

Costly Evidence and Systems of Fact-Finding

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Abstract

This paper compares the relative merits of adversarial and inquisitorial systems of civil procedure in the presence of evidence suppression. Each party has the incentive to suppress evidence that may damage her case, and to reveal any evidence that strengthens her case. I model the decision of a litigant to suppress evidence. The court conditions its action (transfers between the parties) upon the evidence which is revealed. Enforcement costs, which are the cost of suppression and the cost of requesting evidence, are a loss to the relationship and form the basis for my evaluation of the relative merits of each system. I find that neither system always outperforms the other. The strength of the inquisitorial system is that it allows for randomization over evidence requests, which leads to lower expected enforcement cost. Litigants cannot commit to randomize as they are motivated by the expected award in litigation. The strength of the adversarial system is that it sometimes allows litigants to utilize their information about the level of suppression.

In all types of civil litigation, court action is determined by the application of rules of law to the facts of the case. However, the relevant facts of the case are often disputed and must be established based upon evidence. Each party has the incentive to suppress evidence that may damage her case, and to reveal any evidence that strengthens her case. Discovery of the relevant facts is essential to applying the law to a dispute. Systems of civil procedure differ primarily in the method by which evidence concerning the dispute in question is revealed. Under an adversarial regime only the litigants gather evidence. In an inquisitorial regime the court engages in evidence-gathering. This paper studies the relative merits of adversarial and inquisitorial fact-finding systems in a game-theoretic contract framework that specifically considers the costly option to suppress evidence.¹

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¹Though I focus on contract, the framework and results also apply to a tort setting.

An essential role of civil process is to shape individuals' incentives so as to induce specific behavior in some primary activity. This is done through the expected loss that an individual incurs should he deviate from the behavior prescribed by the contract. This expected loss is comprised of the expected court-compelled transfers resulting from evidence revealed that shows the deviation, and the cost of any effort on his part to suppress that evidence. Two crucial components of the method of dispute resolution are the fact-finding system, and the mapping from evidence that is revealed to awards. The primary activity considered here is a productive relationship. Player 1 and player 2 can engage in a relationship such that player 2 making an investment is beneficial, to player 1 and is the jointly optimal outcome. So the players will contract so as to give player 2 the incentive to make this investment. This will be done by specifying an up-front payment to player 2 that is intended to compensate him for the cost of investing, and specifying damages to be paid by player 2 to player 1 if it is proven that player 2 did not invest. After this productive activity, payoffs are realized and player 1 may pursue litigation if the investment was not made. If player 2 did not invest, he possesses critical evidence that shows that he did not invest.² Of course, player 1 would like this evidence to be revealed to the court to show that player 2 did not invest. Player 2 will wish to suppress this evidence. I assume that the court is not active and only takes action based on the contract and evidence that is revealed.

Arguments for or against one system often involve (at least implicitly) some assumption about differences in the ability of each system to address suppression of evidence. In this simple model the adversarial and inquisitorial systems differ only in who requests the evidence. It is costly to request the evidence. Under the adversarial system only player 1 may request the document; under the inquisitorial system only the court may request the document. In both systems, I assume that both the investment decision and the level of suppression are observable to the litigants, but not to the court. I assume that player 2 can suppress evidence equally effectively against the court or against player 1. Effort by player 2 to suppress is costly. The evidence is revealed probabilistically when it is requested, and suppression reduces the probability that the evidence is revealed. I focus on addressing the relative significance of evidence suppression under these two systems.

The adversarial system has the advantage of litigants being able to utilize information about the level of suppression. The strength of the inquisitorial system is that the court can commit to randomize in its request decision.³ I assess the relative merits of each regime based upon the cost of inducing the incentive for player 2 to invest during the productive activity.⁴ I find that neither regime is always preferred. The ability of the court to commit to randomize under the inquisitorial regime allows the evidence to be requested with low probability. This lowers expected enforcement

²I assume, however, that player 1 does not possess any evidence of non-investment.

³The court's lack of information strengthens its ability to randomize.

⁴Note that this differs from seeking the truth at any cost.

costs. Damages are then set more harshly so as to maintain the sufficient incentive for player 2 to invest.⁵ That suppression is observable in the adversarial regime is important when suppression can only occur prior to the request for evidence, as it allows the adversarial system to implement a larger class of expected punishments. This occurs when player 2 bears suppression cost prior to player 1's request decision, which shapes player 2's incentive to invest, in order to deter player 1 (who observes the suppression) from requesting the evidence.

Related Literature

Pretrial discovery is a practical measure that is intended to address differences in what parties can prove in adversarial systems by allowing each party to ask the other questions concerning factual matters of the case.⁶ Each party has the incentive to attempt to avoid providing evidence in response to a question that is damaging to her case. This may be done by providing a confusing or elusive response. Examples of this include failure to fully answer a question, not answering, or even providing much more, possibly useless, evidence than was requested. The effectiveness of these measures depends upon both the type and ownership of the evidence in question. It is apparent that simple, effective methods for preventing these attempts to suppress evidence do not exist. Brazil (1980) and Shapiro (1979) provide evidence from practicing attorneys which suggests that the discovery process is ineffective.⁷

A related form of evidence tampering that typically fits well into this model is the destruction of evidence. Recent high profile cases have involved the shredding of documents and other attempts to destroy evidence. As long as the incriminating evidence that a party attempts to destroy cannot be destroyed with certainty, this model and results apply. Given the large quantities of documents that were shredded in the recent Arthur Anderson and Enron case, it's likely that this effort to destroy evidence could be effectively modeled as reducing the probability of incriminating evidence being revealed. See Sanchirico (2004) for a thorough treatment of the different types of evidence tampering. My results concerning randomization of requesting evidence in equilibrium suggest that it may be advantageous *not* to always have evidence revealed.

In practice the adversarial system has the advantage of having two parties who potentially disclose evidence. In most instances the litigants are better informed than the court. When litigants can disclose similar information, one typically expects the adversarial system to perform well.⁸ However, in reality litigants may not be able to

⁵The intuition here is similar to that found in the optimal enforcement literature.

⁶In my model I am not concerned with the problem of "over discovery" (the excessive use of discovery requests for the purpose of imposing unnecessary costs on one's opponent) as it may be addressed with fairly easy to administer measures. Cooter and Rubinfeld (1994 and 1995) provide a thorough treatment and simple measures for its prevention.

⁷How representative of the population as a whole the data presented in these are is open to debate. See Sanchirico (2004) for a discussion of this issue with regard to Brazil (1980).

⁸This is consistent with the finding of Milgrom and Roberts (1986). Bull and Watson (2004)

convey the same information to the court.⁹

Proponents of the inquisitorial system often suggest that its strength lies in the avoidance of the problems of discovery that are inherent in the adversarial system.¹⁰ One argument is that since the court is the sole fact-gatherer, it does not rely upon responses to discovery requests and hence avoids the situation where parties exert effort to suppress evidence in responses. It is important to note that in most instances one party typically has some control over each particular piece of evidence. Another argument in the literature is that having one fact-finder avoids the externality effects found in the adversarial system. Typically the end result of the civil proceeding is that the court orders one party to pay the other a transfer. Clearly if increased expenditure on production of evidence increases one's chances of winning at trial, it reduces the probability that one's opponent will win.¹¹ The marginal value of one litigant's expenditure to produce evidence favorable to her case is decreasing in her opponent's level of expenditure on evidence production. Thus, proponents of the inquisitorial regime argue that this externality causes expenditure on the production of evidence to exceed the socially optimal amount.¹²

Outline of Paper

The paper is organized as follows. I present the basic model in Section 1. In Section 2, I study the case where player 2 chooses suppression effort after the request is made. Then, in Section 3, I analyze the case where suppression occurs prior to the request decision. In Section 4, I analyze the relative merits of each system on the basis of my findings and provide a more practical discussion of my results there. The Appendix contains the proof of Theorem 1.

show this in a theoretical contract framework. Block, Parker, Vyborna, and Dušek (2000) find this in an experimental investigation of legal procedure. Shin (1998) studies a setting where litigants are equally informed in expectation, but may not be in realization. Froeb and Kobayashi (2000) analyze a setting where each litigant can incur a cost to draw evidence from the same distribution.

⁹Bull and Watson (2004) describe the court-imposed transfers that can be implemented under the adversarial system in a general contract framework. This is in terms of what each party can prove.

¹⁰Gottwald (1999) and Langbein (1985 and 1988) provide descriptions of the German inquisitorial system, and contrast it with the American system. Allen (1988) and Allen, Köck, Reichenberg, and Rosen (1988) discuss the limitations of Langbein's generalizations.

¹¹Bernardo, Talley, and Welch (2000) analyze legal presumptions in a setting where the cost of evidence production depends upon the actual state. Sanchirico (2000) models evidence cost as depending on the actual state.

¹²Tullock (1980) investigates a setting of this type and finds that an inquisitorial system is preferable. Allen et al. (1988) suggest that in practice it is not clear that parties attempting to reveal as much evidence as possible is undesirable. Evidence in my model is informative. My model suggests an advantage for the inquisitorial regime that is somewhat consistent with Tullock's argument. This is that the court may be able to commit to not always request the evidence, but the litigants cannot because player 1 knows whether the investment was made when she makes her request decision and her incentives differ from those of the court.

1 A Model of Evidence Suppression

I consider a relationship between two players, who interact over four periods. Prior to the first period, the legislature determines the fact-finding system. In period 1 the players agree to terms of a contract knowing the legislated system and rules of court action. This has an externally-enforced component m which specifies monetary transfers to be compelled by the court in period 4, conditional on evidence revealed in period 3, and a self-enforced part which describes behavior in the productive interaction and in the fact-finding phase.¹³

In the second period, productive interaction occurs. Suppose that productive interaction involves player 2 making an investment decision, invest (I) or not (N), which influences player 1's immediate payoff in that player 1 prefers I to N .¹⁴ Investment is costly for player 2, and player 1 observes player 2's investment decision. I denote their immediate payoffs by $u : A \rightarrow \mathbf{R}^2$, where $A = \{I, N\}$. Assume that these immediate payoffs are such that the players wish to induce investment. Given this productive interaction, I assume that the players' contract specifies some up front transfer from player 1 to player 2, which is intended to compensate him for his investment, and also specifies a transfer, given by m , from player 2 to player 1 as damages to be paid if player 1 does not invest.¹⁵ That is, the players write the contract to induce a desired contingent loss to player 2 that is sufficient to induce investment.

Should player 1 choose to pursue litigation, court enforcement occurs in periods 3 and 4. I assume that player 1 bears a small cost to pursue litigation. Fact-finding takes place in period 3. The court observes nothing other than some crucial evidence, possessed by player 2, that may be presented at trial. I represent this crucial evidence on which the court conditions the transfer by a document d , which exists following N and does not exist following I . The existence of the document does not ensure that the court observes it. The document must be revealed. In period 4 the court compels a transfer between the litigants conditional on d .¹⁶

The disclosure of d is considered *positive evidence* of non-investment since it is available following N , but not following I . The non-disclosure of d is considered *negative evidence* of investment because it is not available following I , but is following N .¹⁷ The court imposes transfer $m(d)$, the damages specified in the contract, when the document is disclosed, and transfer $m(\emptyset)$ when the document is not disclosed. Due

¹³Though I focus on contract in this paper, the basic set up and results apply to tort as well. In the case of tort, the legislature decides how the disclosure of the evidence is to influence the action taken by the court.

¹⁴The results are not specific to this particular productive interaction. However, assuming a specific production game allows me to emphasize the importance of the fact-finding system and evidence suppression in shaping incentives in productive interaction.

¹⁵One can view the contract as specifying liquidated damages for non-investment.

¹⁶I assume that players cannot contract on whether they later go to court. The only thing the court can observe and will condition on is evidence.

¹⁷See Bull and Watson (2004) for a more thorough discussion of positive and negative evidence.

to the possibility of settlement prior to the court's action transfers must be balanced—meaning that the amount one player pays must equal what the other receives. That is, $m_1(d) = -m_2(d)$, and $m_1(\emptyset) = -m_2(\emptyset)$. This is because if $\sum_{i=1,2} m_i < 0$, the players will renegotiate the contract between periods 3 and 4.¹⁸ Define $\Delta \equiv m_1(d) - m_1(\emptyset)$.¹⁹ To prevent the players from going to litigation when player 2 has invested, let $m_1(\emptyset) = 0$. Thus, Δ represents the damages paid to player 1 by player 2 when the evidence is disclosed. I assume $\Delta > 0$.

Given N , in order for d to be revealed it must be requested, which is costly. When I occurs, d can never be revealed, even if requested, as it does not exist. Following N , the probability that, when requested, document d is revealed is denoted by $p(e)$, where $e \geq 0$ denotes the level of costly effort by player 2 to suppress d . I assume $p(0) = 1$. That is, if both d is requested and player 2 exerts no effort to suppress, d is revealed. As player 2 exerts costly effort to try to suppress the document, I assume that $p'(e) < 0$. I also assume that $p'(0) = -\infty$. Further, I assume that player 2's efforts are decreasingly effective, so that $p''(e) > 0$. Lastly, assume that p is bounded below by $\underline{p} > 0$. Given these assumptions and N (implying that the document exists); player 2 will exert, at least in expectation, positive effort to suppress d . I study the case where player 2's suppression occurs prior to player 1's request and the case where it occurs after player 1's request. Let ϕ denote the cost to player 1 (and to the court) of requesting the evidence.

As modeled, under the adversarial system only player 1 can request evidence. The court chooses whether to request evidence in the inquisitorial system. I assume complete information between the players, but assume that the court is uninformed about the investment decision and player 2's level of suppression.²⁰

The expected loss imposed upon player 2, when N is selected, is the expected damages ($\Delta p(e)$) plus player 2's effort to suppress e . I denote player 2's expected loss by y . When d is requested and e is exerted in equilibrium, $y = \Delta p(e) + e$. Player 2's pre-litigation behavior is influenced by the size of y . I denote the enforcement cost associated with y by $c(y)$, where $c(y)$ is player 2's effort to suppress e plus the cost of requesting ϕ . The timing of when suppression can occur influences the cost of implementing a specific value of y , which I denote \bar{y} . The necessary value of \bar{y} depends on the specific assumptions about player 2's cost of investment. I use the enforcement cost incurred under each system to evaluate the relative merits of each. The notion is that \bar{y} is used to motivate player 2 to invest, and it is desirable to motivate him with the least cost because the enforcement cost is simply a loss to the relationship

¹⁸Clearly, transfers cannot be such that $\sum_{i=1,2} m_i > 0$. In a contract setting, this balancedness assumption is also motivated by courts being unable to impose fines.

¹⁹Note that, given balanced transfers, $\Delta = m_2(\emptyset) - m_2(d)$.

²⁰This fits with the contract theory literature. In many practical settings this seems reasonable though I don't expect complete information between the players to always be the case. However, these assumptions do emphasize informational differences that are, at least implicitly, assumed in many previous comparisons of the two systems. I also assume that the court does not observe any suppression of evidence.

as a whole.²¹

2 Suppression After Request

In this section I study how the choice of fact-finding rules influences the cost of enforcement c when suppression occurs after the request for evidence d . Here, there are three sub-periods of the fact-finding process. First, given N , the request decision is made. Second player 2 chooses suppression effort $e \geq 0$. Then d is revealed with probability $p(e)$. If d is requested, player 2 chooses effort e to maximize his expected payoff. Player 2's expected payoff is given by $-\Delta p(e) - e$, which is his expected transfer less his cost of suppression. My assumptions ensure an interior solution. Thus, I focus on player 2's first order condition. I define e^* to be effort such that $-\Delta p'(e^*) = 1$. I first analyze the adversarial regime, and then study the inquisitorial regime.

Adversarial

Player 1 knows whether the investment was made prior to her request decision. Given N , player 1 requests d when $\phi < \Delta p(e^*)$. Thus, the adversarial system cannot implement some range of small values of \bar{y} because for a small enough expected loss, player 1 has no incentive to request the document. I state this formally as follows.

Proposition 1 *Suppose that suppression occurs only after the request decision and $\phi > 0$. Then there exist finite values of \bar{y} that cannot be implemented by the adversarial system.*

Proof: Consider \bar{y} such that $0 < \bar{y} < \phi$. Then, since $\Delta p(e^*) + e^* = \bar{y}$, it must be that $\Delta p(e^*) < \phi$. Thus, player 1 will not request d when a occurs. *Q.E.D.*

In the first period of interaction the contracting problem facing the players is $\min_{\Delta} e^* + \phi$ such that $\Delta p(e^*) + e^* = \bar{y}$ for the necessary \bar{y} . When $\bar{y} > 0$, this requires $\phi < \Delta p(e^*)$. This is solved as follows. The constraint, $\bar{y} = \Delta p(e^*(\Delta)) + e^*(\Delta)$, is monotonic in Δ . So solving the constrained optimization problem just requires finding the value of Δ that satisfies the constraint. To see this, note that differentiation of the constraint yields

$$\frac{dy}{d\Delta} = p(e^*(\Delta)) + \Delta p'(e^*(\Delta))[e^{*\prime}(\Delta)] + e^{*\prime}(\Delta).$$

Since $e^*(\Delta)$ satisfies player 2's first order condition, it must be that $\Delta p'(e^*(\Delta)) = -1$. Substituting yields

$$\frac{dy}{d\Delta} = p(e^*(\Delta)) - e^{*\prime}(\Delta) + e^{*\prime}(\Delta) = p(e^*(\Delta)) > 0.$$

²¹In practice most, but not all, disputes are settled before they go to litigation. Though it would not change the method of analysis, the timing described here could be enriched by including settlement negotiation and having that negotiation breakdown with some positive probability.

Thus, y is monotonic in Δ . Next consider the shape of y as a function of Δ . Note that since $\Delta > 0$, $dy/d\Delta \in (0, 1)$. Further, $d^2y/d\Delta^2 = p'(e^*(\Delta))e'^*(\Delta) < 0$.

Now consider the relationship between e^* and Δ . Clearly, e^* is increasing in Δ . Total differentiation of the first order condition for player 2, which is $\Delta p'(e^*) - 1 = 0$, yields $p'(e^*)d\Delta + \Delta p''(e^*)de^* = 0$. Thus,

$$\frac{de^*}{d\Delta} = -\frac{p'(e^*)}{\Delta p''(e^*)} > 0.$$

Differentiating again yields

$$\frac{d^2e^*}{d\Delta^2} = -\frac{p''(e^*(\Delta))e'^*(\Delta)}{\Delta p''(e^*(\Delta))} + \frac{p'(e^*(\Delta))}{[\Delta p''(e^*(\Delta))]^2} [p''(e^*(\Delta)) + \Delta p'''(e^*(\Delta))e'^*(\Delta)].$$

So, although, e^* is monotonic in Δ , the curvature is not generally clear. If $p'''(e) > 0$, the graph will be strictly concave. However, monotonicity is the important feature.

As the relationship between y and Δ is monotonically increasing, the graph of e^* as a function of y will be monotonically increasing. So $c = e^*(\Delta) + \phi$ is also monotonic. However, to describe $c = e^*(\Delta) + \phi$ as a function of y , we must consider the request decision. Player 1 will not request the evidence when $\phi < \Delta p(e^*(\Delta))$. This corresponds to when the value of c is above the 45-degree line in Figure 1 below since a comparison of $c = e^*(\Delta) + \phi$ and $y = \Delta p(e^*(\Delta)) + e^*(\Delta)$ is equivalent to a comparison of ϕ and $\Delta p(e^*(\Delta))$. A dotted line in Figure 1 below indicates values of y for which the request is not made.

Since p is bounded we know that for a large enough value of Δ it will be the case that $\phi/\Delta < p(e^*(\Delta))$, meaning the request will be made. The graph in Figure 1 is based on an e^* that is strictly concave in Δ . If $e^*(\Delta)$ is not strictly concave, c may move above and below the 45-degree line, but must eventually fall below it and remain below it. Clearly, a larger \bar{y} than is needed will induce the desired incentives in the productive interaction.²² However, this results in a higher enforcement cost.

Inquisitorial

The timing here is as above, but the court, instead of player 1, requests d . As discussed above, the court must condition the transfer imposed upon whether d is revealed. Since the court is not motivated by the transfer, it can randomize as to when it requests d . Denote the probability with which the court requests d by $\alpha \in [0, 1]$. I assume that when $\Delta p(e^*) < \phi$, α must equal zero.²³ I now consider how α influences the relationship between expected litigation costs and the expected

²²If player 2's immediate payoff from investing has a stochastic component, setting \bar{y} very large would deter efficient breach of the contract. Further, there may be institutional constraints on the size of Δ relative to the actual difference in player 1's immediate payoff.

²³That is, I assume that the court does not request when the expected gain to doing so is less than the cost of requesting. This assumption does not have a qualitative impact on the comparison of systems.

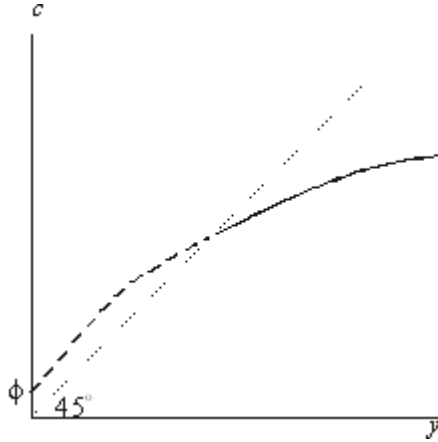


Figure 1: Adversarial, effort after – Relationship between c and y .

difference in transfers. For $\phi < \Delta p(e^*)$, the expected $\bar{y} = \alpha \Delta p(e^*) + \alpha e^*$, and the expected $c = \alpha e^* + \alpha \phi$. Note that, by themselves the players cannot commit to randomize as player 1 knows whether the evidence exists when she decides whether to request the document, and has the incentive to always request document d when it exists.²⁴ However, here α is selected as a policy decision, and then the players select Δ with knowledge of α . Recall that p is bounded below by $\underline{p} > 0$. For a given \bar{y} , as α approaches zero (and Δ is increased) \bar{y} can be implemented in expectation at no cost. I state this formally as follows.

Theorem 1 *Consider an inquisitorial system in which suppression only occurs after the request for document d . Suppose that $\underline{p} > 0$. Then, when d is requested with probability α , for an arbitrarily small α any expected \bar{y} can be implemented at zero expected cost.*

Effort e^* and the request cost ϕ are incurred with low probability. Thus, expected cost is low. Δ is set very large so that even though it is paid with low probability it provides the correct incentives in expectation. Since p is bounded from below e is bounded from above. Thus, the expected cost of effort approaches zero as α becomes small and the probability that e is actually incurred approaches zero.²⁵ It is crucial that $\underline{p} > 0$, so player 2 cannot drive the expected transfer to zero. This implies the existence of a Δ that is large enough to give the desired \bar{y} .²⁶ Note that Δ will be

²⁴Certainly there are ways to attempt to lessen this effect under the adversarial system. Decoupling is one way to do this. See Polinsky and Che (1991). However, it is not clear that decoupled contracts of that nature typically enforced by courts. These are perhaps more readily enforced by other enforcement authorities. Bernstein (1992) discusses a diamond trade group that enforces transfers to third parties.

²⁵Thus, a graph of expected cost as a function of expected punishment (similar to that found in Figure 1) would simply be a horizontal line.

²⁶Values of \bar{y} close to zero can be implemented by choosing α close to zero and Δ such that $\Delta p(e^*) > \phi$ so that $\alpha \Delta p(e^*) = \bar{y}$.

larger under the randomization scheme than in the adversarial case where player 1, so this result relies upon Δ having a rather punitive nature. I discuss this in more detail in Section 4.

The intuition is familiar from the literature on public enforcement of law. There the notion is that it is costly to provide government enforcement of law, so it may be advantageous to put less effort into catching criminals, but to punish (by means of a fine) those who are caught more harshly. This induces the desired incentive for potential criminals as the expected fine is the same. However, enforcement costs are reduced. The uncertainty that allows for randomization is the result of effort to catch violators. The classic treatment is Becker (1968). Polinsky and Shavell (2000) provide a good survey of the literature. The uncertainty for my result comes jointly from court randomization and uncertainty of document revelation.

Given \bar{y} and ϕ , the design problem in period 1 is to choose Δ (chosen by the players) and α (chosen prior to the players contracting by the legislature) to implement \bar{y} at minimum enforcement costs. Formally, this problem is $\min_{\Delta, \alpha} \alpha e^* + \alpha \phi$ such that $\alpha \Delta p(e^*) + \alpha e^* = \bar{y}$. From Theorem 1 choosing α close to zero and Δ such that $\phi < \Delta p(e^*)$ and $\alpha \Delta p(e^*) = \bar{y}$ will minimize $\alpha e^* + \alpha \phi$ while yielding $\alpha \Delta p(e^*) = \bar{y}$.

3 Suppression Before Request

Here I analyze the case where suppression can occur only between the initiation of litigation and the request decision.²⁷ I assume that player 2 chooses the level of suppression effort, which is observable to player 1 and is not observable to the court, before the request decision is made. Player 2's effort to suppress is assumed to influence the probability that the document is revealed in the same manner as before.

Adversarial

Since player 1 observes player 2's effort to suppress prior to her request decision, player 1 will request d only when $\phi < \Delta p(e)$, for the e player 2 actually exerts. Let \bar{e} denote e such that $\phi = \Delta p(\bar{e})$. Player 2 chooses e to maximize his enforcement payoff, which may involve exerting \bar{e} to prevent player 1 from requesting.

Proposition 2 *Consider the adversarial system following N . Suppose $\phi < \Delta$, and player 2 can only suppress prior to litigation. Then, prior to player 1's request decision player 2 exerts \bar{e} when $\bar{e} < \Delta p(e^*) + e^*$ and exerts e^* otherwise.*

Proof: This just follows from player 2's payoff and player 1's request rule. When $\bar{e} < \Delta p(e^*) + e^*$, player 2's payoff from exerting \bar{e} (and deterring player 1's request) is

²⁷Though I consider that settlement may occur between when the document is potentially revealed and when the court imposes transfers, I do not study renegotiation prior to that. So I am not concerned with the scope for renegotiation prior to litigation. That is, I assume for reasons not modeled that settlement does not occur prior to litigation.

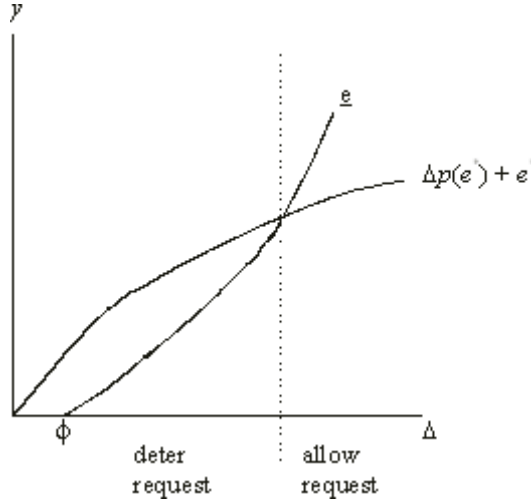


Figure 2: Adversarial, effort before – Relationship between y and Δ .

greater than when he exerts e^* and player 1 requests. However, when $\Delta p(e^*) + e^* \leq \bar{e}$, he prefers to exert e^* and let player 1 request. *Q.E.D.*

This is just like entry deterrence—when the request-detering level of suppression \bar{e} is less than the expected loss under e^* , player 2 suppresses at \bar{e} . Player 2’s behavior here differs from the case where effort is exerted after player 1 requests as he exerts effort to suppress when $\Delta > \phi > \Delta p(e^*)$.²⁸

To consider the period 1 design problem, let’s consider the relationship between y and Δ in the case where the request is deterred and in the case where the request is made.²⁹ For the case where the request is deterred, since \bar{e} is defined to be effort such that $\phi = \Delta p(\bar{e})$, $p'(\cdot) < 0$, and $p''(\cdot) > 0$, it must be that $dy/d\Delta > 0$ and $d^2y/d\Delta^2 > 0$. Thus, the relationship between y and Δ , given that the request is deterred, is as represented in Figure 2.

In the case where the request is made (holding aside, for now, player 1’s decision of whether to request), the relationship between y and Δ is as described on page 2. That is, when the request is always made, $dy/d\Delta \in (0, 1)$ and $d^2y/d\Delta^2 < 0$. This is also represented in Figure 2.

Given the nature of the relationship between y and Δ under each of these settings, the curves cross at most once. Thus, there is a crucial value of Δ , say Δ^* , such that for values of Δ below (above) Δ^* player 2 deters (allows) the request. So the design problem is simply to choose the unique value of Δ for the specific y that is to be implemented. Note that arbitrarily small values of y can be implemented.

²⁸When $\phi \geq \Delta$ player 1 will not request d regardless of player 2’s effort.

²⁹I thank an anonymous reader for suggesting this type of presentation. I am also grateful to that same reader for pointing out an error in an earlier version.

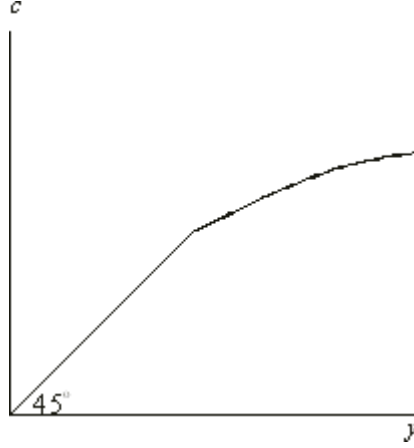


Figure 3: Adversarial, effort before – Relationship between c and y .

Proposition 3 *Consider the adversarial system where player 2 can only exert effort to suppress prior to the request decision and this effort is observable by player 1. Then \bar{y} arbitrarily close to zero can be implemented.*

Proof: Given \bar{y} , choose Δ according to the procedure described in the construction of Figure 2. *Q.E.D.*

The relationship between c and \bar{y} is represented in Figure 3. For y close to zero the slope is 1 as $\bar{y} = \bar{e} = c$. For larger values of y , the slope is less than 1 as $\phi < \Delta p(e^*)$.

Inquisitorial

I now consider the inquisitorial system. Recall that the court is assumed to be unable to observe suppression effort. As above, the court can commit to request d with probability α . Let $z = \alpha\Delta$. From above, there is a unique value of z that implements a particular expected punishment \bar{y} . Thus, the implementation problem, given \bar{y} and the corresponding z that implements \bar{y} , is to choose α and Δ , such that $\alpha\Delta = z$, to minimize the expected cost of implementing a given \bar{y} . Setting α very small reduces the expected request cost. However, since player 2 exerts effort to suppress before knowing whether the request is made (and chooses his effort e^* in response to z), there is no reduction in effort to suppress as in Section 2.

Proposition 4 *Consider the inquisitorial system when suppression can only occur prior to the request decision. Take as given \bar{y} , and $\tilde{\alpha}$ arbitrarily close to zero. Suppose there exists $\tilde{\Delta}$ such that $\phi < \tilde{\Delta}p(\tilde{e})$ and $\tilde{\alpha}\tilde{\Delta}p(\tilde{e}) + \tilde{e} = \bar{y}$, where \tilde{e} is such that $-\tilde{\alpha}\tilde{\Delta}p'(\tilde{e}) = 1$. Then $\tilde{\alpha}$ and $\tilde{\Delta}$ implement \bar{y} at expected cost \tilde{e} . Further, the minimum expected cost at which \bar{y} can be implemented is \tilde{e} .*

As noted above, when a given value of \bar{y} can be implemented under both the adversarial and inquisitorial systems, it must be that Δ under the adversarial system

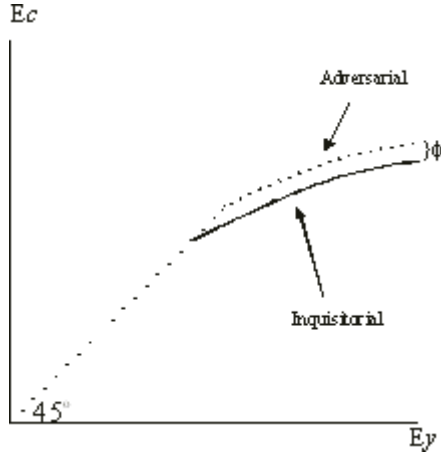


Figure 4: Inquisitorial regime, effort before – Relationship between expected c and expected y .

is equal to z under the inquisitorial system. This is because there is a unique value of Δ (z , with randomization) that implements a given \bar{y} . So both induce the same level of effort.

Proposition 5 *Consider the case where effort to suppress can only be exerted prior to the request decision. Take as given \bar{y} . Suppose that \bar{y} can be implemented under the adversarial regime and suppression effort e^* is induced. Further, suppose that \bar{y} can be implemented under the inquisitorial regime and suppression effort \tilde{e} is induced. Then it must be that $e^* = \tilde{e}$.*

Proof: Suppose not. Then due to the strict convexity of p it must be that either e^* or \tilde{e} is not optimal. *Q.E.D.*

Thus, for \bar{y} 's that can be implemented by both systems, randomization gives the inquisitorial system an expected cost advantage of ϕ . The relationship between expected c and y is represented in Figure 4. As above, I require that the expected transfer justify the request cost ($\phi < \Delta p(\tilde{e})$), for the court to request the evidence.³⁰ Unlike in the case where suppression occurs after the request, suppression effort is always exerted and there will be some values of \bar{y} that the inquisitorial system cannot implement.

4 A More Direct Comparison

In this Section I directly compare the relative merits of each system. I define μ to be operating costs of the inquisitorial system less those of the adversarial system. I

³⁰Here again, a large value of \bar{y} can be used to induce the desired incentives in the productive phase, but it requires a higher level of enforcement cost and may hinder efficient breach.

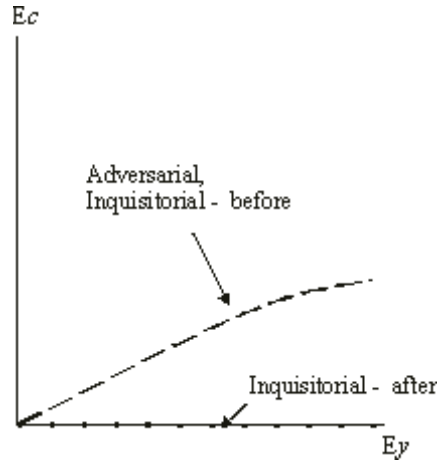


Figure 5: Relationship between expected c and expected y when $\mu = 0$.

consider the case where the request cost for each party is zero. Note that with no request cost, the adversarial system, for effort occurring before or after the request, and the inquisitorial system, when effort occurs prior to litigation, involve essentially the same design problem.

I first consider the case where the operating cost of each system is the same ($\mu = 0$). This is represented in Figure 5. The inquisitorial system is preferred when effort occurs after the request decision.³¹ When suppression only occurs prior to the request decision, the two systems face essentially the same problem since the request cost is zero.

I now consider a perhaps more realistic case where the cost of operating the inquisitorial system is higher than that of operating the adversarial system ($\mu > 0$). Some have argued that in practice operating costs of inquisitorial systems may be higher than those of adversarial systems. One reason is that judges must spend time becoming familiar with cases. It is likely that a judge who is unfamiliar with the issues of a case would require preparation in order to be able to request evidence. When the court conducts fact-finding, it is reasonable to expect that more time may be spent in court. In practice there are many more judges in inquisitorial systems than in adversarial systems.³²

This case is represented in Figure 6. When suppression occurs before, the adversarial system is strictly preferred as the same outcome can be implemented at a lower cost. When suppression occurs after, the benefits of the inquisitorial system must be balanced against the cost of its implementation. This implies comparing the size of the gain from the inquisitorial system with the size of μ . Consider the case where suppression occurs after the request decision. For \bar{y} below y_c the adversarial system is

³¹That is, it is preferred on the basis of cost associated with implementing a given \bar{y} .

³²Proponents of the inquisitorial system may suggest that attorney fees are lower under the inquisitorial system.

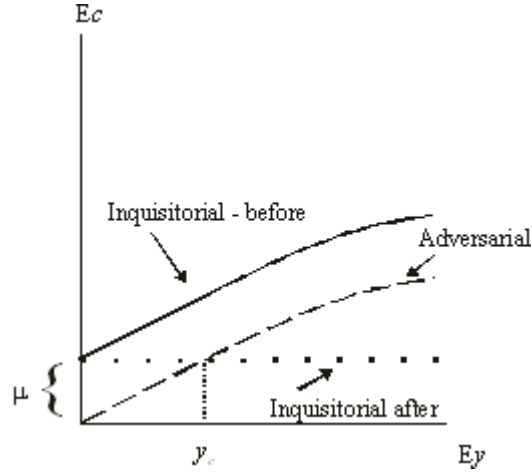


Figure 6: Relationship between expected c and expected y when $\mu > 0$.

preferred. When $\bar{y} > y_c$, the inquisitorial system is preferred. That is, for large values of \bar{y} the inquisitorial system implements \bar{y} at a lower expected cost. More formally, this is as follows.

Observation 1 *Suppose $\phi = 0$, and $\mu > 0$. Assume suppression only occurs **after the request decision**. Then under the adversarial regime any $\bar{y} < y_c$ can be implemented at a lower cost than it can be under the inquisitorial regime. However, under the inquisitorial regime any $\bar{y} > y_c$ can be implemented at lower cost than it can be under the adversarial regime.*

When suppression only occurs prior to litigation, the adversarial system performs better.

Observation 2 *Suppose $\phi = 0$, and $\mu > 0$. Assume suppression only occurs **prior to the request decision**. Then under the adversarial regime any (finite and positive) \bar{y} can be implemented at lower cost than under the inquisitorial regime.*

The strength of the inquisitorial regime lies in its ability to commit to randomize. However, this randomization requires a large Δ . Thus the actual damages imposed must be very punitive. I have been concerned with choosing \bar{y} to prevent player 2 from deviating to N . Thus, in a sense, I am concerned with restitution damages as I am basing \bar{y} on player 2's gain from deviating.³³ However, the actual award that is received in court is Δ . I describe punitive damages as follows.

Definition 1 Δ has a **punitive** component if $\Delta > \bar{y}$.

³³In many settings it is likely that the gain by player 2 may actually be less than the loss imposed on player 1. Here it is reasonable that this is the case as having positive surplus requires that player 2's cost of investment be less than the gain in player 1's immediate payoff.

When suppression is possible Δ must have a punitive component, regardless of the system.

Proposition 6 *Given that $\bar{y} > 0$, Δ must have a punitive component.*

Proof: Consider first the case where $\phi < \Delta p(e^*)$, where e^* is such that $-\Delta p'(e^*) = 1$. Since e^* yields an interior solution it must be that $\Delta > \Delta p(e^*) + e^*$. Next, consider the case for small \bar{y} 's under the adversarial system when suppression only occurs prior to litigation. When player 2 exerts \bar{e} it must be that $\bar{y} = \bar{e} < \Delta p(e^*) + e^*$. *Q.E.D.*

Player 2 will suppress evidence when it is worthwhile for him to do so. This implies that, when evidence is requested only probabilistically, the difference in actual transfers must have a punitive component.

Clearly, the randomization result requires a relatively large Δ . In order for the court to randomize, Δ must have a much larger punitive component than the Δ under the adversarial system. Concerns about fairness may, institutionally, limit the usefulness of the inquisitorial system as a way to commit to randomization.³⁴ If the state expresses a policy where the actual transfer should fit the offense, then Δ cannot, in general, be large enough for randomization to realize the efficiency gains. However, it is worth noting that the actual transfer Δ may only have a punitive component based upon restitution damages. In reality it may be that expectations damages would be much larger.³⁵ Under expectations damages player 1 is awarded the amount needed to give her what she expected to receive if player 2 had acted according to the contract. See, for example, Barnett (1999) for a discussion of contract damages.

An explanation of Theorem 1 is that if the court is uninformed of the state of the world, it can commit to randomizing as to whether to request. It may be, in reality, that there are many possible mutually exclusive documents that could exist. If this is the case, the court may very well not know which document to request. The inquisitorial system may in practice allow some scope for randomization. For example, though randomization is not their focus, Allen et al. (1988) discuss a case in Germany where the judge appears to disregard evidence and shape witness testimony to fit a stronger position than that the witness actually takes. They discuss the numerous privileges that witnesses in Germany may claim. Additionally, they suggest that many types of written documents are very difficult to introduce into evidence.

In practice many Civil law countries have been more willing to enforce penalty clauses in contract law. Hatzis (2003) deals more generally with this difference between Civil and Common contract law, and argues that enforcement of penalty clauses is one of the few areas where there is a substantive difference between the two. Hatzis' discussion of the laws of specific Civil law countries suggests that penalty clauses are

³⁴Further, wealth constraints may also pose a problem. The large literature on optimal enforcement that has dealt with these issues is quite relevant.

³⁵This has not been specifically addressed in the productive activity modeled here, and in general there is not a clear relationship between the gain to player 2 from choosing N and the associated loss to player 1.

most likely to be enforced when the contract is a commercial contract between businessmen. Certainly, there are many limitations. However, it seems that Civil law countries are much more willing to enforce penalty clauses, and this is, at least to some extent, consistent with Theorem 1.

Limitations on punitive damages may restrict the size of Δ for a given \bar{y} . In my model, an analogous constraint would be a limitation on the size of α . If α is constrained to be 1, the effect is the same as when the size of Δ is constrained relative to \bar{y} . Another explanation as to why α may be constrained is that in practice certain inquisitorial systems allow litigants to suggest which documents the court should attempt to gather. Allen et al. (1988) and Langbein (1985) discuss the possibility and tendency of this in German civil procedure.

So I now explore the effects of the constraint that $\alpha = 1$. When $\alpha = 1$ the court must always request d . Recall that player 1 will not choose to go to court unless N has occurred, but the court cannot condition upon that.³⁶ Consider as above the case where $\phi = 0$. When $\mu = 0$ either system has the same cost for a given \bar{y} . When $\mu > 0$ the adversarial system is preferred.

Observation 3 *Suppose $\phi = 0$ and $\alpha = 1$. Then when $\mu > 0$ a given \bar{y} is implemented at a lower cost under the adversarial regime than under the inquisitorial regime. When $\mu = 0$ either regime will implement a given \bar{y} at the same cost.*

5 Conclusion

I have compared the relative merits of systems of fact-finding in a model that allows for the suppression of evidence. Neither system dominates the other. The inquisitorial system's strength is its ability to commit to randomize—my model suggests that it is better for evidence *not* to always be requested. This is very much at odds with the literature in favor of either system. I stress the importance of the litigation process in influencing players' incentives in primary activity as opposed to simply focusing on searching for the truth.

Many advocates of the adversarial system have suggested that the litigants are better informed and imply that thus the adversarial system is preferred. Here, player 1 cannot commit to randomize under the adversarial system because she knows whether the document exists and the level of suppression, and she is motivated by the transfer. In some sense, this is consistent with most of the proponents of the inquisitorial system who have suggested that the inquisitorial system is preferred because litigants act in their own self interest. However, for some (small) values of \bar{y} when $\phi > 0$, a benefit of the adversarial regime is that the players can observe suppression.

Certainly, the specific features of each actual system are of great importance, and will influence whether randomization has any advantage. As such, there are many

³⁶Otherwise, player 1 would initiate litigation even when player 2 invests.

limitations to Theorem 1, and I do not expect it to hold generally in practice. It may be that a player can completely suppress evidence (that is, $\underline{p} = 0$) and the result may not hold. For example, if a party can shred documents and knows for certain that he is shredding the “smoking gun” document, this may restrict the usefulness of randomization.³⁷ For a large enough value of μ , the adversarial system may be preferred.

Though not modeled here, the choice of system may influence the functional form of p . Under one system suppression may be less effective than under another. A reasonable assumption is that litigants are in a better position to detect suppression. However, the court is in a better position to do something about it. That is, a litigant may more easily realize that her opponent is acting to suppress evidence, but in order for the court to act she must convince the court that her opponent is suppressing evidence. In certain circumstances, a litigant may have the incentive to suggest that her opponent is suppressing when in fact he is not. Avenues for future research include evaluating these issues in a more general model with many documents and/or in a setting of asymmetric information.

Appendix

Proof of Theorem 1: Let \bar{y} denote the desired expected loss to player 2. $\bar{y} \equiv \Delta p(e^*) + e^* \equiv \alpha \hat{\Delta} p(\hat{e}) + \hat{e}$, where Δ and $\hat{\Delta}$ denote the differences in the actual transfers and e^* and \hat{e} denote the equilibrium levels of effort under the case where player 1 requests the document that exists and the randomization scheme respectively. Define $x \equiv \alpha \Delta(\alpha) p(e(\Delta(\alpha)))$ and rearrange to obtain $x/\alpha \Delta(\alpha) = p(e(\Delta(\alpha)))$. Inverting yields $p^{-1}(y/\alpha \Delta(\alpha)) = e(\Delta(\alpha))$. To simplify notation let $q(\cdot) \equiv p^{-1}(\cdot)$.

I want to show that the expected enforcement cost, $\alpha \hat{e} + \alpha \phi$ under the inquisitorial system approaches zero when α approaches 0. To do this I show that for a small enough α the optimal e approaches an upper bound. This implies that αe approaches zero. To do this, I need to find $e''(\alpha)$. From above, $de/d\alpha = q'(y/\alpha \Delta(\alpha)) [p(e(\Delta(\alpha)))/\alpha + y \Delta'(\alpha)/\alpha [\Delta(\alpha)]^2]$ It is apparent that $de/d\alpha < 0$. Differentiating again to find the second derivative yields

$$\begin{aligned} d^2e/d\alpha^2 &= \underbrace{-q''(y/\alpha \Delta(\alpha)) [p(e(\Delta(\alpha)))/\alpha + y \Delta'(\alpha)/\alpha [\Delta(\alpha)]^2]}_{-} \\ &\quad - \underbrace{q'(y/\alpha \Delta(\alpha)) [p'(e(\Delta(\alpha))) e'(\Delta(\alpha)) \Delta'(\alpha)/\alpha + y \Delta''(\alpha)/\alpha [\Delta(\alpha)]^2]}_{-} \\ &\quad + \underbrace{-y \Delta'(\alpha) [(\Delta(\alpha))^2 + \alpha \Delta'(\alpha)]/\alpha^2 [\Delta(\alpha)]^4}_{-} d^2e/d\alpha^2 < 0. \end{aligned}$$

Thus, e is decreasing and concave in α . This implies that e is bounded from above, and as α approaches 0, e approaches this bound. Thus, the expected enforcement

³⁷In general, this does not seem to be the case for the document shredders that have been made popular in recent cases. These parties had enormously large quantities of documents. Surely all of the documents shredded were not crucial ones.

costs approach zero.

Note that for values of \bar{y} close to zero, \bar{y} can be implemented by choosing α close to zero and Δ such that $\Delta p(e^*) > \phi$ so that $\alpha \Delta p(e^*) = \bar{y}$. Further, for $\bar{y} < 0$ the court chooses α close to zero so as to make $\alpha \phi$ close to zero, and then chooses Δ so that $\alpha \Delta = \bar{y}$. This is because player 2 will not suppress when $\Delta < 0$. *Q.E.D.*

References

- Allen, R. (1988), "Idealization and Caricature in Comparative Scholarship," *Northwestern University Law Review* 82: 785–807.
- Allen, R. Köck, Reichenberg, and Rosen (1988), "The German Advantage in civil Procedure: A Plea for More Details and Fewer Generalities in Comparative Scholarship," *Northwestern University Law Review* 82: 7–762.
- Barnett, R. (1999), *Contracts: Cases and Doctrine*, Second Edition. Aspen.
- Becker, G. (1968), "Crime and Punishment: An Economic Approach," *The Journal of Political Economy* 76–130.
- Bernardo, A., E. Talley, and I. Welch (2000), "A Theory of Legal Presumptions," *Journal of Law, Economics, and Organization* 16: 1–49.
- Bernstein, L., (1992), "Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry," *Journal of Legal Studies* 21: 115–157.
- Block, M., J. Parker, O. Vyborna, and L. Dušek (2000), "An Experimental Comparison of Adversarial versus Inquisitorial Procedural Regimes," *American Law and Economics Review* 2: 170–194.
- Brazil, W. (1980), "Views from the Front Lines: Observations by Chicago Lawyers About the System of Civil Discovery," *American Bar Foundation Research Journal* 217: 219–251.
- Bull, J. and J. Watson (2004), "Evidence Disclosure and Verifiability," *Journal of Economic Theory*, 118: 1–31.
- Cooter, R. D. and D. L. Rubinfeld (1994), "An Economic Model of Legal Discovery," *Journal of Legal Studies* 23: 435–463.
- Cooter, R. D. and D. L. Rubinfeld (1995), "Reforming The New Discovery Rules," *The Georgetown Law Journal* 84: 61–89.
- Froeb, L. and B. Kobayashi (2000), "Evidence Production in Adversarial vs. Inquisitorial Regimes," Vanderbilt University Law School, Working Paper 99-13.
- Gottwald, P. (1999), "Civil Justice Reform: Access, Cost, and Expedition. The German Perspective," in ed. A. Zuckerman, *Civil Justice in Crisis*. Oxford University Press.
- Hatzis, A. (2003), "Having the Cake and Eating It Too: Efficient Penalty Clauses in Common and Civil Contract Law," *International Review of Law and Economics* 22: 381–406.

- Langbein, J. (1985), "The German Advantage in Civil Procedure," *The University of Chicago Law Review* 52: 823–866.
- Langbein, J. (1988), "Trashing The German Advantage," *Northwestern University Law Review* 82: 763–784.
- Milgrom, P. and J. Roberts (1986), "Relying on the Information of Interested Parties," *Rand Journal of Economics* 17: 18–32.
- Polinsky, M. and Y. Che (1991), "Decoupling Liability: Optimal Incentives for Care and Litigation," *Rand Journal of Economics* 22: 562–570.
- Polinsky, M. and S. Shavell (2000), "The Economic Theory of Public Enforcement of Law," *Journal of Economic Literature* 38: 45–76.
- Sanchirico, C. (2000), "Games, Information, and Evidence Production with Application to English Legal History," *American Law and Economics Review* 2: 342–380.
- Sanchirico, C. (2004), "Evidence Tampering," *Duke Law Journal*, in press.
- Shapiro, D. (1979), "Some Problems of Discovery in an Adversary System," *Minnesota Law Review* 63: 1055–1100.
- Shin, H. S. (1998), "Adversarial and Inquisitorial Procedures in Arbitration," *Rand Journal of Economics* 29: 378–405.
- Tullock, G. (1980), *Trials on Trial*. New York: Columbia University Press.