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COMMENTARY

Two Questions When Solving Coasean Disputes Between Parties with Private Information

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In November 2025, a Delaware judge issued a most unusual ruling in a custody dispute over a five-year-old goldendoodle named Tucker. The embattled couple between whom the dispute was roiling could not settle between themselves who should retain ownership of the dog, and the judge could not find sufficient information to make a determination in favor of either litigant. Thus, the judge ordered that custody be determined via auction, so that as a Washington Post article put it: "The winner gets Tucker. The loser gets the money."[1] This auction was unusual because most auctions commonly result in the winner paying and any loser going home empty-handed, receiving neither prize nor payment. A common auction is the *ascending* auction (also known as an *English* auction) which is often efficient as it systematically clears the market of any excess demand by incrementally raising the price until it reaches the valuation of the second to last bidder, at which point he or she drops out. Only the winner (with an even higher valuation) remains. That price becomes the market clearing price, and the winner subsequently pays the seller, and the loser walks away without the prize and without regrets, knowing that to win would entail a price higher than his or her valuation. However, in the case of the auction specified for Tucker's claimants, the winner would still pay, but this time the loser received the payment from the winner.

A Tucker-like auction was first studied in 1987 with modern techniques by economists Peter Cramton, Robert Gibbons, and Paul Klemperer [CGK].[2] They wanted to dissolve a partnership in such a way that the partner with the highest valuation of the partnership obtains sole ownership of the entire asset, while the losing partners who relinquish their shares get paid. In their model, the initial percentages of ownership of the asset are explicitly specified and known amongst the partners. The model that CGK studied was one of *asymmetric information*: each partner knew the value he or she placed on the asset, but did not know anyone else's value. Indeed, it is this asymmetric information, or sometimes called private information, that makes the auction such a good mechanism for determining who should take sole possession of the asset. Discussions, or pleas to a judge, are hardly a way of ascertaining which party has the highest value. Each party will make his or her case as convincingly as possible. But as the saying goes: "Put your money where your mouth is." CGK give several different "mechanisms" that work equally well in terms of incentivizing the partners to accurately reveal their true values through their bids and then dissolving the partnership in favor of the partner with the highest value. For the special case of just two partners each with equal share, one such mechanism is the first-price CGK auction. In this version, each party makes a sealed bid (sealed so that the other partner cannot know the bid and submit a bid of a penny higher). The high bidder wins the item and pays his bid to the losing bidder. Another such mechanism is the second-price CGK auction. In this version, each party makes a bid as before, and the high bidder wins, but now pays the loser the bid submitted by the losing bidder (i.e., the second highest bid). CGK considered other mechanisms with mixtures of these rules and other mechanisms with rules that apparently differed even further from the first- and second-price CGK auctions described above. Using then-recent techniques developed by (then) future Nobel prize winner Roger Myerson[3], CGK showed that all of these mechanisms ultimately worked to get the players to put their money where their mouths were and truthfully reveal their valuations (perhaps altered through some bidding function that could be unwound so that valuations could be accurately inferred) as a first step, and efficient dissolution as a second step, with the partnership going wholly to the partner with the higher value.

A primary attribute of any CGK partnership dissolution auction is that losing bidders are com-

[1] Daniel Wu, (November 18, 2025) "Court orders exes to bid for custody of Tucker the goldendoodle," *The Washington Post*, https://www.washingtonpost.com/nation/2025/11/18/dog-custody-bid-tucker-delaware/.

[2] Peter Cramton, Robert Gibbons, and Paul Klemperer, (1987) "Dissolving a Partnership Efficiently," *Econometrica*, 55:3, 615–632.

[3] Roger B. Myerson, (1981) "Optimal Auction Design," *Mathematics of Operations Research*, 6:1, 58–73.

pensated. As the judge (Vice Chancellor Bonnie W. David) in Tucker's case put it: "No mechanism can wholly compensate a losing bidder for the emotional loss of a beloved pet, but an auction seems to provide the fairest option for the losing bidder by maximizing her recovery if she does not take home the lot."[4] So paying the loser was a key consideration for the judge. At present, we set aside the moral appropriateness of auctioning a sentient family member to the highest bidder with the loser denied the love of the family pet and the family pet denied the love of a bonded parent. But we do not set aside the aptness of awarding custody in whole to one party or the other, rather than ruling for some kind of shared-custody arrangement, this ex-partner with holidays and weekends and the other ex-partner with the remainder. We are not saying that the judge did not consider the split allocation; we are saying that awarding custody in whole or splitting custody must be considered when deciding on the verdict. (In an interesting twist, at the time of the writing of this commentary, no auction has taken place. It makes us think the judge's ploy really was "Solomon-esque" and not intended to be the final solution. When each party realized the all-or-nothing order by the judge and contemplated life without Tucker, we like to think they worked out an agreement to share custody or repair their broken relationship.)

In the remainder of this piece, we will pivot between Coasean disputes and our opening vignette. We will describe what are Coasean disputes, while giving Ronald Coase's insight: that such disputes are best treated as how to allocate ownership of some asset among a group of interested parties; that is, the special circumstances of Coasean disputes can be handled like any mundane allocation problem with the primary goal of allocative efficiency, getting the allocation that yields the most value, while balancing perhaps any equity and wealth concerns. Then turning back to the opening dog example, we raise two key questions in such disputes: (1) Does the efficient allocation require 100% dissolution, with one side winning the lot in its entirety, and any other party being shut out? (2) Must the loser(s) be compensated by the winner? The answers to these questions determine what kind of mechanism should be used to settle the disputed asset. The dog example we began with illustrates why these questions matter. The judge's ruling declared that either the man or the woman must take sole possession of Tucker upon completion of the auction. But perhaps a shared arrangement is optimal. If the loser of the auction feels a tremendous sadness upon losing the auction and if either party would be willing to pay a large sum to get at least some visitation or shared custody rights, then awarding 100% custody to one parent or the other cannot be optimal. The second question of whether the loser should get paid is intertwined with the first question in the sense that if collected revenue goes to general coffers (the money raised in dog bidding could be donated to an animal shelter rather than going to the loser), then an alternative (simpler) auction can be used. We will offer up some Coasean examples in which case it may or may not make sense to compensate the losers of the dispute. The table below summarizes the gist of our commentary, toggling between answers to our two questions, and (partially) listing some mechanisms that result in efficient allocations. As the table indicates, in the presence of parties with privately known valuations, there is no known mechanism that works when a split allocation is optimal, and losers must be paid.

Ronald Coase, a 1991 Nobel prize winner, described situations in which two neighbors are in dispute, with one side seeming to cause damage to the other side.[5] He bolstered his 40 plus page paper with all sorts of examples, including (a) cattle on a ranch wandering over to a water hole on the neighbor's wheat farm, trampling and destroying wheat; (b) a primary care physician who sued a

[4]Delaware Court of Chancery, (2025) *Callahan v. Nelson*, C.A. No. 2024-1099-BWD, Opinion, https://courts.delaware.gov/Opinions/Download.aspx?id=387510.

[5]Ronald H. Coase, (1960) "The Problem of Social Cost," *Journal of Law and Economics*, 3:1, 1–44.

Right Tool for the Job:
Known Mechanisms for Efficient Allocation when Parties Have Private Information

	Complete Dissolution	**Split Allocation**
Winners Pay, Losers Get Paid	Any Cramton-Gibbons-Klemperer partnership dissolution mechanism	???
Winners Pay, Losers Do Not Get Paid	Common auctions such as the ascending-price auction	Vickrey auction

nearby candy maker, whose pounding the sweets into shape interfered with the doctor's being able to listen to his patients' heartbeats; and (c) one neighbor bred rabbits for hunting and the rabbits liked to dine on the other neighbor's flowers. On the surface, almost all of his examples had a clear perpetrator of damages and a clear victim of said damages. But Coase saw beyond such a facile depiction. His interest was efficiency. Is value maximized with more beef or more wheat? More patients tended or more candy? More rabbits or more flowers? He sought to frame the problems not as perpetrator and victim; but rather, he considered both neighbors having perfectly legitimate activities. It was only the proximity of the neighbors that made the activities incompatible. There is nothing bad about cattle wanting to take a stroll and get a sip of water. And there is nothing wrong with growing wheat. But something must give. There is nothing wrong with the confectioner making candy and nothing wrong with a doctor seeing patients. Something must give. And there is nothing wrong with someone raising rabbits and nothing wrong with someone else growing flowers.[6] Coase then argued that to the victim should not go the spoils, or to put it differently, there was no victim, of if there were a victim it was irrelevant, or if the judge protected the victim with the decision, then the roles are reversed, with the former victim now inflicting damages on the former causer of damages. (We try to capture some of the contortions that Coase used in trying to break through conventional wisdom.)

Coase argued efficiency should be the goal. The so-called Coase theorem summarizes only a small part of his paper, and although it was never formally stated by him as a theorem, it goes something like: If there are no transactions costs in bargaining, then the judge or government can efficiently (ultimately) settle the dispute by awarding the property right to either side and then letting them bargain to exchange rights if the initial assignment was not efficient. Coase spelled out numerical examples, in which the watered cattle is worth more than the the trampled wheat, and how the bargaining would unfold if (a) the wheat farmer were granted an injunction against wandering cattle; and then oppositely, he treated the case when (b) the rancher's cattle could roam if they wanted to. In (a), the rancher and wheat farmer reached a deal in which the rancher paid the wheat farmer to leave fallow the favored cattle path to the watering hole and in (b) the rancher let his cattle roam as they wanted and the farmer left the path fallow because it would have been too expensive to pay the rancher to cease and desist. In short, both (a) or (b) resulted in the cattle having access to the pond. Coase worked several variations of this example, and still all concurred with his theorem, such that even if the property rights were initially misassigned, no matter, the two sides would trade and rearrange rights to reach the most valuable solution. Coase himself, though, sometimes considered

[6]Coase could not resist filling his paper with details that made you question who was at fault. For example, in the case of the confectioner and the doctor, initially, the confectioner's pounding equipment and the doctor's offices were sufficiently distant, but then the doctor built a new examination room too close and then sued for relief.

solutions in which case efficiency required no cattle and other cases in which some cattle going to the pond was efficient, but less cattle than would be optimal if there were no damages suffered by the wheat farmer. That is, Coase recognized that efficiency sometimes involves all or nothing rights and sometimes requires partial rights.

Some examples of transaction costs are the time it takes to work out a deal, perhaps codifying the deal with attorneys and filings, but transactions costs also can be defined more expansively as anything that prevents parties with an inefficient initial allocation from reaching an efficient allocation. But Coase spent about 1/3 of a lengthy paper on the no-transaction-costs case and 2/3 of the paper allowing for positive transactions costs, where if the initial assignment of rights was not the efficient allocation, inefficiency would ensue. If the wheat farmer were granted the right and the rancher's cattle were worth more than the wheat in the path to the hole, but codifying a right of passage cost more than the resulting benefits, the inefficient outcome would obtain. Better for the initial property rights to be properly assigned. But the problem of course is that the efficient solution cannot be seen by the judge. How is the judge to know of the factors that affect the worth of water of the cattle rancher? The price of beef perhaps, but the price of installing alternative watering solutions and fencing, and the perhaps the rancher could switch to some other production; the judge can fathom none of these things.

Myerson along with Mark Satterthwaite showed that private information between a buyer and a seller can be a source of inefficiency.[7] The buyer knows how much he values the good currently owned by the seller. But the buyer would like to buy the good at an attractive price and so can pretend his value is lower than it really is to try to strike a better deal. Likewise, the seller feigns his value is higher than it really is to strike a better deal. Myerson and Satterthwaite showed that this private information prevents efficient trade when the buyer's value and seller's value are not far enough apart.

Returning to CGK (Cramton, Gibbons, and Klemperer), they, like Myerson and Satterthwaite, assumed that all of the parties had private information about their values. But CGK saw that the initial ownership shares make a key difference, and if the ownership shares are evenly split (or not too different from even), then they *could* design a mechanism whereby the partnership could be dissolved efficiently, with the partner with the highest value getting 100% ownership and the other partners getting paid to relinquish their rights.

Let us recap where we are. Coase studied conflicts between neighbors and saw that once stripping away such irrelevant details as who was there first, who was committing some trespass, who was causing the damages and who was on the receiving end of the damages, could be treated as contested ownership of some asset, any asset really. In the case of Coase, however, the asset is usually classified as a property right: the right for cattle to trespass or the right of the wheat farmer of no trespass, for example. But then the solution would be the same solution as any contested asset. And as Coase argued, if the two sides can bargain with no frictions, then it really does not matter for efficiency purposes how the asset is granted to one party or the other, since they can trade to get to the efficient outcome. The emphasis on this part of Coase's paper is usually on simply making clear the ownership of the asset. But in the more realistic setting of positive transactions costs, the disputed asset must be divided efficiently from the initial assignment if efficiency is to obtain. Our opening dog dispute is technically *not* an example of a Coasean dispute between two neighbors with two different conflicting activities, but rather a dispute over a contested asset. And so to understand how to solve Coasean disputes, one needs to understand how to settle any disputed asset, making the custody battle over Tucker relevant.

[7] Roger B. Myerson and Mark A. Satterthwaite, (1983) "Efficient Mechanisms for Bilateral Trading," *Journal of Economic Theory*, 29:2: 265–281.

We see things going two ways. In some settings, the efficient assignment is to award the good wholly to one party or the other, that is, 100% dissolution. Alternatively, in some cases, some partial split of rights might be optimal. Returning to the dog example, suppose that for each dog parent, the first moment of being with the dog is infinitely valuable, and then necessarily additional time is less valuable (since no one has infinite amounts of money to spend). For the mathematically inclined, we might describe dog parent i's utility as $v_i q_i^{1-\alpha}/(1-\alpha) - m_i$, where q_i is the fraction of custody obtained, $v_i > 0$ is her private value (how much she values winning the entire share of custody), α some preference parameter with $0 < \alpha < 1$ common to both parties, and m_i is any monetary payment she makes. The marginal utility with respect to share of custody q_i is v_i/q_i^{α} which is infinite at $q_i = 0$. That first moment with the dog is priceless (think of all of the videos of veterans returning home and being reunited with their dogs!). For this special utility function (but the idea holds more generally), the payoff maximizing split of the dog is $v_i^{1/\alpha}/(v_i^{1/\alpha} + v_j^{1/\alpha}) > 0$ to parent i with value v_i where v_j is the value of the other dog parent, so that a split allocation is optimal.[8]

It could be similar in Coasean problems, like for the doctor and the confectioner. Suppose that they are tethered to operating their businesses where they are, and both find immense value in their work. A complete dissolution is not optimal, but rather some kind of split of their operations is optimal—perhaps, the doctor operating on Mondays, Tuesdays, and Wednesdays and the confectioner operating on Thursdays, Fridays, and Saturdays. But keeping the property right intact can also be the case in other scenarios: the rabbits will eat the flowers and we must decide either (rabbits and no flowers) or (flowers and no rabbits). No split allocation is possible. So we have made the case that in Coasean disputes with private information in which efficient trade cannot take place and the allocation of rights must be efficiently assigned can come in two forms: (1) each party gets all or nothing and (2) a split allocation is optimal.

The other consideration we would like to address is payments to the loser from the winner of the property right. If the property right is to be kept intact, with the winner taking all and the loser being shut out, we need to decide whether the loser should get paid. As in the dog example, the judge as part of her consideration wanted to make sure the losing dog parent had some relief in the form of getting money. Likewise, if one neighbor wins the rights to raise rabbits, we might want to make sure the other neighbor unable to grow flowers gets relief. Auctions can be designed to achieve this as we discussed with the CGK mechanisms, which have the winner pay the losers. In other situations, perhaps no relief is given to the losing side. We'll let Coase argue our point:

> The rights of a land-owner are not unlimited. It is not even always possible for him to remove the land to another place, for instance, by quarrying it. And although it may be possible for him to exclude some people from using "his" land, this may not be true of others. For example, some people may have the right to cross the land. Furthermore, it may or may not be possible to erect certain types of buildings or to grow certain crops or to use particular drainage systems on the land. This does not come about simply because of Government regulation. It would be equally true under the common law. In fact it would be true under any system of law. A system in which the rights of individuals were unlimited would be one in which there were no rights to acquire. —Coase, 1960, page 44

So similarly in the case of thirsty cattle, we might view it unrealistic to protect a pond from thirsty mammals, and we may think about awarding the rights to the pond or the rights of no trespass either

[8] Choose q_1 between 0 and 1 (letting $q_2 = 1 - q_1$) to maximize $v_1 q_1^{1-\alpha}/(1-\alpha) + v_2(1-q_1)^{1-\alpha}/(1-\alpha)$. Any monetary payments can be ignored since transfers of money from one person to another person neither adds nor subtracts from total utility.

way as not requiring payments to the loser. In this case, a simple ascending auction could ascertain whether the farmer or the rancher has the higher value, with no payments to the loser, and the winner paying the money into the municipality's coffers.

But with split allocations being optimal, whether to compensate losers means we must turn to other mechanisms. If no compensation, the Vickrey auction designed by William Vickrey (1996 Nobel prize winner), can be used.[9] It incentivizes parties to truthfully reveal their valuations for the various splits of the good and allocates the good efficiently. We will not go into full general details because the Vickrey auction—though beautiful— is too technical for this commentary. For the curious reader who wants to tackle Vickrey's paper, he allows for both sellers and buyers, but there can be budget balance problems when there are both buyers and sellers, meaning that a benefactor needs to inject money into the mechanism because the money collected is less than the money paid out. But with only buyers with private information, the Vickrey auction raises positive revenue, which can go in the government coffers.

If the split allocation requires payments to the losers, then something more complicated than CGK complete dissolution mechanisms must be built. We could split the dog's time in half and award 50% shares to each dog parent, but then have a bidding procedure where one dog parent can buy additional shares from the other dog parent. Or in the doctor/confectioner problem, each could be awarded three days of the week, and then a mechanism is needed where the confectioner or the doctor could buy additional days from the other depending on bids. We are unaware of any mechanism in which an efficient split is certain to be achieved and not require a benefactor to subsidize the parties involved. More research must be done to better understand mechanisms in this environment, especially for the case when because of private information it is not known whether a party will be a buyer or seller of shares. This is why we wrote ??? in the table above, to emphasize that this area of deciding how to reallocate partnership shares, making sure to compensate any partner who forfeits shares, needs more study.

Returning to the dog dispute, suppose that the judge decided both questions oppositely, wanting to allow for a split allocation, but deciding no payments are required to the parent losing all or some custody rights. The judge may have thought: it is likely that neither party can live without getting at least some shared custody of the dog, life with no Tucker would be unbearable. She may have then thought, tailoring to the situation at hand, that the only way a split allocation could work in practice is if one parent was awarded primary custody and the other parent was awarded secondary custody (weekends, holidays, and such). Further, perhaps payments to the dog parent getting the smaller share would not be necessary and perhaps even repugnant, akin to selling one's child for money. Or perhaps the judge could deem that primary custody comes with the burden of paying the dog's medical and grooming expenses, and so no payment is necessary to the parent getting secondary or no custody. The proper tool for the efficient allocation is then the Vickrey auction, not the Cramton-Gibbons-Klemperer auction that the judge called for.[10] In the likely outcome, one dog parent would win primary custody,

[9] William Vickrey, (1961) "Counterspeculation, Auctions, and Competitive Sealed Tenders," *The Journal of Finance*, 16:1, 8–37.

[10] Although we avoid a comprehensive treatment of the Vickrey auction, here is how it would work. Each dog parent would submit three bids, indicating the bidder's value for secondary custody, the extra value placed on moving up to primary custody, and then the extra value placed on moving up to whole custody. The auctioneer would inspect these bids, treat them as honest revelations of these marginal values, and choose one of the four allocations to achieve the highest total valuation. The four allocations are: (i) award whole custody to the dog father; (ii) award whole custody to the dog mother; (iii) award father primary custody and mother secondary custody; and (iv) award mother primary custody and father primary custody. The payment rules in the Vickrey auction are always of the form: *pay what you displace*. If the dog mother wins secondary custody, she is displacing the father's winning of the whole custody, bumping him down to primary custody—she would have to pay father's bid / marginal value for whole custody. Or if the dog

the other secondary custody, and some revenues would be raised that could go to a local animal shelter. We say the likely outcome because the dog parents initiated the custody suit in June of 2022 and then continued their fight up through multiple levels of Delaware state courts, until the final ruling reached at the end of 2025. The Vickrey auction would settle the dispute so that all involved could go about their lives.

mother wins primary custody, she is displacing the father's whole custody and primary custody, she would pay the sum of the father's bids for whole and primary custody. Or if the dog mother wins the whole custody, she shuts the father out and must pay all three of his marginal values. There are likewise calculations for the payments from the dog father.