Ad Extorquendum Veritatem:
Denunciations at Inquisitorial Trial in the 14th Century

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Abstract

Denunciation furthers social control by providing access to hard-to-reach sections of social networks. We reconceptualize "voluntary" and "coercive" regimes of denunciation in terms of coercive pressure: the credible threat of use of violence by authorities. This allows us to articulate a processual approach to denunciation as situational in nature, adapting to shifting circumstances, rather than as a propensity characteristic of a regime. We test this approach using data from the trial of Waldensians in Giaveno, Italy, in 1335, headed by the inquisitor Alberto de Castellario. A dynamic network actor model attests that coercive pressure increases the rate of denunciation, as initial resistance gave way to cooperation, and decreases the social distance between denouncer and denounced, shifting the denunciation target from fellow villagers to congregation fellows and kinship members. The motivation to denounce was mixed in nature, as deponents simultaneously disclosed and concealed, protecting close ones until they could no more. The analysis implies that coercive regimes may be more effective instruments of social control than voluntary regimes.

We are very few in our generation who have not given other people's names. That is terrible. It can never be undone.

Orson Welles (in Sarris 1967, 545)

Orson Welles' words testify to a paradox: the provision to the authorities of potentially discrediting information on contacts is typically seen as a morally reprehensible act that is, nevertheless, common in social life and history. Denunciation practices were critical in the reinforcement of ecclesiastical power in the Middle Ages (e.g., Given 1997; Pegg 2001), in a succession of repressive regimes in Russia (e.g., Burds 1996; Fitzpatrick 1996), or in the Cultural Revolution in China (Walder 2019). Democratically-elected governments may similarly embrace practices of denunciation in the service of political (e.g., Pontikes, Negro, and Rao 2010) and/or economic objectives (e.g., Headworth 2019).

The controversial nature of denunciation practices led Bergemann (2017, 384) to observe that "*why citizens cooperate with authorities, especially in the most repressive regimes, remains a puzzle*." What is puzzling is not the pervasiveness of denunciation, considering its utility to authorities as a mechanism of social control, but the apparent readiness of citizens to cooperate with authorities in ways that are likely to negatively affect the life chances of those in their proximity. Denunciation is targeted, activating closer or more distant sections of social networks, exposing casual contacts or family members to the (sometimes lethal) scrutiny of authorities. It is instrumental in helping extend the surveillance capacity of the state (Headworth 2019).

The recent upsurge of scholarly interest in denunciation practices (Bergemann 2017; 2019; Headworth 2019) is reinvigorating the classic (if controversial) sociological domain of social control by turning attention away from the actions of state agencies, its traditional focus (Horwitz 1990), to those of the public. The concept of social control was one of the foundation stones of sociology as a discipline (particularly in the United States), designating a key preoccupation of society: ensuring the social order (e.g., Park and Burgess 1924; Ross 1901). In the first half of the 20th century, the concept tended to encompass functions of both social integration and exclusion (e.g., Parsons 1951), referring to a variety of methods that make possible the endurance of social institutions in their change (Mead 1964). This variety was curtailed from the mid-1960s to those methods of formal control employed by authorities to react to social deviance and root out manifestations of non-conformity (e.g., Black 1976; Clark and Gibbs 1965; Cohen 1985). In this perspective, social control embodies the authority of society over individuals, manifested in practices of surveillance, verification, and correction of deviant behavior (Carrier 2006). It designates a set of organized responses, including punishment, dissuasion, prevention, and correction of forms of behavior judged as problematic, troublesome, or undesirable in

some way or another (Cohen 1985). We retain this use of the concept for two reasons: its suitability to our empirical context, the medieval inquisition, and consistency with its established use in historical scholarship, relevant to our analysis (e.g., Given 1997; Hill 2019).[1]

The recognition of the key social function of any system of social control as the separation of nonconformists or deviants from those that conform to norms and conventions poses the challenge of identifying information sources that allow the reliable differentiation between those who conform and those who do not. Knowledge plays a fundamental role in mechanisms of social control (Ross 1901). The limited surveillance ability of the state fosters reliance on a network of informers and voluntary contributions of citizens, conveying privately collected information from personal experiences or the circulation of gossip to the public authorities (Black and Reiss 1970; Warner 1992). Denunciations by citizens have related functions of information-gathering and surveillance. Procuring access to hard-to-reach sections of social networks facilitates the surveillance of what is (or may develop into) deviant behavior, thereby enforcing conformity to norms and regulations.

For social control to be effective in preventing deviance, it needs to be extensive in scope, and to penetrate the social networks of suspects. It is not only the public that adapts to the control efforts of authorities; it is also authorities that adapt their control efforts to deepen access to social networks (Headworth 2019). The directed exchange, where authorities sanction deviating behavior by members of the public, is increasingly supplanted in sociological research by the recognition that social control involves interaction between authorities and the public, where the deployment of each side's resources interacts with the strategies of the other side. This research (Bergemann 2017; 2019; Headworth 2019) directs attention to two processes: how actors make use of networks in response to the control efforts of authorities, and how authorities try to co-opt these networks to augment their surveillance capacity.

Co-optation features strategies that exploit disagreements between the members of a network to cultivate cooperation from voluntary informants (Headworth 2019). Motivated by envy or malice, the denunciation of deviant behavior in social proximity enables authorities to extract incriminating

[1] We have no normative preference between the two definitions. We recognize the applicability of the earlier concept to our context, as the Catholic Church combined coercive forms of social control (Black 1976) over heretics, exemplified in the Inquisition, with practices of deterrence of deviant behavior (Becker 1963), such as the call for regular confessions of the faithful. Carrier (2006) provides an overview of the historical schism in the social control literature, and the difficulties of updating its dominant, restrictive conceptualization by, for example, including the definition of deviance, which makes possible the punitive reaction by authorities (e.g., Horwitz 1990), or by incorporating practices of "normalization" of subjects of authority (e.g., Foucault 1975).

evidence from personal networks. The closer the informant is to the suspect, the more pertinent and reliable the information is, and the more difficult it is to obtain, as closeness may encourage resistance.

The public responds to control efforts by authorities by activating social networks to organize resistance, or selectively disclosing sections of the network in full or partial cooperation. Bergemann (2017; 2019) postulates two motivation types as responsible for cooperation: 1) self-preservation, by removing pressure from oneself and one's family, and 2) social opportunism, manipulating the control efforts of authorities by directing attention to specific others, with the aim of settling personal scores. These types are associated with institutional characteristics: self-preservation is more likely observed in "coercion" regimes, where denunciation serves as an instrument of appeasing authorities, while opportunism is more likely observed in "volunteer" regimes, where denunciation serves self-interest.

Our paper advances this research stream in two notable respects. First, by drawing on Abbott's (2001; 2016) "processual" approach, we propose treating the motivation to denounce as situational in nature, adapting to shifting circumstances, rather than as a stable propensity that is characteristic of a personality type or institutional regime. Second, we propose that the regimes of denunciation should be analyzed not as separate entities, but as related, based on the degree of coercive pressure applied by authorities on members of the public. Our reconceptualization of "voluntary" and "coercive" regimes leads to the formulation of an expectation that the intensifying coercive pressure increases the rate of denunciation and decreases the social distance between denouncer and denounced.

We test this expectation with data from a historical event: the inquisitorial trial of Waldensians in the Italian village of Giaveno in 1335, presided by Alberto de Castellario. The main advantage of this research context is that denunciation is directly observable throughout the duration of the trial. We analyze the trial as a set of relational events (Borgatti, Everett, and Johnson 2013), where the act of denunciation creates connections between the inquisitor, denouncer and denounced. Qualitative and quantitative analyses lend support to our expectation. The response to the increasing pressure by the inquisitor was adaptive in nature, revealing mixed motivation to denounce: deponents simultaneously disclosed and concealed, trying to protect close ones until they could no more.

Denunciation and Coercive Pressure

A "denunciation" is a notification to the authorities by a person(s) about deviant behaviour by another person(s), pointing to forms of disagreement with political or religious orthodoxy (Bergemann 2019).

The act of denunciation is invariably accompanied by a call for punishment of the deviant behaviour. The dominant approach to denunciation in sociological research identifies regimes of denunciation, demonstrating that differences in institutional features lead to divergence in the individual motivation to denounce. Bergemann (2017; 2019) differentiates between a coercion regime, where the authorities encourage denunciation through the use of positive and/or negative incentives, and a volunteer regime, providing no incentives for denunciation. The author finds that denunciations in the volunteer regime tend to be motivated by social opportunism and oriented toward socially proximate others, while in the coercion regime they tend to be motivated by self-preservation and oriented toward distant others.

Recognizing the analytical value of these categories, we identify three substantive issues with them. The first one refers to *categorization*. The incentive-based framework is discrete in nature: the absence of explicit incentives (in an environment that allows actors to harm one another with relative impunity) defines a volunteer regime, while the presence of such incentives defines a coercion regime. However, historical evidence suggests that the presence or absence of incentives is an elusive ground for categorization, as authorities tend to combine coercive methods with voluntary practices, which are less demanding in terms of resources and are less harmful to reputation. Preston (2012, 502) observes that evidence for the military trials of Republicans in the Spanish Civil War (1936-1939) came from the coercive interrogation of prisoners and from voluntary denunciations by local people, primarily of their competitors.

Similarly, Headworth (2019) shows that US welfare fraud investigators modify their approach in collecting information on suspected delinquents. Using cooperation-oriented narratives, they exploit personal grievances to encourage voluntary denunciation. But this is accompanied by exhortations to report others' suspected rule-breaking, actively soliciting tips and exhibiting flyers that "put the state's coercive power on offer" (p. 179). The absence of direct incentives to denounce does not mean that a potential informant is unexposed to indirect forms of pressure to disclose information that he or she is reluctant to give. Headworth (2019, 176) observes that the "strategic deployment of state power helps investigators extract evidence from unintentional or unwitting informants".

That voluntary denunciation is facilitated by a latent menace of coercive power is supported by historical evidence. Residents of areas newly conquered by the Nationalists in the Spanish Civil War were cognizant that not to come forward with denunciations of Republican sympathizers was to

invite suspicion in the eyes of authorities (Preston 2012, 502). Similarly, Judt (2007, 37–38) remarks that denunciations in German-occupied Europe until the end of World War II were often not motivated by reward or material gain, but by the desire to display loyalty and cast doubt on the loyalty of others.

This points towards the second substantive issue with the dominant theoretical perspective: the lack of attention to *interdependencies* in the proclivity for denunciation in the two regimes. In making decisions about whether to denounce others or not, members of the public react not only to the actions of authorities, but also to those of their contacts or prominent others. Observation of the behavior of others (Granovetter 1978), inferences of motivations for action based on these observations (Ermakoff 2008) and the mutual observation between social contacts (Gould 1991) can be even more decisive in facilitating or impeding practices of denunciation than the actions of authorities. To understand how these practices reinforce social control requires attention to both the actions of authorities and to the ways in which they trigger sequences of realignment of preferences (Ermakoff 2008) among members of the public. The observed rate of denunciation in a coercion regime is a product not only of responses to (positive/negative) incentives to denounce by authorities (Bergemann 2017; 2019), but of adjustments to shifts in the preferences of socially-proximate or prominent others.

These adjustments can be captured in an analytical framework in which the substantive focus is on the "process" of denunciation. Bergemann (2017; 2019) presents the regimes of denunciation as ideal types, without specifying a causal or temporal relation between them. They can be distant in time and space (Spain in the 15th and Russia in the 17th century), but also proximate, as demonstrated in the analysis of the Spanish Inquisition before and after 1500 (Bergemann 2019). This analysis hints at the possibility of a temporal relation between the regimes, with one regime transitioning into another, but stops short of articulating a framework for analyzing this transition. Inattention to *process* is the third substantive issue with the dominant framework.

We propose to address these substantive issues in a process-based framework that is based on "coercive pressure" (Ermakoff 2008): the credible threat of use of violence by authorities to encourage denunciation. We posit exposure to coercive pressure as a more appropriate principle of categorization of denunciation regimes than the presence (or absence) of incentives. It has a major advantage relative to the latter: it is continuous in nature, redirecting the focus from the *type* to the *degree* of inducement to denounce.

We argue that coercive pressure provides more solid analytical grounds than incentives for the categorization of regimes and the articulation of the transition between them. It allows to create a scale of pressure and to capture the emergence of interdependencies in the process of application of coercive pressure on members of the public. The starting point is the observation that the two denunciation regimes are not independent but are related to each other through exposure to coercive pressure. We redefine as "coercive" a regime of denunciation characterized by a high degree of coercive pressure on potential informants.[2] Respectively, a "voluntary" regime is characterized by a low degree of coercive pressure. This categorization allows coercive regimes to feature voluntary practices, and voluntary regimes to be exposed to low coercive pressure.

Figure 1 About Here

The two regimes, connected by a continuum of coercive pressure, are represented in Figure 1. The continuum is methodologically useful in two respects. First, it facilitates the positioning of cases, identifying them as predominantly coercive or voluntary in nature. Second, it permits analyzing cases of transition between the two regimes, such as the one occurring in Spain around 1500.

As illustrated in Figure 1, the continuum refers at the same time to a distribution and process. It embodies the assumption that the distribution of observable cases is clustered toward the poles and is thinner in the middle. Practices of denunciation tend to be predominantly coercive or voluntary in nature, with relatively few cases situated between the two, combining voluntary and coercive features. This continuum is intrinsically dynamic; denunciation observed over time can transition from one type of regime toward the other.

This transition can be analyzed as the result of a major institutional event (Bergemann 2017; 2019), but the presented continuum encourages a different analytical perspective: of a process leading from one regime to the other, where any event, whatever its historical significance or institutional function, is only one link in a temporal sequence. The methodological implications are pronounced: instead of comparing observables before and after a key institutional event, the alternative approach investigates sequences of events that connect regimes. The objective is to analyze denunciation

[2] Lumping together positive and negative incentives in defining a coercion regime is a useful simplification, but it creates substantive problems. A coercion regime where prisoners are tortured is put on the same footing as a coercion regime remunerating denouncers. However, the degree of coercion is dramatically different in the two cases. This difference is meaningful, and we expect that it affects both the rate and the target of denunciation.

regimes over time, rather than across contexts, in order to understand how variation in the degree of coercive pressure is associated with change in the rate and the target of denunciation over time.

A Processual Approach to Denunciation

By positing a continuum between voluntary and coercive regimes, defined by the degree of coercive pressure, we conceptualize the act of denunciation as a link in the process of adaptation to pressure. Attention to "process" was fundamental to the Chicago school (e.g., Park and Burgess 1924) and to symbolic interactionism and ethnomethodology (e.g., Goffman 1963; Mead 1964), but receded in importance in sociological research in subsequent decades (Abbott 2016). We draw on a prominent process-based framework: the "processual" approach (Abbott 2001; 2016), articulating the social order as a set of processes, rather than as a collection of solid structures. We identify three essential elements in it. First, its emphasis on events as the unit of analysis. Abbott (2016, 200) argues that to understand individual actions requires identifying sequences of events and analyzing the mechanisms that link them together. Second, the necessity to combine sociological generalization with historical attention to timing and order (Abbott 2001). The social order emerges from sequences of actions by particular actors at particular times in particular places (Abbott 2001). Third, actions are as much the result of shifting conditions as of reflective choices. Actors are embedded in concrete circumstances and relations that shape their actions, but they respond to the social forces pressing on them by way of interpretations.

The "processual" approach reconceptualizes denunciation from an institutional construct to a situational outcome: a product of the interaction between the pressure by authorities and the public's response to it. It is useful to think of denunciation as a response to two types of pressure: by authorities and by one's peers. Authorities use repressive methods and legal institutions to enforce compliance and obtain information (Black 1976; Cohen 1985); the willingness of an individual to provide such information is a function of the perceived capacity of authorities to apply pressure through repressive methods (Becker 1963). At the same time, the willingness to denounce is also exposed to peer pressure by the members of a social group toward conformity with norms of collective solidarity and avoidance of disclosure of information that may endanger the group (Åkerström 1991). The interplay between opposing forces or bases of solidarity is uncertain and historically contingent (Gould 1991).

The act of denunciation is embedded in social relations. Their importance transpires in two respects. First, "local" social relations enable individual actors to obtain credible information about one another's behavioral preference (to denounce or not), and on this basis, to assess how the group might behave as a whole (Ermakoff 2008). Second, as Headworth (2019) shows, social relations are simultaneously a shield against overreaching authorities, and an entryway for the authorities into the social networks of suspects. Social distance is negatively related to resistance: as authorities move to the center of the social network, resistance by contacts tends to increase, but so does the value of the information they provide. Authorities have a natural incentive to raise the degree of coercive pressure in order to increase the scope and quality of information on suspects, while the response of members of the public to the increasing coercive pressure depends critically on social distance to the suspects.

In a processual framework, it is not the simple fact of denunciation that warrants explanation, but the timing and order of denunciation. The order in which members of the public denounce others may be at least as meaningful as the number of denunciations, as it allows us to identify what piece of information or what section of their social network they view as most valuable. Faced with mounting pressure, a denunciation at an early stage does not have the same social content as one at a later stage.

Starting with the basic sociological principle that manifestations of collective solidarity, such as in refusing to denounce one's peers, reflect the strength of the underlying social relations (Gould 1991), we expect that the response to coercive pressure depends on the social distance to the potential target of denunciation. This distance can be determined in relational terms, based on the frequency of interaction or strength of feeling (Marsden and Campbell 1984). Social distance is typically short in the family, as the primary locus for construction of identity and transmission of religious beliefs (Gerber and van Landingham 2021). It can also be determined geographically from neighborhood affiliation (Gould 1991) or from attendance of the same event (Borgatti, Everett, and Johnson 2013). People would be reluctant to disclose valuable information or denounce those close to them unless the pressure mounts to a degree perceived as constraining their choices or threatening their survival, motivating disclosure. This expectation is represented on Figure 1. As the degree of coercive pressure mounts (X axis) we expect to observe decreasing social distance between the denouncer and the denounced (Y axis).

We validate this expectation in an appropriate context: a medieval inquisitorial trial. Such a

trial is sociologically meaningful for several reasons. First, it is a highly disruptive event: the arrival of an inquisitor unsettled local customs and social networks (e.g., Given 1997; Hill 2019). Our choice of context was influenced by Mead's (1964) observation that social control depends on social situations and the temporal experience that actors have of these situations. He drew attention to the sociological importance of situations where a new actor enters a system, provoking readjustment of its regulating principles. Second, a trial features a methodologically advantageous combination of a fixed location, well-defined formal stages, and a sufficient duration (from several weeks to a few months) to enable observation of what Mead (1964) viewed as essential in social control: the mutual adjustment between authorities and the members of the public. Third, as detailed below, an inquisitorial trial featured both voluntary and coercive practices to collect information on suspects.

Drawing on Abbott's framework (2001; 2016), we investigate an event in a historical context, analyzing the temporal order of actions by the inquisitor and by members of the public, and the rate of denunciation in adaptation to the increasing degree of coercive pressure. Suspects always retained choice as to whether to denounce and whom to denounce. We describe next the historical context of the trial, before recounting the unfolding of the trial by using information from the archives. This is followed by a quantitative analysis of the rate and target of denunciation over the duration of the trial.

An Inquisitorial Trial

The trial we examine was only a link in a long-term historical process of combating the spread of what the Catholic Church considered "new and false" beliefs, contrary to Holy Scripture (Hill 2019, 167). The category of "heresy" was constructed by using a set of rhetorical and cultural tropes to articulate its Satanic origin and "infectious" nature (Arnold 2001, 25). That heresy was a source of "infection" of faithful Christians was viewed as justifying the pursuit, interrogation, and exclusion of heretics from the community, their deprivation of civil rights, property, liberty, and even life (Moore 2012).

The legal framework of the inquisition developed in a series of decrees during the late 12th and the 13th centuries. Anti-heretical trials gradually adopted the inquisitorial procedure introduced by Pope Innocent III in the early 13th century for ecclesiastical courts. The adoption of this procedure – as opposed to the old "accusatory" system, allowed the judge to investigate and present charges against a defendant *ex officio*, without having to rely on accusations by private parties (Vallerani 2012, 35–44).

By the late 13th century, the medieval inquisition had developed a degree of organizational coherence based on common legal statutes, practices of record-keeping and collaboration of inquisitors on a local or regional level (Moore 2019), but it never constituted a unitary institution, directed by a clearly designated central authority that coordinated the work of inquisitors (Kieckhefer 1995). They had to operate pragmatically in adapting to local conditions, forming partnerships with bishops and secular authorities (Moore 2019).

An inquisitor was officially appointed by the Pope for a particular area, with the authority to detect suspects, establish their guilt through interrogation, secure an abjuration of heresy from the suspect, and pronounce a sentence (if found guilty), consisting of penitential and/or punitive elements, including imprisonment, wearing crosses, undertaking pilgrimages and capital punishment (handled by the secular authorities) (Hill 2019). Defendants delivered their testimony under oath and were usually not told the names of their denouncers.

A feature of the trial that is highly relevant for our objectives is that it started with a period of voluntary denunciation. Inquisitors typically initiated the process by interviewing local priests, bishops, canons, and monks, who were generally willing to help inquisitorial officials in ensuring the purity of the faith by sanctioning unorthodox beliefs. This was followed by a "period of grace": those who voluntarily presented themselves within a specified period and told the truth about themselves and others would escape incrimination (Pegg 2001). Reliance on a network of voluntary informants allowed the inquisitor to expand the initial information collected from local church officials.

After the expiration of the grace period, inquisitors could apply a set of techniques to turn the knob of pressure and penetrate deeper into local social networks, such as issuing summons, requesting a second deposition, incarceration, and torture. From this point on, the initial voluntary regime began to mutate into a progressively coercive one. A description of interrogatory techniques is provided in the manuals of the inquisitors Bernard Guy (around 1324) and Nicholas Eymerich (1376) (see Hill 2019). Eymerich observed (1376) that : "*the truth can be arrived at by the pressure of the questions*" (in Hill 2019, 226). The objective was to "extract the truth" (*ad extorquendum veritatem*) from dissimulating deponents, making them disclose information that they were generally reluctant to give.

Inquisitors were entitled to start an investigation on the evidence of a single witness but were reluctant to convict unless this evidence could be corroborated by others (Given 1997). This required

the collection of information on the social networks of suspects, following through contacts revealed by those who had confessed. Every confession required full disclosure of other heretics known to the person (Hill 2019). This facilitated the application of psychological pressure on people and contributed to a state of uncertainty as to the behavior of one's social contacts.

As Given (1997, 65) observes, the inquisitorial process was unprecedented in medieval Europe as an instrument of behavioral modification, by creating a socially delimited space where people were isolated from the outer world and subjected to forcible interrogation. The function of the inquisition was enforcing religious orthodoxy, but its impact was broader, reinforcing control over individuals through a comprehensive penal system (Arnold 2001). Once caught up in the inquisitorial machinery, a person could rarely find a permanent exit from the system (Given 1997, 90).

Social control was not reducible to unilateral repression. Historians increasingly recognize that the inquisition was not a repressive machinery controlling an oppressed populace, but carried out a popularly sanctioned need for control of those viewed as dangerous to social order (Berco 2005, 332). It involved a form of interaction between local populations and judiciaries. Given (1997: 23) posits a process in which inquisitors and suspects influence each other's behavior. The outcome of a trial was not predetermined; it was a situational outcome of the interaction of the strategies of inquisitors, those of suspects, and the economic, political, and cultural resources on which both sides could draw.

The inquisitor's attempts to apply pressure on deponents were frequently met with resistance. Many resorted to threatening those who might testify against them (Given 1997, 96), aware that a single truthful testimony could enable the inquisitor to identify potential suspects and unravel the network (Pegg 2001). It was also common for close contacts to conclude pacts to hide incriminating evidence. These pacts were typically based on kinship ties or lord-client relations (Given 1997, 117).

The mobilization of social relations is essential in trying to resolve situations of danger, but is also fraught with tensions (Gould 1991). Resistance was typically based on kinship ties; relatives could arrange with each other to conceal information, to redirect the attention of the inquisitor, or to involve committed Catholic family members (Given 1997). But mobilization could be undermined by relational friction and conflict. Disagreements among neighbors and tensions over matters of marriage and inheritance in families could play to the advantage of the inquisitor (Given 1997).

Relational and political tensions contributed to uncertain outcomes; much depended on how

skillfully an inquisitor navigated local politics and managed to apply sustained pressure on suspects, and the degree to which suspects managed to self-organize. De Biasio (2018) argues that the patterns of denunciation are the result of the interaction between the inquisitorial pressure and the choices by deponents about *whether* to disrupt the social structure, and then, *where* to disrupt it. Suspects had to choose a defensive strategy, such as ostracism, open hostility, flight, collaboration with the inquisitor, or appeal to others for help. Contingent on their choice, they had to further decide whether to disrupt networks at the family level, or at the neighbourhood or village level. They could decide to preserve the cohesion of the family by implicating relations based on trade with residents of a nearby village. But they could also refuse any form of collaboration, or they could collaborate by targeted disruption of the extended family. Naturally, these decisions were rarely made in solitude, as they depended to a significant degree on the actual or perceived choices of other members of the community (Ermakoff 2008). We used archival data to analyze these choices in their temporal order, and to obtain insights into the trade-offs underlying the decisions to prioritize one form of collective solidarity over another under increasing pressure.

The Trial of the Waldensians in Giaveno (1335)

The Waldensians were founded by Valdès, a wealthy resident of Lyon, France, who gave away his possessions around 1170, preaching apostolic poverty as the way to perfection. Known also as the "Poor of Lyon", the Waldensians were an ascetic religious community, based on the strict observance of the gospel, preaching and poverty. Having emerged from the same reforming currents that gave birth to the Franciscans and the Dominicans, the Waldensians were originally part of the Church (Arnold 2001). They were suspect of dogmatic deviance from as early as the 1180s, and declared heretics by 1215 because of their unwillingness to recognize the power of local bishops, and to accept ecclesiastical rules on who was fit to preach.

The Waldensians were generally peasants and skilled laborers (Audisio 1999: 37), residing in the mountainous regions of Southern France and Northern Italy. Persecution forced them to subsist in hiding, but also fostered a sense of collective solidarity. The phrases "*remained in his pertinacity*" and "*denied the truth*" feature in nearly every one of Bernard Gui's Waldensian sentences (Hill 2019, 108). The Waldensians were the only medieval dissident movement that survived for centuries,

becoming absorbed into the Protestant Reformation in the 16th century.

The trial of the Waldensians in Giaveno by Alberto de Castellario in early 1335 is recorded in a register that is presently kept at the Archivio Generale dell'Ordine dei Predicatori in Rome as MS II.64, ff 1r-111v. We use the modern edition published in Merlo (1977, 161–255). The register contains various deeds, including notes on summons, summons issued for specific people, reports by officers, notes from interrogations, abjurations, culpae of individuals (a final listing of misdeeds) and sentences. We have no way of knowing how much of the legal proceedings Castellario and his notary decided to record, but two facts are reassuring. First, the notary, Villelmus Grassi, personally corroborated many of the deeds included in the register. Second, the register contains documents referring to people with only a marginal role in the trial, implying the absence of a significant selection bias.

Alberto de Castellario was a Dominican friar, likely born in Cuneo, a town in Piedmont. He must have been in his forties or older at the time of the trial. A letter sent by the Avignon pope John XXII to the inquisitor in Marseilles in July 1332 (in Eubel 1898, 530) discloses two important facts: that Alberto seems to have had experience as inquisitor, and that the Waldensians were active in the region. "*We have recently heard, by means of relation from our dear son John Albert de Castellario, inquisitor of heretical depravity in the parts of Piedmont of Lombardia superior, that heretics have been thriving and multiplying, particularly those of the Waldensian sect, in the valleys of Luserna and Perosa; that, furthermore, they organized frequent congregations there, in which up to five hundred Waldensians gathered together at times".*

The pope further writes that Alberto informed him that heretics had risen against him in armed opposition, killing the parish priest in Angrogna, as they were afraid that he would denounce them to Alberto. He also encountered resistance by locals in 1333-34 in the valley of the Chisone. His dispatch to Giaveno in early 1335 must have been motivated by his local origin and personal experience with the Waldensians.

The trial of the Waldensians started on January 20th 1335, and ended on February 26th. The first ten days Alberto interviewed local priests and laypeople. They provided information voluntarily, motivated by the moral conviction of contributing to the well-being of the community by denouncing religious deviance. He initiated the formal legal process on January 29th. This is when he called upon

those with knowledge of heretics and their helpers to appear before him within three days (the period of grace), lest they suffer excommunication. He also called upon those who provided aid in any manner to heretics to appear before him within the same three-day period, promising them leniency. Twelve individuals appeared before Alberto during the three days. The denouncers provided relatively few denunciations, incriminating socially distant others.

Having gathered initial information, Alberto issued summons on February 2nd against twelve people. Nine of them appeared before him the next day, all of them denying having ever had anything to do with Waldensians. Another presented himself on February 4th, similarly denying any knowledge of the Waldensians. The same day, Iohannes Gauterii was summoned to appear before the inquisitor. Similar to those before him, he denied any implication in heretical activity. However, Alberto singled him out for special treatment: he ordered the *castellan* of Giaveno to put him to torture. Having been tortured and interrogated for a second time, Gauterii gave 47 names on February 4th, and 24 on the 5th (for a total of 65 unique names, as 6 names were repeated). This proved to be a key point in the trial: Gauterii's testimony provided more than a quarter of all names revealed to the inquisitor (241).

Following Gauterii's deposition, Alberto issued summons for 13 people on February 6th, all but one of them summoned for the first time. This group of deponents behaved very similarly to those before them, giving no names and claiming ignorance of heresy. Dissatisfied with the results, Alberto decided to incarcerate and put to torture Stephanus Vet, who had been summoned before, but had denied involvement. Vet cracked under torture, providing 13 names the first day, and 11 more on the next one. This scenario was repeated with Bernardus de Rosseto, summoned to reappear on February 7th, having already made a deposition on February 3rd, denying any involvement. Subjected to torture, he provided 13 names.

The days from February 4th to the 7th marked the turning point in the trial. The torture-induced confessions of Gauterii, Vet and Rosseto provided the inquisitor for the first time with information from inside the clandestine network. As this network started to unravel, the collective mood changed. On February 9th Palmerius Goytrati re-appeared before Alberto "*melius recordatus*" ("with refreshed memory") to provide information (no record of him being tortured). As Merlo (1977) observes, from February 9th all those appearing before the inquisitor seem to have regained their memory, providing names. It appears torture was unnecessary, applied again only once: on Iohannes Martini on February

18th, to elicit a confession from someone who had already appeared at the trial and had perjured. The notary duly recorded in the register the four occasions when torture was applied during the trial. It is unlikely he would have concealed instances of torture, as neither he, nor the inquisitor, had a reason to hide such information.

We examined the records for clues into the reasons to subject these three to torture. Gauterii was denounced by six people before his deposition, including by the parish priest of Giaveno and the inquisitor's assistant at the trial (Manduca). There was credible information implicating him as being involved with practices of heresy. But the other cases are less clear. Rosseto was denounced by three people, while Vet was denounced by only one person, for having attended a Waldensian congregation. Out of 13 people who made a deposition the same day, only Vet was put to torture. He was likely the most promising lead in a group of "dishonest" deponents. But his selection remains puzzling, as there is little to set him apart from others. It is noteworthy that until the end of the trial, Vet remains targeted by a single denouncer, suggesting that he must have been on the margins of the informal network. In comparison, Gauterii has attracted 22 denunciations by the end of the trial, and Rosseto - 13. They all may have been subjected to torture, but they occupied dissimilar positions in the informal network.

To understand whether the tactic employed by Alberto was premeditated or adaptive in nature, we examined his activity in the earliest period, from January 20th to 29th. On the second day, he met with two local women, a priest and Petrus Cominus. The women gave a few names, but he did not follow up on any of them. He issued summons for one of the two names given by the priest and five out of the eight names given by Cominus. Cominus' testimony proved especially valuable, but others' testimony was ignored. Only one of the eight names that Petrus Truchy gave resulted in a summons.

The earliest period of depositions yielded information with limited value to the inquisitor. It seems that he placed his trust in people of some standing in Giaveno, such as the parish priest or the local notary. There is no indication for a "grand" strategy, but for selective attention to leads from diverse sources, guided by status cues. This behavior is consistent with what is observed in subsequent weeks, when the inquisitor responded to the uncooperativeness of deponents by singling out those who must have appeared to him as the most promising leads.

It is not only the inquisitor who adapted to the flow of events, but also deponents, who held firm early on. We identified three factors that are likely to have contributed to the sudden change in

the willingness to cooperate. First, the fear of torture. Torture was a familiar method in the medieval penal system, but what must have been particularly unsettling is the degree of arbitrariness in the choice of targets. The selection of Rosseto and especially, Vet, may have created an impression that anyone could be targeted. Second, many deponents were liable to an accusation of perjury, as they had previously denied any involvement. Third, the influence of the first deponent to reappear before the inquisitor with "refreshed memory": Palmerius Goytrati. Goytrati bore resemblance to Gauterii on a key dimension. By the time of his redeposition, Goytrati had been denounced by 11 people, with the number rising to 24 by the end of the trial, comparable to Gauterii's 22. It appears that they were both recognized as core members of the clandestine network, having influence over the decisions of others. Goytrati's decision to renege on his initial testimony and cooperate is understandable in light of his susceptibility to perjury and denunciation by many others, making him a prime candidate for torture.

Our analysis of archival records did not yield sufficient clues to establish whether the sudden change in collective behavior was an aggregation of personal decisions or a collective effort at damage limitation. The trial provides a rare opportunity to observe a "moment of decision", when groups have to decide whether to confront coercive pressure (Ermakoff 2008). Ermakoff (2008) explores how the interaction of behavioral and inferential mechanisms under high uncertainty can lead to sudden shifts in collective sentiment and the alignment of behavior. Behavioral alignment is produced when actors make a decision by observing the number of those who choose an option (Granovetter 1978), whereas inferential is the alignment derived from tacitly coordinated inferences of the most plausible outcome (Ermakoff 2008). These inferences rely on information about the preferences of others obtained from interpersonal contacts and from public statements, particularly by prominent group members, that are perceived as representative of the group's stance.

It is probable that these mechanisms interacted in the observed sudden shift in the wake of the Gauterii revelations. The content of individual depositions was hidden from view, but members of the community could make inferences about this content based on the daily summonses, announced in public calls. More and better targeted summonses could be interpreted as evidence for cooperation. The credibility of this evidence was reinforced by the voluntary redeposition of the prominent Goytrati. Inferences based on status cues and circulating rumors can lead to collective alignment in conditions of high uncertainty about others' preferences and interdependence, as individuals expect

to pay a high price if their actions contradict the actions of others.

Broadly consistent with Ermakoff (2008), our account is distinct in attributing a greater role to coercive pressure as a factor of alignment. Deponents looked up to their peers and made inferences based on available information, but their decisions to cooperate or not were situational, congealing in the process of interrogation and adapting to the inquisitor's tactics. The disclosure of accusations by others, the uncertainty over the use of torture and the expected scope of revelations, should torture be applied more widely, must have influenced decision-making too. In the next sections we document the impact of increasing pressure on the rate and target of denunciation through a dynamic network actor model. The quantitative analysis allows us to reinforce the qualitative observations and probe further the mechanism of denunciation.

Variables

The sample for the analysis comprises 269 individuals: 110 deponents and 241 denounced (82 deponents were themselves denounced). We did not include those identified as *Waldensian Masters* from other regions, as the inquisitor was interested in local residents "exposed" to their preaching. If a denunciation did not feature a person, but a household, we coded a denunciation from the deponent to all members of the household that the register enabled us to identify. As all depositions are dated, we have dyad-time observations (e.g., i denounced j on day t). Our dataset contains 836 denunciations in total (830 unique denunciations, as 6 dyads are repeated, and 760, if we count only those where the target is explicitly named). The denunciations constitute our dependent variable.

Table 1 About Here

We constructed our variables by coding information from the registers. The descriptives for these variables are presented on Table 1. The sample features 158 men (58.7%) and 111 women (41.3%). Among deponents, the proportion of women is smaller: 34/110 (30.9%). There were very few explicit mentions in the registers of one's profession or place of residence, implying that the big majority were locals, exercising manual jobs. We have the profession of 21 individuals (7.8%) and some information on the place of residence of 84 individuals (31.2%). We are not featuring the two variables in the analysis because of the substantial missing information. We do not expect this to be a source of bias; as the Waldensian teachings extolled the virtue of apostolic poverty, they were most

appealing to peasants and laborers (Audisio 1999). It is unlikely that significant unobserved wealth disparities could affect the observed patterns.

The next set of variables are time-varying in nature, capturing our key construct: coercive pressure. The degree of pressure on deponents increases with the number of denunciations received, with their being summoned and their reappearance for a second deposition. *Denunciation Received* is the in-degree of an individual in the denunciation network. For the descriptives, we use the in-degree at the end of the trial. For the analyses, we used the in-degree measured a day before (a one-day lag), assuming that denunciations received the same day could not affect the decision of a person deposing on the same day. We applied a root-square transformation to the measure, to account for decreasing marginal contributions: the fact that difference between having received 1 vs. 0 denunciations is more substantial than that between 7 vs. 6 denunciations.

A person is *Summoned* if her name appears in one of the four public calls issued by the inquisitor (on February 2nd, 6th, 8th, and 19th) or a deposition explicitly mentions that this person was summoned by the inquisitor. Overall, 85 out of 110 deponents (77,3%) were summoned. For those summoned in a public call (32 individuals), we have the exact date. On average, it took these people 0.64 days to depose. The big majority deposed either the same day or a day after, indicating that the summons was taken seriously. When we did not know the exact date of the summons, we coded it as occurring on the day before the deposition.[3] Finally, *Deposed* is an actor-level indicator for whether a person is one of the 110 deponents the inquisitor interrogated. Of 110 deponents, 20 were called to depose again.

We used available information in the register to identify the type of tie between a deponent and a person she denounces. Two types of ties are important to us: a *kinship* tie and a *congregation fellow*. The kinship tie typically features the members of a family or household, such as mother, son, sister, or brother, but we also have other ties, such as grandparent-grandchild, brother/sister-in-law, or cognate/affine. The existence of such ties is not always recorded in the registers. This is why we used three relations (sibling, parent-child, and spouse) as the basis for inference of kinship ties. For a given ego, we derived the following relations: '(half-)sibling' (sibling of ego's sibling, or child of ego's

[3] For the "choice function" (who is denounced), undated summonses can only affect the decision of subjects deposed on the same or subsequent day to the summoned person, but not before.

parent), '(step-)parent' (sibling of ego's child, or child of ego's spouse), 'spouse/partner' (parent of ego's child), 'grandparent' (child of ego's child), 'uncle/aunt' (child of ego's sibling), 'sibling-in-law' (spouse of ego's sibling), and 'parent-in-law' (spouse of ego's child). In total, we identified 182 kinship ties. Of these, 118 (64.8%) were recorded in the register. 80 (64 if we only consider recorded ties) of our 836 denunciations were directed at kinship members (9.6% of the total). Considering that the family was the basic unit of medieval society (Given 1997, 178), it is realistic to observe that one in ten denunciations, on average, involved a member of the immediate or extended family. This confirms that this type of denunciation was psychologically costly and had acute social consequences (e.g., Fitzpatrick 1996). At the same time, we dispose of a sufficient number of such denunciations to be able to examine their distribution over the course of the trial.[4]

To capture the informal network of dissident activity, we used the information provided in depositions on congregations and their participants. These typically included statements, such as "I was at X's house and saw Y and Z there" or "I accompanied X and Y to meet with Z". We created a bipartite network connecting people to congregations. We defined two individuals as congregation fellows if they were reported as being present at least once together at one of these events. Given that congregations affirming heretical beliefs were perceived by the inquisitor as "criminal activity", any person that a deponent reports as part of a congregation is considered as "denounced". The denouncer is typically (but not always) a member of the congregation. The association between two individuals can be inferred from the testimony by one or both of them, but also by a third person. A total of 1,086 ties were identified. Of the 836 denunciations, 614 are of congregation fellows (73.4%). This suggests that the inquisitorial process managed to penetrate deep into the social network.

We present descriptives of the denunciation network in Table 1. Density is understandably low (2.8%), considering the size of the network and the sensitive nature of the tie. The proportion of reciprocal ties, where two deponents denounce each other, is relatively high (42.5%). This may be viewed as consistent with observations (e.g., Given 1997) that suspects may have tried to coordinate their actions at the trial or blur distinctions between the roles of denouncer and denounced. Transitivity

[4] Of the 80 denunciations directed at a kinship member, 64 (80.0%) pertain to a member of the immediate (rather than extended) family: a spouse, a sibling, a parent, or a child. The relative paucity of the denunciations prevents further disaggregation: for instance: immediate vs. extended family, matrilineal vs. patrilineal, or ancestor-focus vs. ego-focus (Given 1997, 178–80).

(21.8%) attests to a degree of clustering among the deponents. The directed nature of the network and the order of proceedings did not allow us to use a standard measure of "transitivity". Instead, we created a proxy for clustering adapted to our context, defined as "Common Denouncer". It captures the tendency for a deponent (i) to denounce a person (j) who has been previously denounced by a third person (k) who has also denounced the deponent ($k \rightarrow i \; AND \; k \rightarrow j$). The testimony of k, featuring i and j, suggests that i and j may have been seen together or were present together at a congregation.

Women are the senders of 23.7% of the denunciations and the receiver of 35.3% of these. 58.3% of all denunciations are between individuals of the same sex. Krackhardt's and Stern's (1988) E-I index (a reverse measure of homophily, ranging between -1 (perfect homophily) to +1 (perfect heterophily)) is -0.16, providing evidence for weak gender-based homophily. 20 denunciations (2.4%) were directed at someone who had already died.

Patterns of Denunciation

Orson Welles appears to have been correct: few refuse to give a name. Of the 110 individuals who appeared before the inquisitor, 92 (83.6%) gave at least one name. 60 (54.5%) of them incriminated a congregation fellow, while 39 (35.4 %) incriminated a kinship member (37 incriminated a kinship member who was alive at the time).

A closer look at the 130 depositions reveals the workings of the inquisitorial process: in 95 of these, the deponent had already been accused by someone else. Depositions from someone denounced tend to contain more denunciations on average (7.2 vs. 4.3; t-test (df = 126.23) = 2.58, p = .011) and are more likely to incriminate both congregation fellows (61.1% vs. 11.4%; χ^2 (df = 1) = 23.30, p < .001) and kinship members (38.9% vs. 5.7%; χ^2 (df = 1) = 11.92, p < .001). There is a similar pattern for the rate of denunciation by individuals who were summoned (6.9 vs. 4.5 on average; t-test (df = 118.45) = 2.28, p = .024).

Figure 2 About Here

The impact of the increasing coercive pressure by the inquisitor is most visible in the starkly different behavior of the same people at different stages of the trial. Consider that of the 20 who made two depositions, the majority (16) did not give a single name at the first deposition. But the pattern changes dramatically (see the left section of Figure 2) at the second deposition, when only one person

(Iohanes Dudricis) remained silent. The average number of names given at the second deposition was 11.25, more than three times the number at the first deposition: 3.15 (mean of the differences = 8.1, bootstrapped paired *t*-test (df = 19) = 3.24, = .002). As Figure 2 attests, only two individuals (Gauterii and Vet, both tortured) provide fewer names at their second deposition compared to the first one. A very similar pattern appears in the central section of Figure 2, featuring denunciations of congregation fellows. Fully 85% of the second depositions incriminate at least one congregation fellow. The right section of Figure 2 attests that in this group of deponents, all denunciations of kinship members took place at the second deposition. Half of all second depositions feature at least one kinship member.

For further insight, we broke down the data into four periods: before the grace period, the grace period, the week after (February 1st to 7th, excluding the three confessions obtained under torture) and the remaining period. 13 depositions took place in the first period, 12 in the second, 27 in the third, and 73 in the fourth. On average, 4.69 (SD = 3.30) names were given before the grace period, 5.00 (SD = 2.73) during the grace period, 0.70 (SD = 1.73) during the next seven days, and 8.05 (SD = 8.24) after that. The officials and laypeople that the inquisitor consulted in the beginning, and the people that appeared during the grace period to confess and denounce, provided what appears as moderate support to the inquiry, naming 4.5-5.0 people on average. The most striking piece of evidence is the contrast between collective behavior before and after the application of torture. In the week immediately after the grace period, deponents were largely noncooperative, as 20 of the 27 remained silent, and 5 gave only 1 or 2 names. The average number of names given (0.70) is 11.5 times lower than the average for the remainder of the trial (t-test (df = 86.75) = -7.21, $p < .001$). One can almost understand the inquisitor's frustration, leading to the decision to counteract the resistance by increasing pressure.

Figure 3 About Here

For a visual representation of the tendencies, we plotted on Figure 3 the number and type of denunciations by day. Two observations stand out. First, the relatively slow increase in the number of denunciations in the early period, followed by an increasing rate of denunciation, starting from February 4th-5th , when Gauterii confessed under torture, and accelerating from February 9th, with Goytrati's reappearance. Second, the shifting target of denunciation. There is strong evidence for stages in denunciation based on type. The residents of Giaveno protected kinship members until they

believed they could do so no more. The great majority of denunciations in the first two weeks featured people who were neither congregation fellows nor kinship members. As pressure mounted, denunciation increasingly targeted congregation fellows, as the dissident network became more vulnerable. Finally, from February 9th, the trial started to penetrate even the kinship networks. A temporal order of denunciation emerges based on social distance to the target.

Figure 4 About Here

Figure 4 provides four snapshots of the evolution of the denunciation network. The first graph confirms the impressions from the qualitative analysis. The early denunciations tend to be scattered, featuring quite a few peripheral figures, and providing the inquisitor with choice in the direction to follow. The grace period retains the overall network structure, providing additional information for a more focused search, identifying central figures. The third graph illustrates the dramatic change with the revelations by Gauterii, Vet and Rosseto, allowing the inquisitor to penetrate the core of the social network. The fourth graph shows the network at the end of the trial. It features a clear core-periphery structure, and notable clustering, with the formation of triads, and reciprocation in the form of dyads, where denouncers are also denounced, unlike in previous periods.

The evolution over time suggests that the inquisitor zoomed in on one segment of the early network, exploring it methodically until that segment appeared exhausted, as testified by the final week of denunciations, presented in Figure 3.

Method

Network research is increasingly attentive to the distinction between relational "states" and "events" (Borgatti, Everett, and Johnson 2013). Networks can capture both a set of preexisting relations (states) and ongoing sequences of interaction (events) (Chen et al. 2022). Relational states are continuous and persistent, something a node is with another node (e.g., a friend), while relational events consist of transitory relational behaviors that can be thought of as coordinated actions (e.g., the signature of an agreement), or actions directed by one node at another (e.g., a purchase). The greatest advantage of relational events is that they facilitate analysis of the sequence and timing of actions. Time-stamped event-based data, of the kind featured in our context, can offer rich insight into network processes: the sequence of events that occurs between pairs of nodes over time. To this end, we model the act of denunciation as a relational event (i denounced j on day t), whose rate of occurrence is a function of a

past sequence of events (i.e., past denunciations by others in the network), individual attributes (i.e., gender), and exogenous factors (i.e., the actions of the inquisitor).

We analyze the network of denunciations over time using DyNAMs. A DyNAM (Dynamic Network Actor Model) is a method that facilitates the analysis of coordination networks through time (e.g., which individuals are to form a relationship; Stadtfeld, Hollway, and Block 2017) and directed event sequences (e.g., who calls whom at what point in time; Stadtfeld and Block 2017). The inferential task of the method is to explain the timing, the sender, and the receiver of a relational event (in our case, who denounces whom and when).

A DyNAM features a two-step process. The first step models "individual activity rates" or the waiting time until an actor becomes active to send an event. This can be understood as the exponential hazard of an actor to become active. Unlike conventional event history models (e.g., Mills 2011), a DyNAM accounts for potential endogeneity in a system. For example, how the occurrence of past events (such as a particular configuration in the network), influences the occurrence of future events.

When an actor becomes active, the second step determines the event receiver, following a multinomial probability distribution. Capturing the logic of a Stochastic Actor-Oriented Model (Snijders, van de Bunt, and Steglich 2010), the second step has an actor-oriented nature. This is a key difference between a DyNAM and a Relational Event Model (REM) (Butts 2008), which is tie-based. In DyNAM, ties are weighted against one another by a sending actor, and ties' positions depend on which actor sends the tie (Stadtfeld, Hollway, and Block 2017, 6). Hence, what a DyNAM estimates are individual preferences (the "choice function"): the ties that are more attractive to a sending actor.

The analyses were performed in the statistical system R, using the package goldfish 1.6.4. Our DyNAMs estimate the effects of actors' attributes (i.e., gender, deceased), endogenous processes (prior denunciations), and exogenous, changing dimensions (depositions and summonses) in both individual activity rates and the choice function. For the estimation of activity rates, individuals who never deposed were treated as non-present. Hence, our estimates pertaining to ego-effects compare the 110 deponents in the trial. For the estimation of the choice function, on the contrary, we considered the entire sample (N = 269).

Table 2 About Here

Results

The results of a dynamic network actor analysis of the rate and target of denunciation are presented in Table 2. It includes, first, the coefficients at the deponent level (e.g., whether the deponent is man or a woman), and below, those at the target and dyad levels (e.g., whether the denounced person is a man or a woman). The first model features basic characteristics of the deponent and the target. Women are significantly less likely to make a denunciation than men. This may not be related to socialization norms, but to the fact that medieval society constrained the physical movements of women. Hence, they tended to have smaller personal networks than men. Deponents were significantly more likely to denounce a living person than one already dead. This may have been encouraged by the inquisitor's preference to collect names of people who could then be summoned to testify.

We start including our proxies for coercive pressure in Model 2. The greater the number of denunciations faced, the more likely a deponent was to provide a name, confirming that denunciation was a response to pressure. The number of denunciations matters in the "choice" sub-model too. As another example of the "Matthew effect" (Merton 1968), deponents are significantly more likely to denounce a person already denounced by others. This may be the result of the interaction of two processes. One is the deponent acting on the basis of information about the proceedings at the trial, denouncing those who had already been named by others, either out of self-preservation, or a desire to concentrate blame on a few and spare the rest. Second, the inquisitor's tactic to verify accusations by relying on more than one deposition (Given 1997) and to mount pressure by presenting several witness accounts against an individual. Inquisitorial manuals are explicit on the need to guide the process by highlighting specific people or events, and cross-checking depositions (Hill 2019; see also Rehr 2019).

The next two coefficients provide strong evidence for a degree of clustering of the network of denunciation. Deponents appear likely to name a person who had already named them, or a person who had been named by a common denouncer. We cannot state with certainty whether these instances of reciprocity and transitivity were coordinated or spontaneous. The formation of denunciation dyads and triads may be the result of collective efforts at coordination to shift the blame around (e.g., Given 1997; Pegg 2001), but evidence for this remains anecdotal. It is more likely that it was a spontaneous process, reinforced by coordination between people knowing each other well. The frequent complaints by inquisitors of the tendency of suspects to prevaricate and twist compromising facts (see Hill 2019) imply that deponents used all available information to deflect attention from themselves or from those

close to them.

When the network and pressure proxies are added, the dyad-level gender coefficient changes sign, indicating that deponents were significantly more likely to denounce a woman than a man. This effect is weakly significant in model 2, but strongly significant ($p < .01$) in model 3, adding the two pressure indicators. The inclusion of "being summoned" and "previously deposed" lends support to the expectation that testimonies adapted to the degree of pressure on the deponent. A summons was typically issued on the basis of denunciation. Accordingly, a deponent summoned by the inquisitor is significantly more likely to give at least one name relative to a deponent who was not summoned. Deponents could volunteer or be called to make a second deposition when the initial one was judged to require clarification or verification in light of new information, or the deponent had "refreshed her memory". A redeposition was less likely to yield a name relative to the first deposition. This must be related to the fact that the first deposition had already provided names. The two effects are replicated at the dyad level: deponents were more likely to name someone summoned, but less likely to name a person who has already deposed. The summonses were visible to deponents, announced via public calls. Furthermore, the Inquisitor was likely to be interested in those who had already appeared before him.

What is notable is that the inclusion of the two process measures invalidates the prior effect of denunciations received. This suggests that these measures are related, as the summonses and second depositions were typically based on denunciations received. A key difference is that the denunciations were typically not visible or explicit to a deponent, but the summons and (re)depositions were. Unless the inquisitor decided to apply pressure on a deponent using prior denunciations, these denunciations would not have been explicit to the deponent. The latter would have likely acted based on information accessible through public calls, or through rumors about denunciations of others. This likely accounts for the observed difference in the effects of denunciations received at the individual and dyad levels.

Table 3 About Here

For additional insights, we modelled denunciations of congregation fellows (Models 4-6) and kinship members (model 7-9), as these were psychologically more costly than denunciations of fellow villagers. We do not find significant differences between the results for all denunciations (models 1-3) and only for congregation fellows (models 4-6). This could be related to the fact that in small villages

in medieval Europe people knew each other well. Social relations based on trade or on neighborhood could have been not far removed in strength from those based on faith.

Table 4 About Here

As expected, the kinship models reveal significant differences from prior models, aligned with what is observed in Figure 3: kinship ties were more valuable to deponents and were disclosed to the inquisitor later in the trial. Women were not more or less likely than men to disclose such ties but were more likely to be named. There is some weak evidence for sex heterophily in denunciation of kinship members (i.e., women denounced men, and men denounced women). Unlike in prior models, there is no tendency to name a living person, hinting at efforts by deponents to shift blame around by naming a kinship member who could be neither interrogated, nor prosecuted. A related finding is the significant, negative effect of denunciations received in the "choice" models (8 and 9). Deponents are more likely to "pile on" by naming a fellow villager or a congregation fellow already denounced, but they display the opposite tendency with regard to a kinship member, perhaps in an attempt to deflect attention from her or shift blame to the group.

The principal difference appears in Model 9: the significant, positive effect of a redeposition, contrasting with its negative effects in the prior models. Pressure on a deponent is inexorably higher at the second deposition, as the need for reappearance implies a problem with the first deposition, and the looming threat of perjury. The results reveal that a re-deposing person was more likely to denounce a family member and less likely to denounce a fellow villager or congregation fellow. Confronted with increasing pressure and/or inconsistencies in her testimony, this deponent would feel compelled to disclose more, by naming a kinship member. The evidence suggests that this was a measure of last resort, accompanied by efforts to limit potential damage and to shift blame around.

Because of the lower number of cases in models 7-9, we estimated the coefficients in various configurations to ensure that degrees of freedom are not affecting the results. We included the kinship and congregation fellow measures in the "choice" models (1 to 3), reaching very similar conclusions. We re-estimated the coefficients in the "choice" models using REM, the results were almost identical. The tie-based estimation technique used by REM is inappropriate at the deponent level. It considers all network nodes as potential senders and receivers, but those who never deposed cannot denounce. In contrast, DyNAMs allows us to consider non-deponents as absent when estimating activity rates.

To address the possibility that expected punishment may have influenced denunciation, we examined the sentences. Sentences were proclaimed on the last day of the trial. We found lists with the misdeeds of 36 individuals, and sentences for 17 of them. There are no harsh sentences: nobody was imprisoned or burned. There is little variation in the types of penances allotted by the inquisitor. In the majority of cases, people were required to wear crosses, attend church service, visit the local abbot, pay a fine or fast. It appears unlikely that expected sentences may have significantly affected behavior.

Discussion

Redefining regimes of denunciation, we proposed and tested a framework that is more parsimonious and dynamic in nature than past accounts (Bergemann 2017; 2019). This framework is based on the assumption that understanding denunciation requires integrating the degree of coercive pressure in our theoretical or empirical models. The role of incentives for denunciation or of latent constructs, such as the motivation to denounce, can be ascertained only when the degree of exposure to coercive pressure is established. The advantages of a framework based on coercive pressure are significant: it allows to develop a processual account of denunciation, to categorize regimes of denunciation in a continuous, rather than discrete manner, and to account for interdependencies in the process of denunciation.

In contrast to approaches that compare practices of denunciation across contexts (Bergemann 2017; 2019), we explored variation of practices over time in the same context. Our substantive interest is in adaptation, not in stability, analyzing denunciation as the result of reflective, related choices of actors in the process of adaptation to increasing pressure. This process emerged from the registers of a medieval inquisitorial trial. We chose this context because of the opportunity to observe denunciation at varying degrees of coercive pressure, where voluntary practices become increasingly non-voluntary.

What is most remarkable about the trial is the sudden manner in which early resistance gave way to cooperation upon the confessions by a few individuals. We have more scholarly evidence of sudden shifts from tacit cooperation to resistance (e.g., Kuran 1995) than for the opposite, documented here. This shift was likely triggered by interacting behavioral and inferential mechanisms of alignment (Ermakoff 2008) in response to the pressure. The evidence suggests that the inquisitor did not execute a premeditated plan, but acted on the most promising leads from the available sources. Adaptation was mutual: the inquisitor adapted to suspects' dissimulation by enacting techniques to reduce their leeway

and steer the interrogation process in a desired direction. In turn, the suspects adapted to the increasing degrees of pressure and uncertainty by relying on status cues and their contacts, and making inferences about others' preferences from public announcements. A mutually adaptive process was punctuated by key interventions by the inquisitor.

This is reminiscent of a high-stakes game, with the inquisitor increasing pressure by issuing summonses, calling deponents for a second deposition, and seeking to verify past denunciations. These instruments were generally successful in increasing the rate of denunciation. But deponents were not devoid of agency, responding to efforts to restrict their leeway through coordination with others (i.e. concentrating blame on a few), attempts to blur the lines between denouncer and denounced, and the formation of triads of denunciation. Unsurprisingly, these attempts were most pronounced in regard to kinship members. Denunciation of kinship members was most disruptive of established forms of collective solidarity in medieval society, as demonstrated by the attempts to limit damage by shifting blame around and deflecting attention.

Such forms of behavioral ambiguity have been observed in similar historical contexts (e.g., Padgett and Ansell 1993), implying that, when actors are exposed to mounting pressure that limits their lines of action, stable motivation types prove less analytically useful than they may otherwise be. Deponents displayed mixed motivation to denounce, simultaneously concealing and disclosing, and even when they started to disclose more, they still tried to conceal. Those appearing before the inquisitor held out on naming kinship members until they felt they could do so no more, or they felt reassured that others acted similarly.

Our principal finding: that social distance to the target of denunciation decreased as coercive pressure increased (Figure 3), is broadly consistent with Headworth's (2019) and Bergemann's (2017; 2019) arguments that proximity in social relations increases the likelihood of (voluntary) denunciation. Our analysis reinforces Headworth's (2019) observation that authorities are likely to apply coercive pressure on potential informants to enhance access to personal networks and information. However, coercive pressure is only a latent factor in his account and receives no theoretical attention, while we attribute to it a primary theoretical role that is corroborated in our empirical analyses.

The similarity of our results to Bergemann (2017; 2019) conceals significant misalignment in their interpretation, which is most pronounced in regard to the grace period. This author (2017; 2019)

considers the grace period as a "coercion" regime, in view of the presence of incentives to denounce. Inversely, we categorize it as a "voluntary" regime, emphasizing exposure to a relatively low level of coercive pressure (Figure 1). Our categorization is aligned with historical research on the inquisition (e.g., Given 1997; Hill 2019), and is reinforced by the results of qualitative and quantitative analyses. That only 12 people volunteered to appear before the inquisitor and then gave relatively few names, attests that deponents did not respond predictably to incentives to hurt their rivals (Bergemann 2017; Negro and Goodman 2015) or considered the incentives to break bonds of collective solidarity as too small. Unsurprisingly, the inquisitor proceeded to increase the coercive pressure on deponents upon acknowledging the relative ineffectiveness of the voluntary incentives. The combination of coercive and voluntary practices or the transition from one type of regime to another are observed not only in our context: there is ample historical evidence that they apply broadly (e.g., Preston 2012; Judt 2007).

Bergemann (2017; 2019) argues that the grace period incentivizes people to provide names of distant others to please authorities and protect themselves, while outside the grace period they would be at liberty to settle personal scores. Hence, the social distance between denouncer and denounced is likely to decrease upon the expiration of the grace period. Our analysis suggests that this decrease is attributable rather to the increase in coercive pressure that accompanied the end of the grace period, as the inquisitor raised the stakes. His use of torture signaled to the public that he would no longer brook disclosure of distant, prototypical others. Our interpretation is that the decreasing social distance is not driven primarily by opportunities to settle personal scores, but by the exposure to increasing pressure and the anticipation of exposure to even greater pressure should one decide not to cooperate at present.

We believe that this mechanism is largely responsible for the high rate of cooperation observed in other turbulent historical contexts, such as the Red Scare in the 1950s (e.g., Pontikes, Negro, and Rao 2010), the Spanish Civil War (Preston 2012) or German-occupied areas in World War II (Judt 2007). Our answer to the question as to why citizens cooperate with coercive authorities (Bergemann 2017) is unequivocal, as citizens adapt to the real, perceived or expected use of violence by authorities. Our findings suggest that a more appropriate question than that of the reasons for cooperating in coercive regimes may be the opposite one: of the reasons for *not* cooperating.

A sociological truism is that conformity is the main mechanism of adaptation (e.g., Goffman 1963; Zuckerman 1999). Non-conformity or acts of insubordination are often punished with labelling

and exclusion (Becker 1963). Furthermore, collective efforts at mobilization and resistance tend to be fragile (e.g., Gould 1991), and vulnerable to targeted interventions, as our deponents discovered. The Giaveno trial is an illustration of the disheartening sociological fact that even a relatively cohesive and resistant community can be fractured with skillful application of interrogative and repressive methods. Knowledge of the capabilities of these methods has a powerful dissuasive function, as attested in a contemporary context by Headworth (2019). It is the expectation of inconsistencies in their application or of hesitation to apply them by authorities that is a potential catalyst of dissident activity (Komaromi 2015; Walder 2019).

Furthermore, the results of our analysis lead us to question the expectation that a voluntary regime of denunciation is likely to produce a more effective system of social control than a coercive one (Bergemann 2019). This argument is based on the observations that a voluntary regime requires fewer organizational resources and that denouncing in it is perceived as driven by personal choice, as blame is deflected away from the authorities and toward the populace. However, the operation of the medieval inquisition relied on a relatively small staff, as the trial in Giaveno confirmed. Satisfactory results were achieved in the span of only a month. A key observation from our analysis is that during the early, voluntary regime, the roles of denouncer and denounced rested with different people. But when coercive pressure mounted, these roles became entwined: the denounced was a denouncer too. This is when damage to the social fabric of a community is the deepest, as practically anyone can be a denouncer and suspicion becomes pervasive.

Perhaps the most meaningful way in which sociology can contribute to historical analysis is by articulating the social structures constituting the fabric of history in the process of their emergence. An analysis of a trial is unhabitual in sociological analysis, but it has two major advantages. It enables the observation of increasing coercive pressure in delimited social and physical space. It also allows connecting micro events and choices to institutions, highlighting the dynamic, uncertain, conflictual and local nature of a process that appears to be inevitable only in hindsight (Padgett and Ansell 1993).

The activity of the medieval inquisition can be understood as a sequence of games between the Church and the public, based on mutual adaptation. Church authorities were aware that heretic beliefs travelled in the family (Becker et al. 2020). This awareness encouraged the century-long elaboration of interrogative methods to fracture family-based forms of solidarity through systematic

extraction of information. There was no masterplan or consistent oversight (Kelly 1989; Kieckhefer 1995); what became later known as "the Inquisition" evolved in a series of local trials, where inquisitors adopted and adapted legal templates.

A notable methodological implication of our analysis is that studies of denunciation need to control for the degree of coercive pressure as a baseline against which to substantiate effects of other constructs, such as incentives or motivation types. We recognize their importance, but emphasize the substantive role of one factor in a parsimonious model. We believe it could be useful in reconciling divergent findings, such as in historical work showing that denunciation of family members in Russia was much more prevalent in the late 19th century and late socialism than in the Stalinist terror regime in late 1930s (Burds 1996; Fitzpatrick 1996). Rather than institutional differences between Imperial, Stalinist and Socialist Russia, we propose an explanation in terms of the coercive pressure on citizens in these regimes. We envision a curvilinear relationship between coercive pressure and the propensity to denounce a family member. At very high levels of pressure, as during the "Great Purge" in the late 1930's, the propensity may be lower, rather than higher, given the collective nature of accountability: if one family member was branded as an "enemy of the people," the whole family suffered (Fitzpatrick 1996, 849–50).

Authoritarian regimes, where pressure is tangible, but less intense than in totalitarian regimes, may be more conducive to denunciation of family members. It is fitting that the inquisitor in Giaveno made use of torture in a sporadic and targeted manner, with the possible intention of conveying to the public that torture *could* be applied to anyone, even if it was applied rarely. The use of force needed to appear arbitrary to intimidate, but avoid the full-fledged arbitrariness that antagonized the public into a violent reprisal, of the kind that the inquisitor had himself experienced.

The analysis makes clear the dual historical role of the inquisitorial process: as a mechanism of individualization and an instrument of social control. The use of the inquisition to suppress heresy can be placed within the context of the growing bureaucratization of European societies at the time (Arnold 2001), reflected in the adoption of practices of information-collection and record-keeping for purposes of verification of testimony. The availability of classified information on individuals enabled the inquisitor to customize his approach by selecting *whom* and *how much* to pressure. Such practices were part of a new way of looking at lay people as individuals, with their proper agency, autonomy

and motivation (Arnold 2001). As Foucault (1994) notes, the modern state integrates an old technique of the exercise of power originating in Christian institutions: pastoral power. It is not directed at the community in its totality, but at individuals in the course of their lives, based on understanding their beliefs and motivations, and knowing their innermost secrets through the practice of confession.

Individualization through the creation of person-specific histories enabled inquisitors to script a role for almost everyone and make one play the preassigned role (Given 1997). It also facilitated the application of pressure on targeted people, in order to gain leverage over their contacts and co-opt a section of their network. Figure 4 confirms observations that, as a result of financial constraints and political tensions, from the late 13th century inquisitors preferred interventions on only a segment of the population (Given 1997, 140). The extraction of information through the manipulation of relations to impel denunciation, allowed the inquisitor to assert control over a territory with a relatively small staff. However, the system had an inherent limitation, as it could not muster sufficient resources for a sustained campaign against an adversary adapting to its operations.

The analysis of data from seven centuries ago allows us to identify the outlines of the future in the registers of the distant past. The methods developed by the Church to combat the spread of heresy, would not look out of place in contemporary interrogation manuals (Sullivan 2013). The application of these methods had a negative impact on the social cohesion of communities that is still felt nowadays (Drelichman, Vidal-Robert, and Voth 2021). The Church did not manage to stem the rise of heterodox beliefs that culminated with the Reformation, but created an organizational system for the suppression and control of difference that political ideology and technological innovation in the 20th century would ultimately bring to fruition.

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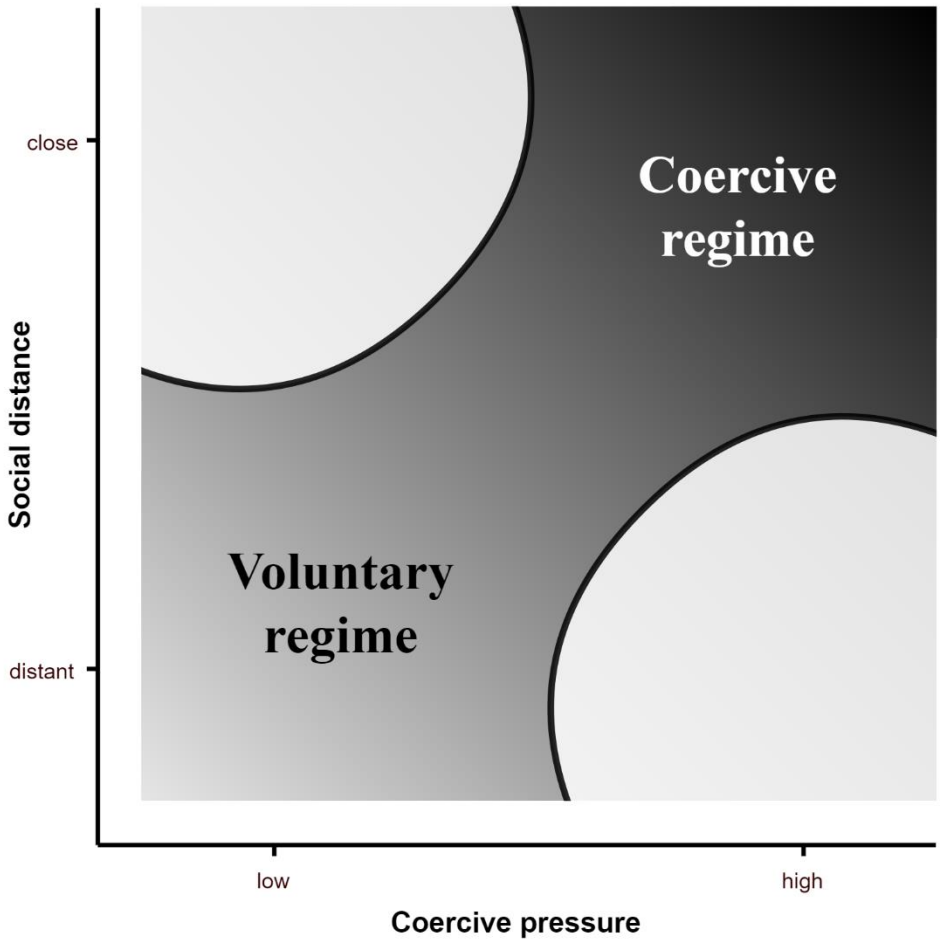

Figure 1. Illustration of the theoretical framework.

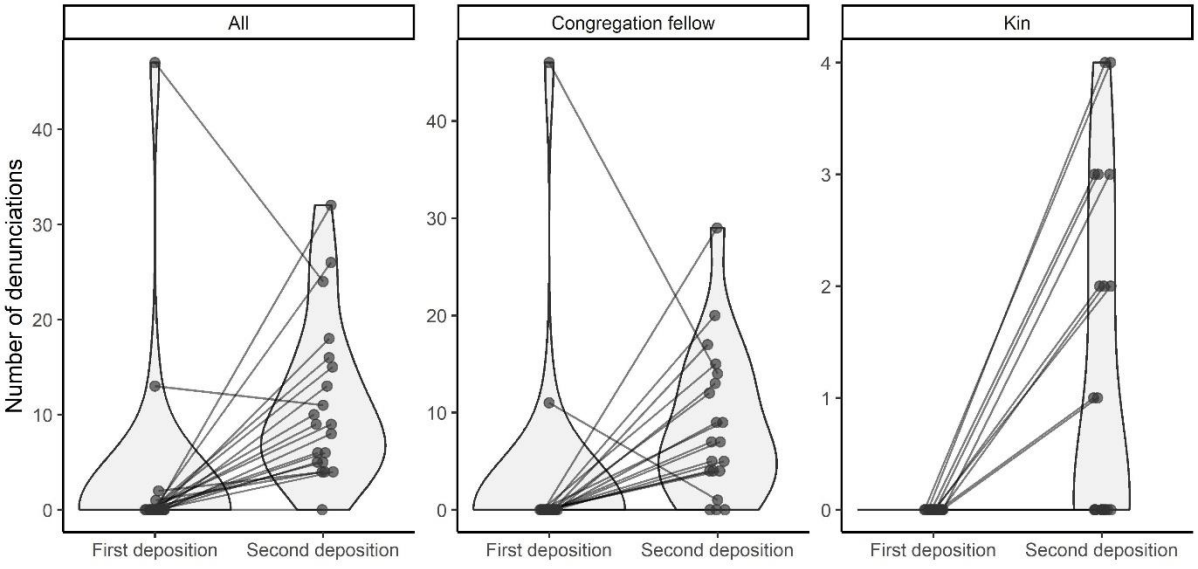

Figure 2 Number of denunciations at first and second depositions.

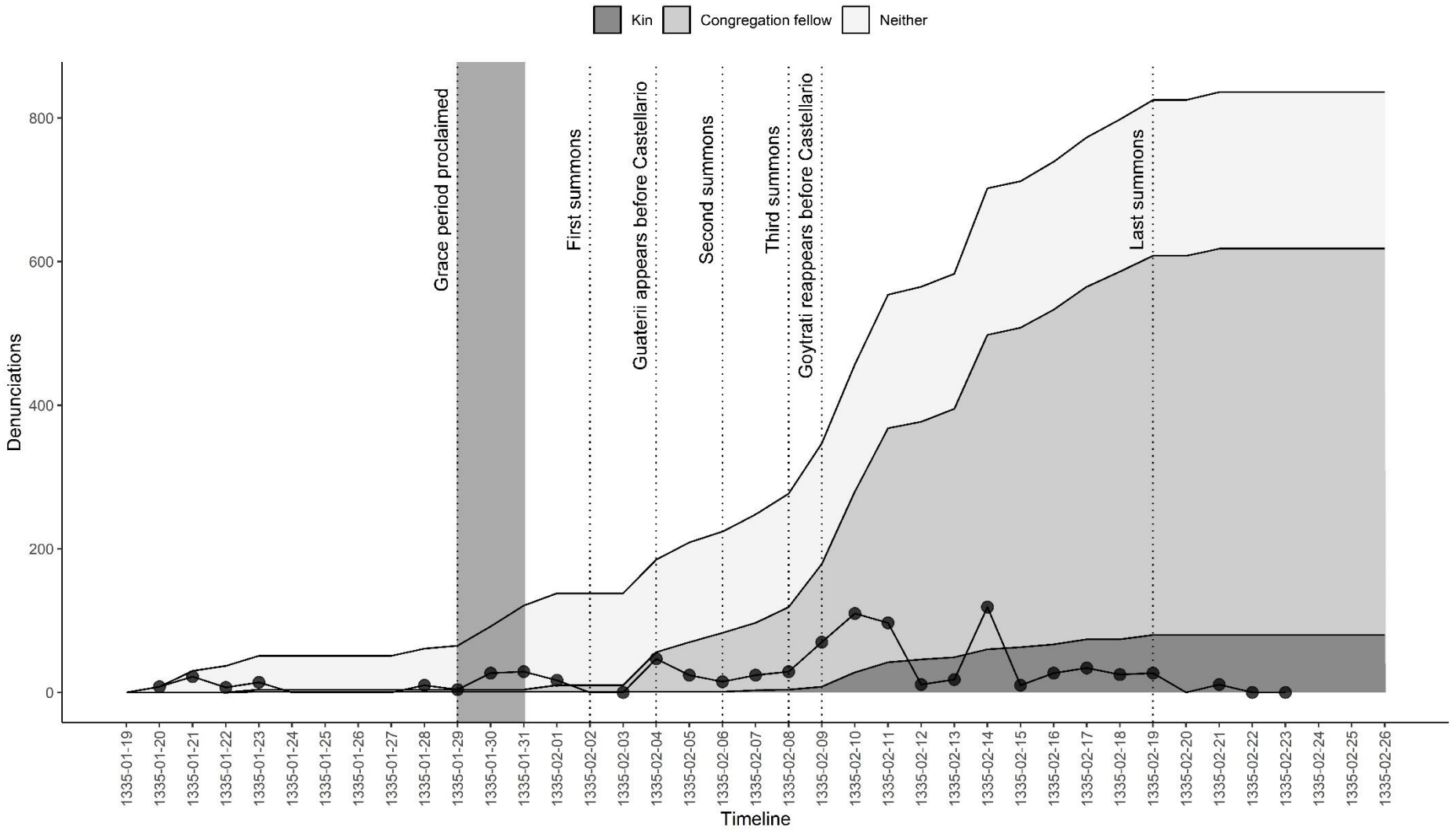

Figure 3. Number of Denunciations during the trial.

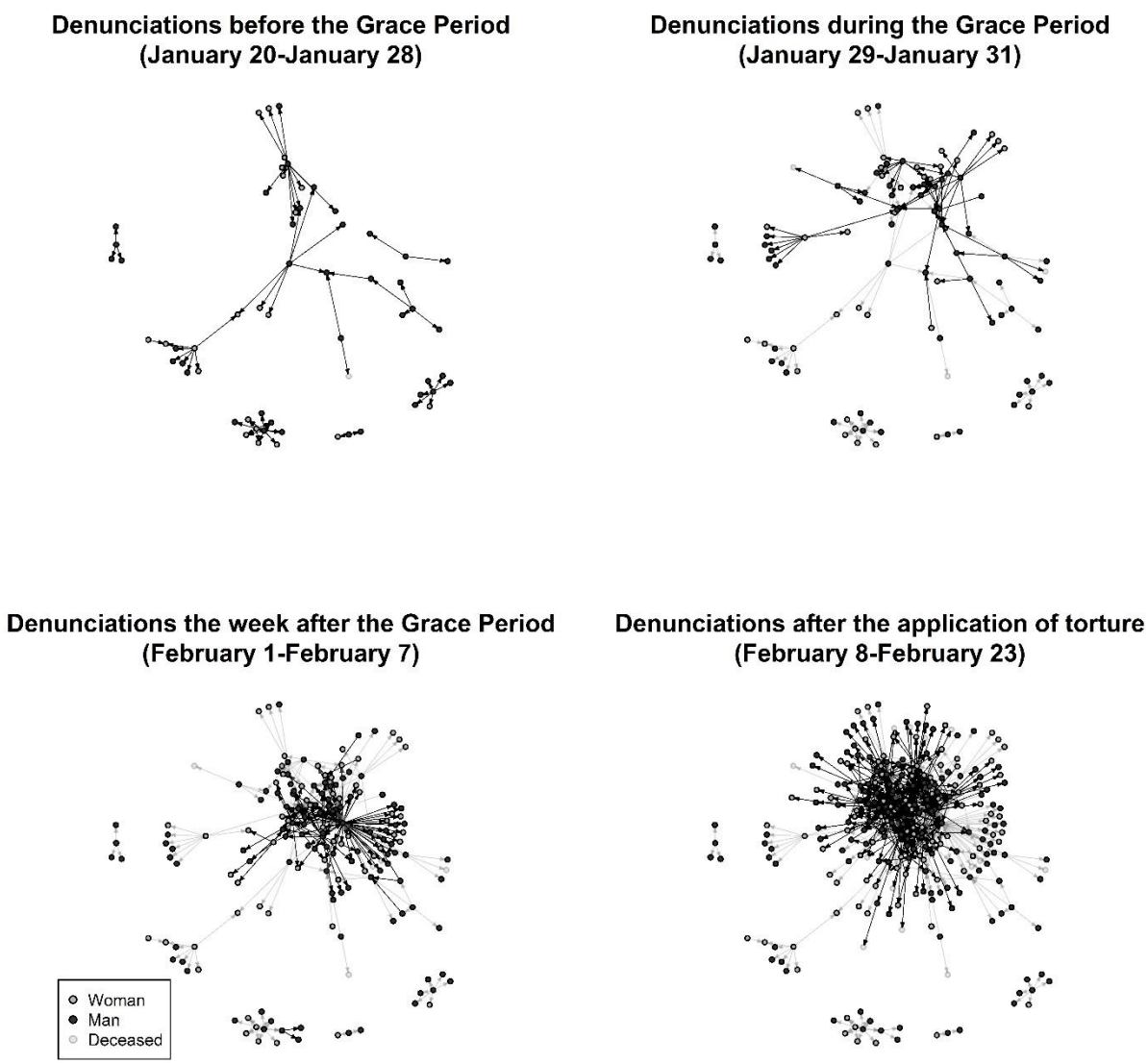

Figure 4. Visualization of the denunciation network.

	Mean	SD	Min	Max
All sample (N=269)				
Woman	0.41	0.49	0	1
Deceased	0.06	0.23	0	1
Denunciations received	3.09	4.80	0	44
Summoned	0.33	0.47	0	1
Deposed	0.41	0.49	0	1
Deposed in two occasions	0.07	0.26	0	1
Deponents (N=110)				
Woman	0.31	0.46	0	1
Denunciations received	4.36	5.30	0	24
Summoned	0.77	0.42	0	1
Deposed in two occasions	0.18	0.39	0	1
Denunciations (N=830)				
Density	0.03			
Reciprocity	0.43			
Transitivity	0.22			
To kin	0.10	0.30	0	1
To congregation fellow	0.73	0.44	0	1
Woman (sender)	0.24	0.43	0	1
Woman (receiver)	0.35	0.48	0	1
Same sex	0.58	0.49	0	1
Deceased (receiver)	0.02	0.15	0	1
Previously denounced (sender)	0.82	0.39	0	1
Summoned (receiver)	0.85	0.35	0	1
Reported in redeposition (receiver)	0.26	0.44	0	1

Note: Density and reciprocity are calculated considering the out-going ties of non-deponents as missing. As zeroes, these values would be 0.01 and 0.25, respectively.

Table 1. Descriptives for the Variables in the Analysis.

	Model 1			Model 2			Model 3		
	Est.	SE		Est.	SE		Est.	SE	
Intercept	-12.70	0.04	***	-12.94	0.05	***	-14.32	0.09	***
Summoned (ego)							2.76	0.10	***
Previously deposed (ego)							-1.11	0.16	***
Denunciations received (ego) (sqrt)				0.11	0.01	***	-0.01	0.01	
Woman (ego)	-0.37	0.08	***	-0.29	0.08	***	-0.08	0.08	
Summoned (alter)							1.32	0.13	***
Previously deposed (alter)							-0.94	0.13	***
Denunciations received (alter) (sqrt)				0.07	0.01	***	0.04	0.01	***
Reciprocity				1.58	0.12	***	1.81	0.14	***
Common denouncer				0.64	0.04	***	0.51	0.04	***
Woman (alter)	-0.19	0.09	*	0.17	0.09	†	0.25	0.09	**
Same sex	0.05	0.08		0.18	0.09	*	0.12	0.09	
Deceased (alter)	-0.81	0.23	***	-0.55	0.23	*	-0.55	0.23	*
Log likelihood (rate model)	*-11,529*			*-11,442*			*-10,955*		
AIC (rate model)	*23,063*			*22,890*			*21,920*		
BIC (rate model)	*23,072*			*22,905*			*21,944*		
Number of observations (rate model)	*836*			*836*			*857*		
Log likelihood (choice model)	*-4,659*			*-4,254*			*-4,206*		
AIC (choice model)	*9,324*			*8,521*			*8,428*		
BIC (choice model)	*9,338*			*8,549*			*8,466*		
Number of observations (choice model)	*836*			*836*			*836*		

Note: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. DyNAM estimates for all denunciations.

	Model 4			Model 5			Model 6		
	Est.	SE		Est.	SE		Est.	SE	
Intercept	-12.94	0.05	***	-13.32	0.06	***	-16.17	0.25	***
Summoned (ego)							5.68	0.25	***
Previously deposed (ego)							-1.80	0.09	***
Denunciations received (ego) (sqrt)				0.13	0.01	***	0.00	0.01	
Woman (ego)	-0.28	0.09	**	-0.19	0.09	*	0.00	0.10	
Summoned (alter)							1.47	0.14	***
Previously deposed (alter)							-1.02	0.14	***
Denunciations received (alter) (sqrt)				0.06	0.01	***	0.03	0.01	***
Reciprocity				1.76	0.13	***	2.01	0.15	***
Common denouncer				0.68	0.04	***	0.54	0.04	***
Woman (alter)	-0.19	0.10	†	0.29	0.11	**	0.41	0.11	***
Same sex	0.00	0.10		0.16	0.10		0.06	0.10	
Deceased (alter)	-1.03	0.29	***	-0.69	0.29	*	-0.67	0.30	*
Log likelihood (rate model)	*-8,600*			*-8,536*			*-7,898*		
AIC (rate model)	*17,204*			*17,077*			*15,805*		
BIC (rate model)	*17,213*			*17,091*			*15,827*		
Number of observations (rate model)	*614*			*619*			*650*		
Log likelihood (choice model)	*-3,420*			*-3,022*			*-2,972*		
AIC (choice model)	*6,846*			*6,056*			*5,961*		
BIC (choice model)	*6,860*			*6,083*			*5,996*		
Number of observations (choice model)	*614*			*614*			*614*		

Note: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. DyNAM estimates for denunciations directed at congregation fellows.

	Model 7			Model 8			Model 9		
	Est.	SE		Est.	SE		Est.	SE	
Intercept	-14.97	0.13	***	-15.52	0.16	***	-17.52	0.47	***
Summoned (ego)							2.17	0.46	***
Previously deposed (ego)							1.21	0.55	*
Denunciations received (ego) (sqrt)				0.15	0.02	***	0.03	0.02	
Woman (ego)	-0.04	0.24		0.01	0.26		-0.42	0.31	
Summoned (alter)							1.65	0.42	***
Previously deposed (alter)							-1.82	0.50	***
Denunciations received (alter) (sqrt)				-0.14	0.05	**	-0.17	0.05	***
Reciprocity				2.16	0.39	***	2.98	0.53	***
Common denouncer				1.51	0.14	***	1.34	0.14	***
Woman (alter)	0.24	0.26		0.84	0.30	**	0.94	0.34	**
Same sex	-0.56	0.26	*	-0.34	0.27		-0.54	0.29	†
Deceased (alter)	-0.27	0.52		0.24	0.53		0.19	0.53	
Log likelihood (rate model)	*-1,278*			*-1,266*			*-1,228*		
AIC (rate model)	*2,561*			*2,538*			*2,466*		
BIC (rate model)	*2,566*			*2,545*			*2,480*		
Number of observations (rate model)	*80*			*91*			*122*		
Log likelihood (choice model)	*-443*			*-327*			*-317*		
AIC (choice model)	*891*			*666*			*650*		
BIC (choice model)	*898*			*680*			*669*		
Number of observations (choice model)	*80*			*80*			*80*		

Note: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4. DyNAM estimates for denunciations directed at kinship members.