefore, corrective taxes or regulations are necessary. The Coasean agrees with the Pigouvian that a spillover exists, but disagrees on the solution. The Coasean notes that if rights to air quality exist, the parties can bargain or litigate to enforce the rights. The "optimal" result will arise because the party who values the property right the highest will buy it from or not sell it to the other party.

Factories and laundries do not simply pop into existence. Each sets up at a particular time and place, with a set of expectations about what it may and may not do. The decision by the party coming to the scene after the first party arrived determines the second party's expectations about the state of the world. If the laundry arrived on the scene after the factory, decisions by the laundry owner must incorporate legitimate expectations of the operation of the factory, including whatever spillover effects are likely to affect it. The price the laundry owner paid for the site reflects these expectations as do the supplies the laundry owner buys to operate his laundry. Given that the laundry owner chose to set up shop when and where he did, and given the expectations that he had in doing so, or should have had given the rights structure, it is difficult to see in such examples effects that are called "externalities" demanding governmental action.

The physical spillover effects the factory has on the laundry are indisputable but are not externalities. The laundry owner's expectation of the effects must be presumed to be internalized in his decisions. Put differently, these spillover effects are part of the definition of the both the laundry-owners' property rights and of the factory's owner's property rights: to wit, the factory owns the right to emit pollutants of this sort into the air, while the laundry owner owns no right to be free of such pollutants from this factory.

Externalities exist *only* when another party's actions create unexpected spillover effects.<sup>156</sup> Put differently, for there to be no externality, all that is

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156. That is, externalities occur only when an existing property-rights arrangement is changed or violated.

necessary is that the party encountering spillover effects expects or reasonably should expect to encounter them. This expectation prompts the party to adjust to the expected effects.<sup>157</sup> To the extent that adjustments to the spillover effects do not occur because the benefits of adjusting do not justify the costs of doing so, the market value of affected properties adjusts to reflect the spillover effects.

When a spillover is expected, it is internalized on the parties to the effects, which eliminates the externality. Internalizing the externality does not require the party who might conventionally be identified as ‘causing’ the spillover effect to take account of the effect either consciously or by responding appropriately to prices, taxes, or subsidies that include the value of the effect on the ‘victim’ of the spillover. For example, for there to be no externality, it is not necessary, although it would be sufficient, for a railroad to take account of the effects that sparks from its locomotives have on the owners of lands adjoining the railroad’s tracks. If the landowners expect their lands will be damaged from the sparks of locomotives, the landowners internalize these costs. The landowners adjust in various ways, say by moving their crops further from the tracks or by growing crops less likely to burn easily. Further, the market value of the land incorporates the landowners’ success or failure at avoiding the ill-effects of the sparks.

When a pattern of effects is expected, the details of those expectations define the specific contours and contents of property rights. If owners of land adjoining railroad tracks expect routine damage to the land from locomotive sparks, the landowner does not own the right to be free of railroad sparks. That right is not one of the sticks in the landowners’ bundle of rights. That stick is owned by the railroad.

### PROPERTY RIGHTS, NOT SOCIAL ENGINEERING

Unlike in the literature on externalities, nothing said here suggests that the absence of spillovers implies a Pareto-optimal allocation of resources. The problem is not externalities or spillover effects whether anticipated or not. The problem, if one asserts there is a problem, is in the structure of property rights. It is necessary to have a set of institutions that allows parties to make deals under a set of enforceable and protected rights.

This approach describes traditional common-law courts. In *Sturgis v. Bridgeman*, the court was not called upon to make an economic assessment regarding which of the two parties is the least-cost avoider.<sup>158</sup> The court was asked to determine which party had the property right to the noise and vibration environment of the building: the confectioner or the physician. When courts make such determinations they ask which party acted consistently within prevailing expectations or rights structure.<sup>159</sup>

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157. It is possible that the expectation of some spillover effect causes no adjustment in the activities of the affected party. The absence of any such adjustment would signal that the costs of any possible adjustment outweigh the corresponding benefits.

158. *Sturgis v. Bridgeman*, L.R. 11 Ch. 857 (1879) is the case employed by Coase, *supra* note 72, where noise from a confectioner’s shop made the use of a doctor’s consulting room unpalatable. In that case the court enjoined the noise to protect the doctor’s right to quiet enjoyment of his property.

159. That is, the rights of contesting parties are determined by existing property rules, not by a weighing of the costs and benefits of alternative uses of the property.

The process of determining, in any legal case, which party is the least-cost avoider is not rational calculation by the court but evolves from human behavior leading up to the dispute that gave rise to the case.<sup>160</sup> The determinative factor, in short, is prevailing custom.<sup>161</sup> The courts have long looked to community expectations, broadly defined, to discover as best as they can which party acted in a way most consistent with expectations.<sup>162</sup> That party is the one declared to have “the right.” Property rights are a bundle of *expectations* about how others (including the state) will act in different circumstances.<sup>163</sup> Expectations may originally give rise to *de facto* property rights which, if courts rule in ways consistent with these expectations when disputes arise, become *de jure* property rights.<sup>164</sup> Hence, insofar as no one’s legitimate expectations are upset, no externality occurs.

The prevailing pattern of expectations—and, hence, the particular arrangement of property rights in which expectations are embedded—is not necessarily economically optimal with respect to a particular situation.<sup>165</sup> However, having clear property rules in place allows parties to adjust their behavior to the legal structure. The point is that no externality occurs when spillover effects are expected, or reasonably should be expected. In some instances, altering existing property rights might improve economic efficiency even if doing so violates prevailing expectations.<sup>166</sup>

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160. BRUNO LEONI, *FREEDOM AND THE LAW* 189-203 (expanded 3d ed. 1991).

161. JAMES COOLIDGE CARTER, *LAW: ITS ORIGIN, GROWTH AND FUNCTION* 320-45 (1907).

162. *See, e.g.*, LON FULLER, *THE MORALITY OF LAW* (1964); F.A. HAYEK, *LAW, LEGISLATION, AND LIBERTY: RULES AND ORDER* (1973).

163. *See* COOLIDGE CARTER, *supra* note 161.

164. *See* FULLER, *supra* note 162.

165. *See* *Whalen v. Union Bag & Paper Co.*, 208 N.Y. 1, 3, 101 N.E. 805 (1913) (illustrating alternative results from property rights cases in New York. A new paper mill in a rural area ruined the water quality for a downstream farmer who had to drill a well for clean water for his animals and crops. He sued for damages and an injunction against the pollution. The Court of Appeals held that the polluting mill had to know the riparian rights of other water users, so it would pay damages and was enjoined from continued infliction of such damage. Overturning the decision of the appellate court, which held that the economic value of the mill was much greater than the value of the river water to the plaintiff, the Court held that “Although the damage to the plaintiff may be slight as compared with the defendant’s expense of abating the condition, that is not a good reason for refusing an injunction. Neither courts of equity nor law can be guided by such a rule for if followed to its logical conclusion, it would deprive the poor litigant of his little property by giving it to those already rich.” That is, rights are rights and courts are not to engage in economic valuation contests to divine which party has greater value for the rights. Enforce existing rights and parties may bargain should they wish—farmer Whalen could have been paid to allow the pollution, but if he refused, Union Bag could have looked for another location to build or changed its technology.); *but cf.* *Boomer v. Atlantic Cement Co.*, 26 N.Y.2d 219, 257 N.E.2d 870 (1970) (The same court, six decades later, refusing to issue an injunction against a cement plant that issued dirt, smoke and vibrations, nuisances to neighbors. The court held that there were damages of \$185,000 but an injunction was not in order because millions had been invested in the plant and hundreds of jobs were at stake. That is, the polluter was allowed to force a buyout of nuisance rights. Unlike the *Whalen* court, which enforced existing rights, the *Boomer* court put them up for grabs under a balancing approach, which, of course, the dominant party could easily win.); *see generally* Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965 (2004).

166. *See* Alvin Roth, *Repugnance as a Constraint on Markets*, 21 J. ECON. PERSP. 37, 42 (2007) (In the example of open-access roads, if government restricts access to drivers who pay tolls that mimic market prices, Johnson and other drivers will be made better off. We recognize that certain activities



The challenge is not for external observers, such as wise economists, to design and implement government policies that “internalize externalities” given transitory circumstances. There are few instances when someone experiences a consequence that he did not expect or had no good reason to expect, and, hence, to which he has not already adjusted his actions in a Pareto-optimal way. The challenge is to allow the evolution of a system of property rights that encourages productive social cooperation.<sup>167</sup> Framing the problem as one centered on external effects deflects attention from the core issue and gives rise to the notion that planners can respond to issues and help construct statutory or administrative rules to enhance economic efficiency as seen by the planners. To believe that approach can succeed requires omniscience by such observers who generate policies divorced from politics. Both assumptions are absurd.<sup>168</sup>

### CONCLUSION

We have reviewed the origins of the concept of externality. It began with the noted economist Alfred Marshall more than a century ago. His concern centered on the effects of the spread of information that would spur economic development. Some information was internal to a firm, some was external information that could help spur productivity. His protégé and successor at Cambridge, A.C. Pigou, wrote extensively about problems associated with private production and consumption decisions. Society would not maximize its well-being if private actors were not restrained by legislation designed to ameliorate wrongs, such as women working in factories, which was of particular concern. Pigou’s distinction between social cost and private cost launched the discussion that proceeds apace about the need for governmental action to right economic wrongs.

Some economists, especially in the 1950s, expanding the work on externalities, showed that by pulling just the right levers, higher levels of wealth and welfare, all the way up to “bliss points,” could be achieved. Professors Scitovsky, Meade, and Bator formalized the model of externality, showing how a change in rules, perhaps by imposing taxes on undesirable activities or by ordering investment in underutilized areas, could raise social welfare. Nobel laureate James Buchanan dismissed such hopes through formal economic logic, showing that the justification for state action to rectify private-sector problems applied only to a limited set of instances and, in any case, ignored the consequences of turning such matters over to the tender mercies of legislatures or the bureaucracies they create and monitor.

Until about 1970 the focus was on more efficient economic planning. For years, development economists contended that backwards countries could be pulled into modernization and wealth by assorted planning tools such as investment in select infrastructure, import substitution policies, and more. However, concern

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may be deemed repugnant and so prohibited, such as restrictions on the entertainment called dwarf tossing.)

167. *Supra* note 165.

168. See generally James Buchanan, *Positive Economics, Welfare Economics, and Political Economy*, 2 J. L. & ECON. 124, 126-37 (1959).

about environmental matters soon came to dominate the application of externality. For a half-century now, economists have trotted out numerous schemes to reduce externalities, that is, close the imagined gap between imagined social optimality and private outcomes.

Professor Baumol swatted aside Buchanan's analysis and likened environmental externalities to underemployment or excess inflation—call in the experts and they would change monetary and fiscal policy to balance inflation and employment to make the economy great again. Following Baumol, many would-be policymakers volunteer to pull the levers of power to fix the environment. Despite economists such as Buchanan dismembering the theoretical bases for asserting that bliss points can be achieved by policy actions that attack alleged externalities, many environmental economists plow ahead, sure that their wisdom, drawn upon by well-meaning politicians, will succeed in planning a better environment and economy.

We join Ronald Coase in believing that when property rights are clearly established and enforceable, and when parties are free to bargain to rearrange who owns and may use property in a productive manner that does not inflict unacceptable harm on others, we have the greatest likelihood of sustainable economic growth and private protection of property. In terms of economic logic, externalities are rare species. More common are claims that things we do not happen to like are externalities that should be changed by legislative or administrative edict.