

Ordeals*

Peter T. Leeson[†]

Abstract

I argue that medieval judicial ordeals accurately assigned accused criminals' guilt and innocence. They did this by leveraging a medieval superstition called *iudicium Dei*. According to that superstition, God condemned the guilty and exonerated the innocent through clergy conducted physical tests. Medieval citizens' belief in *iudicium Dei* created a separating equilibrium in which only innocent defendants were willing to undergo ordeals. Conditional on observing a defendant's willingness to do so, the administering priest knew he was innocent and manipulated the ordeal to find this. My theory explains the peculiar puzzle of ordeals: trials of fire and water that should've condemned most persons who underwent them did the reverse. They exonerated these persons instead. Boiling water rarely boiled persons who plunged their arms in it. Burning iron rarely burned persons who carried it. Ordeal outcomes were miraculous. But they were miracles of mechanism design.

*I thank Gary Becker, Omri Ben-Shahar, Peter Boettke, Richard Brooks, Dennis Carlton, Christopher Coyne, Frank Easterbrook, David Friedman, Todd Henderson, Emir Kamenica, Roger Koppl, William Landes, Steven Levitt, Anup Malani, David Myatt, Emily Oster, Alexandre Padilla, Eric Posner, Richard Posner, Jesse Shapiro, Steven Shavell, Andrei Shleifer, Virgil Storr, seminar participants at Harvard Law School, Stanford Law School, and the University of Chicago, the editors, and an anonymous reviewer for helpful comments. I also thank the Becker Center on Chicago Price Theory at the University of Chicago where I conducted this research.

[†]Email: PLeeson@GMU.edu. Address: Department of Economics, George Mason University, MS 3G4, Fairfax, VA 22030.

“It is a fearful thing to fall into the hands of the living God.”

—*Hebrews 10:31*

1 Introduction

For 400 years the most sophisticated persons in Europe decided difficult criminal cases by asking the defendant to thrust his arm into a cauldron of boiling water and fish out a ring. If his arm was unharmed, he was exonerated. If not, he was convicted. Alternatively, a priest dunked the defendant in a pool. Sinking proved his innocence. Floating proved his guilt. People called these trials ordeals.¹

No one alive today believes ordeals were a good way to decide defendants’ guilt. But maybe they should. This paper argues that ordeals accurately assigned accused criminals’ guilt and innocence. They did this by leveraging a medieval superstition called *iudicium Dei*. According to that superstition, God condemned the guilty and exonerated the innocent through clergy conducted physical tests.²

Medieval citizens’ belief in *iudicium Dei* created a separating equilibrium. Guilty defendants expected ordeals to convict them. Innocent defendants expected the reverse. Thus only innocent defendants were willing to undergo ordeals. Conditional on observing a defendant’s willingness to do so, the administering priest knew he was innocent and manipulated the ordeal to find this.

My theory explains the peculiar puzzle of ordeals: trials of fire and water that should’ve condemned most persons who underwent them did the reverse. They exonerated these persons instead. Boiling water rarely boiled persons who plunged their arms in it. Burning iron rarely burned persons who carried it. Ordeal outcomes were miraculous. But they were miracles of mechanism design.

It’s easy to dismiss ordeals as the irrational custom of Dark Age ignorance. Much scholarship that addresses ordeals treats them as such (see, for instance, Robertson 1802; Gibson

¹Several other ordeals existed. But they were rarely used and generally unimportant. Where they were more important, I discuss them below. When this paper refers to “ordeals,” it’s referring to the hot and cold ordeals described below.

²Unilateral judicial ordeals weren’t the only medieval judicial procedures grounded in the *iudicium Dei* superstition. Oath swearing and, to a much lesser extent, judicial battle, were also connected to this belief.

1848; Plucknett 1956; Baldwin 1961; Caenegem 1988). More recently, several authors have attempted to rescue ordeals from European legal history's museum of the absurd. One account argues that ordeals facilitated community consensus and unity (Colman 1974; Brown 1975; Hyams 1981). Another account suggests ordeals were criminal punishments (Lea 1973; Hyams 1981).³ A third argues nearly the opposite: ordeals were a tool of mercy, a way to get criminals off the hook (Kerr, Forsyth, and Plyley 1992).

No one seriously entertains the idea that ordeals actually did what they were supposedly designed to do: determine if defendants were guilty of the crimes they were accused of.⁴ My analysis uses rational choice theory to show how ordeals did just that. In doing so I develop a "law and economics of superstition." The law and economics of superstition explores the role that objectively false beliefs play in the legal systems of rational people.

Almost no work uses rational choice theory to investigate superstition's persistence or relationship to the law. Fudenberg and Levine's model of superstitious beliefs (2006) and Posner's (1980) study of the economics of legal systems in primitive societies are two exceptions to this. Fudenberg and Levine consider how certain superstitions can persist even when individuals are patient, rational learners. They show how superstitions can influence rational actors' equilibrium behavior. In my theory of ordeals, superstition also determines individuals' decision making in equilibrium. Further, the superstition-supported equilibrium

³This view is the most natural one for a rational choice scholar to hold. Efficient criminal punishment imposes a high penalty on criminals with a low probability (Becker 1968). In the context of ordeals that would mean one of two things. If the ordeal itself was supposed to be the punishment, it would mean applying ordeals infrequently and boiling/burning everyone they were applied to. But ordeals were used in exactly the opposite way: they were applied frequently and boiled/burned only a small percentage of those to whom they were applied. If the boiling/burning was supposed to be the punishment, it would mean boiling/burning only a small percentage of accused persons, but not going through the costly process of pretending to boil/burn every accused person, which is what ordeals did. Closely related, if boiling/burning was the desired punishment, ordeals were a highly inefficient way to administer it. Ordeals were multi-day undertakings that involved masses, endless rituals, and so on. It's much cheaper to just boil/burn persons instead. A third reason ordeals don't make sense as punishments is that they were applied indiscriminately (i.e., without regard to an accused person's guilt or innocence since this hadn't been determined yet). The theory of efficient punishment says something like: "boil every tenth *criminal*." But ordeals boiled every tenth *accused person*, which is very different. Finally, while punishments have the same expected cost for guilty and innocent persons, ordeals had different expected costs for them. Ordeals' features are consistent with the idea of ordeals as fact-finding procedures, not punishments.

⁴Though several authors have suggested that ordeals' physical aspects may have made it physiologically harder for guilty persons to pass them than innocent persons because of guilt-induced bodily stress. For instance, see Plucknett (1956) Roberts (1965), Colman (1974), Hyams (1981), Caenegem (1988), and Pilarczyk (1996).

is self-confirming. This contributes to superstition’s persistence. But superstition persists for another reason too: it’s socially useful.

This aspect of my analysis is most closely connected to Posner (1980). Posner notes superstition’s prominence in primitive societies. He suggests that some of these societies’ objectively false beliefs may actually promote their well-being. For instance, the belief that wealthy group members are witches helps some primitive societies enforce a norm of group sharing that permits social insurance. My analysis, which finds that medieval judicial ordeals accurately assigned accused criminals’ guilt and innocence, complements Posner’s suggestion that some superstitions are socially productive.

Most relevant to my argument, Posner (1980, 47) points out that certain societies’ religious beliefs discourage criminals from concealing their crimes. For instance, if individuals believe it’s unlucky to eat with the kin of men they’ve slain, to avoid this fate, they’re encouraged to announce their deed when they’ve killed a stranger. Their religious belief facilitates legal fact finding where conventional fact-finding methods are prohibitively costly.

This insight is directly relevant to ordeals. Ordeals were an institution of “self-finding facts” where traditional fact-finding methods weren’t helpful. Their beauty lay in the simple but ingenious way that they incentivized accused criminals to unwittingly reveal their guilt or innocence.

2 *Iudicium Dei*

The golden age of unilateral European judicial ordeals was the 9th through 13th centuries.⁵ Two types of ordeals flourished in this age: hot and cold.⁶ Hot ordeals included hot water and hot iron ordeals (*iudicium aquae fervantis* and *iudicium ferri*).⁷ Cold ordeals included

⁵Reliance on judicial ordeals appears in the earliest of legal codes the world over. On ordeals’ ubiquity and varieties, see Gilchrist (1821), Groitein (1923), and Lea (1866).

⁶Some legal systems gave the plaintiff the right to choose the kind of ordeal the defendant would undergo. Other systems gave the defendant the right to choose. But ordinarily the court chose. See Lea (1973, 45-46).

⁷The hot water and hot iron ordeals sometimes came in “strengths” corresponding to the severity of the alleged crime or extent of the defendant’s disrepute. The “single” hot water ordeal involved the proband putting his arm into boiling water only up to his wrist. The “single” hot iron ordeal involved carrying a piece of hot iron that weighed only one pound. The “triple” hot water ordeal involved the proband putting his arm in boiling water up to the elbow. The “triple” hot iron ordeal involved carrying a piece of iron that weighed three pounds.

cold water ordeals (*probatio per aquam frigidam*).⁸

In the hot water ordeal a priest boiled a cauldron of water into which he threw a stone or ring.⁹ As Bishop Eberhard of Bamberg's late 12th-century breviary instructed, the proband "shall plunge his hand into the boiling water" and recover the object. "[A]fterwards let [his hand] be immediately sealed up."¹⁰ If he's innocent, the proband will succeed in "bring[ing] forth his hand safe and unharmed from this water. But if he be guilty and presume to plunge in his hand," it will show harm from burning on inspection three days later (Howland 1901: 7-9). The hot iron ordeal worked similarly. But instead of plunging his arm into a cauldron of water, the proband carried a piece of burning iron nine paces.¹¹

Ninth-century theologian Hincmar of Rheims described the cold water ordeal as follows: "he who is to be examined by this judgment is cast into the water bound, and is drawn forth again bound." If he's guilty and "seeks to hide the truth by a lie, [he] cannot be submerged:" he'll float (Howland 1901, 11). If he's innocent, he can be submerged: he'll sink.

The law reserved ordeals for certain cases. England used them only in criminal cases—accusations of homicide, robbery, arson, and so on.¹² Punishments for failing ordeals ranged from fines, to mutilation, to death.¹³ The rest of Europe used ordeals mostly in criminal cases, but sometimes in civil cases too.¹⁴

The law also reserved ordeals for cases where judges couldn't confidently conclude defendants' guilt or innocence without them (Bartlett 1986; Bloomfield 1969; Davies and Fouracre

⁸Hot water ordeals are older. They first appear in the *Lex Saliica* circa 507-511. Cold water ordeals are a 9th-century invention.

⁹Ordeals' particulars varied by time and place. But their basics were similar. Throughout ordeals' existence, individuals invoked them for a variety of purposes ranging from political (Who is the rightful heir to this office?) to religious (Is this relic genuine?). I exclusively consider ordeals invoked for judicial purposes.

¹⁰The proband was the person who underwent the ordeal. Usually this was the defendant. Though occasionally plaintiffs were probands as well.

¹¹On the continent, justice systems sometimes used another variety of hot ordeal—the hot ploughshares ordeal. The idea was the same as in the other hot ordeals. But the proband walked across hot ploughshares instead of thrusting his arm into boiling water or carrying burning iron.

¹²There are a few post-Norman conquest cases of English ordeals in civil cases. But they're rare.

¹³For example, in pre-11th century England, criminal punishment was financial (Klerman 2001, 5). Under the Assize of Clarendon, criminal punishment was mutilation. Under the Assize of Northampton, it was death. The Assizes of Clarendon and Northampton required defendants who passed the ordeal but whose community members considered them of "very bad repute" and were "evilly defamed by the testimony of many legal men" to "abjure the realm" (Howland 1901, 16).

¹⁴It's likely that part of the reason ordeals were more commonly used in criminal cases than civil ones is that evidence was typically harder to get in the former.

1986; Goitein 1923; Lea 1866; McAuley 2006; Miller 1988; Thayer 1898).¹⁵ As 13th-century German law put it, “It is not right to use the ordeal in any case, unless the truth may be known in no other way” (Bartlett 1986, 26).

If a defendant confessed or reliable witnesses testified against him, the court would convict him without an ordeal.¹⁶ Where the court considered the accusation plausible but such evidence was lacking, it often permitted the defendant to exonerate himself by “swearing off” the accusation with an oath. The court could order defendants to take oaths alone or with a specified number of “oath helpers” to assist them.

Oath swearing had limited usefulness. Certain defendants’ oaths were unacceptable, such as those of unfree persons who composed much of the medieval population. Foreigners, persons who perjured themselves, had failed in a legal contest, and those with tarnished reputations also had unacceptable oaths. In cases where oath-helping was used, defendants’ inability to produce the requisite number of compurgators created a similar problem. Justice systems unwilling to convict or exonerate accused persons indiscriminately when “regular” evidence was silent needed another way to determine their guilt or innocence.¹⁷ That way was ordeals.¹⁸

Ordeals’ ostensible power to determine defendants’ guilt or innocence rested on the idea that they were *iudicia Dei*—judgments of God. Where man couldn’t correctly assign criminal status, he recruited the Lord. As a Carolingian capitulary put it: “Let doubtful cases be determined by the judgment of God. The judges may decide that which they clearly know, but that which they cannot know shall be reserved for Divine judgment” (Lea 1866, 176). According to medieval Christian belief, if priests performed the appropriate rituals, God

¹⁵Before the 13th century, a panel of judges, or “court presidents,” usually heard criminal cases. Depending on the court, judges included royal justices, clerics, counts, and local landowners. Judges decided whether an ordeal was required and, if so, which one. As I discuss below, clerics administered and officiated ordeals.

¹⁶The Assizes of Clarendon and Northampton required ordeals for all major crimes. However, in practice, courts didn’t order accused persons to ordeals if there was clear evidence of their guilt (Groot 1982). For a summary of some basic features of Anglo-Saxon law, see Pollock (1898) and Pollock and Maitland (1959).

¹⁷Since evidence was absent for crimes involving unobservable acts or states of mind, ordeals were often used to try accusations of magic, idolatry, and heresy. Other crimes unlikely to produce evidence that ordeals were thus often used for include incest and adultery.

¹⁸Another reason a court might order an ordeal was if the law prescribed judicial combat but one of the would-be combatants couldn’t fight (for instance, if she were a woman) and couldn’t find a champion to replace her, or if the defendant had no specific accuser to combat (because he had been accused on public suspicion).

would reveal individuals' guilt by letting boiling water/burning iron harm them (or making holy water reject their guilty bodies) and reveal their innocence by miraculously saving their limbs from harm (or accepting their guiltless bodies into his blessed pool).

3 Law, Economics, and Superstition

3.1 A Theory of Medieval Judicial Ordeals

There are two obvious alternatives to asking God to find facts in “doubtful cases.” Judges could ask accused persons if they're guilty. Alternatively, they could threaten to torture accused persons to encourage them to tell the truth. The trouble with these approaches is that they produce significant mistakes. Every accused person asked about his guilt proclaims his innocence. Torture has the opposite problem: if its threat is ominous enough to prompt guilty persons to confess, it's ominous enough to prompt innocent persons to confess too.

In contrast, ordeals could correctly identify defendants' guilt or innocence because they imposed different expected costs on the guilty and innocent. Consider how a medieval citizen's belief that ordeals were *iudicia Dei* influenced his incentive to undergo or decline an ordeal.

Suppose a medieval farmer accuses his neighbor, Frithogar, of stealing his beast. Frithogar denies it. The farmer has no witnesses but is well respected. Frithogar isn't. The court doesn't believe the farmer would accuse Frithogar for no reason. It orders Frithogar to the hot water ordeal.

Frithogar believes in *iudicium Dei*. He believes that by performing the appropriate rituals, priests can ask God to reveal his guilt or innocence through the hot water ordeal and that God will do so. To evidence his innocence, God will perform a miracle that prevents the boiling water from harming his arm. To evidence his guilt, God will let the boiling water harm him.

Below I consider what happens when Frithogar is a skeptic—when he believes the foregoing might be true, but his belief is incomplete. For now, assume his belief that ordeals are *iudicia Dei* is complete. What will Frithogar do?

Suppose Frithogar stole the farmer’s beast. He knows this. But nobody else knows. In this case, if Frithogar undergoes the ordeal, he expects to burn his arm. Moreover, by doing so, he expects to reveal his guilt and thus to suffer the legal punishment for stealing beasts: a large fine. Frithogar’s other option is to decline the ordeal. He can avoid the ordeal by confessing his crime or settling with the farmer. Both alternatives “punish” him.¹⁹ But neither is as punishing as the fine for stealing beasts. By declining the ordeal, Frithogar suffers less punishment than if he undergoes it.²⁰ He also saves his arm. Thus, if he’s guilty, Frithogar chooses to decline the ordeal.

Now suppose Frithogar is innocent. The farmer’s beast wandered off. Frithogar knows he didn’t steal it. But nobody else knows. In this case, if Frithogar undergoes the ordeal, he expects to deliver his arm from the boiling water unharmed. Moreover, by doing so, he expects to reveal his innocence and thus to avoid legal punishment. If Frithogar declines the ordeal and confesses or settles instead, he suffers a punishment for a crime he didn’t commit. Thus, if he’s innocent, Frithogar chooses to undergo the ordeal.

The ordeal creates a separating equilibrium that sorts Frithogar by his guilt or innocence. It does this by satisfying the single-crossing condition: if he’s innocent, Frithogar finds it cheaper to undergo the ordeal than if he’s guilty. The ordeal leverages Frithogar’s superstition—his objectively false belief that ordeals are *iudicia Dei*—to incentivize him to reveal his criminal status to the legal system.

3.2 *Iudicia Cleri*

In the equilibrium just described, guilty persons never undergo ordeals. Innocent ones always do. But what happens to them when they do?

Ordeals only work if they don’t injure the people who undergo them. They only exonerate probands they don’t harm. Short of genuine *iudicia Dei*, how can boiling water be made

¹⁹He can also avoid the ordeal by fleeing his town. But for this example I suppose that fleeing is more costly to Frithogar than confessing or settling. So Frithogar never considers this option.

²⁰Judges considered a person’s refusal to undergo an ordeal evidence of guilt. For example, when Walicharius of Brion claimed a vineyard as his own against several monks and, failing to receive warranty from a man he alleged could warrant his claim, the court ordered him to an ordeal, Walicharius refused. When he later revived his claim in Angers and the court learned of his refusal to undergo the ordeal in Brion, it found against him (White 1995, 115-116).

innocuous to human flesh?

By *iudicia cleri*. Because of ordeals' sorting effect, priests who administer them learn defendants' guilt or innocence. Conditional on observing a defendant's willingness to undergo an ordeal, the administering priest knows the defendant is innocent. Knowing this, the priest can "fix" the ordeal to find the "correct" result. For example, if Frithogar chooses to undergo his ordeal, the ordeal-administering priest can lower the water's temperature so it doesn't boil him. Frithogar plunges his arm into the cauldron expecting to be unharmed. His expectation is fulfilled—not by God, but by the newly informed priest.

To accomplish such manipulation, priests required latitude in their administration of ordeals. Liturgical *ordines* and royal dooms prescribed ordeal instructions for clerical administrators. A striking feature of these instructions is the scope they created for priestly ordeal fixing. Consider the clerical instructions for the hot iron ordeal prescribed by a 10th-century English doom (Howland 1901, 12-13):

Concerning the ordeal we enjoin in the name of God and by the command of the archbishop and of all our bishops that no one enter the church after the fire has been brought in with which the ordeal is to be heated except the priest and him who is to undergo judgment Then let an equal number from both sides enter and stand on either side of the judgment place along the church And no one shall mend the fire any longer than the beginning of the hallowing, but let the iron lie on the coals until the last collect And let the accused drink of the holy water and then let the hand with which he is about to carry the iron be sprinkled, and so let him go [to the ordeal].²¹

Several features of these instructions stand out (Henry 1789, 273). First, only the priest and proband were initially allowed in the church after the priest made the ordeal fire. This gave the priest opportunity to manipulate the fire and thus the iron's temperature. The doom indicates that before the proband begins the ordeal, "two men from each side go in and certify that [the iron] is as hot as we have directed it to be." But the priest's isolation until this point allowed him to defraud the certifiers, for example by providing them with a different iron for inspection than he provided the proband.

Second, the ordeal ceremony forbade mending the fire after the communion consecration. It required the iron to remain on dying coals until the priest made his final prayer. If the

²¹Hot water ordeal instructions were similar. See Howland (1901, 7-9).

priest failed to manipulate the fire’s temperature or switch the iron, he could let the iron cool before the proband handled it by delaying and drawing out the final prayer.

Third, the ordeal ceremony required observers to align along the church’s walls for the ordeal’s duration. In a reasonable-sized church, this put them a considerable distance from the ordeal “stage.” By diminishing observers’ ability to observe, that distance facilitated priestly chicanery.

Finally, the ordeal instructions directed the priest to sprinkle the proband’s hand with holy water immediately before he carried the iron. It’s easy to imagine how sprinkling could become dousing under a manipulative priest’s control. The water helped offset any injurious heat remaining on the iron that fire-fixing or iron-tampering failed to address.

Hot ordeal formulae also granted clerics discretion in deciding ordeals’ outcomes (see, for instance, Colman [1974]; Brown [1975]; Ho [2003-2004]). They instructed the proband’s “hand [to] be sealed up, and on the third day” for the priest to examine “whether it is clean or foul within the wrapper” (Howland 1901, 12-13). But they were silent about what it meant for a hand to be “clean or foul.” The hand’s state depended largely on the priest’s judgment.²²

Cold water ordeals permitted outcome fixing too, but in a different way.²³ Men have less body fat than women. Because of this, while the average lean male has an 80 percent chance of sinking in water, the average lean woman has only a 40 percent chance (Kerr, Forsyth, and Pyley 1992, 586). This difference enabled cold water ordeal manipulation through the selection of who was sent to them. If cold water ordeals were used only for men, priests could reliably exonerate persons who underwent them.²⁴

Because of priestly manipulation, the separating equilibrium that ordeals create is self-

²²Though, in West Frisian Synod Law, in certain cases it was possible to appeal to the community to decide ordeal outcomes (Colman 1974, 590).

²³See also, Radding (1979).

²⁴Whether priests believed ordeals were *iudicia Dei* or instead understood that they were really *iudicia cleri* is an interesting historical question, but unimportant for my theory. As long as priests manipulate ordeals to reflect the information they receive about defendants’ guilt or innocence after defendants’ decide to decline or undergo them, ordeals are effective. The evidence is unclear about what priests truly believed. Though it’s important to point out that priestly ordeal manipulation isn’t incompatible with priestly faith in ordeals as genuine *iudicia Dei*. According to the developing doctrine of *in persona Christi*, priests may have believed that they were acting in the person of Christ—i.e., that God was guiding them—when they manipulated ordeals.

confirming when individuals start as certain that ordeals are *iudicia Dei*. Guilty persons always expect ordeals to harm them and find them guilty in the process. They always decline ordeals. So guilty persons' belief is never challenged. Innocent persons always expect ordeals to not harm them and exonerate them in the process. They always undergo ordeals. Having observed their willingness to do so, ordeal-administering priests infer these persons' innocence. Priests fix ordeals to exonerate them.²⁵ So innocent persons' expectation is always fulfilled. In equilibrium the only evidence that ordeals generate confirms the belief that they're *iudicia Dei*. Ordeals reinforce the superstition that makes them effective.

3.3 Skeptics

The equilibrium described above illustrates how ordeals work when individuals have complete faith in them. But it breaks down if we allow that faith to be incomplete. If instead of assuming that defendants never question ordeal outcomes, we allow defendants to update their beliefs about ordeals' legitimacy after observing the history of these outcomes just as we allow priests to update their beliefs about defendants' guilt or innocence after observing defendants' decisions to decline or undergo ordeals, this equilibrium might implode.

In that equilibrium everyone who undergoes an ordeal is exonerated. But a 100 percent acquittal rate may seem suspicious to persons whose belief that ordeals are *iudicia Dei* is incomplete.²⁶ Individuals may be skeptical about ordeals for other reasons too. The presence of ordeal observers suggests that medieval citizens at least entertained the idea that ordeal outcomes could reflect worldly influences in addition to otherworldly ones.

Skeptics pose a potential problem for ordeals. Innocent skeptics may decide they don't want to hazard ordeals because they fear the possibility that boiling water will boil them, burning iron will burn them, and so on. If everyone passes ordeals, innocent skeptics' fear disappears. But then the problem raised above emerges: guilty skeptics may decide they

²⁵Although priest bribery was of course possible, there was a check on this: priests worked for privately owned bishoprics whose owners' revenues depended on local producers' productivity and thus lower crime, which in turn necessitated judicially honest priests. These owners therefore had an incentive to limit priestly ordeal corruption, for example by firing corrupt priests, where they could.

²⁶Persons with complete belief totally discount the possibility that observed ordeal outcomes are anything other than God's work. They interpret a 100 percent acquittal rate as evidence that 100 percent of probands were innocent and thus saved by God.

want to hazard ordeals. In both cases pooling occurs, destroying ordeals' ability to distinguish guilty persons from innocent ones. How did ordeal-administering priests overcome this problem?

They condemned a positive proportion of probands. To see how this worked, consider a defendant, j , ordered to an ordeal. $j \in \{j_g, j_i\}$. When j is guilty of the crime he's been accused of, $j = j_g$. When j is innocent of the crime he's been accused of, $j = j_i$.²⁷ j can undergo the ordeal or decline it. If j undergoes the ordeal and it finds him guilty, he earns β . If j undergoes the ordeal and it finds him innocent, he earns 0. If j declines the ordeal, he earns θ . As in Frithogar's case, $0 > \theta > \beta$.²⁸

j is a skeptic. He believes ordeals may be *iudicia Dei*, but also believes they may be a sham perpetrated by crafty priests. $\rho \in (0, 1)$ measures the strength of j 's belief that ordeals are *iudicia Dei*.²⁹ ρ is the probability j assigns to God revealing his guilt through the ordeal if $j = j_g$ or the probability he assigns to God revealing his innocence through the ordeal if $j = j_i$. j 's priest condemns a proportion of defendants who undergo ordeals equal to $\gamma \in (0, 1)$. j knows probands' historical success rate.

From j_g 's perspective, if ordeals are *iudicia Dei*, γ reflects guilty persons who underwent ordeals and God condemned, which would happen to him if he underwent the ordeal since he's guilty. If ordeals are a sham, γ reflects priestly condemnations of defendants who underwent ordeals and thus the probability that he'd be condemned if he underwent the ordeal. j_g therefore declines the ordeal if $\rho\beta + (1 - \rho)\beta\gamma < \theta$. This is true for any $\gamma > (\theta - \rho\beta)/(\beta - \rho\beta)$.

From j_i 's perspective, if ordeals are *iudicia Dei*, γ reflects guilty persons who underwent ordeals and God condemned, which wouldn't happen to him if he underwent the ordeal since he's innocent. If ordeals are a sham, γ reflects priestly condemnations of defendants

²⁷I assume that although the legal system doesn't initially know whether j is guilty or innocent, j knows whether he's guilty or innocent. This is a reasonable assumption in most cases. Though it may not always hold. Suppose j 's legal system doesn't distinguish between justifiable homicide and ordinary murder. In this case, although j may know that he killed the person he's accused of killing, he may be uncertain about his guilt from God's, and thus the ordeal's, perspective.

²⁸In practice, different ordeal alternatives will have different prices. But for my purpose, which is to examine the decision to decline or undergo an ordeal, this is unimportant. I therefore treat all ordeal alternatives as requiring the defendant to pay the same price, θ .

²⁹I assume that j and the priest know j 's level of belief. Medieval priests knew how often their community members went to church, received communion, confessed, and practiced other religious rituals. So this assumption is reasonable. Others observe j 's level of belief imperfectly.

who underwent ordeals and thus the probability that he'd be condemned if he underwent the ordeal. j_i therefore undergoes the ordeal if $\rho\theta + (1 - \rho)\beta\gamma > \theta$. This is true for any $\gamma < \theta/(\beta - \rho\beta)$.

To ensure a separating equilibrium, the priest must condemn enough probands to deter guilty skeptics from wanting go undergo ordeals (which would create a pooling equilibrium that involved all defendants choosing to undergo ordeals), but not so many probands as to also deter innocent skeptics from wanting to do so (which would create a pooling equilibrium that involved all defendants declining ordeals). The priest must condemn $\theta/(\beta - \rho\beta) > \gamma > (\theta - \rho\beta)/(\beta - \rho\beta)$.

Since, where $\rho \in (0, 1)$ and $0 > \theta > \beta$, $\forall \rho : \theta/(\beta - \rho\beta) > (\theta - \rho\beta)/(\beta - \rho\beta) \Rightarrow \exists \gamma : \theta/(\beta - \rho\beta) > \gamma > (\theta - \rho\beta)/(\beta - \rho\beta)$. By adjusting the proportion of probands he condemns, the priest can use ordeals to support a separating equilibrium for any positive level of belief that ordeals are *iudicia Dei*.

The priest prefers not to condemn any innocent persons. Therefore he sets $\gamma = \gamma^* \equiv (\theta - \rho\beta)/(\beta - \rho\beta) + \varepsilon$. This minimizes the number of innocent probands he must condemn to ensure separation given the strength of individuals' belief that ordeals are *iudicia Dei*.

The optimal proportion of probands the priest condemns falls as individuals' belief that ordeals are *iudicia Dei* rises.³⁰ As ρ approaches θ/β , which is the lowest level of belief that prevents a pooling equilibrium in which both guilty and innocent persons choose to undergo ordeals without the priest condemning any innocent probands, γ^* approaches 0. As ρ approaches 0, γ^* approaches θ/β , which is the highest proportion of innocent probands the priest can condemn without driving all defendants into a pooling equilibrium in which both guilty and innocent persons decline ordeals.

It's useful to consider how, starting in disequilibrium, potential probands' and priests' behavior could converge on equilibrium. Disequilibrium prevails when the proportion of probands a priest condemns is outside the range required to secure separation—i.e., $\gamma > \theta/(\beta - \rho\beta)$ or $\gamma < (\theta - \rho\beta)/(\beta - \rho\beta)$.

³⁰The use of “champions” in unilateral ordeals—persons who underwent ordeals by proxy—was infrequent and doesn't affect my argument. Even when champions were used, undergoing an ordeal remained more expensive for guilty persons than for innocent ones because the former expected to be convicted with a higher probability. Thus in situations where belief was imperfect, the use of champions could influence the optimal rate of proband condemnations (γ). But sorting was unaffected.

The priest can learn that he's set γ too high or too low from two sources. First, he learns that γ is too high when he observes that every accused person confronted with an ordeal chooses to decline it. Unless every person accused of crime is in fact guilty, at least some defendants will choose to undergo ordeals when $\gamma < \theta/(\beta - \rho\beta)$. Thus, if the priest observes all of them choosing the opposite, he knows that $\gamma > \theta/(\beta - \rho\beta)$. In this case the priest knows he needs to condemn fewer probands. He lowers γ until some accused persons begin to choose to undergo ordeals. This occurs when γ drops below $\theta/(\beta - \rho\beta)$.

Similarly, the priest learns that γ is too low when he observes that every accused person confronted with an ordeal chooses to undergo it. Unless every person accused of crime is in fact innocent, at least some defendants will choose to decline ordeals when $\gamma > (\theta - \rho\beta)/(\beta - \rho\beta)$. Thus, if the priest observes all of them choosing the opposite, he knows that $\gamma < (\theta - \rho\beta)/(\beta - \rho\beta)$. In this case the priest knows he needs to condemn more probands. He raises γ until some accused persons begin to decline ordeals. This occurs when γ rises above $(\theta - \rho\beta)/(\beta - \rho\beta)$.

The priest can also learn that he's set γ too low (though not if he's set it too high) if he observes rising crime or repeat probands. When $\gamma < (\theta - \rho\beta)/(\beta - \rho\beta)$, guilty persons are willing to risk undergoing ordeals. When they do, some of them are exonerated. These persons learn that ordeals are a sham.

Such persons are unlikely to tell others as much. To do so would be to inform them of their guilt. Much more likely, such persons will proclaim ordeals' legitimacy. After all, others will only consider these persons' exonerations as legitimate as the ordeals that produced them. Still, with first-hand knowledge that ordeals are a sham, guilty persons who passed their ordeals are willing to commit more crime than before.

If the priest observes rising crime, or simply the same probands appearing before him repeatedly, he knows that $\gamma < (\theta - \rho\beta)/(\beta - \rho\beta)$ and thus that he needs to condemn more probands. To do this he condemns probands whose repeated appearance suggests that they know ordeals are a sham. He continues to raise γ if necessary until some accused persons begin to decline ordeals. This occurs when γ rises above $(\theta - \rho\beta)/(\beta - \rho\beta)$.

For the convergence processes described above to occur, the only information potential defendants require is γ : the proportion of probands condemned in their community. They

don't require information about the priest's methods or objectives. For a given level of belief and given payoffs of declining an ordeal, passing one, and failing one, γ alone determines defendants' expected payoff of hazarding the ordeal. Thus, as long as defendants know this, their behavior will comport with what the priest desires once he's lowered or raised γ sufficiently to place it within the range derived above.

It's reasonable to think that medieval citizens would've often had a good idea about the frequency with which others in their communities who hazarded ordeals failed or succeeded. Proband's fate wasn't private. And medieval communities were usually small. Similarly, it's reasonable to think that medieval priests knew how probands decided when confronted with ordeals and knew those probands' identities. Priests were the persons administering their ordeals.

It's also useful to consider how robust the ordeal-created equilibrium is when citizens' belief in ordeals as *iudicia Dei* is incomplete. As demonstrated above, when individuals' belief that ordeals are *iudicia Dei* is complete ($\rho = 1$), priests condemn no probands. The resulting separating equilibrium is self-confirming: every person who has experience with an ordeal has experience that confirms his belief that ordeals are *iudicia Dei*. This is also true when individuals are skeptics if their belief that ordeals are *iudicia Dei* is strong enough to produce a separating equilibrium without priests condemning any innocent probands. This is when $\rho \geq \theta/\beta$.

When individuals are skeptics and their belief falls below this threshold, things are different. Priests must condemn $\gamma^* > 0$ of probands. The separating equilibrium that emerges is semi-, but not completely, self-confirming. As when individuals' belief that ordeals are *iudicia Dei* is complete, in this case too, only innocent probands undergo ordeals. But now priests condemn some innocent probands. These individuals have experiences that contradict their belief that ordeals are *iudicia Dei* instead of confirm it.

The trouble these individuals pose for ordeals is small. Consider the kinds of problems an innocent person who an ordeal condemns can create. He can proclaim his innocence and tell everyone ordeals are a sham. But this is the same thing a truly guilty person would do. So no one's belief is affected. Alternatively, he can exploit his knowledge that ordeals are a sham by committing crimes and hoping to be ordered to ordeals. But similar to the

case in disequilibrium considered above, if he does this, he confronts the priest repeatedly. Suspicious of the repeat proband, the priest condemns him, foiling his plan.³¹

The real danger to ordeals when priests had to condemn innocent probands wasn't that condemned probands would tell others ordeals were a sham or that they would exploit the system. It was that publicly observed events would contradict ordeal results, evidencing ordeals' illegitimacy. For example, one medieval defendant accused of murder underwent an ordeal, failed, and was hanged. A few weeks later the man he murdered came home (Bartlett 1986, 160).

Such incidents threatened to initiate a process that could destroy ordeals' operation. An occasional contradictory incident could be explained away. But if they happened frequently, individuals' belief that ordeals were *iudicia Dei* could weaken considerably. To ensure separation with weaker belief, priests would have to condemn a higher proportion of innocent probands. This would increase the chance of additional ordeal-contradicting incidents, weakening belief further, requiring priests to condemn more probands, and so on. Eventually ρ would reach 0. Ordeals would break down.

Fortunately for ordeals, instances like the murdered man returning home were rare (Bartlett 1986, 160). They were rare for two reasons. First, the cases in which judges used ordeals militated against such situations. Judges used ordeals when normal evidence was lacking. The prospect that evidence would come back later to contradict ordeal results was therefore slim. Second, for reasons I discuss below, medieval citizens' belief that ordeals were *iudicia Dei* was strong. So γ^* was positive but low: priests didn't have to condemn a high proportion of probands to produce separation. There were therefore few cases in which contradictory evidence was possible.

Examining the possibility of growing skepticism that ordeal-contradicting incidents can create when belief in ordeals is incomplete sheds light on the robustness of the ordeal-created equilibrium in the face of a gradual leak of information about priestly manipulation. Consider

³¹Before their ordeals, probands spent several days with the priests who officiated them, partaking in mass, prayer, and so on. This may have permitted priests to glean additional information about probands' guilt or innocence (Pilarczyk 1996, 98; Henry 1789, 273). Such information supplemented that which priests received from observing defendants' willingness to undergo ordeals, facilitating their ability to identify (and thus condemn) a guilty defendant who took his chances with the ordeal because γ had been set too low, because he had figured out that ordeals were a sham, or because some other imperfection prevented flawless separation.

the case in which someone tells others that he saw the priest rig an ordeal.

We can think about such an information leak in terms of the unraveling logic described above. When there's a leak, ρ falls, requiring a higher γ^* . Starting from an equilibrium with a relatively high ρ and thus a relatively low γ^* , the additional ordeal-contradicting incidents the leak indirectly generates are few. Strong believers largely discount leaks as rumor, leading to a small effect on belief. A small fall in belief requires only a small increase in the proportion of probands the priest must condemn, contributing minimally to ordeal-contradicting incidents which, when numerous, can set in motion the unraveling process described above. In this case the ordeal-created equilibrium exhibits “local robustness”—robustness to the unraveling scenario in the neighborhood of relatively strong belief.

In contrast, starting from an equilibrium with a relatively low ρ and thus a relatively high γ^* , the additional ordeal-contradicting incidents the same information leak indirectly generates are numerous. Weak believers discount leaks little, leading to a large effect on belief. A large fall in belief requires a large increase in the proportion of probands the priest must condemn, contributing significantly to ordeal-contradicting incidents and, in doing so, setting in motion the unraveling process described above. In this case the ordeal-created equilibrium exhibits “local fragility”—fragility tending toward the unraveling scenario in the neighborhood of relatively weak belief.

3.4 Accessing and Strengthening Belief

Ordeals are robust to skepticism, but not infinitely so. The stronger the belief that ordeals are *iudicia Dei*, the better ordeals work in terms of robustness to information leakages and innocent-person condemnations. Ordeal ceremonies were therefore arranged to access and strengthen potential probands' belief in ordeals' legitimacy. They accomplished this in several ways.

First, “the Church . . . followed the policy of surrounding [ordeals] with all the solemnity which her most venerated rites could impart” (Lea 1973, 33). Priests administered ordeals, in churches, as part of ordeal masses. Besides the standard sacred mass rituals, such as communion, these masses involved sacred rituals specific to ordeals, such as Christening the ordeal “stage” and implements.

Second, ordeal ceremonies reinforced guilty and innocent defendants' expectations about ordeal outcomes by reminding each of their fate in undergoing the ordeal. Consider the prayer the priest made before the proband over the cauldron of ordeal water (Lea 1973, 34):

O holy water . . . I adjure thee by the living God that thou shalt show thyself pure . . . to make manifest and reveal and bring to naught all falsehood, and to make manifest and bring light to all truth; so that he who shall place his hand in thee, if his cause be just and true, shall receive no hurt; but if he be perjured, let his hand be burned with fire.

Third, ordeal ceremonies highlighted ordeals' religious foundations, reminding probands of their divine precedent and successful track record. Consider the following hot water ordeal prayer (Howland 1901, 8):

O Lord . . . make known Thy righteous judgment [S]anctify . . . this water being heated by fire. Thou that didst save the three youths, Sidrac, Misac, and Abednego, cast into the fiery furnace at the command of Nebuchadnezzar, and didst lead them forth unharmed by the hand of Thy angel . . . and, as Thou didst liberate the three youths from the fiery furnace and didst free Susanna from the false charge . . . so, O Lord, bring forth his hand safe and unharmed from this water [if he's innocent].³²

Finally, ordeal ceremonies reminded probands of God's omniscience, omnipotence, and infallible power to exculpate the innocent and condemn the guilty through trials of fire and water. Consider the benediction of the water the priest made in the hot water ordeal (Howland 1901, 8):

I bless thee, O creature of water, boiling above the fire . . . I adjure thee by Him who ordered thee to water the whole earth from the four rivers, and who summoned thee forth from the rock, and who changed thee into wine . . . punish the vile and wicked, and purify the innocent. Through Him whom hidden things do not escape and who sent thee in the flood over the whole earth to destroy the wicked and who will yet come to judge the quick and the dead and the world by fire. Amen.

These features of ordeal ceremonies tapped into and bolstered the belief that ordeals' success required. "In those ages of faith, the professing Christian, conscious of guilt, must

³²The "three youths" referenced here are the righteous boys God saves from the fiery death King Nebuchadnezzar orders in the Book of Daniel. "Susanna" is the woman sentenced to death in the same book. The prophet Daniel exonerates her in the last hour. His name means "judgment of God" in Hebrew.

indeed have been hardened who could undergo the most awful rites of his religion, pledging his salvation on his innocence, and knowing under such circumstances that the direct intervention of Heaven could alone save him from having his hand boiled to rags, after which he was to meet the full punishment of his crime, and perhaps in addition lose a member for the perjury committed” (Lea 1866, 257; see also Hyams [1981, 111]).

4 Predictions and Evidence

My theory of medieval judicial ordeals generates several predictions. The evidence supports them.

1. *Most probands are exonerated.*

If my theory is correct, the evidence on ordeal outcomes should point to plenty of priestly ordeal fixing. Most probands should be exonerated. The surviving records of ordeal outcomes support this prediction.

These records are from the early 13th century. They have two sources. The first source is the *Regestrum Varadinense*, an ordeal register from Varad, Hungary (modern-day Oradea, Romania) under the reign of King Andrew II, which Imre Zajtay (1954, 541-552) and R.C. van Caenegem (1991, 76) have analyzed. The *Regestrum* records hot iron ordeals that Hungarian clerics administered in the basilica of Nagyvárad between 1208 and 1235.

These records include outcomes for 308 cases involving ordeals. In 100 of these cases the ordeal was aborted before it produced a final result, typically because the parties settled.³³ My theory suggests that defendants in these cases were guilty. But, of course, there’s no way to see if this was so.

Examining the outcomes of the 208 cases in which defendants underwent ordeals is more instructive. The data are telling: probands failed their ordeals in only 78 cases, or 37.5 percent of the time. Probands passed their ordeals in 130 cases, or 62.5 percent of the

³³75 cases were settled. The plaintiff withdrew his complaint in the other 25. Some of the withdrawals came after the defendant had already carried the hot iron but before his arm was unwrapped. It’s very likely that these defendants were innocent. At the very least, we can conclude that their accusers thought the ordeal would find them so. This is the only reason they would’ve withdrawn their accusation: to avoid a possible perjury charge, which could result if the ordeal exonerated the defendant.

time.³⁴ Unless nearly two thirds of ordeal-officiating priests didn't understand how to heat iron, these data suggest priestly rigging intended to exculpate probands. Ordeals exonerated the overwhelming majority of probands tried in the basilica of Nagyvárád.

Like the data relating to ordeal outcomes described below, these data must be interpreted with caution. It's impossible to say whether the percentage of probands who failed (or passed) their ordeals is large or small in the context the data consider. The data don't tell us that the persons who were exonerated were in fact innocent. And, since we have no counterfactual, they don't tell us whether a still larger proportion of defendants might've been exonerated in a world without ordeals. What the data do tell us is that most persons who underwent ordeals in the basilica of Nagyvárád were exonerated and thus that ordeals couldn't have been used exclusively to extract guilty pleas.

The second source of records for ordeal outcomes finds this result more strongly still, but is based on fewer cases. This source is the plea rolls that English royal courts kept between 1194, the year of the first surviving roll, and 1219, when English courts stopped ordering ordeals. Kerr, Forsyth, and Plyley (1992, 580-581) uncovered 19 probands in these records for whom the rolls report ordeal outcomes.³⁵ 16 probands underwent cold water ordeals. 3 underwent hot iron ordeals. 14 of the 16 probands who underwent cold water ordeals passed. All 3 probands who underwent hot iron ordeals passed. Based on these data, ordeals exonerated English probands 89 percent of the time (see also, Klerman 2001, 12).³⁶

Focusing on the probands who underwent hot iron ordeals, it again appears that priests didn't understand how to heat iron, or that they chose not to so as to exculpate probands. The sample is tiny. But, suspiciously, "red-hot" iron is never harmful to those carrying it. This is the opposite of what the evidence should show if the iron that probands carried was actually red hot. As historians of medieval English law Frederick Pollock and Frederic

³⁴62.5 percent is a conservative estimate of the proportion of probands who were unharmed by "red hot" iron in Varad. As indicated in the previous note, some plaintiff withdrawals came after the proband had carried the iron. It's probable that these probands, who aren't included in my calculation, were also unharmed. If their plaintiffs thought otherwise, they wouldn't have withdrawn their complaints.

³⁵The plea rolls contain references to a similar number of ordeal outcomes. But since these rolls recorded only ordeal failures (this being the only instance in which ordeal outcomes had implications for the royal exchequer), we can't use data from these rolls to illuminate the proportion of probands who passed ordeals (Kerr, Forsyth, and Plyley 1992, 579).

³⁶As Maitland (1887 I, xxiv) put it, "success at the ordeal" was "far commoner than failure."

Maitland (1959, 599) put it, the “evidence . . . we have seems to show that the ordeal of hot iron was so arranged as to give the accused a considerable chance of escape.”³⁷

Turning to the cold water ordeal, things are slightly different. Recall that because of differences in body fat, men are likely to sink in water, and thus to be exonerated at cold water ordeals, while women are likely to float, and thus to be convicted.³⁸ If, then, as my theory suggests, medieval justice systems sought to exonerate persons who were willing to undergo ordeals, they should’ve sent only men to cold ordeals and sent women only to hot ones.

The data support this prediction. 91 ordeals appear in England’s eyre rolls between 1194 and 1208. 84 of the probands are male. 7 are female. Judges ordered 79 of the men to cold water ordeals, 1 to the hot iron ordeal, and 4 to unspecified ordeals. They ordered all 7 women to hot iron ordeals (Kerr, Forsyth, and Plyley 1992, 581). Thus while judges ordered men to cold water ordeals between 94 and 98.8 percent of the time, they ordered women to cold water ordeals 0 percent of the time.

Two cases that involve a man and woman jointly accused of the same crime are particularly instructive. In one case the defendants were accused of burglary. In the other they were accused of murder. In both cases judges ordered the men to cold water ordeals and the women to hot iron ordeals (Maitland 1887 I, nos. 12 and 119). In a third case, a woman was accused of murder, ordered to the hot iron ordeal, and passed. A man was then accused of the same murder but ordered to the cold water ordeal instead (Maitland 1887 I, no. 101).³⁹

³⁷The hypothesis that priests were selling justice has difficulty explaining the ordeal data’s notable feature: most defendants underwent ordeals. If priests routinely sold justice, most defendants facing ordeals would settle with their accusers. Accusers could extort no more from defendants than priests. And by bribing their accusers to drop their complaints, defendants could avoid undergoing ordeals. Faced with the prospect of having to bribe priests to secure their innocence, defendants would settle instead. If priests colluded with accusers to extort defendants, we would also expect settlements. By settling with their accusers, defendants could avoid ordeals; priests and accusers could divide the settlement price; and priests could avoid the labor of administering ordeals. Thus, if priests were selling justice, we should observe settlements, not defendants choosing to undergo ordeals and being exonerated. But the data show the opposite: most defendants underwent ordeals and were exonerated. Only a minority settled.

³⁸This assumes the average medieval male was lean. That seems reasonable given the paltry diet of most medieval citizens.

³⁹Twelfth-century Icelandic law required men to go to cold water ordeals and women to hot water ordeals. In 12th- and 13th-century England, where the data considered above come from, the law didn’t make any provision for the differential treatment of men and women in terms of hot or cold ordeals. See Lea (1973, 46) and Kerr, Forsyth, and Plyley (1992, 581).

2. *Ordeals aren't used for defendants who are known non-believers.*

According to my theory, ordeals only inform priests about defendants' guilt or innocence if defendants' belief that ordeals are *iudicia Dei* is at least positive. If that theory is correct, medieval legal systems should've exempted non-believers (i.e., those for whom $\rho = 0$ or $0 < \rho < \rho^*$, the critical threshold required to ensure separation for a given γ^*) from ordeals. The evidence supports this prediction.

There was one major group of obvious non-believers in medieval Europe: Jews. Medieval judicial ordeals were intimately connected to and strongly dependent on Christian belief. Priests administered ordeals, in churches, as part of Christian mass, with all the attendant Christian ritual. Ordeals' Christian trappings were designed to access and strengthen individuals' belief that ordeals were *iudicia Dei*. But they were intended for, and only capable of having the desired effect on, Christians.

As Bartlett (1986, 54) puts it, "such a sacral proof" as ordeals, "so deeply hedged about with Christian liturgy and ritual, a proof which normally required a vigil in a church and prior communion, was so indelibly Christian that it would be . . . in Christian eyes, virtually meaningless to apply it to non-Christians." More important, it would be meaningless in non-Christian eyes to apply it to non-Christians. In contrast to Christians, for Jews, "[t]rials by ordeal . . . were totally alien to their nature and tradition" and belief (Eidelberg 1979-1980, 111).

Because of Jews' non-belief, we find a bifurcated medieval trial policy in "doubtful cases" involving Jews and Christians. If the defendant was Christian, he was tried by ordeal. If he was Jewish, he was tried by compurgation.⁴⁰ As Charlemagne's capitularies instructed (of 814 and 809 respectively): "If a Jew accuses a Gentile, the accused if need be, can prove his rightness by valid witnesses and an oath upon relics or by trial by ordeal involving glowing iron." "[B]ut if a Gentile accuses a Jew, it suffices to bring two witnesses, Jew or Gentiles, and bear an oath" (Eidelberg 1979-1980, 112).⁴¹

⁴⁰However, Jews were sometimes subjected to trial by combat (Lea 1866, 103). I discuss this medieval judicial institution below.

⁴¹Some burgesses also received ordeal exemptions. Though this seems to have been the result of a political bargain with government authorities. In the 12th century, some clerics began seeking exemption from hot and cold ordeals. But they already used these to a very limited extent, relying heavily on compurgation instead. Clerical exemptions were based on the growing ecclesiastic concern that ordeals were uncanonical,

3. *Ordeals are abandoned when clerics stop administering them.*

Medieval persons' belief that ordeals were *iudicia Dei* ($\rho > 0$), and thus ordeals' ability to work, depended on ordeals' religious status—a status dependent on priests' central role in their administration. Only clerics could perform the religious rituals, such as mass, that invoked Godly intervention in judicial matters. My theory therefore predicts that when priestly involvement in ordeals ceased, so must have ordeals.

The history of ordeals' demise supports this prediction. High-ranking ecclesiastics began seriously questioning ordeals' relationship to their religion in the 12th century.⁴² “[T]he twelfth century was the great age of [canonical] sifting, and the credentials of the ordeal were among the things sifted” (Bartlett 1986, 83).

According to ordeals' ecclesiastic critics, ordeals had no scriptural sanction. Despite ordeal rituals' allusions to Daniel, Susanna, and the fiery furnace, the Bible contains but one instance of what might be construed as an actual judicial ordeal. In the Book of Numbers (5:11-31) an accused adulteress undergoes an ordeal of bitter waters (poison ingestion) to prove her fidelity. Besides the fact that this is the lone potential case of scriptural sanction for judicial ordeals, medieval judicial ordeals weren't ordeals of bitter waters.⁴³ They were ordeals of boiling water, burning iron, and dunking in pools, which had no scriptural support.

Ordeals' detractors argued that ordeals had an even more severe problem that cast doubt on their canonical credentials. They violated an important Christian proscription with lots of scriptural support: “thou shalt not tempt the Lord thy God” (Deuteronomy 6:16; Matthew 4:7). Judicial ordeals required priests to command God to perform miracles at their whim, which the Bible forbids.

Together with the fact that there existed more papal decretals questioning ordeals' religious status than supporting it, these factors led the Fourth Lateran Council to reject judicial ordeals' religious legitimacy and to ban priests from participating in them in 1215.

which came to a head in 1215. I discuss this below. See Bartlett (1986).

⁴²Some high-ranking ecclesiastics questioned ordeals from their inception in Christendom. But these criticisms didn't gain ground until the 12th century. When they did, ordeals began to disappear in some places toward the end of the 12th century (Caenegem 1991, 85-86). However, ordeals' widespread disappearance didn't occur until the 13th century after Pope Innocent III's edict.

⁴³The next closest thing to a judicial ordeal in the Bible is the casting of lots that a crew of sailors undertakes to decide who offended God and caused a storm in the Book of Jonah (1:7).

As the Council's decree read: "let no ecclesiastic . . . pronounce over the ordeal of hot or cold water or glowing iron any benediction or rite of consecration, regard being also paid to the prohibitions formerly promulgated respecting the single combat or duel" (Howland 1901, 16).⁴⁴

If ordeals didn't depend on medieval citizens' religious beliefs, the Church's condemnation, and clerics' withdrawal, shouldn't have affected medieval judicial systems' reliance on them. Although the religious trappings that formerly framed ordeals would no longer be involved, secular judicial systems could've continued to use boiling water, burning iron, and dunking in pools to decide defendants' guilt and innocence in "doubtful cases." If citizens' superstition wasn't important to ordeals' functionality, these religious trappings wouldn't have been missed. Ordeals would've continued as successfully as they did before.

But they didn't. Instead, secular judicial systems abandoned ordeals where their traditional religious trappings evaporated. Denmark prohibited ordeals in 1216, England in 1219, and Scotland in 1230. Italy ended ordeals in 1231; though some Italian towns had already abandoned them by then. And Flanders' criminal justice system dispensed with ordeals between 1208 and 1233 (Caenegem 1991: 87). Shortly thereafter Norway, Iceland, Sweden, and others followed suit. France never formally abolished ordeals. But the last mention of them that historians can find is in 1218, just after the Church's ban (Caenegem 1991, 87).

Where priests defied the Council's prohibition and continued to participate in ordeals, places such as Germany, Greece, Hungary, Poland, and Croatia, ordeals lingered longer. But "[w]ith trifling exceptions, the ordeal could not continue without priests" (Bartlett 1986, 101; see also, Lea [1866, 267]). So ordeals went extinct where clerics refused to officiate them.⁴⁵ By denouncing ordeals' canonical status and banning clerical participation in them, the Fourth Lateran Council's decision "robbed the ordeal of all religious sanction" (Plucknett

⁴⁴There were other objections to ordeals. But those discussed above were the most important. The most significant objection not discussed above was the argument that clerics shouldn't participate in activities that potentially involved the shedding of blood. For a detailed discussion of the theological issues driving the Fourth Lateran Council's ordeal prohibition, see Baldwin (1961) and McAuley (2006).

⁴⁵Secular authorities understood the importance of priestly participation to ordeals' operation. A decade before the Church's ban, some clerics decided for themselves that ordeals were at odds with their religion. They stopped administering them. But secular authorities would have none of it. As Pope Innocent III complained: "Although canon law does not admit ordeal by hot iron, cold water and the like, unhappy priests are being compelled to pronounce the blessing and become involved in such proofs and are being fined by the secular officials if they refuse" (Bartlett 1986, 98).

1956, 118). Without the religious sanction on which the belief that ordeals were *iudicia Dei* rested, trial by fire and water became impotent—useless as tools to separate the guilty from the innocent.

Ordeals' post-Church condemnation collapse stands in stark contrast to another popular medieval judicial process that the Fourth Lateran Council also condemned and prohibited priests from taking part in: judicial combat. Judicial combat was used for deciding property disputes and criminal cases.⁴⁶ It provides a useful contrast to ordeals because, although “the moral influence of the ordeal depended entirely upon its religious associations,” that of judicial combat didn't (Lea 1866, 272). For example, “while a duel may be fought without the aid of a priest[,] the efficacy of an ordeal depended wholly upon the religious rites which gave it the sanction of a direct invocation of the Almighty” (Lea 1973, 162-163; see also Bloomfield [1969, 555]; Bartlett [1986, 120-121]; Rollason [1988, 15]; Palmer [1989, 1553]).

This crucial difference between ordeals and judicial combat explains why, though the Church condemned and prohibited priestly participation in them both in 1215, judicial combat “survived for centuries the ordeal proper” (Thayer 1898, 39). In Spain judicial combat continued until the late 13th century. In Italy, Flanders, and Germany it continued until the 14th century. In Portugal, France, and Hungary it lasted until the 15th century. Even England didn't see its last judicial combat until 1456 (Russell 1980, 154).

5 Concluding Remarks

After the Church withdrew its support from ordeals in the 13th century, ordeals died. Trial by jury replaced them in England. Trial by inquisition replaced them on the continent.⁴⁷ No one longs for ordeals' return. But as I explain below, if the appropriate belief structure existed to support them, perhaps they should.

My analysis of the law and economics of medieval judicial ordeals leads to several conclusions. First, though rooted in superstition, judicial ordeals weren't irrational. Fact finding

⁴⁶On the law and economics of judicial combat, see Leeson (2011).

⁴⁷On the evolution of trial by jury and inquisition in England and on the European continent respectively after the ordeal's demise, see for instance Pollock and Maitland (1959). On the economics of these traditions, see Hayek (1960) and Glaeser and Shleifer (2002).

in the Middle Ages was costly. Given technological limitations, it was often impossible. In an environment in which people assigned a high probability to the idea that priests could call on God to reveal judicial truth, ordeals were an effective way of accessing defendants' private information about their criminal status. Ordeals achieved what they sought: they accurately assigned guilt and innocence where traditional means couldn't.

Second, my analysis suggests that optimal legal institutions depend partly on the beliefs of the people they encompass. For example, the legal regime that's efficient in a society where people believe firmly that God curses cheaters is different from the legal regime that's efficient in a society where people don't believe this. In the former society, superstition does part of the work we normally ask state-made law and punishment to do. *Ceteris paribus*, the efficient legal regime in the latter society involves more state-made law and punishment than it does in the former. Similarly, in a society where citizens believe strongly that trials of fire and water are *iudicia Dei*, such as medieval society until the 13th century, it's cheaper to use such trials to establish accused persons' guilt or innocence in certain cases than it is to use other methods for this purpose that don't leverage citizens' beliefs, such as trial by jury or inquisition.

The reason it doesn't make sense for modern developed societies to use medieval judicial ordeals isn't that post-ordeal trial methods are inevitably superior. It doesn't make sense for them to use medieval judicial ordeals because (a) technological advance has made fact finding in the cases in which medieval legal systems used ordeals infinitely cheaper than it once was; and (b) citizens in modern developed societies don't believe that trials of fire and water are *iudicia Dei*, which medieval judicial ordeals require to work.⁴⁸ In a dramatically less technologically advanced state, such as that which prevailed in the Middle Ages, or even in a technologically advanced state where individuals believe strongly that trials of fire and water are *iudicia Dei*, medieval-style judicial ordeals could again be the efficient option.⁴⁹

⁴⁸However, many citizens in modern developed societies do believe in other superstitions that their countries' legal systems can, and in some cases do, leverage to improve criminal justice in much the same way that medieval legal systems leveraged the *iudicium Dei* superstition for that purpose. Consider, for example, the common belief that polygraph tests are capable of measuring physiologically whether persons are lying or telling the truth.

⁴⁹Where these conditions are satisfied in some modern developing countries, medieval-style ordeals are still used to decide accused criminals' guilt or innocence. For example, although its government has criminalized the practice, ordeals called "sassywood" remain popular in Liberia. See Leeson and Coyne (2011).

Finally, my examination of ordeals suggests that objectively true beliefs don't necessarily supplant objectively false ones. More important, it suggests that, in some cases at least, society is better off because of this. If institutions based on objectively false beliefs, such as the belief that God intervenes in man's judicial proceedings to ensure that the righteous party prevails, produce social outcomes that are as good, or better, than the social outcomes that institutions based on objectively true beliefs produce, there's no pressure for the former beliefs to give way to the latter. Ordeals are an example of this. This logic explains how a judicial institution based on objectively false beliefs could last for nearly half a millennium: superstition can be socially productive.

Perhaps surprisingly this means that societies composed of individuals who lack certain objectively false beliefs can be worse off than societies composed of individuals who believe deeply in objectively false propositions. To return to the example from above, holding other features and beliefs constant, a society in which no one believes in an invisible, omnipotent, and omniscient being who interferes with human affairs to ensure cosmic justice will have to devote more resources to addressing crime than a society in which every person believes firmly in such a being. The superstitious society outperforms the scientific one.

References

- [1] Baldwin, John W. 1961. "The Intellectual Preparation for the Canon of 1215 against Ordeals." *Speculum* 36:613-636.
- [2] Bartlett, Robert. 1986. *Trial by Fire and Water: The Medieval Judicial Ordeal*. Cambridge: Cambridge University Press.
- [3] Becker, Gary S. 1968. "Crime and Punishment: An Economic Approach." *Journal of Political Economy* 76:169-217.
- [4] Bloomfield, Morton W. 1969. "Beowulf, Byrhtnoth, and the Judgment of God: Trial by Combat in Anglo-Saxon England." *Speculum* 44:545-559.
- [5] Brown, Peter. 1975. "Society and the Supernatural: A Medieval Change." *Daedalus* 104:133-151.
- [6] Caenegem, R.C. van. 1988. *The Birth of the English Common Law*. Cambridge: Cambridge University Press.
- [7] Caenegem, R.C. van. 1991. *Legal History: A European Perspective*. London: Hambledon Press.
- [8] Colman, Rebecca V. 1974. "Reason and Unreason in Early Medieval Law." *Journal of Interdisciplinary History* 4:571-591.
- [9] Davies, Wendy, and Paul Fouracre, edited. 1986. *The Settlement of Disputes in Early Medieval Europe*. Cambridge: Cambridge University Press.
- [10] Eidelberg, Shlomo. 1979-1980. "Trial by Ordeal in Medieval Jewish History: Laws, Customs and Attitudes." *Proceedings of the American Academy for Jewish Research* 46:105-120.
- [11] Fudenberg, Drew, and David K. Levine. 2006. "Superstition and Rational Learning." *American Economic Review* 96:630-651.
- [12] Gibson, William Sidney. 1848. *On Some Ancient Modes of Trial, Especially the Ordeals of Water, Fire, and Other Judicia Dei*. London: Printed by J.B. Nichols and Son.
- [13] Gilchrist, James P. 1821. *A Brief Display of the Origin and History of Ordeals . . .* London: Printed for the author by W. Bulmer and W. Nicol.
- [14] Glaeser, Edward L., and Andrei Shleifer. 2002. "Legal Origins." *Quarterly Journal of Economics* 117:1193-1229.
- [15] Groitein, H. 1923. *Primitive Ordeal and Modern Law*. London: George Allen and Unwin.
- [16] Groot, Roger D. 1982. "The Jury of Presentment Before 1215." *American Journal of Legal History* 26:1-24.

- [17] Hayek, Friedrich A. 1960. *The Constitution of Liberty*. Chicago: University of Chicago Press.
- [18] Henry, Robert. 1789. *The History of Great Britain, From the First Invasion of it by the Romans . . . Volume 2*. Dublin: Printed for P. Byrne.
- [19] Ho, H.L. 2003-2004. "The Legitimacy of Medieval Proof." *Journal of Law and Religion* 19:259-298.
- [20] Howland, Arthur C., edited and translated. 1901. *Ordeals, Compurgation, Excommunications and Interdict*. Philadelphia: Department of History of the University of Pennsylvania.
- [21] Hyams, Paul R. 1981. "Trial by Ordeal: The Key to Proof in the Early Common Law." 90-126 in *On the Laws and Customs of England*, edited by Morris S. Arnold, Thomas A. Green, Sally A. Scully, and Stephen D. White. Chapel Hill: University of North Carolina Press.
- [22] Kerr, Margaret H., Richard D. Forsyth, and Michael J. Plyley. 1992. "Cold Water and Hot Iron: Trial by Ordeal in England." *Journal of Interdisciplinary History* 22:573-595.
- [23] Klerman, Daniel. 2001. "Settlement and the Decline of Private Prosecution in Thirteenth-Century England." *Law and History Review* 19:1-65.
- [24] Lea, Henry C. 1866. *Superstition and Force: Essays on the Wager of Law, the Wager of Battle, the Ordeal, Torture*. Philadelphia: Collins.
- [25] Lea, Henry Charles. 1973. *The Ordeal*. Philadelphia: University of Pennsylvania Press.
- [26] Leeson, Peter T. 2011. "Trial by Battle." *Journal of Legal Analysis* 3:341-375.
- [27] Leeson, Peter T., and Christopher J. Coyne. 2011. "Sassywood." Unpublished manuscript. Department of Economics, George Mason University.
- [28] McAuley, Finbarr. 2006. "Canon Law and the End of the Ordeal." *Oxford Journal of Legal Studies* 26:473-513.
- [29] Miller, William Ian. 1988. "Ordeal in Iceland." *Scandinavian Studies* 60:189-218.
- [30] Morris, Colin. 1975. "Judicium Dei: The Social and Political Significance of the Ordeal in the Eleventh Century." *Studies in Church History* 12:95-111.
- [31] Palmer, Robert C. 1989. "Review: Trial by Ordeal." *Michigan Law Review* 87:1547-1556.
- [32] Pilarczyk, Ian C. 1996. "Between a Rock and a Hot Place: Issues of Subjectivity and Rationality in the Medieval Ordeal by Hot Iron." *Anglo-American Law Review* 25:87-112.

- [33] Plucknett, Theodore F.T. 1956. *A Concise History of the Common Law*. 5th ed. Boston: Little, Brown, and Co.
- [34] Pollock, Frederick. 1898. "English Law Before the Norman Conquest." *Law Quarterly Review* 14:291-306.
- [35] Pollock, Frederick, and Frederic William Maitland. 1959. *The History of English Law*. 2 vols. Washington, D.C.: Lawyers' Literary Club.
- [36] Posner, Richard A. 1980. "A Theory of Primitive Society with Special Reference to Law." *Journal of Law and Economics* 23:1-53.
- [37] Radding, Charles M. 1979. "Superstition to Science: Nature, Fortune, and the Passing of the Medieval Ordeal." *American Historical Review* 84:945-969.
- [38] Rollason, D.W. 1988. *Two Anglo-Saxon Rituals: Church Dedication and the Judicial Ordeal*. Vaughan Paper No. 33. University of Leicester, Leicester, UK.
- [39] Roberts, John M. 1965. "Oaths, Autonomic Ordeals, and Power." *American Anthropologist* 67:186-212.
- [40] Russell, M.J. 1980. "II Trial by Battle and the Appeals of Felony." *Journal of Legal History* 1:135-164.
- [41] Thayer, James Bradley. 1898. *A Preliminary Treatise on Evidence at the Common Law*. Boston: Little, Brown, and Co.
- [42] White, Stephen D. 1995. "Proposing the Ordeal and Avoiding It: Strategy and Power in Western French Litigation, 1050-1110." 89-123 in *Cultures of Power: Lordship, Status, and Process in Twelfth-Century Europe*, edited by Thomas N. Bisson. Philadelphia: University of Pennsylvania Press.
- [43] Zajtay, Imre. 1954. "Le Registre de Varad. Un monument judiciaire de début du XIIIe siècle." *Revue historique du droit français et étranger* 32:527-562.