What Happened on Blackstone Avenue? Transaction Costs, Scholarly Midwives, and the Birth of the Coase Theorem

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Abstract

The Coase theorem has been shrouded in ambiguity and confusion throughout its life, this despite the prominent role that it plays in economic and legal analysis. As this paper demonstrates, this is no less true of the path by which Coase came to the result that bears his name. Drawing on published and archival sources, we discuss the challenges that Coase encountered in formulating his argument and illuminate the roles of other scholars in correcting Coase's errors—particularly as regards the impact of transaction costs on his negotiation analysis—and nudging him toward a theoretically valid result. We also show that Coase's legendary 'conversion' of the disbelieving Chicago economists was both less extensive than commonly believed and likely involved their acceptance of a result that is both demonstrably incorrect and fundamentally different from that which Coase published in "The Problem of Social Cost." All of this works to highlight the ongoing challenges posed by transaction costs for understanding the domain and range of the Coase theorem, challenges that are as old as the theorem itself.

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What Happened on Blackstone Avenue?

Transaction Costs, Scholarly Midwives, and the Birth of the Coase Theorem

The Coase theorem is foundational to the economic analysis of law as it has emerged since the 1960s. The theorem tells us that, under certain restrictive assumptions—in particular, that transacting is costless—the allocation of resources will be both efficient and unaffected by the direction of legal rights and liabilities. Violations of those assumptions, in turn, show us why law *does* matter, from an allocational perspective, thereby providing the *raison d'être* for the field itself. The theorem also provides what many consider to be the, or at least a, justification for the use of the efficiency criterion in judicial decision making, demonstrating that the efficient outcome is the one to which the parties would voluntarily agree if transaction costs did not get in the way. Given the outsized role that the Coase theorem plays in the economic analysis of law, it is fair to wonder, then, whether the field would even exist in anything like its present form were it not for "The Problem of Social Cost" (1960) and the 'theorem' to which it gave rise.

In George Stigler's (1988, ch. 5) telling, Coase is, quite literally, a modern Archimedes, the solitary scientist whose revolutionary discovery forever transformed our thinking.[1] The history of science is seldom so neat and clean, however, and the Coase theorem is no exception. The theorem has been, from its inception, the creation of the community of economists and, perhaps to a lesser extent, legal scholars. Coase laid out his result in a then-obscure and struggling journal, and it may well have passed unnoticed were it not for the efforts of a network of friends and associates at schools including the London School of

[1] See also Kitch (1983, p. 220-21), where Stigler provided his initial recounting of the story, as well as the discussion of it in section III, below.

Economics (LSE), Virginia, and Chicago—Coase's past, present, and future academic homes—who discussed and applied it in a variety of more widely-read outlets in the years immediately following its publication.[2] The theorem was christened by Stigler (1966, 113), perhaps its most fervent apostle, in a textbook of all places, which had the effect of exposing an even broader audience to Coase's result. And though the theorem began to gain traction in the late 1960s and early 1970s, some three decades of debate were needed to help us pin down the assumptions required to validate Coase's very loosely constructed 1960 claims—much of that turning on the nature and definition of transaction costs, and the characteristics of a world from which they are absent. This helps to explain why there is no generally accepted statement of the Coase theorem, as reflected in the variety of Coase theorems found in the literature.[3] This turns out to be very important, as some of these formulations persist despite the fact that they cannot withstand basic economic scrutiny.[4] The theorem's form and place in legal–economic analysis, then, is the outcome of a complex production function (Medema 2020a).[5]

This paper draws on archival and published sources to show that this complex production function also extends to the lengthy process by which Coase arrived at his result. The path was by no means straightforward, and the result that emerged in "The Problem of Social Cost" was anything but the product of a solitary mind. Indeed, there likely would be no Coase theorem were it not for the small group of friends and acquaintances who pushed back

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[2] Coase himself remained virtually silent on the subject post-1960—Coase (1981) being the exception—before finally wading into the fray in 1988 in an effort to clarify what he considered the central message of "The Problem of Social Cost" and to rebut critics of the theorem that bears his name (Coase 1988b).

[3] A representative sample can be found in Medema (2020a, p. 1075).

[4] For example, many statements of the Coase theorem allow for positive (albeit low) transaction costs. Under such conditions, it is trivial to demonstrate the the theorem's invariance claim does not hold. See, e.g., Medema (2020a).

[5] It bears emphasizing that the diffusion of the Coase theorem in the legal literature owes much to Calabresi (e.g., (1970) and to Posner (Posner 1973). On this, see, e.g., Medema (2014); (2023).

against Coase's initial formulation of his result, alerting him to fundamental errors in his analysis. As we shall see, Coase set out at least three versions of his result in 1959–60, two of them assuredly incorrect, and had at best a faint sense for the implications of transaction costs (as we now call them) for his conclusion when he drafted the paper in which it first appeared, "The Federal Communications Commission," in 1959. The complications introduced by these costs, often glossed over in contemporary discussions of the theorem, came into the argument only because of the pushback that Coase received, with his continued reflection on their import driving Coase both to the detailed explication of his negotiation result in "The Problem of Social Cost" and to the extensive attention given to transaction costs in the last two-thirds of that article. And as for the fateful evening at Aaron Director's home on Blackstone Avenue, over the course of which Coase 'converted' some twenty assembled Chicagoans to his point of view, we shall see both that the extent of the conversion necessary was far less than the traditional story suggests and that it is not at all clear what 'Coase theorem' the Chicagoans believed at the end of the evening, Coase's argument in "The Problem of Social Cost" and Stigler's later reminiscences notwithstanding.

We begin by tracing Coase's initial development of the argument in his study of the Federal Communications Commission (FCC) and his subsequent refinement of it in light of the challenges raised by those to whom he showed it prior to the paper's publication. A brief discussion of Coase's famous debate with the Chicagoans and subsequent elaboration of his argument in the "The Problem of Social Cost" then sets the stage for revisiting that evening on Blackstone Avenue, based upon which we can put together the final pieces of process by which Coase arrived at the insight that we now call the Coase theorem, and who helped get him there. As fascinating as the traditional origins story is—thanks in no small part to Stigler's (1988) hyperbole—the reality is far more interesting, both for what it tells us about

Coase and Coase's result, and for our understanding of the messy process behind how it came to be.

I. The FCC and the Frequency Allocation Problem

When Coase was appointed to an Assistant Lectureship in economics at the LSE in 1935, he was asked to teach a course on the "public utilities" in Britain.[6] Feeling the need to bring himself up to speed on these industries and their history, Coase dove into the relevant source materials, making meticulous case studies of the post office, the supply of electricity and, most famously, the British broadcasting industry. These studies gave rise to a significant number of publications over the next few decades, including *British Broadcasting: A Study in Monopoly* (1950), a book lauded by Milton Friedman already in the mid-1950s as "something of a classic."[7] Coase's work on the British Broadcasting Company (BBC) stimulated an interest in the political economy of broadcasting more generally, prompting him to take up the study of broadcasting in the United States.

Like several of the projects that Coase undertook over the course of his career, his study of "The Political Economy of Broadcasting" had a rather long gestation.[8] We know that Coase began work on it in the early 1950s, and, in 1956, applied for a grant from the Ford Foundation to fund research for a book on the subject. His intent was to complete the book, which would take Great Britain, the U.S. and Canada as its case studies, by "the end of

[6] Coase had previously held positions at the Dundee School of Economics and Commerce and the University of Liverpool.

[7] As reported by Edward Levi. See Levi to Harrison, May 7, 1956, as well as Levi to Coase, April 26, 1956, Ronald H. Coase Papers, Box 26, Folder 9, Special Collections Research Center, Regenstein Library, University of Chicago. Hereafter, citations to materials from the Coase Papers will be cited as "RHC Box-Folder" (e.g., RHC 26-9).

[8] Coase's study of the American broadcasting system was facilitated by his decision, in 1951, to move from England to the U.S. and the University of Buffalo. But this project, which grew out of his 1948 visit to the U.S. to study its commercial broadcasting system as a counterpoint to the non-commercial British system, was already underway at that stage.

1958."[9] That he had already made some reasonable headway on the U.S. side of this project is evident from a series of five lectures on "Radio, Television and the Press" that Coase gave at Wabash College in June of 1956 and another of eight lectures delivered at Claremont Men's College the following year.[10] The promised book was never written, but what did emerge from this project undoubtedly had far more influence than Coase could possibly have imagined.

A. Inspiration

At some point during this period, and certainly by 1956, Coase encountered an article by Leo Herzel who, as a University of Chicago Law School student, had in 1951 penned a note for the *University of Chicago Law Review* arguing that broadcast frequencies should be allocated through the market.[11] Herzel suggested that the FCC. "lease channels for a stated period to the highest bidder," his justification being that "The greatest social benefit will result if factors of production (including frequency channels) are used by producers who can pay the most for them" (1951, p. 811, 812). The administrative allocation process in place at the time, he argued, was unlikely to replicate that allocation.

Though Coase is often given the credit for the idea of allocating broadcast frequencies via auctions or other market processes, he has made it clear that Herzel was not only there first, but inspired his own thinking about the possibilities of market-based solutions here (Coase

[9] The book, Coase noted in his Ford Foundation proposal, would "examine the effects on the programs provided by the radio and television services of the way in which the service is financed, of the form of organization and of the kind of Government regulation." Coase, "Application for assistance in making a study of the political economy of radio and television," 1 May 1956, RHC 39-2.

[10] Materials related to these lectures can be found in RHC 39-3 (Wabash) and RHC 39-4 (Claremont). The Wabash folder contains the full text of Coase's lecture. Claremont lecture material is a 33-page summary of his talk and presumably was taken by a stenographer since it refers to Coase in the third person.

[11] Herzel, who was profoundly influenced by Abba Lerner's *The Economics of Control* (1944), had been an undergraduate student at the L.S.E. and then completed an M.A. in economics at the University of Illinois before attending law school. Though Herzel's time at the LSE overlapped with Coase's, there is no indication that they knew each other.

2014, p. 73).[12] We find Coase hailing Herzel's argument already in his 1956 Wabash lecture, but it is also clear that he was not yet fully on board with it. "I would not wish," he said,

> to leave you with the impression that I would advocate a substitution, here and now, of a system under which frequencies were allocated by means of the price mechanism for the one which we now have. There are a number of factors about which I would like to have more information or to which I would like to give more thought before coming to a final conclusion, much as I would like that conclusion to be that no special Governmental regulation is necessary.[13]

That is, as much as Herzel's argument for the market appealed to Coase, he realized that Hertzel's analysis did not settle the matter. Yes, auctioning off frequency leases would put them in the hands of those who valued them most highly, but Herzel had not demonstrated to Coase's satisfaction that this would consistently ensure an efficient outcome. Specifically, his analysis did not account for the interference externality problems that would result from people broadcasting on the same or adjoining frequencies, a problem that had been a major impetus for federal regulation in the first place. Coase described the issue this way to his Wabash audience:

> A final point and, as I've discovered, a somewhat tricky one to expound. A single frequency can be used simultaneously by several users provided that the power, location and, no doubt, other technical aspects are appropriately regulated to prevent interference (or more accurately, to take account of interference). And many alternative arrangements are possible. Clearly the answer, as Mr. Herzel indicated, is

[12] Though published in 2014, these remarks were part of a talk delivered in 2001 at the University of Chicago.

[13] "Radio, Television and the Press," A Series of five lecture delivered at the 1956 Conference on Economics and Freedom at Wabash College, June 14 to 22, 1956, p. 51, RHC 39-3.

> to lease a frequency to a single person, who will then sub-let rights to others in such a way as to maximise his income. But … the way in which a single frequency is used can affect the use to which other frequencies can be put (for example, the width of a frequency is a variable factor). In which case; [sic] it can be argued that the primary landlord for all frequencies should be a single organization, presumably the F.C.C. I would not like this conclusion but it may be what one is forced to.[14]

In fact, Coase was still not convinced that a market-based system could efficiently resolve this externality problem when he delivered his Claremont lecture in June 1957.[15] But at some point between the Claremont lecture and the spring of 1959, he discovered the answer, and it was in this discovery that the 'Coase theorem' was conceived.

B. Accounting for Externalities

Coase spent the 1958-59 academic year at Stanford's Center for Advanced Study in the Behavioral Sciences, a visit made at Friedman's urging, attempting to turn material from his Wabash and Claremont lectures into a paper on the role of the FCC. in American broadcasting.[16] His time at the Center paid dividends, as he informed Friedman on June 1, 1959 that he would be "sending to Aaron early next week an article on the Federal Communications Commission."[17] Of course, "to Aaron" meant that he was submitting the paper to the *Journal of Law and Economics*, a fledgling and struggling journal founded in

[14] "Radio, Television and the Press," 53.

[15] "Summary of Eight Lectures Delivered by Ronald H. Coase of the University of Buffalo at the Institute on Freedom and Competitive Enterprise June, 1957 — Claremont Men's College," 13, RHC 39-4. As the above-quoted passage from his Wabash lecture shows, however, it *was* clear to him that organization under a single owner, a "firm," could efficiently resolve the issue. This approach, which derives from his 1937 article, "The Nature of the Firm," also featured in "The Problem of Social Cost." See Coase (1960, p. 16). The implication, of course, is that Coase developed his argument for resolution of externalities by "the firm" *before* he developed the market argument.

[16] Coase to Friedman, 13 May 1958, Milton Friedman Papers, Box 23, Folder 28 ("Correspondence, Coase, Ronald H. 1948 - 1976"), Hoover Institution Library and Archives.

[17] Coase to Friedman, 1 June 1959, Friedman Papers Box 23, Folder 28.

1958 and edited by Aaron Director, Friedman's brother-in-law, at the University of Chicago Law School. Coase's letter to Friedman suggests that he was a bit hesitant about the paper, and he invited Friedman's "criticism" of it. "The historical material is fuller and the argument tighter than in the paper you heard on the same subject at Wabash," he said, "but I'm probably a good deal more vulnerable than I was."[18] This 'vulnerability' concern was undoubtedly a related his claim, absent in the Wabash and Claremont lectures, that the pricing system *could* overcome the interference externalities problem and so generate an efficient allocation. And as it turned out, his concerns were justified.

No drafts of Coase's FCC article seem to have survived, so we must look to the published version to see his arguments. This matters for our story, as the archival evidence suggests that Coase's argument evolved in important ways between the initial draft and the published version. However, those archival records also allow us to reconstruct some of this history and to see how Coase's thinking changed in the weeks and months following his completion of the initial draft.

Though Coase referenced Herzel's analysis affirmatively in the article, just as he had in his lectures, he pointed out that ensuring efficient frequency allocations was not as simple as having the FCC lease frequencies to the highest bidder. These frequencies must also be transferable to meet changing circumstances, something that was not possible under FCC rules. But if the legal environment was altered to facilitate the free transfer or sharing of frequency rights through the market, Coase noted, those rights would end up in the hands of those who value them most highly, regardless of in whose hands they are initially placed (1959, p. 25).

Even if these rights were made transferable, however, there remained the issue of harmful

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[18] Coase to Friedman, 1 June 1959, Friedman Papers Box 23, Folder 28.

interference to account for. Coase acknowledged that the possible advantages of a private property system are more difficult to see in the case where one party's actions cause harm to others, but he contended that private property rights in frequencies would effectively resolve the incompatible use problems of concern here. To support this claim, he invoked a nineteenth-century British legal case, *Sturges v. Bridgman*,[19] which involved a property dispute between a physician and a confectioner. Coase laid out the facts of the case as follows:

> A confectioner had used certain premises for his business for a great many years. When a doctor came and occupied a neighboring property, the working of the confectioner's machinery caused the doctor no harm until, some eight years later, he built a consulting room at the end of his garden, right against the confectioner's premises. Then it was found that noise and vibrations caused by the machinery disturbed the doctor in his work. The doctor then brought an action and succeeded in securing an injunction preventing the confectioner from using his machinery. (1959, p. 26)

Yet, Coase argued, the judge's decision to grant the injunction, though resolving problem of conflicting uses, did not necessarily determine the ultimate allocation of resources. The reason, he said, was that "*Once the legal rights of the parties are established, negotiation is possible to modify the arrangements envisaged in the legal ruling*, *if the likelihood of being able to do so makes it worthwhile to incur the costs involved in negotiation*" (Coase 1959, p. 26-27, emphasis added). Coase's explanation ran as follows:

> The doctor would be willing to waive his right if the confectioner would pay him a

[19] 11 Ch. D. 852 (1879). Of course, Coase also utilized this case when discussing negotiated solutions to externalities in "The Problem of Social Cost." See Coase (1960, pp. 8-10).

> sum of money greater than the additional costs he would have incurred in carrying out his consulting at another location (which we will assume to be $200). The confectioner would be willing to pay up to an amount slightly less than the additional costs imposed on him by the decision of the court in order to induce the doctor to waive his rights (which we will assume to be $100). With the figures given, the doctor would not accept less than $200, and the confectioner would not pay more than $100, and the doctor would not waive his right. But consider the situation if the confectioner had won the case (as well he might). In these circumstances the confectioner would be willing to waive his right if he could obtain more than $100, and the doctor would be willing to pay slightly less than $200 to induce the confectioner to do so. Thus it should be possible to strike a bargain which would result in the confectioner's waiving his right. This hypothetical example shows that the delimitation of rights is an essential prelude to market transactions; *but the ultimate result (which maximizes the value of production) is independent of the legal decision*. (1959, p. 27, emphasis added)

The problem that had perplexed Coase a few years earlier in his Wabash and Claremont lectures had been resolved, at least to his satisfaction. Private property rights in frequencies would take care of the interference problem, and the market mechanism would ensure that those frequencies ended up in their highest-valued uses if negotiation was both legally permissible and cost-effective.[20]

[20] In fact, Coase, without saying as much, linked this analysis directly back to the issue that concerned him in the Wabash and Claremont lectures when he said that, "there is no analytical difference between the problem of interference between operators on a single frequency and that of interference between operators on adjacent frequencies. The latter problem, like the former, can be solved by delimiting the rights of operators to transmit signals which interfere, or might potentially interfere, with those of others. Once this is done, it can be left to market transactions to bring an optimum utilization of rights" (1959, p. 27). As the lengthy passage from the Wabash lecture quoted above makes clear, the potential "analytical difference" here was *precisely* the issue that had concerned him at that time.

This is the earliest version of Coase's negotiation result, encompassing both the efficiency and invariant allocation claims, that he would lay out at much greater length in "The Problem of Social Cost" and which Stigler would christen the "Coase theorem" not long thereafter.[21] It is also the extent of Coase's case for negotiated solutions to externalities in the FCC article. As Coase did not label his result a "theorem" and, in fact, resisted Stigler's characterization of it, we shall be content to label it "Coase's result" in the discussion that follows.

C. Qualifications

Having established that private property rights and the exchange process could efficiently resolve harmful spillover effects, Coase immediately proceeded to qualify his position from several directions, both in a lengthy footnote and in the text itself. Let's begin with the footnoted qualifications. First, Coase said, though the legal decision does not affect the ultimate allocation of resources, it *will* affect the distribution of wealth between the involved parties. This, in turn, explains "why questions of equity bulk so largely in such cases." He also pointed out that the law may make the exchange process prohibitively costly or even formally prohibit the transactions his analysis envisioned, as was the case in the U.S. for broadcast frequencies. A third complication arises because "*Such transactions are not costless*." As a result, Coase continued, some value-enhancing transactions will not take place, and there is no guarantee that those which actually do take place will generate the most efficient outcome. And lastly, he noted, "a waste of resources may occur when the criteria used by the courts to delimit rights result in resources being employed solely to establish a claim" (1959, p. 27n.54, emphasis added), a qualification that seems vague at first glance but

[21] It bears emphasizing that, for Coase, there was a *unique* efficient allocation of resources, that which maximized the value of output, and thus efficiency and invariance went hand in hand.

the meaning and origins of which will become clear momentarily.

Coase then proceeded to devote nearly two additional pages to extolling the benefits of property rights and the pricing system for dealing with frequency interference externalities before pausing for a final qualification, one that would seem to significantly limit the domain of his earlier claim: "it was possible to reach this unequivocal result," he said, "because the conflicts of interest were between *individuals*" (1959, p. 29, emphasis added). With large numbers of involved agents, however, the situation changes significantly, with "the argument for the institution of property rights … weakened and that for general regulations becom[ing] stronger." To illustrate this, Coase invoked the "example commonly given by economists" when analyzing harmful effects—smoke pollution:

> Of course, if there were only one source of smoke and only one person were harmed, no new complication would be involved; it would not differ from the vibration case discussed earlier. But if many people are harmed and there are several sources of pollution, it is more difficult to reach a satisfactory solution through the market. *When the transfer of rights has to come about as a result of market transactions carried out between large numbers of people or organizations acting jointly, the process of negotiation may be so difficult and time-consuming as to make such transfers a practical impossibility*. Even the enforcement of rights through the courts may not be easy. It may be costly to discover who it is that is causing the trouble. And, when it is not in the interest of any single person or organization to bring suit, the problems involved in arranging joint actions represent a further obstacle. *As a practical matter, the market may become too costly to operate*. (1959, p. 29, emphasis added)

But as frequency interference issues typically involved small numbers of parties, Coase sensed that the market process could indeed be relied upon to successfully manage spectrum allocation. He thus urged the FCC, both in this article and in more forceful testimony before the Commission in December 1959,[22] to at least explore the possibilities that this process afforded, something which, to that point, it had failed to do.

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It is important to bear in mind that this description of Coase's analysis in "The Federal Communications Commission" is drawn from the *published* version of the paper. Coase's argument there, though, is clearly different from the missing original draft, and in important ways. To see how Coase's argument evolved, we must now turn our attention to what transpired in the months following Coase's decision to send the paper off to Director and the *Journal of Law and Economics*.

II. Objections and Refinements

What happened once Coase's paper landed on Director's desk is not entirely clear, but we can piece together bits of the story from the archives and other records.[23] Director showed the paper to and discussed it with other members of the Chicago faculty, and at least some of them registered objections to Coase's claim that an efficient and invariant allocation of resources would be achieved regardless of to which party rights are assigned. Reuben Kessel apparently was particularly unhappy with Coase's argument and "pressed hard" to have that section removed from the paper (Kitch 1983, p. 220).[24] Though we cannot know with

[22] "Testimony of Ronald H. Coase, Professor of Economics, University of Virginia, to the Federal Communications Commission, Friday, December 11th, 1959," RHC 39-11.

[23] See, e.g., Coase (1993, p. 249-50); (2004, 200); (2014, p. 75), Kitch (1983), and Stigler (1988).

[24] Perhaps recalling Kessel's reaction, his former UCLA colleague and regular co-author, Armen Alchian, later described Kessel as a man for whom "appreciation of the power of economic analysis induced an intense impatience with economists who propounded unverifiable theorems or assumed the validity of unvalidated propositions" (1987, 19). Ironically, Kessel was to affirmatively invoke Coase's result roughly fifteen years later in an article on liability in the blood market (Kessel 1974). Coase, for his part, became

certainty the precise nature of Kessel's objections, it is reasonable to assume that they formed the basis for Director's response to Coase on August 2, 1959.[25] Interestingly, however, the letter itself gives no hint that Director had shown the paper around or that there was any larger conversation about it taking place at Chicago.

A. The Objections

Director opened his letter by telling Coase that he had "gone over [the] article very carefully," finding it "so nicely written that suggesting minor changes would be superfluous." He indicated that he would send it to the printers on the 10th of the month but assured Coase that there would still be an opportunity to make changes at the galleys stage. Director then shifted gears, however, informing Coase that he had "struggled with [the] point about the indifference of the court so far as efficiency is concerned." He had finally come round to the conclusion that Coase's argument was correct, he said, but only under the assumption that "the amount of harm is a fixed quantity." In that case, Director noted, "either rule of liability eliminates the harm in the most efficient manner—with the least amount of resources."[26] But if the amount of harm is not fixed, he argued, Coase's claim did not hold up:

> Suppose a number of enterprises all producing the same product. Some are more efficient than others in the sense that they have found ways of eliminating the harm by a better utilisation of the resources they employ. If the enterprises are held liable then there is an incentive for the inefficient enterprises to become more efficient. If this is possible then the amount of harm will be reduced.

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quite close with Kessel in later years and eventually co-edited, with Merton Miller, a collection of Kessel's papers (Kessel, Coase, and Miller 1980).

[25] Director to Coase, August 2, 1959, RHC 21-6.

[26] To be clear, what Director meant here is not literally that the amount of harm is constant, but that it is constant for any non-zero level of harm. That is, the choice is between no harm at all and some fixed positive amount of harm.

> But the alternative rule which does not hold the enterprises liable, will leave all enterprises without any incentive to become more efficient. Hence more resources will have to be used to eliminate the harm, because the amount of harm to be eliminated is larger.

Director seemed to sense that Coase would have a response to this objection, as he closed his brief letter by stating, "You no doubt can provide a good answer to my puzzle."

It turns out, though, that Chicago was not the only source of objection to Coase's reasoning. Indeed, there were at least two others. Coase had also sent a copy of the paper to his good friend, Duncan Black, around the same time that he submitted the paper to Director and the *Journal of Law and Economics*. Educated in mathematics and economics at Glasgow, Black had been Coase's colleague at the Dundee School of Economics and Commerce, and his work on voting and group decision making made him one of the founders of social choice theory and the economic approach to the political process.[27] He apparently received the paper only a day before heading off on holiday, but scribbled a "hasty" note of response to Coase on July 30, 1959—just days before Director sent off his own letter. Black was very keen on the paper, informing Coase that he had "read it at one gulp and enjoyed it and have read it again." In fact, he could find only one thing in it to disagree with, that being Coase's insistence that the final allocation of frequencies would be independent of the initial assignment of rights in them, about which Coase himself had apparently expressed "some doubts" in his letter to Black, just as he had in his letter to Friedman.[28]

Black was of the mind that the initial specification of rights would be "highly important."

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[27] Black's work on group decision making, as best represented in his book, *The Theory of Committees and Elections* (1958), benefitted greatly from Coase's 1937 analysis of firm behavior.

[28] Duncan Black to Ronald Coase, 30 July 1959, RHC 39-10. Black identifies "pp. 32-6" as the pages of the manuscript in question. Director's second letter to Coase, discussed below, points us to this bit of the paper as well.

However, his objections took a different line than those emanating from Chicago, emphasizing the effects of what we would now call the 'transaction costs' associated with the processes contemplated by Coase. Coase, as we saw in section I, had claimed that the allocation of frequencies would be efficient and invariant so long as transaction costs were not too high to make negotiation worthwhile. Black correctly recognized that this claim could not be sustained. First, he said, though "different starting points would, as a result of a series of sales and resales, give rise to the same end distribution of ownership … some routes to this position would give rise to more (unproductive) legal costs than others."[29] This meant that some outcomes would have a higher value of output associated with them than others, in contrast with Coase's claim.

But Black was also concerned about the consistency of Coase's result with economic theories of bargaining, both old and new. One aspect of this was the implications of Edgeworth's (1881) exchange analysis for any claims of invariance:

> the important thing, as I see it, is that the end result would differ for different initial delimitations of the wave lengths put up to auction. And they would lead to different end results even though Edgeworth's contract and recontract, without any money changing hands until the final solution was reached, were in operation.[30]

Yes, the end results may be efficient, in the sense of exhausting gains from exchange, but there is no guarantee, Black was arguing, that *identical* allocations of resources follow from the different starting points (here, initial specifications of rights). Nor, he continued, was drawing any sort of definitive conclusion about efficiency itself a simple matter here, as the tools of game theory, then making their way into economics, had demonstrated:

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[29] Duncan Black to Ronald Coase, 30 July 1959, RHC 39-10.
[30] Duncan Black to Ronald Coase, 30 July 1959, RHC 39-10.

> The theoretical problems would lie within the Theory of Groups, if there were one—Neumann & Morgenstern have shown that it is hopeless to attempt anything here in an exact way. In committees if you permit alliances in the informational problems, things become impossibly complicated.

For Black, then, these combined concerns cast serious doubt on Coase's claims both for efficiency and for an invariant allocation of frequencies.[31]

Still another objection to Coase's claim came from David Cavers, a professor at Harvard Law School and, like Coase, a fellow at the Center for Advanced Study in the Behavioral Sciences during this period. Coase reports that, when discussing his analysis with Cavers, Cavers had

> pointed out, correctly, that if someone had a right to commit a nuisance, he might threaten to create that nuisance simply to extract money from those who would be harmed by it, in return of course for agreeing not to do so. In effect, Cavers felt that what I was advocating would lead to blackmail or something analogous to it. (Coase 1988a, p. 657)

This, too, posed a challenge to Coase's efficiency and invariance claims, particularly if carrying out these threats involved the expenditure of resources by the threatening party.

This feedback suggests that Coase did indeed have plenty of reasons to be uneasy about his claims.[32] But a comparison of the concerns raised by Black and Cavers in particular with

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[31] The mention of "Neumann & Morgenstern" is, of course, an allusion to their pathbreaking book, *Theory of Games and Economic Behavior* (1944). Given Coase's lack of training in mathematics, it is questionable whether he was familiar with the book's contents.

[32] That said, Coase later reported that when he had laid out his argument his argument for his old friend Abba Lerner, who was visiting the Center at that time, Lerner "got the point in a minute and agreed with it," a fact that Coase attributed to their common LSE heritage and, specifically, the LSE "opportunity cost" tradition (Coase 2014, p. 75). It is not clear, however, at what point during this process Coase had his conversation with Lerner. A 1973 letter from Lerner to Coase reinforces Lerner's eager agreement with Coase's result. Lerner to Coase, 30 November 1972, RHC 26-8.

the published version of the paper also suggests that Coase took these comments to heart.

B. The Refinements

Coase sent a revised version of the paper to Director not long after receiving Director's initial letter, and this revision appears to have taken into account the criticisms set down by Black and Cavers—though not (at least overtly) Director's.[33] Teasing out the nature of these revisions reveals how Coase had originally formulated his argument and, as we work through our analysis, how and why his argument evolved as it did.

The most identifiable of these revisions is the one made in response to Cavers' 'blackmail' comment, and it is the last of Coase's footnoted qualifications to his result: allowing that "a waste of resources may occur when the criteria used by the courts to delimit rights result in resources being employed solely to establish a claim" (Coase 1959, p. 27). This bit of footnote text functioned as an acknowledgment on Coase's part that his result would not hold if blackmail activity had actual economic costs associated with it, and we know that this qualification was added to the paper at this stage because Director tells us so in his second letter (see below).[34]

But a comparison of Black's letter with the published version of Coase's article suggests that this bit of blackmail-related footnote text is not the only revision that Coase made to the paper. His second and third qualifications in that same footnote read as follows:

> Second, [the law] may impose costly and time-consuming procedures. Third, the legal delimitation of rights provides the starting point for the rearrangement of rights

[33] We know that Coase sent Director a revised version of the paper because a second letter from Director to Coase, about which more below, explicitly states this. See Director to Coase, nd ("Sunday"), RHC 21-6.

[34] Of course, there also would have been no reason for Cavers to raise the blackmail objection had this qualification appeared in Coase's original draft. As it happened, the blackmail issue arose repeatedly in later debates over the Coase theorem's validity. See Medema (2020a, p. 1061-62) and the references cited therein.

> through market transactions. Such transactions are not costless, with a result that the initial delimitation of rights may be maintained even though some other would be more efficient. Or, even if the original position is modified, the most efficient delimitation of rights may not be attained. (Coase 1959, p. 27n.54)

These, of course, are two of the very concerns raised by Black in his letter to Coase, and there is every reason to believe that they were inserted at this stage in response to Black's comments. Why? Because there would have been no reason for Black, who had read through Coase's paper twice, to raise those issues had these qualifications appeared in that version of the paper.

Things get still more interesting when we juxtapose Black's third concern, going to the problems of group decision making, with Coase's more expansive qualification about externality situations where "large numbers of people are involved" (Coase 1959, p. 29). Black, as we have seen, informed Coase that it is "hopeless to attempt anything" in these group contexts, as "things become impossibly complicated" for informational and other reasons. Now recall what Coase said about harmful effects that involve large numbers of people:

> When the transfer of rights has to come about as a result of market transactions carried out between large numbers of people or organizations acting jointly, the process of negotiation may be so difficult and time-consuming as to make such transfers a practical impossibility. Even the enforcement of rights through the courts may not be easy. It may be costly to discover who it is that is causing the trouble. And, when it is not in the interest of any single person or organization to bring suit, the problems involved in arranging joint actions represent a further obstacle. (p. 29)

Once again, it is difficult to envision that Black would have alerted Coase to the problematics of large-numbers bargaining if this passage had been in the original version of the paper.

The implication, then, is that the transaction-cost-related qualifications that Coase put on his result in the FCC article were *not* limitations that Coase himself had recognized, but instead were derived from the comments received from Black and Cavers and inserted into a revised version of the paper that he sent to Director.

C. Round Two With Chicago

The modifications that Coase made to his argument clearly did not satisfy Director, however, as he sent off a second letter to Coase which he opened by stating, "I better try again."[35] Director first laid out what he (correctly) took to be the thrust of Coase's argument and then repeated his objection but at greater length, this time specifically taking up Coase's illustration from *Sturges v. Bridgman*:

> My point is simply that your conclusion is valid only in the special case where the amount of vibrations-harm-produced in the economy, is a fixed quantity. In this event your demonstration that the minimum amount of real resources is used in dealing with vibrations disposes of the problem. The number of confectioners (or the size of confectionaries) and the number of doctors cannot change. Only equity considerations will help us to choose the legal rule of liability.
>
> But your conclusion is not valid if the amount of vibrations is variable. Suppose for illustration that it varies with the amount of candy produced by the confectioner. Then if the confectioner is held liable he has to incur the cost of producing both products—the candy and the vibrations. If he is not held liable he only has to incur the cost of producing one product—the candy. In the former instance he will reduce

[35] Director to Coase, nd ("Sunday"), RHC 21-6. Unfortunately, the archives contain no copy of the cover letter that presumably accompanied Coase's revised manuscript.

> his output and thus reduce the amount of vibrations, and thus reduce the amount of resources used to deal with vibrations. In the latter instance he will have no inducement to reduce output. There will then be too many confectioners and too few doctors.
>
> Equity considerations will not help us to choose the right rule. To do so we again need the conventional analysis.

The argument that Director was making here is straightforward and much clearer than in his first letter: If the confectioner is made liable for its actions, all is well. But if the confectioner is not liable, it will not bear the full cost of its actions and so will undertake an inefficiently high level of the harm-causing activity. Director then pressed his argument still further:

> To put the point in an extreme form, if the confectioner is not held liable for vibrations, I can see a whole industry developing to "produce" vibrations. And the customers will have to buy this product, or at least pay for it. Of course they will buy it at its competitive cost of production. The most efficient method will be used to deal with the vibrations. And the producers will have to dress up their activity so that they also produce some minor joint item to escape the charge of being plain spiteful.

If the argument here sounds familiar, it is because Director was making what amounts to a variant of the point made by Cavers. If those who cause harm are not liable for the damage they inflict, new firms will enter the market, producing vibrations solely to secure a bribe to stop doing so—in essence, engaging in blackmail. As a result, there will be too many producers of vibrations relative to what is efficient. And given that the augmentation of this activity would not occur under injurer liability, the invariant allocation of resources claimed by Coase would also go by the boards.

It is at the point in the letter that Director tips us, via a telling bit of marginalia, to the fact that Coase had revised his paper. Having set off the 'blackmail' paragraph with a hand-drawn bracket, Director scribbled alongside it, "I note that you refer to this w/ your *new* page 32."[36] Though seemingly insignificant, this note is important for two reasons. First, it signals that Coase had revised the paper to take account of Cavers' comment. Secondly, Coase's admission of the inefficiencies associated with blackmail activities also effectively conceded Director's point that the entry of new harm producers would be sufficient to invalidate his result. That Director persisted with this challenge despite having read Coase's attempt to assume it away in his footnoted qualification tells us that he and his Chicago colleagues were still not satisfied.[37]

Recognizing that Coase might still be unwilling to accept his argument, Director closed his letter with a final illustration, one drawn from the U.S. experience and which he perhaps thought would resonate with Coase's legal sensibilities:

> In the early days of the Middle West our courts abandoned the English common law rule *when farmers brought actions against cattle raisers whose cattle strayed and destroyed crops*. The courts ruled that the cattle raisers were not liable. I think they did so because they believed that the cost of fencing crops was less than the cost of fencing the cattle ranches. But surely the result was to make cattle raising too large and crop raising too small.[38]

The alert reader will recognize that Director's economic argument here, which simply

[36] Director to Coase, nd ("Sunday"), RHC 21-6, emphasis added. Black's letter to Coase placed Coase's discussion of negotiated solutions on pages 32-36 of the original draft. Black to Coase, 30 July 1959, RHC 39-10.

[37] Though there is no evidence in the record for why Director *et al*. refused to accept Coase's qualification as dispositive of the issue, it is not hard to infer their rationale: It meant assuming away the possibility of entry in response to positive profit opportunities (the bribes), something that no good Chicago economist could abide.

[38] Director to Coase, nd ("Sunday"), RHC 21-6, emphasis added.

reiterates his previous point, is less important for our story than the medium. For here lie the roots of the pastoral example that was to capture the imagination of countless economists and legal scholars in the decades to come.

The paper trail ends at this point. Though it seems clear that he made some concessions to Black and Cavers, Coase tells us that he refused to back down in the face of the criticisms set down by Director and Chicago, who continued to object to his result: "I said that it might be an error, but if it's an error it's an interesting error and I would just as soon it stayed in" (Kitch 1983, p. 220).[39] Coase ultimately prevailed, and the paper went forward to publication with its 'questionable' argument intact—or at least mostly so. It was published as the lead article in the 1959 issue of the *Journal of Law and Economics*, which appeared sometime in late 1959 or early 1960.[40]

III. Converting the Chicago Pigovians

Not long after the paper's publication, Stigler invited Coase, who in the fall of 1959 had taken up a position on the economics faculty at the University of Virginia, to come to Chicago to present a paper at the Industrial Organization workshop. Coase accepted, but only on the condition that he also be allowed to present a defense of his argument from the FCC article. This was agreed upon, and Coase made the trip out to Chicago from the University of Virginia.[41]

Coase's defense of his argument took place not in a typical departmental seminar, but at

[39] See also Coase (1993, p. 249).

[40] The dates are fuzzy here because the archival record is incomplete/inaccessible and the *Journal* was known for not publishing on schedule in the early years. We do know that Coase had mailed offprints of the paper to others by mid-February 1960. See J.K. Horsefield to Coase, 18 February 1960, RHC 39-10.

[41] Stigler (1988, 75) suggests that Coase was invited to Chicago to give a talk about the negotiation result. This is incorrect. See, e.g., Kitch (1983, p. 220-21) and Coase (2014, p. 76).

Director's house on Blackstone Avenue, just a few minutes' walk from the University, on the evening prior to the Industrial Organization workshop. Approximately twenty Chicago faculty members were in attendance, including Director, Kessel, Stigler, Friedman, John McGee, Lloyd Mints, and H. Gregg Lewis—as well as Arnold Harberger and his former student, Martin Bailey, the latter of whom had suggested the possibility of negotiated solutions to externalities several years earlier (Bailey 1954, p. 50-52). Stigler recounted the evening's events on multiple occasions, including at a 1981 celebration of the history of law and economics at Chicago:

> At the beginning of the evening we took a vote and there were twenty votes for Pigou and one for Ronald, and if Ronald had not been allowed to vote it would have been even more one-sided.
>
> The discussion began. As usual, Milton did much of the talking. I think it is also fair to say that, as usual, Milton did much of the correct and deep and analytical thinking. I cannot reconstruct it. I have never really forgiven Aaron for not having brought a tape recorder that night. He should have known this was going to be a great event because he is a wise man. My recollection is that Ronald didn't persuade us. But he refused to yield to all our erroneous arguments. Milton would hit him from one side, then from another, then from another. Then to our horror, Milton missed him and hit us. At the end of that evening the vote had changed. There were twenty-one votes for Ronald and no votes for Pigou. (Kitch 1983, p. 221).[42]

Friedman later suggested in a conversation with this author that there was more than a bit of hyperbole in Stigler's telling of this story, but that it is correct in the essentials. Coase, for his part, called it "a lively and very Stiglerian description" (1993, p. 250) and described the

[42] See also Stigler (1988, ch. 5).

evening's discussion as "hot and heavy," going on for some two hours (2014, p. 76).

Coase later insisted that no votes were actually taken but allowed that, if there had been, the tally at the start of the evening would have been as lopsided as Stigler suggested (2014, p. 76).[43] Yet, he was able to convert the assembled Chicagoans to his position over the course of the evening's debate, which revolved around Director's illustration of farmers, cattle ranchers and crop destruction and even, according to Deirdre McCloskey, included the shuffling around of chairs to represent property rights.[44] Ironically, it was Harberger who, as Coase tells the story, was the first to suggest that Coase had effectively refuted Friedman's arguments.[45] "What I do seem to remember as a turning point," Coase recalled, "was when Harberger said, 'if you cannot show that the marginal cost schedule changes, he can run right through'" (2014, p. 76). Of course, the marginal cost schedule for the agents does not vary with the assignment of property rights, which is precisely the point.

That a group of economics faculty members so favorably disposed toward the market and supportive of the efficiency of the market process had such difficult grasping Coase's argument speaks to the challenge that it posed to received views. John McGee has said that "as the debaters left Aaron Director's home in a state of shock they mumbled to one another that they had witnessed intellectual history" (Cheung 1987, 456). Coase, on the other hand, professed himself mystified that "a statement the equivalent of $2 + 2 = 4$ should be treated as on a par with $E = MC^2$" (2014, p. 76). But indeed it was, and it apparently did not take long

[43] Coase called Stigler's mention of a vote, "pure fiction" (2014, p. 76). Beyond that, however, Coase's brief retrospective comments on the evening's events are consistent with Stigler's. See also, "Looking for Results: An Interview with Ronald Coase," *Reason* (January 1997): http://reason.com/archives/1997/01/01/looking-for-results. Accessed July 12, 2024.

[44] See, e.g., Coase, "Social Cost," pp. 5-6, RHC 43-15 and McCloskey (1998, p. 367). McCloskey's reference to the shuffling of chairs comes from stories told to her by Stigler.

[45] See "Looking for Results: An Interview with Ronald Coase," *Reason* (January 1997): http://reason.com/archives/1997/01/01/looking-for-results.

for the word of the evening's events to get around the department. As Coase later recounted, "Harry Johnson said [the] next day when I saw him at the Quadrangle Club at lunch-time that he understood that I had shown his colleagues that the market could operate in a sphere where they thought it could not, something which Harry Johnson added was very hard to do at Chicago."[46]

Though Johnson was undoubtedly correct, it remains to ascertain how Coase did so, and exactly what it was that he convinced the assembled Chicagoans to believe.

IV. Writing "The Problem of Social Cost"

Director, always in search of material for the *Journal of Law and Economics* in those days, urged Coase to write up a fuller exposition of his argument, based on the evening's discussion, for the *Journal*. Coase did so while in London during the summer of 1960, and the paper that emerged was "The Problem of Social Cost." Its opening footnote makes clear the paper's ties to his previous research but only vaguely hints at the circumstances from which the paper arose:

> This article, although concerned with a technical problem of economic analysis, arose out of the study of the Political Economy of Broadcasting which I am now conducting. The argument of the present article was implicit in a previous article dealing with the problem of allocating radio and television frequencies (The Federal Communications Commission, 2 J. Law & Econ. [1959]) but comments which I have received seemed to suggest that it would be desirable to deal with the question in a more explicit way and without reference to the original problem for the solution of which the analysis was developed. (Coase 1960, p. 1n.1)

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[46] Coase to George Priest, 26 January 1983, RHC 31-12.

The paper was written in three parts, submitted sequentially, over the course of the summer (Kitch 1983, p. 221), and there is no indication that it went through any sort of refereeing process. It was published as the lead article in the 1960 issue of the *Journal of Law and Economics*, which appeared in the late winter or early spring of 1961.[47]

At forty-four pages, "The Problem of Social Cost" represented a dramatic extension of the relatively brief discussion of harmful effects found in the FCC paper.[48] Its messages were three: that harmful effects are reciprocal in nature, that in a world of costless transacting an efficient and invariant allocation of resources will obtain so long as rights are assigned over the relevant resources, and that the imperfections associated with markets and government necessitate a comparative institutional approach to these problems. The last was by far the most extensively treated in the article, but it is only the second of these that concerns us for the moment. And though Coase's basic argument is well known, we must highlight a few aspects of it here because they turn out to provide important clues about what did and did not happen during the debate at Director's home.

A. Rancher Liability

Coase began his discussion of how the pricing system might handle problems of harmful effects by examining a situation in which "the damaging business has to pay for all damage caused *and* the pricing system works smoothly," adding that, "strictly this means that the operation of a pricing system is without cost." For Coase, this was the obvious case, one "in

[47] The *Journal* was then publishing only a single issue per year and still running well behind schedule.

[48] The use of the expression "harmful effects" here is intentional. The term "externality" had been introduced into economics a few years earlier by Francis Bator (1957, p. 42, 43) and Paul Samuelson (1957, p. 210) as economists began to devote some attention to their study (Medema 2020b). Coase himself did not employ the term in "The Problem of Social Cost," however, nor, as a descriptor of the problem, anywhere else within his writings. Though he proclaimed his aversion to the language of "externalities" on several occasions later in life, the most fulsome statement is found in a letter written by Coase to James Buchanan in early 1962, some nine months after the publication of "The Problem of Social Cost." See Coase, "Buchanan and Stubblebine on Externality," nd (early 1962), RHC 19-7.

which most economists would presumably agree," as his friends at Chicago had, "that the problem would be solved in a completely satisfactory manner" (Coase 1960, p. 3). As will become apparent, however, it was *not* the same situation that he had analyzed in the FCC paper.

To paint a picture of the harmful effect, Coase took up the example of straying cattle which destroy crops on the land of a neighboring farmer—the pastoral example that has come to be so closely associated with the Coase theorem and, as Coase put it a couple of years later, "was vexing the minds of some of our colleagues at the University of Chicago."[49] Utilizing a numerical example showing how crop damage varies with the size of the rancher's herd, Coase demonstrated that, under a regime of rancher liability, all relevant costs are internalized to the rancher and to the farmer, leading to efficient outputs of both beef and crops.

But then Coase proceeded to introduce a potential objection. "It might be thought," he said, "that the fact that the cattle-raiser would pay for all crops damaged would lead the farmer to increase his planting if a cattle-raiser came to occupy the neighboring property." After all, the farmer would be fully compensated at the market price for any resulting damage. But such an argument—"a nice little problem in bluff or blackmail," as Coase called it a couple of years later—is erroneous.[50] If it had not been profitable to grow the crop under perfectly competitive conditions prior to the roaming cattle problem, it would not be any more profitable now given that the compensation simply replaced the revenues that would have been secured through the market. Coase did grant that, if the problem of cattle trampling

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[49] Coase, "Lecture Notes from University of Chicago Seminar" (undated, likely 1963), RHC 123-1. Information contained in these lecture notes dates them to 1963, and the lectures likely were given at Virginia rather than Chicago—though the handwritten edits suggest that they may well have been re-used for later lectures at Chicago. See also Coase's 1969 lectures on "Social Cost," RHC 43-15.

[50] "Lecture Notes from University of Chicago Seminar" (undated, likely 1963), RHC 123-1.

crops was sufficiently widespread, the effect of a cattle-raising industry coming into existence could increase crop prices and so induce an extension of cultivation, but he made clear that his interest was in confining his attention to "the individual farmer" (1960, p. 4).[51]

In the end, Coase concluded that a law specifying rancher liability for harm will inevitably force both the rancher and the farmer to bear the full costs of their actions. If markets are perfectly competitive and there are no legal restrictions on the use and transferability of land, the allocation of resources to ranching and farming (and any other prospective uses of that land) will be that which maximizes the value of output (pp. 5-6).[52]

B. Clinching the Argument: Farmer Liability

Having made the case, at least to his satisfaction, that efficiency is assured when the damaging business is liable for harm caused, Coase next turned his attention to the polar opposite case—one in which, "although the pricing system is assumed to work smoothly (that is, costlessly), the damaging business is not liable for any of the damage which it causes." Here, Coase said, "I propose to show that the allocation of resources will be the same in this case as it was when the damaging business was liable for damage caused" (1960, p. 6).

Coase began his analysis here by assuming that the rancher has three steers. Referencing the data he had used to assess rancher liability, he showed that the rancher's cost structure, and thus its decision process, is not changed one iota when the farmer is the one legally liable for the harm. This, as we have seen in section III, is where Coase clinched at least a part of his argument against his Chicago critics, showing that, as Harberger indicated, the rancher's

[51] If anything, Coase noted, the farmer will end up reducing the extent of his planting, as would occur if the most cost-effective resolution of the problem involved the rancher paying the farmer to leave a portion of his land uncultivated or turn it to some other use (1960, pp. 4-5).

[52] This assumed absence of any legal restrictions on the use and transferability of land avoids the problems resulting from the prohibition of frequency reallocation through bargaining that Coase had pointed to in his FCC discussion.

marginal cost was not affected by the direction of liability. The implication, then, is that "*The size of the herd will be the same whether the cattle-raiser is liable for damage caused to the crop or not*" (p. 7, emphasis added).

Once again, however, Coase anticipated an objection. "It may be argued," he said, "that the assumed starting point—a herd of 3 steers—was arbitrary" (p. 7). But as he went on to demonstrate, a change in the starting point for the negotiation does not affect value of the crop that will be destroyed by adding the second, third, fourth … steer to the herd and so does not affect the amount that the farmer is willing to pay, or the minimum payment that the rancher is willing to accept, to achieve a given reduction in herd size.

Coase then moved on to one final objection: "It might be thought that it would pay the cattle-raiser to increase his herd above the size he would wish to maintain once a bargaining had been made, in order to induce the farmers to make a larger total payment" (pp. 7-8). This, of course, parallels the blackmail-related concern, treated earlier, that the farmer may expand his cultivation to induce a larger payment from the rancher. But as in the former case, Coase noted, "such manoeuvres are preliminaries to an agreement and do not affect the long-run equilibrium position, which is the same whether or not the cattle-raiser is held responsible for the crop damage brought about by his cattle" (p. 8).

Having set out his argument and his responses to the several potential objections, Coase had only to sum up the conclusion that emerged from the analysis:

> It is necessary to know whether the damaging business is liable or not for damage caused since without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them. But the ultimate result (which maximises the value of production) is independent of the legal position if the pricing system is assumed to work without cost. (p. 8)

This statement is the closest Coase comes in "The Problem of Social Cost" to setting down the result that came to be known as the Coase theorem. However, this is *not* the result that he had laid out in in the FCC paper. Nor, as it happens, is it at all clear that this is what Coase had convinced the Chicago economists to believe several months earlier.

V. Revisiting Blackstone Avenue

Knowing the particulars of both Coase's 1959 and 1960 arguments, it is useful to revisit the fateful evening on Blackstone Avenue, without which there almost certainly would have been no "Coase theorem."[53] What actually happened that evening has been long forgotten, and Stigler's gushing reports are woefully short on details. We have been told that the entire group of twenty was opposed to Coase at the start of the evening and in his corner at the end of it, and that Friedman led the charge against Coase. This last, at least, is very believable, given Friedman's well-known skills as a debater and his relish for good economic argument. The particulars of the debate, though, have remained shrouded in mystery. The legend that has grown up around the evening is that twenty Chicago economists walked into the room believing negotiated solutions to externalities were not possible and left a couple of hours later with their understanding almost magically transformed. But a careful examination of Director's correspondence with Coase and the first portion of "The Problem of Social Cost" suggests that this legend, like so many others, is a bit overblown.

A. The Terms of Debate

Our discussion to this point has established a few relevant facts. First, Director's second letter

[53] Yes, Coase's argument about exchanges of rights leading to efficient outcomes, with final allocations of resources that are independent of the rule of liability, is present in the FCC article, but it is safe to say that there would be no Coase theorem without "The Problem of Social Cost" and that article would never have been written absent the fateful evening at the house on Blackstone Avenue. If this alone is not sufficient to convince the reader, the discussion that follows should clinch the argument.

to Coase was both the pleading of the Chicago case against Coase and the source of the farmer–rancher illustration. Second, this illustration, complete with steer trampling crops, framed the evening's debate. We also know, because Coase has told us as much, that the first *eight* pages of his 1960 article (the farmer–rancher discussion), and *only* those pages, were stimulated by his debate with Friedman and company (Coase 2014, p. 76-77). Taken together, these bits of information suggest that Director's letter and pages 2-8 of "The Problem of Social Cost" provide a roadmap to the most important the details of the evening's discussion.

Let's begin with two unambiguous insights that we can glean from from Director's letters to Coase, the relevant portions of which were reproduced in section II, above. The first is that, by the time Director drafted his initial letter, he and his Chicago colleagues had come to accept Coase's conclusion that the harmful effect would be dealt with efficiently under "either rule of liability" when the amount of harm-generating activity is *fixed*—that is, when harm is an all-or-nothing proposition.[54] This basic point of agreement is reflected in the first row of table 1, below. Second, the Chicagoans believed that Coase's claim of an efficient and invariant outcome was flat-out wrong if the amount of harm is variable. These two points are emphasized in both of Director's letters. Putting these pieces together, we can draw the following conclusion: By the time the Chicago economists arrived at Director's home, *Coase did not need to convince them that parties could negotiate efficient solutions to externality*

[54] Director to Coase, August 2, 1959, RHC 21-6. Director does not provide the logic behind this conclusion, but it is relatively simple to reconstruct. Given that the number of confectioners and physicians is constant, the elimination of harm to which Director refers requires either that one party relocate or that, say, a more well-insulated wall is built to eliminate the effect of the vibrations. If the confectioner is liable, then, he faces three options: build a new wall, relocate his business, or bribe the physician to relocate. Needless to say, he will selected the least-cost option. If the confectioner is *not* liable, the physician faces the very same set of decisions: relocate, bribe the confectioner to relocate, or build a new wall. And, of course, he will select the course of action that is least costly. But given that both the confectioner and the physician face the same set of options, the choice that is made—the one that minimizes costs—will be the same under either rule of liability.

problems or even that attainment of the efficient outcome was independent of the rule of liability. He only had to convince them that this was not a special case, that his claim was also correct when the amount of harm-causing activity is *variable*.[55] This may account for the use of the farmer–rancher illustration both in the debate and in Coase's 1960 article: The harm caused by the rancher's activity obviously varies with herd size, and herd size is easily adjustable, making it a simple matter to zero in on the class of situations that so concerned the Chicagoans.[56]

Table 1

Coase vs. Chicago on Efficiency and Invariance

	Rancher Liable	Rancher Not Liable	Invariant Allocation
Amount of Harm Fixed	Coase: Efficient Outcome Chicago: Efficient Outcome	Coase: Efficient Outcome Chicago: Efficient Outcome	Coase: Yes Chicago: Yes
Amount of Harm Variable	Coase: Efficient Outcome Chicago: Efficient Outcome	Coase: Efficient Outcome Chicago: *Inefficient* Outcome	Coase: Yes Chicago: *No*

It turns out, however, that we can narrow things just a bit further. Director's second letter also admits that an efficient outcome will result in the *variable* harm case *when the injurer is liable for damage* because the costs of the harm are fully internalized to him in that situation. This suggests that *rancher* liability was not a major topic of conversation at Director's home. It may also explain why Coase felt comfortable opening his discussion of injurer liability in "The Problem of Social Cost" by stating that this is a situation "in which most economists would presumably agree that the problem would be solved in a completely satisfactory

[55] See Director's comment about "the indifference of the court rule as far as efficiency is concerned." Director to Coase, August 2, 1959, RHC 21-6.

[56] This also leads one to wonder whether the chairs that McCloskey has described being shuffled around that evening may have represented not property rights per se, but steer.

manner …" (1960, p. 3). What Director's second letter effectively tells us then, is that the major bone of contention between Coase and the Chicagoans was the situation where *the harm is variable and the harm-causing party is* not *liable for harm done,* as illustrated in table 1. It is thus reasonable to assume that this situation was the centerpiece of the evening's discussion. For Coase to clinch his argument, he needed only show that, under these conditions, the rancher faces the same incentives when not liable for damage as he does when he *is* liable. And this Coase did, both that evening and, as we have seen, in "The Problem of Social Cost."

B. Debating Points

There remain a couple of further clues in these documents that allow us to tease out a bit more information about the evening's discussion. Coase's defense of his result in the "The Problem of Social Cost" takes up three significant potential objections to it. We need do no more here than to quote the first sentence from each of them:

> "*It might be thought* that the fact that the cattle-raiser would pay for all crops damaged would lead the farmer to increase his planting if a cattle-raiser came to occupy the neighbouring property." (1960, p. 3, emphasis added)
>
> "*It may be argued* that the assumed starting point—a herd of 3 steers—was arbitrary." (p. 7, emphasis added)
>
> "*It might be thought* that it would pay the cattle-raiser to increase his herd size above the size that he would wish to maintain once a bargain had been made, in order to induce the farmer to make a larger total payment." (pp. 7-8)

There is good reason to suspect that these were not, in fact, 'potential' objections, contrived by Coase for his 1960 article, but instead were at the heart of the evening's debate.

The third of these, as should be clear, is the blackmail argument raised both by Cavers and by the Chicagoans in Director's second letter, but here applied to the farmer-rancher situation. This is where the pieces begin to fall into place. Director knew of Coase's insertion of the blackmail-related qualification in the FCC paper at the time he wrote his second letter. The marginalia in this letter, discussed above, tell us as much.[57] The fact that Director registered the blackmail objection *despite* reading Coase's footnoted qualification tells us that this qualification was not sufficient to satisfy Chicago; he had to go further, and there is every reason to believe that this territory was covered, and to the Chicagoans' satisfaction, during evening's debate.

When we come to "The Problem of Social Cost," we find Coase taking on this objection directly rather than through an oblique footnote. What matters for present purposes, however, is not the argument *per se* but the wording he used in introducing it: "It might be thought …" Of course, it *had been* thought—it was right there in Director's letter as a major point of concern for the Chicagoans. And given that this part of "The Problem of Social Cost," by Coase's admission, revisits the debate on Blackstone Avenue, it seems clear that this 'hypothetical' objection was anything but hypothetical—that it and Coase's response to it summarized one facet of the evening's debate.[58] It is difficult not to speculate, then, that when Coase used expressions such as "It might be thought …" and "It may be argued …" in his article, he was telling us precisely what objections the Chicagoans had thrown his way over the course of the evening and how he had responded to them. It may even be that Coase's references to the use of "dogs, herdsmen, aeroplanes, mobile radio and other means"

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[57] Director to Coase, nd ("Sunday"), RHC 21-6. Again, this is the footnoted qualification about the use of resources "solely to establish a claim," discussed in sections I and II, above. There is nothing else in the FCC paper that would have triggered this response from Director.

[58] The case for this interpretation is strengthened by Coase's retrospective comment that he had included this blackmail discussion in the paper because "Some economists" had objected to his treatment of it in the FCC article (1988a, p. 657). It bears noting that the first of the above-enumerated 'potential' objections is the flip-side of the third one, this time with the farmer doing the blackmailing.

to keep cattle in check, and to the cattle wandering along "a well-defined route to a brook or to a shady area" (1960, pp. 3, 4) were drawn from the evening's discussion, as the Chicagoans dreamed up potential scenarios that might reveal in chink in Coase's armor.[59]

What seems crystal clear, however, is that the major bone of contention was the blackmail issue, apart from which the Chicagoans were pretty much on board with Coase's result from the get-go. A conversion, yes, but hardly of the magnitude that the traditional story, as told to us by Stigler, would lead one to believe.

C. What 'Coase Theorem' Did Chicago Believe?

It is fashionable among Coase theorem cognoscenti to inform those tossing around "Coase (1960)" that Coase actually laid out the result that bears his name already in his 1959 FCC article. And, indeed, our discussion to this point suggests that Coase 1960 did little more than flesh out and defend what he had said in 1959. The fact of the matter, however, is that Coase's 1959 result was very different from that laid out in 1960. And, to complicate matters still further, the 1959 version *was wrong*—though not necessarily for the reason Chicago suspected.

Let's compare the result that Coase set down in in 1960 with the one that appeared in the FCC paper, and with which the Chicago economists took issue. Coase's 1960 statement reads as follows:

> It is necessary to know whether the damaging business is liable or not for damage caused since without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them. But the ultimate result

[59] See Coase (1960, p. 3, 5). There are other more minor potential objections dealt with by Coase in the paper—typically taken up as part of the more significant ones touched on here and not tipped off with the same language clues—that we can now conclude must also have been part of the evening's discussion. However, we need not go over that territory here.

> (which maximises the value of production) is independent of the legal position *if the pricing system is assumed to work without cost*. (Coase 1960, p. 8, emphasis added)

In 1959, however, Coase had put things this way:

> Once the legal rights of the parties are established, negotiation is possible to modify the arrangements envisaged in the legal ruling, *if the likelihood of being able to do so makes it worthwhile to incur the costs involved in negotiation* … but the ultimate result (which maximizes the value of production) is independent of the legal decision. (Coase 1959, p. 26-27, emphasis added)

There is a clear, and very important, difference between these two statements: The 1960 statement explicitly assumes that negotiation is costless, whereas the 1959 one allows for positive transaction costs, assuming only that these costs are smaller than the expected gains from exchange. The latter thus encompasses a fairly broad range of circumstances, while the former is much more narrowly drawn, requiring for its validity a world that, as Coase later put it, exists only on the "blackboard" (Coase 1964, p. 195).[60] What accounts for this dramatic change of position?

We saw in section II that Coase qualified this 1959 statement with a rather curious footnote, stating that because "transactions are not costless," negotiation may *not* take us to the efficient and invariant outcome and, indeed, may not take place at all (Coase 1959, p. 27n.54). That is, having just claimed that the parties *will* bargain to an efficient and invariant result so long as the potential gains from exchange exceed the costs of bargaining, Coase

[60] See also, e.g., Coase (1988c, 28-30). It is also worth pointing out that, in his 1960 analysis, Coase made the assumption that beef and cattle are sold in perfectly competitive markets, whereas he made no such assumption in the FCC article, whether when discussing frequency exchange or confectioners and physicians. This too matters here, as the allocation of resources to ranching and cattle raising cannot otherwise be presumed to be efficient. One can only speculate as to when Coase came to this particular realization.

immediately pulled back and essentially said, “Well, maybe not”—setting down qualifications intended to address the problems that Black and Cavers had pointed to regarding his initial claim. But in the attempt to account for these problems, Coase effectively created an argument that was non-sensical: Even when transaction costs are less than the gains from exchange, the ultimate allocation of resources can vary with the initial assignment of rights. And as efficiency, for Coase, was associated with a unique allocation of resources, it was not assured, either. The 1960 statement, on the other hand, needed no such qualification, as Coase assumed from the start that the transacting process was costless. Somewhere along the way from “The Federal Communications Commission” to “The Problem of Social Cost,” Coase had obviously discovered that there was a serious problem with his 1959 claim.

It is tempting to believe that this realization came out of the evening’s discussions at Director’s home, and perhaps it did. Stigler (1988, 75) tells us that, early on in the evening’s discussion, “Ronald asked us to assume, for a time, a world without transaction costs.” On the other hand, Coase said in a 2001 retrospective that, when writing up his 1960 article, “I did not confine myself to what I have [sic] said at the meeting. … I [also] showed that the conclusion that puzzled the Chicago economists was dependent on the assumption of zero transaction costs although they are in fact quite likely to be large” (Coase 2014, p. 76-77). This suggests either that Stigler’s memory was faulty or that Coase argued his case that evening under both positive and zero transaction costs assumptions, realizing only after the fact that the latter assumption was a necessary ingredient for his efficiency and invariance claims to obtain.

All that said, there is no evidence that Coase’s allowance for positive transaction costs in the FCC paper was of any concern to the Chicago economists. Director’s letter makes clear that they were perfectly willing to accept Coase's 1959 conclusion save for instances in which the victim is liable for harm and the amount of harm is variable. The fact that the brand of price theory practiced by Friedman, Stigler, and other Chicago economists at this time minimized (essentially by ignoring) the effects of transaction costs only adds weight to this conclusion—as does Stigler's complete neglect of transaction costs in his 1966 initial statement of a "Coase theorem" (1966, 113). In short, there is every reason to believe that assembled economists left Director's home believing that Coase's result applies to a world in which transaction costs are positive. This is both a very different result than the one that Coase set down in "The Problem of Social Cost" and one that, as Coase came to recognize, is demonstrably false (Medema 2020a, p. 1073-74).

D. Coase and Transaction Costs: Giving Duncan His Due

Our reconstruction of the history suggests that the problems associated with transaction costs—the main thrust of "The Problem of Social Cost"—were not much on Coase's radar when he first formulated his negotiation result for the FCC paper. It was Duncan Black who brought them to Coase's attention—or at least made clear their import and some of their implications—leading Coase to hastily append a set of transaction-cost-related qualifications to his result before the paper went to the printer. But at some point, whether prior to his dance with the Chicago economists or some months afterward when fleshing out his argument for "The Problem of Social Cost," Coase seems to have realized the fundamental incompatibility between his 1959 claim and the footnote that effectively negated it. His response was to assume away the problem entirely and thus rid his result of the indeterminacy-related issues highlighted by Black's comments.

That it was Duncan Black who caused Coase to recognize the transaction-costs-related issues in his FCC argument calls into question the propensity to view Coase's externality analysis as an 'obvious' outgrowth of the transaction-cost analysis found in his 1937 classic, "The Nature of the Firm."[61] Both articles are correctly seen as highlighting the importance of transaction costs, but it seems that Coase did not recognize the role and importance of these costs in negotiations over harmful effects when he originally formulated his 1959 result.[62] The FCC article was not an exercise in transaction-cost economics and really only nodded to their significance when Black questioned Coase's original argument. This suggests that Black may deserve a goodly amount of the credit for the assumption of zero transaction costs that is so essential to Coase's 1960 result and, ultimately, to the Coase theorem, as well as for the lengthy discussion of transaction costs and comparative institutional analysis that occupies the last thirty pages of "The Problem of Social Cost." That Black would be attuned to these issues should not surprise, given his work on strategic interactions within the decision-making processes of committees. That a goodly amount of the impetus for Black's work in this vein came, by Black's own admission, from Coase's 1937 analysis makes all of this just that much more ironic.

VI. Conclusion

There can be no denying that Coase's 'discovery' altered the path of economic thinking, suggesting that, in theory at least, markets have the potential to do things we thought they could not and that institutional particulars may be less important than we believed. But the story behind the theorem's genesis is illustrative of its fraught status within economic and

[61] See Coase (1937). A different version of the story has "The Problem of Social Cost" being all about the world of zero transaction costs, putting it at odds with Coase's 1937 analysis and giving rise to a sort of "Das Adam Smith Problem" for the modern age. See, e.g., Hart (2008, p. 406).

[62] Indeed, Coase made no reference to his 1937 analysis in the FCC article, and even his 1960 analysis goes no further when citing it than to posit the firm as an alternative to the market for organizing economic activity.

legal analysis. It was wrong as originally formulated by Coase, nonsensical as revised by him in light of challenges raised by others, and in any case very different from the result that emerged in "The Problem of Social Cost." And, of course, even the 1960 result would turn out to require greater specificity—again as demonstrated by others—to carry the weight that Coase had put on it. All of this works to highlight the ongoing challenges posed by transaction costs for understanding the domain and range of the Coase theorem, challenges that, as this paper has demonstrated, are as old as the theorem itself.

That Coase did not fully grasp the import of the transaction costs so central to his legacy, nor what the world would look like in their absence, when working out his negotiation result is no sin. In fact, many of the criticisms leveled against the theorem in the decades that followed are simply more sophisticated rehashings of the very transaction-cost-related points raised by Black, Cavers and Chicago in 1959, and related misunderstandings and misuses of the theorem continue to abound in the literature (Medema 2020a). Such are the messy processes by which ideas originate, evolve and come to be accepted as knowledge, even if good stories would tempt us to believe otherwise.

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