DO LIABILITY RULES
FACILITATE BARGAINING:
A REPLY TO AYRES AND TALLEY

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Do Liability Rules Facilitate Bargaining?
A Reply to Ayres and Talley

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Abstract

In a recent article, Ian Ayres and Eric Talley advance the thesis that, when bargaining is imperfect, liability rules facilitate bargaining; that is, "liability rules may induce both more contracting and more efficient contracting than property rules." In this reply, we question their thesis on the following grounds:

- The general argument they offer in support of their thesis is incomplete and may be upset by countervailing factors.
- A priori reasoning suggests that the opposite of their thesis is likely to be true.
- Their numerical example turns out to illustrate the opposite of their thesis.
- Variations of their numerical example also illustrate the opposite of their thesis.

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In a recent article, Ian Ayres and Eric Talley revisit the question of the relative superiority of property versus liability rules,[1] a topic that was introduced to legal academia in its economically oriented form by Calabresi and Melamed two decades ago.[2] Ayres and Talley focus on the context in which bargaining is feasible, such as when one neighbor disturbs another (in contrast to situations in which bargaining is infeasible, such as when industrial pollution harms many disorganized victims). In this case, the Coase Theorem[3] informs us that when bargaining functions perfectly, the efficient result will be achieved regardless of the legal rule. When bargaining is imperfect due to the possibility of strategic behavior, however, it is understood that the efficient result may not be reached under either property or liability rules.[4]

The primary thesis advanced in Ayres and Talley's article is that, when bargaining is imperfect, "liability rules may induce both more contracting and more efficient contracting than property rules."[5] We question their thesis on the following grounds:

> ●The general argument they offer in support of their thesis is incomplete and may be upset by countervailing factors.

> ●A priori reasoning suggests that the opposite of their thesis is likely to be true.

> ●Their numerical example turns out to illustrate

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[1]See Ian Ayres & Eric Talley, Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade, 104 **Yale L.J.** 1027 (1995).

[2]See Guido Calabresi & A. Douglas Melamed, Property Rules, Liability Rules and Inalienability: One View of the Cathedral, 85 **Harv. L. Rev.** 1089 (1972).

[3]See R.H. Coase, The Problem of Social Cost, 3 **J.L. & Econ.** 1 (1960).

[4]See, e.g., A. Mitchell Polinsky, Controlling Externalities and Protecting Entitlements: Property Right, Liability Rule, and Tax-Subsidy Approaches, 8 **J. Leg. Stud.** 1 (1979); A. Mitchell Polinsky, Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies, 32 **Stan. L. Rev.** 1075 (1980).

[5]Ayres & Talley, supra note 1, at 1033 (emphasis omitted). The bulk of part II of their article, see id. at 1036-65, and of their appendix, see id. at 1104-13, is devoted to the thesis we address in this reply. Ayres and Talley discuss two other substantial points: (1) a liability rule with damages equal to victims' actual harm may undermine bargaining when injurers do not know victims' actual harm, see id. at 1065-72, 1114-15; and (2) "fractional" property entitlements may facilitate trade, see id. at 1072-82, 1116-17. We do not consider either of these points here. (We note, though, that these points are correct. See Louis Kaplow & Steven Shavell, Property Rules versus Liability Rules 30 n.58, 33-34 n.63 (Harvard Law School Program in Law and Economics Discussion Paper No. 156)(Mar. 1995)(discussing prior work on these points and assessing their importance).)

the opposite of their thesis.

> •Variations of their numerical example also illustrate the opposite of their thesis.

We begin by outlining the theory concerning the choice between property and liability rules and how it depends upon bargaining. We next state Ayres and Talley's thesis and proceed to explain the above points. Last we offer a concluding comment on how bargaining bears on the choice between property and liability rules in the context Ayres and Talley examine.

I. Bargaining and the Choice between Property and Liability Rules for the Control of Harmful Externalities

Ayres and Talley consider the familiar context in which an injurer (say, a factory) may cause harm to a victim (say, a neighbor who would be bothered by noise from the factory). It is efficient for the injurer to harm the victim if and only if the benefit from the harm-causing activity exceeds the harm to the victim.

Adopting the now familiar framework of Calabresi and Melamed,[6] Ayres and Talley compare a liability rule -- in which the injurer is free to harm the victim, upon payment of damages -- to property rules -- for example, a property rule protecting victims from harm. Because Ayres and Talley's thesis concerns bargaining under legal rules, it is useful to distinguish the following three cases.

A. Bargaining Is Impossible

When bargaining is impossible, a liability rule will result in efficient behavior if the damages injurers must pay equal the harm their acts produce, for injurers will then cause harm if and only if the value of their activity exceeds the damages they must pay. By contrast, under a property rule protecting victims, some efficient activity will be prevented, and under a property rule freely permitting injurers to cause harm, some inefficient activity will occur. As a consequence, the liability rule is superior to property rules.

The preceding argument assumes that damages equal harm, which is known to the parties and the court. Often, however, courts will not be able to assess harm accurately.[7] In this situation, it can be demonstrated that the liability rule with damages set equal to average harm remains superior to property

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[6] *See* Calabresi & Melamed, *supra* note 2.

[7] This is the situation relevant to Ayres and Talley's argument.

rules.[8]

B. Bargaining Is Perfect

When bargaining is perfect, we know from the Coase Theorem that efficient behavior will result regardless of the legal rule. For example, under a property rule protecting victims, injurers will bribe victims to permit harm whenever that is efficient. Under a liability rule where damages are mistakenly set below actual harm, victims will bribe injurers to desist whenever that is efficient. Because perfect bargaining results in efficiency, the level of social welfare under property rules is the same as under liability rules.

C. Bargaining Is Imperfect Due to Asymmetric Information

When each party's own valuation is not known by the other, each party will have incentives to misrepresent its valuation in bargaining, hoping to extract more of the bargaining surplus from the other party. Parties may therefore demand too much or offer too little, with the result that efficient bargains may not be reached. In this case, one cannot say unambiguously whether property rules or liability rules will be superior.[9] We offer, however, two related conjectures:

(1) *When bargaining is imperfect, the liability rule will tend to be superior to property rules (but the advantage of the liability rule will be less than when bargaining is impossible).*

(2) *When bargaining is imperfect, the property rule will lead to* greater *bargaining-related welfare gains than does the liability rule.*

Why do we suspect these claims to be true? Consider the "race" between property rules and liability rules. If the race is run without bargaining, the liability rule will win, as we explained in Section A. If the race is run with perfect bargaining, there will be a tie, as we explained in Section B. Hence, under perfect bargaining, property rules *necessarily* lead to greater bargaining-related welfare gains than does the liability rule. Under imperfect bargaining, our a priori guess (but it is only a guess) is therefore that property rules lead to

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[8]We demonstrate this claim in Kaplow and Shavell, supra note 5, at 18-21, 98-99. When damages equal average harm, injurers will cause harm when their benefits exceed the average harm that they will cause, and they will refrain when their benefits are less than the average harm. Under a property rule, by contrast, a court would have to either permit or forbid *all* harmful actions of injurers (for the court cannot observe injurers' actual benefits); this would be a less efficient result than under the liability rule (even though the liability rule no longer always results in efficient behavior).

[9]See id. at 30-34, 109-13. In the examples explored in our paper and in the variations of Ayres and Talley's example discussed in Parts IV and V, the liability rule is not always superior, but in each instance the property rule leads to greater bargaining-related welfare gains than does the liability rule.

greater bargaining-related welfare gains; that is, we suspect that under imperfect bargaining, some but not all of the initial efficiency disadvantage that exists under property rules is nullified through bargaining.

To illustrate, suppose that, in the absence of bargaining, welfare is 90 under the liability rule but is only 70 under a property rule. Under perfect bargaining, assume that welfare under both types of rule is 100. Then, the liability rule gains only 10 due to bargaining, compared the property rule's gain of 30. Under imperfect bargaining -- in which, say, half of all efficient agreements are consummated -- the liability rule's bargaining-related gains are 5 whereas the property rule's bargaining-related gains are 15.

II. Ayres and Talley's Thesis: Liability Rules Facilitate Bargaining

We now turn to Ayres and Talley's thesis, that liability rules facilitate bargaining. We take their thesis to be that *bargaining tends to raise social welfare by a greater amount under liability rules than under property rules*. In other words, the combination of the number of agreements made as a consequence of bargaining, and the improvement that each of these agreements brings about, raises social welfare more when the liability rule is in place than when a property rule is in place.

To avoid possible confusion below, we note that Ayres and Talley's thesis is *not* that welfare is higher under liability rules without regard to how much welfare rises as a consequence of bargaining -- that is, without regard to either the number of agreements or how much each agreement raises welfare. The subject of Ayres and Talley's thesis is whether liability rules "Facilitate Coasean Trade,"[10] not whether liability rules might be better than property rules for reasons having nothing to do with bargaining.[11] One would not say, for example, that liability rules facilitate bargaining in a case such as the following: welfare is $60 under a liability rule both with and without bargaining -- that is, all bargains fail, so welfare is not at all increased by bargaining -- and welfare is $59 under a property rule with bargaining but $50 without bargaining -- so welfare is increased, by $9, as a result of bargaining.

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[10]Ayres & Talley, supra note 1, at 1027 (title); id. at 1058 (section heading); see, e.g., id. at 1038 ("This Part [argues] that liability rules may actually *facilitate* trade by reducing the effective amount of private information")(emphasis in original).

[11]Ayres and Talley expressly distinguish their argument from that in our article -- which is concerned with total welfare and which emphasizes that the plausible advantage of the liability rule when there is imperfect bargaining is due to the "head start" it has in the absence of bargaining (as we explained in Section I.C above). They state that "the information-forcing property of liability rules may provide an independent reason that liability rules can dominate property rules when bargaining is possible." Id. at 1059 n.101; see also id. at 1099 n.225 (liability rules may both lubricate trade and mitigate inefficiency in the absence of trade).

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As a final observation, we note that, although Ayres and Talley do not assert that liability rules always facilitate bargaining (they regularly use the qualifier "may"), their article leaves the reader with the strong impression that there exists an important tendency for liability rules to facilitate bargaining.[12] Moreover, it would be uninteresting to consider the very limited claim that there is a *mere possibility* that liability rules facilitate bargaining in some conceivable instance.[13]

III. Does Theory Support Ayres and Talley's Thesis?

Ayres and Talley advance a two-step argument for their thesis that liability rules facilitate bargaining:

    (1) Under liability rules, victims voluntarily separate into two groups. Ayres and Talley refer to the separation of victims as the "information-forcing" effect of liability rules.[14]

    (2) As a *consequence* of this separation of victims, bargaining will be facilitated under liability rules to a greater extent than results under property rules, under which there is no separation.

As we will now explain, the first step -- that victims will separate -- is correct. However, the second step -- that bargaining will be facilitated -- is not demonstrated by Ayres and Talley, and the a priori reasoning presented in section I.C implies that the second step is likely to be false.

A. First Step: Do Victims Separate Under a Liability Rule?

Ayres and Talley argue that victims separate into two groups: those whose harm is above the level of damages and those

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[12]For example, they state that their argument "challenges various common wisdoms in law and economics" (id. at 1032) exposing a "fundamental flaw" (id. at 1061) in traditional thinking, that they are the "first" to show that liability rules may induce better contracting (id. at 1033), that the phenomenon they study "dramatically" affects behavior (id. at 1044, 1059), that the "practical importance" of their "robust" conclusion "can" be mitigated by other factors (id. at 1047), that the characteristic they identify is "much stronger" than a contrary consideration (id. at 1053), and that prior failure to recognize their "remarkably robust" result about information revelation has led the academy to "misprescribe" when liability rules are appropriate (id. at 1100).

[13]This limited claim would be uninteresting in two senses. First, it would lack practical importance (in contradiction to Ayres and Talley's statements cited in note 12). Second, the limited claim lacks conceptual importance. No one to our knowledge has suggested that bargaining could *never* be better under liability rules. Indeed, a central theme of the leading prior work on property and liability rules that addresses imperfect bargaining is that which rule is best on this dimension is generally indeterminate. See Polinsky, supra note 4 (both articles).

[14]See, e.g., Ayres & Talley, supra note 1, at 1032, 1036.

whose harm is below the level of damages.[15] To illustrate,
suppose that damages are $50. A victim whose actual harm would
be $80 might then offer a bribe to the injurer in exchange for a
promise to desist from causing harm. And a victim whose true
harm would be $20 might accept a payment less than $50 (but more
than $20) in return for permitting the injurer to cause harm.
(If the injurer's benefit were $40, the injurer would be deterred
by the liability rule but would gain by acting if the payment to
the victim were only, say, $30.) Ayres and Talley's argument is
correct as far as it goes,[16] raising the question whether this
characteristic of bargaining under liability rules facilitates
bargaining.

B. Second Step: Is Bargaining Better under Liability Rules Because of Separation?

To demonstrate that the separation of victims under
liability rules means that such rules facilitate bargaining,
Ayres and Talley rely principally on an extended numerical
example (discussed in Part IV) rather than presenting a direct
affirmative argument. In commenting on the example, however,
they at times suggest that the separation of victims into two
groups reduces the degree of asymmetric information, and that
this should facilitate bargaining.[17] But the import of their
suggestion is limited: separation is only one aspect of the
effect of liability rules on bargaining, which is, after all, a
subtle and complex process about which seemingly plausible
predictions may not hold true.
　　Indeed, Ayres and Talley acknowledge an effect of liability
rules apart from separation: injurers may have strategic
incentives to misrepresent their valuations under a liability
rule that are not present under a property rule.[18] But they do
not explain why this countervailing factor is not controlling.[19]

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[15]See id. at 1039-47. This separation does not occur under property
rules.

[16]Prior writing on bargaining when damages under a liability rule do not
equal each victim's actual harm takes for granted that separation occurs --
that each type of victim is only interested in one of the two types of
bargain; but prior writing does not attribute special significance to the
phenomenon. See, e.g., Polinsky, supra note 4 (both articles); Steven
Shavell, Property Rights and the Rule of Liability in a Simple Bargaining
Model (unpublished, 1988).

[17]See, e.g., Ayres & Talley, supra note 1, at 1055, 1061.

[18]See id. at 1043-44, 1047, 1053, 1055-56.

[19]Ayres and Talley do refer to both injurers' and victims' incentives when
claiming that "liability rules are most likely to mitigate informational
inefficiencies when the plaintiff's [victim's] private information [rather
than the injurers'] is the primary impediment to efficient trade." Id. at
1047. We have doubts about this assertion. First, if there were no
informational asymmetry with regard to victims (which their analysis suggests

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Additionally, as we emphasized in Section I.C, a priori reasoning indicates that welfare gains due to imperfect bargaining will tend to be greater under property rules than under liability rules (because property rules necessarily gain more as a consequence of perfect bargaining). Indeed, this *must* be the case when the problem of asymmetric information is relatively small.[20] Thus, the opposite of their thesis seems likely to be true.

IV. Does Ayres and Talley's Example Support Their Thesis?

As we noted, Ayres and Talley use a single numerical example to support their thesis,[21] but it turns out that the example illustrates the opposite of their thesis.

In their example, victims differ in the harm they suffer if they are injured; harm varies over the range from $0 to $100. Damages under a liability rule are assumed to be $50 (regardless of the particular victim's actual harm, which both courts and injurers are presumed to be unable to observe). Injurers are of two types, those who would gain $40 from being permitted to injure a victim, and those who would gain $60. Ayres and Talley

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is the worst case for the liability rule), the liability rule actually produces a first-best (maximum possible) level of welfare with no bargaining. (When victims are identical, damages equal to average harm equal each victim's actual harm, so injurers cause harm if and only if their benefits exceed the harm caused.) Second, as the amount of asymmetry with regard to injurers increases (which they suggest disfavors the liability rule), the relative advantage of the liability rule rises in Ayres and Talley's model. See *infra* note 34. The example they subsequently present is designed to capture the case in which informational asymmetries are greatest for victims, see *id*. at 1048 & n.67, 1049 n.74, but their analysis of the example shows that injurers do strategically misrepresent themselves to victims, see *id*. at 1055-56, and we explain in Part IV that the net effect of injurers' and victims' representations (and other factors) is such that their conclusion is contradicted.

[20]As the amount of asymmetric information becomes small (for example, as the range of victim and injurer types becomes very narrow), the level of welfare under any rule will become close to the first-best, and thus the levels of welfare under any two rules will become very close to each other.

[21]See Ayres & Talley, *supra* note 1, at 1047-58. They present the solution of their model only for a particular set of numbers. (We consider variations in Part V.) We do not believe that additional support for Ayres and Talley's thesis can be found in Talley's working paper, Property Rights, Liability Rules, and Coasean Bargaining under Incomplete Information (John M. Olin Program in Law and Economics, Working Paper No. 114)(Stanford Law School, Aug. 1994). In this paper, Talley shows, under certain assumptions, that "it is possible to find a liability rule that will outperform any type of property rule." Ayres & Talley, *supra* note 1, at 1032 n.14. But, as we have emphasized throughout, a conclusion about overall performance (total welfare) has no clear implication about the increase in welfare due to bargaining and thus about their thesis. (For further reservations about the applicability of Talley's paper, see Kaplow and Shavell, *supra* note 5, at 34 n.64, 115-16.)

assume that bargaining takes a particular form,[22] and then they determine what offers would be made, which ones would be accepted, and what actions would result. We now discuss how the example actually bears on their thesis.

A. Bargaining Raises Welfare More under Property Rules than under the Liability Rule

The results in the following table concerning welfare when there is no bargaining (the first column) and when there is bargaining (the second column) appear in Ayres and Talley's article;[23] we added the third column, stating the increase in welfare due to bargaining.

	Welfare: No Bargaining	Welfare: Bargaining	Increase in Welfare Due to Bargaining
Property Rule	$50	$59.75	$9.75
Liability Rule	$55	$59.875	$4.875

As is apparent from the table, *welfare rises by twice as much due to bargaining under a property rule as under the liability rule. This result directly contradicts Ayres and Talley's thesis that liability rules facilitate bargaining.*[24]
Ayres and Talley do not discuss the fact that bargaining raises welfare by $9.75 under a property rule and by only $4.875 under the liability rule. Instead, they make the comparison that we criticized in Part II because it concerns total welfare under the two legal rules rather than the increase in welfare due to bargaining: "The net impact of these effects is that under a liability rule, the expected joint payoffs ($59.875) are higher than those produced by bargaining under a property rule ($59.75). Liability rules are more efficient because they induce more

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[22]In particular, they assume that injurers make take-it-or-leave-it offers to victims. Under the liability rule, victims first announce whether they are interested in paying injurers to desist or allowing themselves to be injured for an amount less than the stated damages. Also, when offers are rejected, injurers then decide whether or not to cause harm (and pay damages).

[23]See Ayres & Talley, supra note 1, at 1050-51, 1058 (table 4), 1060 n.102 (table 5).

[24]One might also make a comparison in percentage terms of the extent to which welfare increases under imperfect bargaining relative to the improvement that would occur under perfect bargaining. Under the property rule, 75% of the gap ($9.75 out of $13) is closed, whereas under the liability rule just under 61% of the gap ($4.875 out of $8) is closed. (The first-best level of welfare achieved with perfect bargaining is $63. See id. at 1050.) In any event, this comparison is not directly relevant for policy, because by definition it is absolute levels of welfare that are relevant if one is maximizing social welfare.

trade."[25] As we just emphasized, it is the property rule, not the
liability rule, that induces more gains from trade (twice as
much) in their example. The reason that the liability rule
results in slightly more total welfare ($0.125) when there is
bargaining is that it produced much more welfare ($5.00 more) in
the absence of bargaining. The advantage of the liability rule
is dramatically less when there is bargaining than when there is
not; the liability rule loses most of its initial advantage
precisely because the property rule leads to significantly
greater gains from bargaining.[26]

B. There Are More, Not Fewer, Value-Increasing Trades under Property Rules than under the Liability Rule

Ayres and Talley further state that the liability rule
results in more value-increasing trades and more benefit from
such trades than does the property rule.[27] With regard to the
first point, they report: "Table 4 shows how liability rules
facilitate Coasean trade. Under a property rule only 25% of the
bargainers reach Coasean agreement, but under a liability rule
this figure rises to 30%."[28] What they do not state, however, is
that *fully half of the agreements concluded under liability rules
produce no increase in welfare because these agreements do not*

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[25]Id. at 1059.

[26]Ayres and Talley acknowledge the view expressed in our paper, see supra
note 5, that the liability rule may result in more welfare than the property
rule with bargaining due to the "head start" of the liability rule in the
absence of bargaining. See Ayres & Talley, supra note 1, at 1059 n.101. They
assert, however, that "the information-forcing property of liability rules may
provide an independent reason that liability rules can dominate property rules
when bargaining is possible." Id. Specifically, they offer two previously
unmentioned arguments (neither of which relates to the example under
discussion in the text) in support of the claim that the information-forcing
aspect of liability rules facilitates bargaining.
     First, they state that a different version of the liability rule
involving "tailored" damages, which they discuss later in their article, may
undermine bargaining. But this fact does not support their thesis that
bargaining is *facilitated* by a liability rule involving "untailored" damages,
the form of liability rule with which their thesis is concerned.
     Second, they state that introducing litigation costs into their model
might result in improved bargaining under the liability rule, citing Talley's
working paper, see Talley, supra note 21, as support. But there is no obvious
connection between litigation costs and the information-forcing claim.
Indeed, Talley does not make use of the information-forcing effect in the
section Ayres and Talley cite. Instead, he explains: "The intuition behind
this result stems from a view that the credible threat of litigation costs
imposes an effective 'tax' on bargaining breakdown." Id. at 31; see also
Ayres & Talley, supra, at 1069 n.123 (providing the same intuition).

[27]We note that at least one of these points must be false: the amount by
which welfare rises due to bargaining under the property rule is greater than
under the liability rule, so it cannot be true that both the amount of trade
and the gains per trade are higher under the liability rule.

[28]Ayres & Talley, supra note 1, at 1058.

alter outcomes; rather, these agreements are pure extortions.
This fact can be derived from their table 3, which portrays
offers made and accepted; for example, half of the injurers who
receive payments from victims in return for promises to desist
are injurers who would not have caused harm in any event.[29]

Thus, it turns out that under the liability rule *only 15%* of
parties make agreements that increase welfare, whereas the figure
is 25% under property rules. In summary, the liability rule
facilitates a particular type of trade involving pure extortion,
but there is less trade that increases welfare under the
liability rule than under the property rule.

C. There is More, Not Less, Increase in Welfare per Trade under Property Rules than under the Liability Rule

Ayres and Talley further state: "The table also shows that
expected payoffs for those reaching a Coasean agreement are
significantly higher under a liability rule ($71.25) than under a
property rule ($52.00)."[30] But these are the wrong figures to
use. For example, $71.25 is the average level of welfare of
parties who trade under a liability rule; it is not the *increase*
in the parties' welfare *on account of trade*. We have computed
the relevant figures for the increase in welfare due to trade; it
turns out that *the increase in welfare due to bargaining is more
than twice as high under the property rule ($39) as under the
liability rule ($16.25).*[31]

V. Variations of Ayres and Talley's Example

Ayres and Talley mention two variations of their example,
which we have solved. In one variation, mentioned in a footnote,
Ayres and Tally refer to the case in which injurers' benefits are
$80 and $20, rather than $60 and $40, as in their example.[32]
Under this alternative assumption, it can be shown that the
advantage of the liability rule is much larger than in their

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[29]See id. at 1054 (table 3). We note that all of the trade under a
property rule results in an increase in welfare.

[30]Id. at 1058-59.

[31]To compute these figures for the per-trade increase in welfare, divide
the average gain due to bargaining by the fraction of parties who enter into
agreements. For example, with the property rule, divide $9.75 by .25, to
obtain $39. (We note that, if one were to ignore the trades under the
liability rule that are pure extortions, for which the gain is $0, the average
gain for the remaining trades would be $32.50, which is still less than the
average gain under the property rule.)

[32]See Ayres & Talley, supra note 1, at 1059 n.100.

example ($2.25 rather than $0.125),[33] yet there are no successful bargains under the liability rule. Obviously, the (now greater) advantage under the liability rule cannot be attributed to the facilitation of bargaining, for there is none. Additionally, we observe that the juxtaposition of this variation with their original example is troubling for Ayres and Talley's thesis: when injurers' valuations are changed in a manner that *increases* the advantage of the liability rule, the amount of successful trade under the liability rule *falls*.[34]

The other variation we note was used by Ayres and Talley in their initial demonstration that victims separate into two groups. There, instead of assuming that injurers' benefits were either $60 or $40, they assumed that injurers' benefits could take on any value between $0 and $100, just as they had assumed throughout their article to be true for victims.[35] The results for this variation (which is not solved in their article) are as follows: (1) there is no successful bargaining under the liability rule, and (2) welfare increases by so much as a result of bargaining under the property rule that the initial advantage of the liability rule is eliminated. Thus, in the original variation of Ayres and Talley's example, their thesis is starkly contradicted.

VI. Concluding Comments

In this reply, we have shown that Ayres and Talley's central thesis that liability rules facilitate bargaining is not adequately supported by their article, and we have explained why a priori reasoning suggests that the opposite of their thesis is likely to be true. Additionally, we have reported that their

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[33]Our computation uses damages of $50, the level Ayres and Talley used in the body of their article; this level still equals victims' average harm because victims are unchanged in this modification. Ayres and Talley report $3.00 rather than $2.25, see id.; their figure refers instead to an optimal level of damages, which in this case is near $20 or $80. With regard to different damage levels in this example, we note two relevant features: (1) Throughout the range of possible levels of damages for which a liability rule differs materially from a property rule, there are significantly fewer trades under the liability rule. (2) Welfare and trade increase as the level of damages move from the middle of the range towards $20 or $80. That is, the level of welfare and the amount of trade *increase* as the extent by which victims are separated *decreases*, the opposite of what one would expect from Ayres and Talley's argument that greater separation facilitates bargaining.

[34]This is not only true when comparing Ayres and Talley's $60/$40 example with the $80/$20 modification. As one moves from $50/$50 to greater extremes, two results hold: (1) The advantage of the liability rule increases. (2) The amount of trade falls steadily, until the split reaches $75/$25, at which point (and after) there is no trade at all.

[35]See Ayres & Talley, supra note 1, at 1040-41 (referring to this case as a "canonical example of negotiation under asymmetric information"). As in the example they solve, in this variation they assume uniform distributions, see id. at 1040 n.47, and damages of $50 under the liability rule, see id. at 1041, assumptions that we maintain.

numerical example and variations on it contradict their thesis.

In closing, we state briefly our views (which we present more fully elsewhere) on the question whether property or liability rules result in more efficient outcomes.[36]

(1) When bargaining is impossible, the liability rule tends to be superior to property rules, even when damages reflect only average harm rather than each victim's actual harm. We believe this conclusion to be significant because such important phenomena as industrial pollution and automobile accidents arise in contexts in which bargaining between injurers and victims is infeasible.

(2) When bargaining is possible, the choice between the two types of rules will be less important. When bargaining is perfect, the choice is irrelevant (the Coase Theorem). When bargaining works tolerably well, although imperfectly, factors other than those addressed here (such as victims' incentives, the judgment-proof problem, administrative costs) often will be more important in determining the optimal rule.

(3) Nonetheless, when bargaining is imperfect our conjecture is that, other things being equal, liability rules will tend to perform better than property rules. The essential reason is that inefficiency will arise only when bargaining fails, and it is the liability rule that leads to a higher level of welfare in the absence of bargaining.

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[36]See Kaplow & Shavell, supra note 5 at 15-34; see also id. at 35-51 (discussing other factors that bear on the appropriate legal regime in the context of harmful externalities); id. at 66-93 (different analysis applicable in the context of protecting possessory interests).