Journal of Cultural Analytics

Brys, Zoltan, Robert L. J. Shaw, Gideon Kotzé and David Zbíral. 2026. Correlates of Contestation Against Religious Authorities in Medieval Inquisitorial Testimonies. *Journal of Cultural Analytics*, 11(3): pp. 1–33. DOI: https://doi.org/10.22148/jca.1098

Correlates of Contestation Against Religious Authorities in Medieval Inquisitorial Testimonies

Zoltan Brys, Department for the Study of Religions, Masaryk University, Brno, Czech Republic, zoltan.brys@mail.muni.cz

Robert L. J. Shaw, Department for the Study of Religions, Masaryk University, Brno, Czech Republic, robert.shaw@mail.muni.cz

Gideon Kotzé, Department for the Study of Religions, Masaryk University, Brno, Czech Republic, gideon.kotze@mail.muni.cz

David Zbíral, Department for the Study of Religions, Masaryk University, Brno, Czech Republic, david.zbiral@mail.muni.cz

The self-declared aim of medieval inquisitions against heresy was to suppress dissident religious cultures. In addition to recording rituals and beliefs, inquisitorial testimonies also document instances when trial subjects directly contested religious authorities either during proceedings or retrospectively. This quantitative study examines how the presence of such contestations relates to the religious affiliation of deponents, their gender, the setting of the investigation (urban or not), and the period of the trial. We analyze 4,433 testimonies from twenty medieval inquisition registers, dating between 1243 and 1522 and covering multiple regions of Latin Christendom. Testimonies were classified using both human coders and a large language model (LLM); classification accuracies of the LLM were confirmed by human cross-validation. We collect data on the presence of contestations against religious authorities, the deponent's religious affiliation (Apostles, Beguins, Cathars, Guglielmites, Lollards, Waldensians, other heterodox, non-heterodox) and gender, and we include controls for textual characteristics. We conduct regression analyses at both register and testimony levels, complemented by random forest variable importance estimation. Testimonies associated with Beguins (Average Marginal Effect, AME = .47), Lollards (AME = .25), other heterodoxy (AME = .21), and Waldensians (AME = .20) are more likely to contain contestations than those from non-heterodox deponents, while those associated with Cathars, Apostles and Guglielmites show no significant effect. Registers predominantly documenting major urban centers were less likely (Standardized Marginal Effect, SME = −.12) to contain contestations, while registers from later periods were more likely (SME = .07). Men were slightly less likely to engage in contestation than women (AME = −.04). Our results suggest contestations varied systematically by dissident culture, with reform-oriented groups, rural settings, and later periods showing higher prevalence.

Journal of Cultural Analytics is a peer-reviewed open access journal published by the Center for Digital Humanities. © 2026 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See http://creativecommons.org/licenses/by/4.0/.

OPEN ACCESS

Introduction

Contestation of Religious Authorities in Medieval Heresy Trials

Beginning in the eleventh and twelfth centuries, Western Christian authors wrote with growing alarm about movements of popular religious dissent, and the Roman church began to develop new mechanisms to counter them. Central among these, from the thirteenth century onward, was the application of a new form of legal procedure, that is, inquisition, to the task of repressing such cultures (Kelly). Through these proceedings, papally-appointed inquisitors and bishops investigated thousands of individuals and tried them under suspicion of heresy (Peters; Given; Kras). While heresy was technically defined as obstinately holding beliefs contrary to the doctrine of the established church, the records of heresy trials highlight a far broader field of both activity and expression. Regarding activity, inquisitors often expended more effort in investigating tangible actions than interrogating beliefs: Such acts included not only rituals but also forms of practical assistance deemed supportive of heterodox groups (Arnold, *Inquisition and Power* 152; Biller 314; Sackville 118–19). Regarding expression, the views expressed by those on trial often contested the authority of church figures and institutions as much as or more than the finer points of theology (Arnold, "Voicing Dissent" 9–16). Such contestations can appear as simple reactions to repressive action, as in the case of Mina Iohannis, who in 1299 had said that the Dominican inquisitors in Bologna "were acting for the sake of money" ("*faciebant propter pecuniam*") (Paolini and Orioli 170) in burning a suspect. Others, like the 1431 admission of the East Anglian Lollard John Reve that "the Roman pope was the Antichrist and had no power in the church" ("*papa Romanus est Antechristus, et non habet aliquam potestatem in Ecclesia*") (Tanner, *Heresy Trials* 108), present a more thoroughgoing rejection of established hierarchies. Whatever their exact background and content, however, such explicit and direct contestations represented a politico-institutional challenge distinguishable from both theological dissent and other "heretical" activities documented.

This study centers on these direct and explicit contestations in medieval heresy trials, examining how suspects overtly challenged religious institutional authority at the hearings or confessed to having done so previously. Singling out this aspect of dissent is pertinent both from a historiographical and broader cultural analytical perspective. Such explicit and direct contestations have received little sustained attention from historians. Certainly, there has been some social historical examination of dissident resistance in inquisitions (Given), and there is a general awareness that the contestation of religious authority forms part of the expression of different dissident milieus (Piron; Taviani-Carozzi). In addition, there has been some interest in local developments of anticlerical attitudes over time (Biget) and in the forms of such

contestations in inquisition records (Albaret). However, no attempt has previously been made to quantify how frequently such verbal challenges to religious authorities occur in any larger body of inquisitorial evidence and examine some of the factors that correlate with their presence or absence. From the standpoint of cultural analytics, examining the contestation of religious authorities explores the proto-political consciousness in medieval religious dissident groups. This approach thus positions the analysis of religious dissent within broader sociocultural frameworks of resistance in the face of repression and censorship deployed through trial proceedings.

The Sociocultural Dynamics of Religious Dissent and Repression, and Inquisition Registers as Transcripts

Such broader sociocultural frameworks of resistance have certainly not been entirely absent from the study of medieval religious dissent and its repression in medieval Western Christendom. Earlier Marxist perspectives characterized dissident religious cultures like the Cathars and Lollards as manifestations of class struggle rather than religious awakening, and the inquisitions against heresy as an apparatus for suppressing social resistance (Erbstösser; Koch; Werner and Erbstösser). Building on Grundmann (*Religiöse Bewegungen*; *Religious Movements*), recent scholarship has tended to take a more nuanced view, emphasizing the diversity of social backgrounds among dissenters and their genuine religious motivations (Arnold, *Inquisition and Power*; Arnold, "A Man Takes an Ox"; Arnold, "Voicing Dissent"; Audisio; Given; Kaelber, "Weavers into Heretics?"; Kaelber, "Sociological Explanations"; Lansing). Such views have nevertheless stressed the coevolution of repressive mechanisms and dissenting practices (instead of their simple emergence in opposition to one another), an outlook that is conversant with modern critical and political theory concerning the interaction of power with the subaltern (Arnold, *Inquisition and Power*; Arnold, "Inquisition, Texts and Discourse"; Foucault; Scott, *Weapons of the Weak*; Scott, *Domination*). The interaction of dissent and its repression has also been placed in the context of wider sociocultural influences. The expanding social horizons fostered by urbanization and commerce from the high Middle Ages onward are seen as enhancing the spread of emergent religious outlooks among the laity, as well as the awareness of church authorities of such outlooks and their desire to exert control (Arnold, "Inquisition, Texts and Discourse"; Asad; Moore, *Formation*; Moore, *Origins*; Moore, "Birth of Popular Heresy"; Moore, *First European Revolution*; Moore, *War on Heresy*).

Awareness of the broad sociocultural dynamics of religious dissent and repression also frames our understanding of inquisition records. These documents were products of trials in which inquisitors sought to obtain incriminating testimonies, applying

pressure through leading questions, repeated hearings, incarceration, and judicial torture. The results of the interrogations were documented by notaries, who produced the final deposition records and the even more extensively edited summaries of guilt that accompanied sentencing. What such documents tell us of dissident religious cultures is thus heavily mediated (Arnold, "Inquisition, Texts and Discourse"; Del Col; Grundmann, "Ketzerverhöre"; Merlo, "I registri inquisitoriali"; Zbíral and Shaw). Nevertheless, the depositions and summaries of guilt found in inquisition trial records can still be understood through James Scott's framework as forced revelations of *hidden transcripts*—the concealed discourses through which subordinated groups contest authority (Scott, *Domination*). The inquisitors, as the dominant party, sought to monitor and control hidden spaces of resistance: In the process of trials, they brought them to the surface, publicizing (and perhaps solidifying) the discourses they found most challenging. The explicit contestations of religious authority elicited from deponents in inquisition trials and written down in their records arguably bear the sharpest witness to this dynamic, directly documenting the sociocultural clash between dissent and its repression.

Dissident Religious Cultures and Other Potential Influences on the Contestation of Authority

This clash was, however, neither singular nor static: a consideration that must inform how we define the factors associated with contestations of religious authority. Firstly, different dissident religious cultures may have engendered such contestations to very different degrees. When discussing these cultures, we must be aware that most of their names were coined by their adversaries and thus reflect a hostile perspective, and that in the last fifty years, scholarship has subjected the exact demarcations and identities of most of them to challenge. Most famous among them are the so-called Cathars (more commonly referred to as "good men/women," "good Christians," or simply "heretics" in trial records) and Waldensians, who were the main objects of the inquisitions of thirteenth- and fourteenth-century Languedoc (southwestern France) and Italy. In England, the Lollards were the main target of the trials administered by local bishops in the fifteenth and early sixteenth centuries. Alongside these, medieval inquisitions whose records survive also targeted the Guglielmites (in Milan in 1300), the Beguins (or *Begguini*/*Beguini*, that is, supporters of nonconformist Franciscans following stricter rules of poverty in Languedoc around the turn of the fourteenth century), the Apostles (in Italy at the turn of the fourteenth century), and others, as well as picking up other expressions of heterodoxy that do not appear tightly associated with any perceived grouping. These categories can be deconstructed still further as

they entail significant diversity. Scholarship has variously emphasized the existence of multiple Catharisms (or even questioned the coherence of Catharism as such), multiple Waldensian traditions, and multiple forms of Lollardy (Benedetti, *Eretiche ed eretici*; Jiménez Sanchez; Zanella, *Hereticalia*; Zanella, *Itinerari ereticali*; Merlo, *Valdesi e valdismi*; Swanson 329–47; Hornbeck; Zerner; Pegg, "On Cathars"; Pegg, "Heresy, Good Men"; Pegg, "Paradigm of Catharism"). Nevertheless, the more overarching labels do at least reflect certain common features in how dissidence is presented by the records, allowing them to serve as working categories for empirical research. Most crucially, those features have potential pertinence to the contestation of religious authority because they suggest different levels of interest in the established church and its reform. At one end of the spectrum, Cathars are typically associated with specific rituals—above all, the *consolamentum*, described as a religious initiation—and, at times, dualistic beliefs that rendered their reported culture relatively distinct from orthodox religious life. The Guglielmites in Milan appear similarly set apart by their belief that their deceased figurehead, Guglielma, embodied the Holy Spirit. On the other hand, the Lollards (who often protested aspects of the orthodox understanding of Christian ritual life) and the Waldensians, Apostles, and Beguins (apostolic poverty movements that the church deemed to have gone too far to be incorporated) appear more reformist in their outlook on existing church institutions. The existence of a spectrum between separatist and reformist outlooks naturally provokes the question of how religious cultural alignment correlates with the direct contestation of church authorities. We might expect those more inclined toward separatism to engage less in such contestation than those whose program was to reform the church.

These religious cultures and the trials that targeted them also overlapped with other aspects of the social environment that might relate to the contestation of religious authorities. Some inquisitions investigated dissent over wide areas with large rural populations; others focused more tightly on towns and cities. The latter are often seen as hotbeds of religious activism, including dissent, in the high and late Middle Ages, owing to the greater intensity of communication and heightened literacy fostered by commerce. Beyond this, they were also places where more polycentric models of authority emerged. Civic political institutions such as communes and guilds were present in urban centers alongside aristocratic and ecclesiastical elites. While towns and cities were certainly not all alike in terms of competition between powerholders and the conflicts that inevitably resulted (Lantschner), overall they were places where political authority was more likely to be contested. It is thus reasonable to ask how much this political contestation was transposed into the sphere of religious authority.

To the extent that such politico-social complexity might relate to the contestation of authority, we must also consider the time period of the trials. The atmosphere of the fifteenth and early sixteenth centuries, for instance, was very different from that of the thirteenth in this respect. Historians of the late Middle Ages have spoken of the increasing political importance of public opinion among an expanding middle class and the rise of a "public sphere," which both fostered and was accelerated by print culture (Guenée; Hobbins; Giraudet; Barucci). While inevitably felt strongest in towns and cities, these developments also accelerated throughout the period, seemingly fostering contestations of authority and their uptake, including in the religious sphere: The time span under investigation in this study concludes just prior to the Reformation, when religious authority was contested successfully enough to allow the lasting formation of new churches in many parts of Europe. Whether inquisition trial testimonies also evidence an increasing prevalence of contestations of religious authority over time thus deserves investigation.

At the level of individual testimonies and summaries, we must also consider gender as a potential correlate of such contestations. Medieval social structures systematically constrained women's public voices and agency. Women were placed under male wardship, excluded from most guilds, barred from preaching, and largely absent from public affairs, though they retained a pronounced authority in household management and some areas of religious life (Herlihy; Benedetti, "Donne valdesi"; Brenon). Some dissident religious cultures may have offered more gender-egalitarian spaces than mainstream society: Cathars are sometimes characterized as such, and Apostles reportedly granted women greater freedom of expression than Catholics (Brenon; Orioli). However, the evidence suggests complex and contingent patterns, including the documented exclusion of women from leadership roles in some contexts (Abels and Harrison). Given these structural constraints, we must ask whether male deponents were more likely to articulate direct challenges to religious authorities, reflecting both their greater access to the public sphere and potentially different experiences of persecution.

What Factors Correlate with the Contestation of Religious Authorities?

With these considerations in mind, this study investigates the factors associated with the presence or absence of explicit contestations of religious authority within testimonies found in inquisition trial records. Specifically, we examine whether

1. some dissident religious cultures, especially those with a greater emphasis on reforming the established church, may have been more conducive to such challenges than others;

2. urban environments, marked by intensified political contests, also fostered greater contestation of religious authorities;
3. later periods, in which the "public sphere" was more developed, may be more strongly associated with such contestations than earlier ones;
4. women, given their social and legal position, may have been less likely than men to directly challenge figures and institutions imbued with religious authority.

Methods

Study Scope

This study examines medieval inquisitorial records concerning popular religious dissent as they are documented in surviving registers from Latin Christendom. The analysis excludes early modern inquisitions and cases of learned heresy.

Study Design

This study employs a quantitative analysis of inquisitorial testimonies. Data collection involved compiling a source corpus of inquisitorial records and filtering it down to testimonies using human coding and large language models (LLMs). We also collected independent and dependent variables using human coding, LLMs, and algorithmic text measures. The accuracy rates of LLM classifications were assessed through human cross-validation. We modeled register-level contestation rates with beta regression and testimony-level contestation with multilevel logistic regression, and we ranked all correlates across both levels using model-agnostic random-forest permutation importance.

Data Collection

Source corpus. When constituting our source corpus for this study, we aimed at a comprehensive and balanced selection of extant medieval registers of heresy inquisitions (see **Table 1**). The corpus only includes registers which contain testimonies or detailed summaries of guilt because it is only those which would contain contestations of religious authority. In terms of chronology, the corpus spans 1243 to 1522. In terms of geography, we can see today's southwestern France, north-central Italy, Switzerland, and England represented. These choices are conditioned by the uneven activity of the inquisition of heresy, the uneven preservation of trial records, and the uneven progress in the editing and publishing of texts.

Overall, we included twenty registers (see **Table 1**). In eighteen cases, we used what are considered the standard scholarly printed editions. In two cases, we used digital-born

editions (Rehr; Wallnerová and Zbíral). For printed editions, our preprocessing pipeline involved digitization on a professional robotic scanner, optical character recognition using ABBYY FineReader software (versions 15 and 16), the manual removal of editorial material (introductions, translations, critical apparatus, footnotes, page numbers, artificial modern headings, etc.), as well as cleaning and correction to obtain the clean full texts. We then segmented each register into individual documents. In order to protect the rights of the editors and publishers, we processed them under a setting which does not license the LLM to use these texts as training data. We have also only included the first twenty characters of each document in the data supplement, for easy identification, cross-checking, and reproducibility.

Register Name	Date		Edition used
	Start	End	
Caux Doat 22	1243	1247	(Douais; Duvernoy, *Cahiers de Bernard de Caux*)
Caux ms. 609	1245	1246	(Rehr)
Carcassonne HHH	1246	1247	(Duvernoy, "Registre de Bernard de Caux")
Toulouse Parnac	1273	1282	(Biller et al.)
Galand	1283	1302	(Wallnerová and Zbíral)
Albi	1299	1300	(Davis)
Bologna	1291	1310	(Paolini and Orioli)
Guglielmites	1300	1302	(Benedetti, *Milano 1300*)
Ablis	1308	1309	(Palès-Gobilliard, *L'inquisiteur Geoffroy d'Ablis*)
Gui Sentences	1308	1323	(Palès-Gobilliard, *Livre des sentences*)
Carcassonne DDD	1323	1327	(Duvernoy, *Registre DDD*)
Carcassonne GGG	1328	1329	(Duvernoy, *Registre GGG*)
Castellario	1335	1335	(Merlo, *Eretici e inquisitori*)
Casasco	1373	1388	(Merlo, *Eretici e inquisitori*)
Settimo	1387	1388	(Pazé)
Fribourg 1399	1399	1399	(Utz Tremp)
Norwich	1428	1431	(Tanner, *Heresy Trials*)
Fribourg 1430	1430	1430	(Utz Tremp)
Coventry	1486	1522	(Tanner and McSheffrey)
Kent	1511	1512	(Tanner, *Kent Heresy Proceedings*)

Table 1: We included inquisition registers in the analyzed corpus, specifying date ranges and editions used.

Analyzed corpus. We filtered the source corpus of trial records down to an analyzed set of testimonies using a combination of human-coded screening and LLM classification. We define testimonies as depositions and summaries of guilt (which effectively summarize the evidence gained in preceding depositions that are now lost). We also applied a minimum-length criterion of twenty-one linguistic tokens to ensure testimonies contained sufficient substantive content. We counted tokens using spaCy's Natural Language Processing (version 3.7.5) library (Honnibal and Montani) with the latincy/la_core_web_lg model for Latin (version 3.8.0) (Burns et al.).

Of the 9,169 trial documents in the source corpus, 3,794 contained fewer than twenty-one tokens, including 3,663 from Caux ms. 609, which frequently records successive interrogations with the note that the subject "said the same as the previous." Of the 5,375 substantive trial records, which contained more than twenty linguistic tokens, 4,583 were classified by human annotator either as testimonies (n = 3,990) or not (n = 593). For the remaining 792, we applied zero-shot LLM-classification using the following prompt:

> The following text is a RECORD from a medieval inquisition register. Carefully READ the RECORD and DECIDE if it is a TESTIMONY. TESTIMONY must involve (1) either a DEPONENT (often described as *testis*, *loquens*, *deponens*) or someone being CONVICTED of specified crimes, and (2) some information about heresy. TESTIMONY might involve: name of the inquisitor, notary, a location, a date. *Confessio* (i.e., a confession), *interrogatio* (i.e., a hearing), and *culpa* (i.e., a summary of crimes of which someone is being convicted) are TESTIMONIES. These are NOT TESTIMONIES: *iuramentum*, *abjuration* (formal renunciation of heresy by a defendant, typically under oath and in front of an inquisitor), financial documents (property valuation, bail, injunction to confiscate property, surety agreement, transferring of possession, fine, rental agreement, sale declaration of transferred deposits), discussion between inquisitors, letter, injunction to excommunicate, public summons, *sermo generalis*, sentence, preceptum and legal consultation.

For all LLM classification tasks in this study, we employed Anthropic's Claude Opus 4.5 (claude-opus-4-5-20251101) proprietary LLM with temperature set to zero to ensure minimally stochastic outputs. This model was selected on the basis of its performance (90.8%) on multilingual question-answering tasks (Anthropic). This specific LLM classification of testimonies cost 2.12 USD in batch mode without extended thinking. Out of 792 trial documents, the LLM categorized 481 as testimonies. LLM classifications were cross-validated on a sample of 200 records by two authors (the second and fourth author) with expertise in medieval Latin and historical research;

the validation set was divided between them without overlap. The LLM achieved an acceptable level of 89.5% accuracy (**Table 2**). This filtering process resulted in 4,471 (3,990 human-classified and 481 LLM-classified) testimonies.

		Human	
		True	**False**
LLM	**True**	115	9
	False	12	64
accuracy = 89.5%, precision = 92.7%, recall = 90.6%, F1 = .92			

Table 2: The confusion matrix and classification performance metrics for LLM versus human testimony classification (*n* = 200).

Variables

After assembling the analyzed corpus of testimonies, variables were extracted for quantitative analysis. The dependent variable was a binary indicator representing the presence or absence of the explicit contestation of religious authority within each testimony. The independent variables were the religious affiliation of the deponent, gender, the predominantly urban or non-urban context of the register (binary), and the mean date of the register. Three additional textual control variables were calculated for each testimony: length in linguistic tokens, lexical diversity, and the number of inquisitorial questions identified in the testimony. These variables were extracted using a combination of human coding, LLM classification, and computational text analysis.

For logistical reasons and to ensure consistent context for the LLM, the dependent variable and two of the independent variables (gender and number of questions) were extracted simultaneously via the following shared prompt:

> The following text is a testimony from a medieval inquisition register. In it, a DEPONENT (often described as testis, loquens, deponens) is questioned about various matters by the INQUISITION; or someone is being CONVICTED of specified crimes by the INQUISITION. Carefully analyze this TESTIMONY and extract the following information precisely! If the requested information is not provided, reply: Unclear.
>
> Specify the gender of the DEPONENT or person being CONVICTED as Male, Female, or Unclear, based on name of the deponent or linguistic cues (e.g., pronouns, grammatical gender, gendered adjectives, titles, or other gendered language in the testimony).

How many distinct times does the INQUISITOR explicitly pose questions in this testimony (a question can be considered explicitly posed by expressions such as "asked, s/he answered" and other phrasings that directly evidence the asking of a specific question)? Provide the answer numerically!

Does the DEPONENT or person being CONVICTED explicitly and directly accuse the Inquisitor/Inquisition of power abuse? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly accuse the Church/Papacy of power abuse? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly accuse the priest(s) of power abuse? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly accuse the religious orders of power abuse? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly question the legitimacy of the Inquisitor/Inquisition? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly question the legitimacy of the Church/Papacy? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly question the legitimacy of the priest(s)? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear.

Does the DEPONENT or person being CONVICTED explicitly and directly question the legitimacy of religious orders? (Such contestations can either be expressed as currently held views or confessions of past views.) Answer with True or False or Unclear."

The cost of the LLM classifications of the dependent variable and two independent variables of gender and the number of inquisitorial questions in all documents identified as testimonies (n = 4,471) was 65.06 USD. For each testimony, the binary dependent variable was coded as 1 (contestation present) if any of the eight contestation-related prompts returned True; otherwise, it was coded as 0. These prompts captured either explicit allegations of power abuse or direct challenges to legitimacy, targeting any of four types of religious authority: the Inquisition/inquisitors, the established church/Papacy, priests, or religious orders. Our prompt separated contestations into eight evaluations to maintain a precise definition, but consistent with our research question, we aggregated them into a single binary indicator. For the eight contestation prompts, the LLM returned no Unclear responses.

The number of inquisitorial questions, returned as an integer, served as a textual control variable directly addressing a source-critical concern (Zbíral et al.; Zbíral and Shaw): the extent to which the presence or absence of authority contestations might have been influenced by more intense questioning than that generally characterizing the given register.

In the case of thirty-eight documents, the LLM indicated that the gender of the deponent could not be defined (it returned a FALSE response instead of Male or Female); because these were mainly group interrogations or non-testimonies, we removed these from the dataset. For the remaining 4,433 testimonies, human cross-validation of the LLM classification of the dependent binary variable (presence of authority contestation) on a sample of 200 testimonies resulted in a 96.5% accuracy rate. For the gender variable it resulted in a 99.5% accuracy rate, and for the number of inquisitorial questions it achieved a mean absolute error of 0.15 (i.e., 91% of the values were identical). We report precision, recall, and F1-score for the authority contestation and gender classifiers in **Table 3**. Notably, false negatives were more

	Human					
	Authority contestation			**Gender**		
		True	**False**		**Male**	**Female**
LLM	**True**	13	2	**Male**	146	1
	False	5	180	**Female**	0	53
	accuracy = 96.5%, precision = 86.7%, recall = 72.2%, F1 = .788			accuracy = 99.5%, precision = 99.3%, recall = 100%, F1 = .997		

Table 3: Confusion matrix and classification performance metrics for LLM versus human classification of the presence of authority contestation and gender (n = 200).

common than false positives for the authority contestation classifier in the validation sample (five against two), indicating that the classifier tended to underdetect instead of overgenerate instances of authority contestation.

The next extracted variable was the deponent's religious affiliation. We classified it into one of eight categories (i.e., Apostles, Beguins, Cathars, Guglielmites, Lollards, Waldensians, other heterodox, non-heterodox) according to the content of each testimony. The label "non-heterodox," and not "orthodox," is used because the records do not usually permit a positive classification as orthodox, only the absence of evidence for heterodox affiliation. For three registers (Bologna, Carcassonne HHH, and Toulouse Parnac), we manually coded all testimonies (n = 814). The LLM classified the remainder (n = 3,657) using register-specific prompts. The LLM prompts drew from a consistent set of definitions but only included those categories present in each register (**Table 4**). The LLM prompt template was as follows:

> The following text is a testimony from a medieval inquisition register. In it, a DEPONENT (often described as *testis*, *loquens*, *deponens*) is interrogated about various matters by an INQUISITOR; or someone is being CONVICTED of specified crimes by the INQUISITION. Carefully analyze this TESTIMONY and decide if the DEPONENT or person being CONVICTED is...[register-specific relevant categories, as detailed in **Table 4**].

Religious affiliation	Present in registers	Definition used in the LLM prompts
Beguin	Carcassonne DDD, Carcassonne GGG, Gui Sentences	a supporter of executed beguini/begguini; and/or a believer in their moral worth and/or sanctity as martyrs; a collector of relics/bones of executed Beguins; and/or a follower of Petrus Iohannis (Olivi) and/or other "spiritual" Franciscans; and/or a believer that Pope John XXII lacks authority over religious vows and Franciscan poverty
Cathar	Ablis Albi Bologna Carcassonne DDD Carcassonne GGG Carcassonne HHH Caux Doat 22 Caux ms. 609 Galand Gui Sentences Toulouse Parnac	a supporter of dissident ministers simply described as "heretici"; and/or a "hereticus" or "heretica" (without other sect specification) themselves; and/or a believer in their moral worth and/or ability to save souls; and/or a participant or witness to rituals administered by "heretici", such as the "adoratio" (kneeling, saying "Benedicite") and the "hereticatio"/"consolamentum" (religious initiation of those taking up the life of fully fledged heretics, whether during life or on deathbed); and/or a believer in dualist religious propositions (e.g. that there are two divinities, good and bad)

(Contd.)

Religious affiliation	Present in registers	Definition used in the LLM prompts
Guglielmite	Guglielmites	someone who is found to have held, taught, or affirmed any of the following beliefs, or who has abjured such beliefs or participated in cultic practices (e.g., special masses, feasts, veneration of relics) associated with the beliefs: that Guglielma was the incarnation of the Holy Spirit, the third person of the Trinity, destined to resurrect and save all humanity, and that Mayfreda de Pirovano was her earthly vicar or female pope
Lollards	Coventry Kent Norwich	someone who is found to have held, taught, or affirmed any of the following beliefs, or who has abjured such beliefs: that the Eucharist is merely material bread, not the true body of Christ; and/or that vocal/auricular confession should be made only to God and not to a priest; and/or that priests have no more power from God than laymen in administering sacraments or divine offices; and/or that pilgrimages to holy and devout places or the worship of images of saints are not necessary, meritorious, or profitable for the soul; and/or that sacraments such as baptism, confirmation, matrimony, or extreme unction are not necessary for salvation or efficacious; and/or that blessed bread and holy water hold no greater virtue or efficacy after consecration
Waldensian	Carcassonne GGG Carcassonne HHH Casasco Castellario Caux Doat 22 Caux ms. 609 Fribourg 1399 Fribourg 1430 Gui Sentences Settimo Toulouse Parnac	a supporter of Waldensian brothers and sisters ("valdenses"); and/or a Waldensian brother or sister ("valdensis") themselves; and/or a believer in the moral worth of Waldensians and/or ability to save souls; and/or participants in blessed meals and communal prayers with Waldensians; and/or a receiver of confession and/or absolution from a Waldensian; and/or a believer that one should not swear oaths and/or that executing convicted criminals or religious dissidents is not legitimate
Other heterodox	Bologna Carcassonne DDD Carcassonne GGG	a holder of dissident religious views which are not sect-specific (e.g. doubts or opposition to matrimonial doctrine; doubts or denial of the efficacy of sacraments; rejection or strong opposition to the established clerical hierarchy; demonic invocations; sorcery), providing that the deponent cannot otherwise be categorized as either Beguin, Cathar, Guglielmite, Lollard, or Waldensian

(Contd.)

Religious affiliation	Present in registers	Definition used in the LLM prompts
Non-heterodox	All non-manually classified registers	an orthodox Catholic; and/or a non-suspect witnesses or informant; and/or those with only incidental/fearful contact with religious dissidents who otherwise maintained orthodox beliefs and behaviors

Table 4: We used religious affiliation categories for testimony classification. The table lists the eight affiliation categories applied in this study, their presence across inquisition registers, and the operational definitions included in the LLM classification prompts. While definitions were held constant, only those categories relevant to each register were included in the respective LLM prompt.

The cost of the LLM-classification of religious affiliation was 9.27 USD. Human cross-validation of the LLM classification of religious affiliation achieved 85.0% accuracy on a sample of 200 testimonies (**Table 5**).

		Human						
		Beguin	**Cathar**	**Guglielmite**	**Lollard**	**Waldensian**	**Other heterodoxy**	**Non-heterodox**
LLM	**Beguin**	5	0	0	0	0	0	0
	Cathar	0	89	0	0	0	0	10
	Guglielmite	0	0	2	0	0	0	0
	Lollard	0	0	0	10	0	0	0
	Waldensian	0	0	0	0	15	0	1
	Other heterodoxy	0	0	0	0	0	0	0
	Non-heterodox	0	14	1	1	3	0	49
	accuracy = 85.0%, macro-averaged precision = 92.6%, macro-average recall = 84.8%, macro-average F1-score = .88							

Table 5: Confusion matrix and classification performance metrics for LLM versus human classification of religious affiliation of the deponent (*n* = 200).

The next two independent variables were register-specific: urban or non-urban context of the register (binary) and the mean date of the register. Urban context (a binary variable coded as 1 if human evaluation estimated that the majority of the trial subjects were residents of a major urban center) and temporal context (mean date of the register, calculated from start and end dates).

Two additional textual control variables were collected at testimony level. We counted linguistic tokens using spaCy's Natural Language Processing (version 3.7.5) library (Honnibal and Montani) with the latincy/la_core_web_lg model for Latin version 3.8.0 (Burns et al.). Our rationale for measuring length was to verify that results hold true even controlling for the fact that longer testimonies provide more room for contestations of religious authority to appear. We assessed lexical diversity by Measure of Textual Lexical Diversity (MTLD; McCarthy and Jarvis) because it is robust to varying text length and provides a stable estimate of lexical variation across varying sample sizes. Measuring lexical diversity allowed us to control for the possibility that tighter notarial summarization and standardization of testimonies (which, in general, should lead to lower lexical diversity) might serve to efface contestations.

Statistical Methods

After providing standard descriptive statistics of variables, we conducted three complementary statistical analyses to examine the correlates of contestation.

First, at the register level, we modeled the proportion of testimonies containing contestation in each register using beta regression (Cribari-Neto and Zeileis; Zeileis et al.), with urban context and quadratic polynomial of mean date as independent variables. This analysis evaluates the two register-level hypotheses examined in this study: whether contestation varied by urban setting and over time. We applied beta regression because the outcome variable was a register-level proportion. To satisfy distributional assumptions of beta regression, we added a small constant (1E-07) to registers with zero contestation. Independent variables were standardized to yield comparable standardized average marginal effects (AME) (Bartus). To assess the robustness of register-level findings, we additionally conducted a jackknife leave-one-out analysis, reestimating the beta regression after excluding each register in turn.

Second, at the testimony level, we used multilevel (mixed-effects) binary logistic regression (Bates et al., "Fitting Linear Mixed-Effects Models"; Bates et al., *lme4*), with testimonies nested within registers (using random intercept), in order to assess associations between testimony-level variables (e.g., religious affiliation, gender, length, lexical diversity, inquisitorial questions) and the presence of contestation. Because inquisitors and notaries are specific to individual registers in this corpus, their effects cannot be modeled independently. Instead, they are absorbed into the register-level random intercept. We checked for multicollinearity using variance inflation factors. AMEs were calculated to facilitate comparison across independent variables. We treated religious affiliation and gender as categorical variables and therefore not standardized; all continuous independent variables were standardized (z-score).

Third, we applied a random forest classifier at the testimony level to estimate permutation-based variable importance for all factors, providing a model-agnostic assessment. Statistical significance for variable importance was determined using the Altmann method (Altmann et al.). All significant independent variables, including those at register level, were involved, and we quantified variable importance as the reduction in model accuracy after permuting each variable's values (Wright et al.; Breiman; Wright and Ziegler). We aggregated results across 10,000 bootstrap resamples in order to yield stable importance estimates.

Statistical significance was assessed at $\alpha = .05$. Average and standardized marginal effects (AME and SME) were both considered negligible when their absolute values were less than .025. All analyses used R version 4.4.2 with the betareg (Zeileis et al.), lme4 (Bates et al., *lme4*), margins (Leeper et al.), and ranger (Wright and Ziegler) packages. The R code and input data to reproduce our results are publicly available in the journal's Dataverse repository.

Results

Descriptive Statistics

We report descriptive statistics for all variables in **Table 6**.

Characteristic	All testimonies N = 4,433[1]	Contestation absent N = 3,899[2]	Contestation present N = 534[2]	*p*-value[3]
Register				< .001
Ablis	43 (1.0%)	38 (88%)	5 (12%)	
Albi	37 (0.8%)	37 (100%)	0 (0%)	
Bologna	604 (14%)	336 (56%)	268 (44%)	
Carcassonne DDD	63 (1.4%)	27 (43%)	36 (57%)	
Carcassonne GGG	55 (1.2%)	40 (73%)	15 (27%)	
Carcassonne HHH	22 (0.5%)	21 (95%)	1 (4.5%)	
Casasco	34 (0.8%)	9 (26%)	25 (74%)	
Castellario	169 (3.8%)	157 (93%)	12 (7%)	
Caux Doat 22	42 (0.9%)	38 (90%)	4 (9.5%)	
Caux ms. 609	2,116 (48%)	2,108 (99.6%)	8 (0.4%)	
Coventry	107 (2.4%)	89 (83%)	18 (17%)	

(Contd.)

Characteristic	All testimonies N = 4,433[1]	Contestation absent N = 3,899[2]	Contestation present N = 534[2]	*p*-value[3]
Fribourg 1399	1 (< 0.1%)	1 (100%)	0 (0%)	
Fribourg 1430	94 (2.1%)	89 (95%)	5 (5.3%)	
Galand	74 (1.7%)	72 (97%)	2 (2.7%)	
Guglielmites	68 (1.5%)	65 (96%)	3 (4.4%)	
Gui Sentences	507 (11%)	435 (86%)	72 (14%)	
Kent	61 (1.4%)	54 (89%)	7 (11%)	
Norwich	81 (1.8%)	42 (52%)	39 (48%)	
Settimo	67 (1.5%)	59 (88%)	8 (12%)	
Toulouse Parnac	188 (4.2%)	182 (97%)	6 (3.2%)	
Urban setting	911 (21%)	617 (68%)	294 (32%)	< .001
Register date	1291 (62.8)	1286 (61.9)	1330 (56.0)	< .001
Religious affiliation				< .001
Apostles	99 (2.2%)	85 (86%)	14 (14%)	
Beguins	87 (2.0%)	23 (26%)	64 (74%)	
Cathars	1,773 (40%)	1,726 (97%)	47 (2.7%)	
Guglielmites	48 (1.1%)	47 (98%)	1 (2.1%)	
Lollards	187 (4.2%)	124 (66%)	63 (34%)	
Non-heterodox	1,478 (33%)	1,468 (99.3%)	10 (0.7%)	
Other heterodoxy	430 (9.7%)	181 (42%)	249 (58%)	
Waldensians	331 (7.5%)	245 (74%)	86 (26%)	
Gender is male	3,059 (69%)	2,793 (91%)	266 (8.7%)	< .001
Length	187 (298)	173 (253)	286 (507)	.009
MTLD	80.1 (44.4)	79.1 (45.0)	87.2 (39.5)	< .001
Number of inquisitorial questions	1.1 (3.8)	1.0 (3.2)	1.6 (6.7)	.024

[1] n (column %); Mean (SD)
[2] n (row %); Mean (SD)
[3] Fisher's Exact Test with simulated p-value (based on 10,000 replicates); Wilcoxon rank sum test

Table 6: Descriptive statistics for all study variables are presented by presence or absence of contestation.

Register-Level Results

Beta regression analysis examined the contestation rates of testimonies across twenty inquisition registers (**Table 7**; **Figure 1**). The beta regression model with urban context and mean date achieved a pseudo R^2 = .25. The precision parameter φ = 3.6 (SE = 1.2, $p < .01$) indicated adequate model fit for the beta distribution. Urban context showed a significant negative association with contestation rates ($\beta = -0.92$, SE = 0.25, $p < .001$, SME = −.12, SME-p = .001). Mean date demonstrated an overall significant positive association (SME = .07, SME-$p < .05$), indicating that contestation was more prevalent in later registers.

Register	n	Y	Urban setting	Date
Caux Doat 22	42	9.5%	0	1245
Caux ms. 609	2116	0.4%	0	1246
Carcassonne HHH	22	4.5%	0	1247
Toulouse Parnac	188	3.2%	0	1278
Galand	74	2.7%	0	1293
Albi	37	0.0%	1	1300
Bologna	604	44.4%	1	1301
Guglielmites	68	4.4%	1	1301
Ablis	43	11.6%	0	1309
Gui Sentences	507	14.2%	0	1316
Carcassonne DDD	63	57.1%	0	1325
Carcassonne GGG	55	27.3%	0	1329
Castellario	169	7.1%	0	1335
Casasco	34	73.5%	0	1381
Settimo	67	11.9%	0	1388
Fribourg 1399	1	0.0%	1	1399
Norwich	81	48.1%	0	1430
Fribourg 1430	94	5.3%	1	1430
Coventry	107	16.8%	1	1504
Kent	61	11.5%	0	1512

n = number of testimonies in the registers
Y = ratio of testimonies with authority contestation against religious authorities in the register
Ordered by increasing mean date

Table 7: Proportion of testimonies containing contestation by register with setting and date.

The complementary jackknife analysis indicated that the register-level findings were not driven by any single register. The estimated urban association remained negative and statistically significant in all twenty leave-one-out models. The weakest urban effect was observed when excluding Fribourg 1399 ($b = -0.62$, $p = .011$), while the strongest was observed when excluding Bologna ($b = -1.10$, $p < .001$). The linear date coefficient remained positive in all twenty iterations. It was statistically significant ($p < .05$) in thirteen of the twenty models and at least borderline significant ($p < .10$) in nineteen models. The sole exception occurred when excluding Caux ms. 609, where the coefficient remained positive but was not statistically significant ($b = 0.46$, $p = .12$).

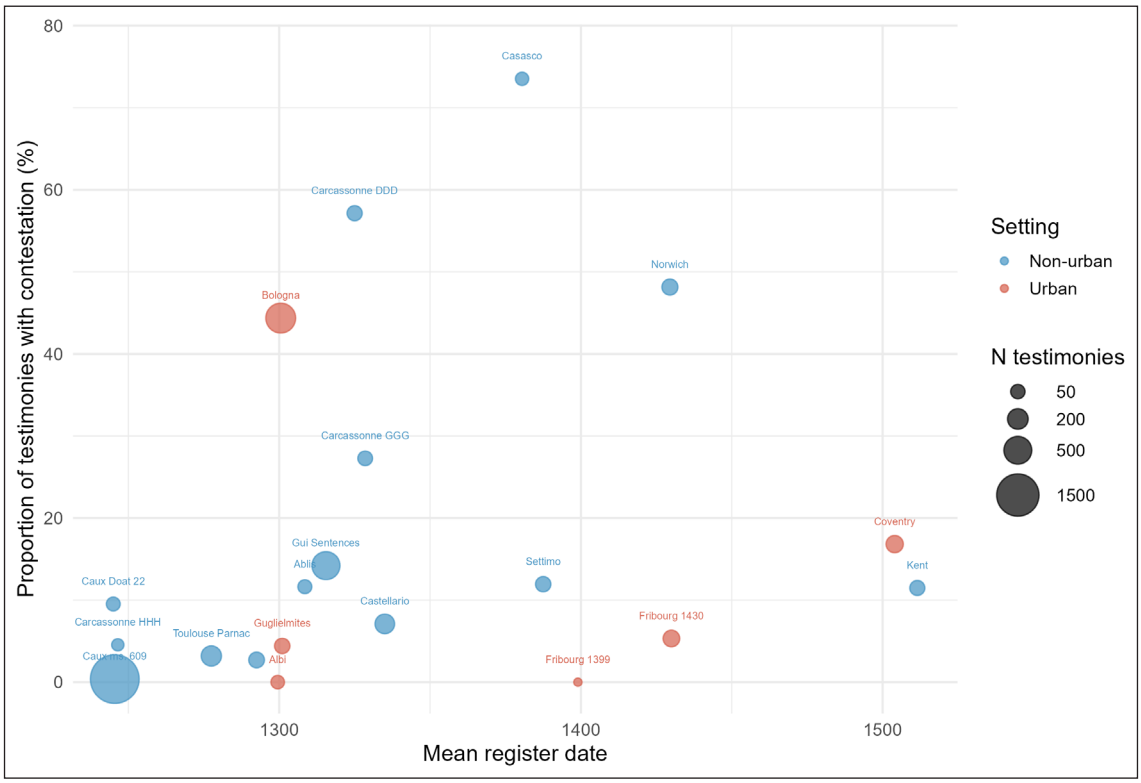

Figure 1: Register-level contestation proportions by mean register date. Point size is proportional to the number of testimonies in the register, and colors indicate urban and non-urban settings.

Testimony-Level Results

The multilevel logistic regression model including register-level random intercepts ($\sigma^2 = 1.15$, sd = 1.07) showed a substantially improved fit compared to the null model (AIC = 1778 versus $AIC_{null} = 2209$), indicating significant heterogeneity in contestation likelihood across registers and strong explanatory power for the included independent variables. Variance inflation factors were low (maxVIF = 1.66), indicating no significant

multicollinearity. Among religious affiliations, Beguins (AME = .47), Lollards (AME = .25), Other heterodoxy (AME = .21), and Waldensians (AME = .20) were significantly more likely to contest religious authority compared to non-heterodox deponents (**Table 8**). Gender was also a statistically significant predictor: males were significantly less likely to contest (AME = −.04). Among control variables, testimony length was a significant correlate (AME = .02), while lexical diversity and inquisitorial questions showed no significant effect (**Table 8**).

Variable	B	SE	*p*	AME	AME-p
Religious affiliation (reference category: Non-heterodox)					
Apostles	0.90	0.50	.08	.02	.17
Beguins	4.87	0.58	< .001	.47*	< .001
Cathars	0.64	0.40	.12	.02	.11
Guglielmites	−1.13	1.23	.35	−.01	.20
Lollards	3.45	0.64	< .001	.25*	.002
Other heterodoxy	3.14	0.42	< .001	.21*	.001
Waldensians	3.12	0.44	< .001	.20*	.001
Gender is male	−0.62	0.13	< .001	−.04*	< .001
Control variables					
Testimony length	0.35	0.07	< .001	.02	.001
Lexical diversity	−0.04	0.07	.58	−.002	.58
Number of questions	0.02	0.07	.74	.001	.75
n = 4,433 (testimonies), *k* = 20 (registers) Random intercept variance (register) = 1.15 (*sd* = 1.07) AIC = 1778 (AIC_{null} = 2209) Max(VIF) = 1.66					

Table 8: Results of multilevel logistic regression modelling the presence of contestation of religious authority in testimonies. Asterisks indicate significant ($p < .05$) and non-negligible ($|AME| > .025$) correlates.

Variable Importance

Complementing the regressions, the random forest analysis began by verifying the statistical significance of all potential predictors. Lexical diversity ($p = .74$) and the number of inquisitorial questions ($p = .83$) were excluded as they did not reach statistical significance. Permutation-based variable importance was computed for

all significant independent variables across 10,000 bootstrapped random forest models (**Figure 2**). The independent variables contributing most to model accuracy were religious affiliation (median importance = 0.047), followed by register (0.039), length of the testimony (0.032), date of the register (0.025). Urban setting (0.013) and gender (0.007) showed significant, but lower, contributions to model predictive power (**Figure 2**).

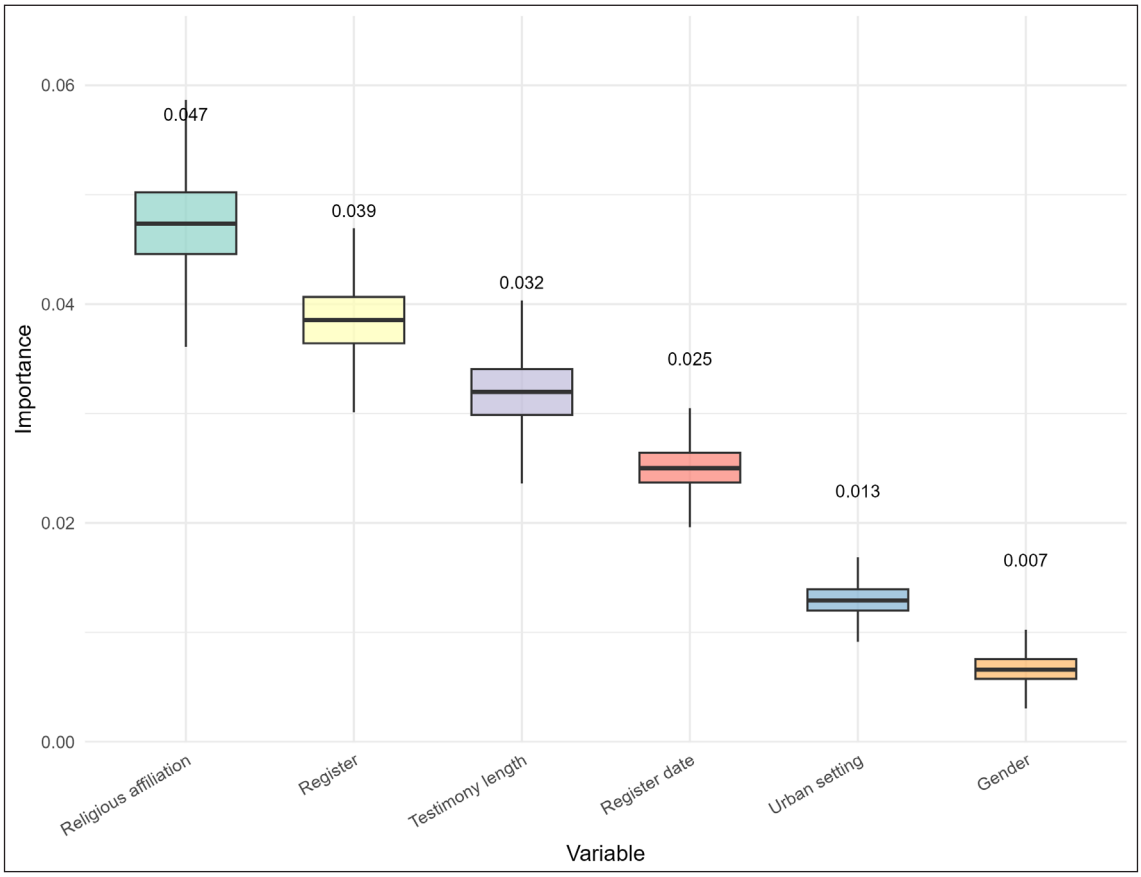

Figure 2: Permutation-based variable importance for all significant independent variables in the random forest model, computed over 10,000 bootstrap resamples. Importance is quantified as the decrease in model accuracy after permuting each independent variable. The median importance for each independent variable is annotated above each box. Independent variables are ordered by median importance, reflecting their relative contribution.

Discussion

Summary

To the best of our knowledge, this study represents the first quantitative analysis of contestations of religious authorities in medieval inquisitorial testimonies across Western Christendom. We analyzed 4,433 testimonies drawn from twenty

inquisition registers spanning nearly three centuries (1243–1522). Our results show that such contestations were not randomly distributed; rather, they exhibited systematic variation.

Key Results

The likelihood of the explicit contestation of religious authority in inquisitorial testimonies varied most strongly by dissident religious culture. Testimonies from Beguins, Lollards, Waldensians, and other heterodox groups were significantly more likely to include contestations than those associated with non-heterodox deponents, while Apostles, Guglielmites, and Cathars did not differ meaningfully from the non-heterodox baseline. Contrary to expectations, registers primarily documenting urban populations showed a lower proportion of contesting testimonies than those focused on rural areas. Men were also slightly less likely to contest religious authority than women. Finally, contestations were more frequently documented in registers from later periods.

Limitations

This study faces several limitations derived from the nature of historical trial records and the computational methods employed.

Source-related limitations. Inquisition records were the products of coercive legal processes and shaped by the interrogation goals and documentary practices of inquisitors and notaries. Their genesis has the potential to introduce systematic biases in what was recorded and how it was framed. While we attempted to control for some textual traces of inquisitorial and notarial practice, we found no viable direct control for the potential bias of the investigatory spotlight, that is, the possibility that the mention of contestations of religious authority was conditioned by the interests of particular inquisitors, rather than—or alongside—factors of dissident culture and environment. The coverage of edited inquisition registers, while quite comprehensive, could be extended through further digitization efforts. More problematically, the uneven preservation of registers creates unfillable geographic and temporal gaps in our evidence. For instance, while religious dissent most likely continued in Languedoc after 1330, the absence of an active inquisition after 1330 left no further records of religious dissent. Substantial losses of documentation from England, Bohemia, Poland, Hungary, German territories, and other regions likewise limit our coverage.

Methodological limitations. Our register-level analysis assumes homogeneous urban or rural contexts within each register, which may not reflect the actual residential locations of individual trial subjects. Analyses at this level therefore capture

register-level rather than individual-level patterns. Furthermore, while our LLM-based classification achieved acceptable accuracy levels, there remains space for improvement. Finally, the binary coding of authority contestation as simply present or absent may miss more nuanced forms of resistance.

Statistical and causal limitations. Beta regression and multilevel logistic regression depend on correct model assumptions and specification; unmeasured confounding or omitted variables may bias our results. We did not formally incorporate LLM classification uncertainty into our models, though this represents an important direction for future methodological development (Karjus). Statistically, our findings identify associations, and correlations should only be interpreted causally where a clear, theoretically grounded relationship can be established. Moreover, group differences cannot be fully disentangled from contemporaneous variations in time, region, or record genre, so results should be read as context-shaped associations rather than intrinsic cultural traits.

Interpretation

The correlation of the different dissident cultural categories with contestations of religious authorities falls largely in line with our expectations. Testimonies tied to those cultures that appear most overtly separatist in their broader textual portrayal—the Cathars and the Guglielmites—were not more likely to express explicit contestations against religious authorities than the non-heterodox baseline. The result for Cathar-associated testimonies is important because it places an important caveat on historiographical deconstructions of Catharism that interpret it as mere anticlericalism or a reaction to persecution instead of a more cohesive, deeply rooted, and independently-minded form (or forms) of dissent (Théry-Astruc, "Cléricalisme et hérésie"; Théry-Astruc, "Heretical Dissidence"; Pegg, *Most Holy War*; Pegg, "Paradigm of Catharism"; Pegg, "Le catharisme en questions"; Moore, *War on Heresy*). If Cathar culture(s) essentially boiled down to criticism of or reaction to the church, we might expect to see much more contestation than the evidence presents. Consequently, the debate on the degrees of invention of Catharism should address the reasons why contestation of orthodox religious authorities plays such a limited role in the extant evidence. In the case of the Guglielmites, our finding corroborates their contrast to more militantly reformistic milieus and their commitment to partial separatism, forming "a small church within the church" (Stará and Zbíral 69). Other dissident cultures that appear more reactive to the established church indeed display a higher tendency to engage in the explicit contestation of religious authorities. This can be seen in the results concerning testimonies associated with the Beguins, the Waldensians,

and the Lollards. The notable exception is the Apostles: Just as with the Cathars and Guglielmites, testimonies associated with them do not differ statistically in the presence of explicit religious authority contestations from the non-heterodox deponents. While the reasons for this exception require further exploration, it challenges Bernard Gui's assertion in the *Practica inquisitionis* that the Apostles preached that the Roman Church had lost all authority due to evil prelates (Mollat 86). Overall, the results confirm that dissident religious cultures could diverge in ways that went beyond theology. The contestation of religious authority was not a uniform feature of medieval dissent, but it instead appears relatable to the specifics of identity formation.

The impact of urban context defied our expectations in that registers where the majority of those tried were estimated to be townspeople appear less associated with authority contestations than those drawn from more rural environments. This may suggest that urban populations were more cautious about openly challenging powerholders. However, further research is needed because we have only modeled this factor at the register level. Moreover, our random forest analysis ranked urban context as relatively low in explanatory importance, indicating that this register-level composition effect should not be overinterpreted.

On the other hand, the fact that registers from later periods appear more associated with contestations suggests that the overall development of public debate and discourse over the late Middle Ages promoted challenges to religious authority. While it may be that inquisitors were also becoming more alive to the danger of challenges to the authority of the established church, and thus focused on this issue more intently in later centuries, we found no relationship between the intensity of inquisitorial questioning and the presence of contestations. Moreover, any heightening of inquisitorial interest in contestations might itself reflect the growing importance of public debate.

Finally, our result concerning men and women suggests that gender played a minor role in shaping whether contestations occur in inquisition trial records. Women's testimonies are slightly more likely to contest authority. This pattern runs counter to our initial expectation that men, with their greater access to the public sphere and more prominent roles, would more readily articulate contestations. As Vise argues, courts may have provided women a unique forum for public expression that was otherwise less available to them in medieval society. Women's contestations may have been more readily documented by inquisitors and their notarial staff because they violated gendered expectations. Alternatively, dissident religious cultures may have genuinely offered women greater latitude for critical expression. Crucially, however, our study only captures direct and explicit contestations as they were documented in inquisitorial proceedings: We have left aside the fuller range of gendered expressions that might

speak to religious assertiveness and resistance and recognize that some pertinent utterances and acts will have escaped the record entirely. In any case, a more nuanced investigation of the connection between gender and different types of contestation captured in inquisition records represents an important topic for future research, especially because the wider links between gender and medieval religious dissent are a long-standing point of debate.

Generalizability

As mentioned, our analysis is constrained by the availability of surviving inquisition registers and their selection for this study. Nevertheless, we believe that its coverage of multiple European geographies, a broad temporal span (1243–1522), and a wide variety of dissident religious cultures provides a foundation for understanding the various influences on contestations of religious authority voiced by medieval European dissidents. The study contributes more generally to the historical study of conflict and resilience and underlines the viability of larger scale studies (more common in the fields of social and economic history) aimed at exploring the past dynamics of religious cultures. The topic of contestations of religious authority shows again how much cultural and religious history, especially if viewed from a macro-perspective, can be placed in conversation with broader social developments. Last but not least, this study demonstrates how properly supervised LLM-based data capture workflows can expand the volume of historical material analyzed within a single study, and can do so in a relatively fast and straightforward manner. This is potentially game-changing for the analysis of past cultural dynamics because it allows a broader and more holistic outlook on the evidence without overly simplifying the focus of study to the simplest features.

Conclusions

This study provides quantitative evidence showing that explicit contestations against religious authorities in medieval inquisitorial testimonies were systematically associated with dissident religious culture and temporal context instead of being randomly distributed. The differential patterns observed across dissident groups suggest that authority contestation constituted a distinct dimension of medieval religious dissent, separate from but complementary to doctrinal resistance. It appears quite unevenly distributed among the different religious cultural milieus rather than, as has sometimes been suggested (Biget 414, 436–37), being a constant feature, or even the main source, of religious dissidence in general. In some dissident milieus, the overt contestation of religious authority was in fact not a central feature, perhaps because those involved effectively sought to shape their own emerging institutions instead of

reforming existing ones. For others, assailing the authority of the established church was a core feature of their religious identity. The temporal increase in contestations aligns with broader changes in the public political culture of later medieval Europe. It also provides some corroboration for the traditional notion that challenges to religious authorities were on the rise in the late Middle Ages, culminating in the upheavals of the Reformation period. At the same time, the negative association with urban contexts calls for caution against the still commonplace view of townspeople as self-conscious drivers of institutional change, and it reminds us that rural cultures did not lack an appetite for resistance. Our findings also weigh against the existence of any simplistic relationship between gender and the explicit defiance of religious authorities in dissident milieus.

Data Availability

The collected dataset and the R code to reproduce our results are both available in the journal's Dataverse repository at https://doi.org/10.7910/DVN/WKHTDP.

Funding

This research has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme, grant agreement No. 101000442, project "Networks of Dissent: Computational Modelling of Dissident and Inquisitorial Cultures in Medieval Europe" (Zoltan Brys, Robert L. J. Shaw, and Gideon Kotzé), and from the European Regional Development Fund, grant agreement No. CZ.02.01.01/00/22_008/0004595, project "Beyond Security: Role of Conflict in Resilience-Building" (David Zbíral).

Competing Interests

The authors have no competing interests to declare.

Works Cited

Abels, Richard, and Ellen Harrison. "The Participation of Women in Languedocian Catharism." *Mediaeval Studies*, vol. 41, 1979, pp. 215–51. https://doi.org/10.1484/J.MS.2.306245.

Albaret, Laurent. "L'anticléricalisme dans les registres d'inquisition de Toulouse et de Carcassonne au début du XIVe siècle." *L'anticléricalisme en France méridionale (milieu XIIe–début XIVe siècle)*, *Cahiers de Fanjeaux*, no. 38, Privat, 2003, pp. 447–70. https://doi.org/10.3406/cafan.2003.1821.

Altmann, André, Laura Toloşi, Oliver Sander, and Thomas Lengauer. "Permutation Importance: A Corrected Feature Importance Measure." *Bioinformatics*, vol. 26, no. 10, 2010, pp. 1340–47. https://doi.org/10.1093/bioinformatics/btq134.

Anthropic. "Introducing Claude Opus 4.5." *Anthropic*, 24 Nov. 2025. https://www.anthropic.com/news/claude-opus-4-5.

Arnold, John H. *Inquisition and Power: Catharism and the Confessing Subject in Medieval Languedoc*. The Middle Ages Series, U of Pennsylvania P, 2001.

———. "Inquisition, Texts and Discourse." *Texts and the Repression of Medieval Heresy*, edited by Caterina Bruschi and Peter Biller, York Studies in Medieval Theology 4, York Medieval Press, 2003, pp. 63–80.

———. "'A Man Takes an Ox by the Horn and a Peasant by the Tongue': Literacy, Orality and Inquisition in Medieval Languedoc." *Learning and Literacy in Medieval England and Abroad*, edited by Sarah Rees Jones, Utrecht Studies in Medieval Literacy 3, Brepols, 2003, pp. 31–47.

———. "Voicing Dissent: Heresy Trials in Later Medieval England." *Past & Present*, vol. 245, 2019, pp. 3–37. https://doi.org/10.1093/pastj/gtz025.

Asad, Talal. "Medieval Heresy: An Anthropological View." *Social History*, vol. 11, no. 3, 1986, pp. 345–62. https://doi.org/10.1080/03071028608567662.

Audisio, Gabriel. *The Waldensian Dissent: Persecution and Survival, c. 1170–1570*. Cambridge Medieval Textbooks, Cambridge UP, 1999.

Bartus, Tamás. "Estimation of Marginal Effects Using Margeff." *The Stata Journal: Promoting Communications on Statistics and Stata*, vol. 5, no. 3, 2005, pp. 309–29. https://doi.org/10.1177/1536867X0500500303.

Barucci, Teresa. "The Medieval Public Sphere and the Response to a Condemnation for Heresy in Bologna, 1299." *The English Historical Review*, vol. 139, no. 598–599, 2024, pp. 651–79. https://doi.org/10.1093/ehr/ceae109.

Bates, Douglas, Martin Mächler, Ben Bolker, and Steve Walker. "Fitting Linear Mixed-Effects Models Using lme4." *Journal of Statistical Software*, vol. 67, no. 1, 2015. https://doi.org/10.18637/jss.v067.i01.

Bates, Douglas, et al. *lme4: Linear Mixed-Effects Models Using "Eigen" and S4*. Version 1.1-37, 26 Mar. 2025. https://cran.r-project.org/web/packages/lme4/index.html.

Benedetti, Marina. "Donne valdesi nelle fonti della repressione tra XV e XVI secolo." *Chiesa, vita religiosa, società nel medioevo italiano: Studi offerti a Giuseppina De Sandre Gasparini*, edited by Maria Clara Rossi and Gian Maria Varanini. Italia Sacra 80, Herder, 2005, pp. 33–51.

———. *Eretiche ed eretici medievali*. Carocci, 2023.

———, editor. *Milano 1300: I processi inquisitoriali contro le devote e i devoti di santa Guglielma*. Milano medievale 2, Libri Scheiwiller, 1999.

Biget, Jean-Louis. "L'anticléricalisme des hérétiques d'après les textes polémiques." *L'anticléricalisme en France méridionale (milieu XIIe–début XIVe siècle)*, *Cahiers de Fanjeaux*, no. 38, Privat, 2003, pp. 405–45. https://doi.org/10.3406/cafan.2003.1820.

Biller, Peter. "Through a Glass Darkly: Seeing Medieval Heresy." *The Medieval World*, edited by Peter Linehan and Janet L. Nelson, Routledge, 2001, pp. 308–26. https://doi.org/10.4324/9781315102511-21.

Biller, Peter, Caterina Bruschi, and Sean L. Field, editors. *Inquisitors and Heretics in Thirteenth-Century Languedoc: Edition and Translation of Toulouse Inquisition Depositions, 1273–1282*. Brill, 2011.

Breiman, Leo. "Random Forests." *Machine Learning*, vol. 45, 2001, pp. 5–32. https://doi.org/10.1023/A:1010933404324.

Brenon, Anne. "The Voice of the Good Women: An Essay on the Pastoral and Sacerdotal Role of Women in the Cathar Church." *Women Preachers and Prophets through Two Millennia of Christianity*, edited by Beverly Mayne Kienzle and Pamela J. Walker, U of California P, 1998, pp. 114–33. https://doi.org/10.1525/9780520919273-008.

Burns, Patrick J., Tim Geelhaar, Nora Bernhardt, and Vincent Koch . *LatinCy/la_core_web_lg*. spaCy, 2023. https://huggingface.co/latincy/la_core_web_lg.

Cribari-Neto, Francisco, and Achim Zeileis. "Beta Regression in R." *Journal of Statistical Software*, vol. 34, no. 2, 2010. https://doi.org/10.18637/jss.v034.i02.

Davis, Georgene Webber, editor. *The Inquisition at Albi, 1299–1300: Text of Register and Analysis*. Columbia UP, 1948.

Del Col, Andrea. "Alcune osservazioni sui processi inquisitoriali come fonti storiche." *Metodi e ricerche*, vol. 13, nos. 1–2, 1994, pp. 85–105.

Douais, Célestin. *Documents pour servir à l'histoire de l'Inquisition dans le Languedoc*. Vols. 1–2, Renouard, 1900.

Duvernoy, Jean, editor. *Cahiers de Bernard de Caux: Ms Doat XXII B.n. Paris: Agen, Cahors, Toulouse, 1243–1247*. 2002. http://jean.duvernoy.free.fr/text/pdf/bdecaux.pdf.

———, editor. *Le Registre DDD de l'Inquisition de Carcassonne*. 2003. http://jean.duvernoy.free.fr/text/pdf/DDD.pdf.

———. "Registre de Bernard de Caux, Pamiers, 1246–1247." *Bulletin de la Société Ariégeoise des Sciences, Lettres et Arts*, special issue, 1990, p. 108.

———, editor. *Registre GGG de l'Inquisition de Carcassonne*. 2003. http://jean.duvernoy.free.fr/text/pdf/GGG.pdf.

Erbstösser, Martin. *Heretics in the Middle Ages*. Translated by Janet Fraser, Edition Leipzig, 1984.

Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. Translated by Alan Sheridan, Pantheon Books, 1977.

Giraudet, Luke. *Public Opinion and Political Contest in Late Medieval Paris: The Parisian Bourgeois and His Community, 1400–50*. Brepols, 2022.

Given, James Buchanan. *Inquisition and Medieval Society: Power, Discipline, and Resistance in Languedoc*. Cornell UP, 1997.

Grundmann, Herbert. "Ketzerverhöre des Spätmittelalters als quellenkritisches Problem." *Ausgewählte Aufsätze*, vol. 1, Schriften der Monumenta Germaniae Historica 25, Hiersemann, 1976, pp. 364–416.

———. *Religiöse Bewegungen im Mittelalter*. 3rd ed., Wissenschaftliche Buchgesellschaft, 1970.

———. *Religious Movements in the Middle Ages: The Historical Links between Heresy, the Mendicant Orders, and the Women's Religious Movement in the Twelfth and Thirteenth Century, with the Historical Foundations of German Mysticism*. U of Notre Dame P, 1995.

Guenée, Bernard. *L'opinion publique à la fin du Moyen Âge: D'après la Chronique de Charles VI du Religieux de Saint-Denis*. Pour l'histoire, Perrin, 2002.

Herlihy, David. *Women, Family and Society in Medieval Europe: Historical Essays, 1978–1991*. Edited by Anthony Molho, Berghahn Books, 1995.

Hobbins, Daniel. *Authorship and Publicity before Print: Jean Gerson and the Transformation of Late Medieval Learning*. U of Pennsylvania P, 2009.

Honnibal, Matthew, and Ines Montani. *spaCy 2: Natural Language Understanding with Bloom Embeddings, Convolutional Neural Networks and Incremental Parsing*. Jan. 2017. https://spacy.io/.

Hornbeck, J. Patrick. *What Is a Lollard? Dissent and Belief in Late Medieval England*. Oxford UP, 2010.

Jiménez Sanchez, Pilar. *Les catharismes: Modèles dissidents du christianisme médiéval (XIIe–XIIIe siècles)*. Presses Universitaires de Rennes, 2008.

Kaelber, Lutz. "Sociological Explanations of Cathar Success and Tenacity in Languedoc: A New Perspective Focusing on the 'Houses of Heretics'." *Heresis*, vol. 38, 2003, pp. 31–49.

———. “Weavers into Heretics? The Social Organization of Early-Thirteenth-Century Catharism in Comparative Perspective.” *Social Science History*, vol. 21, no. 1, 1997, pp. 111–37. https://doi.org/10.2307/1171458.

Karjus, Andres. “Machine-Assisted Quantitizing Designs: Augmenting Humanities and Social Sciences with Artificial Intelligence.” *Humanities and Social Sciences Communications*, vol. 12, no. 277, 2025, pp. 1–18. https://doi.org/10.1057/s41599-025-04503-w.

Kelly, Henry Ansgar. “Inquisition and the Prosecution of Heresy: Misconceptions and Abuses.” *Church History*, vol. 58, no. 4, 1989, pp. 439–51. https://doi.org/10.2307/3168207.

Koch, Gottfried. *Frauenfrage und Ketzertum im Mittelalter: Die Frauenbewegung im Rahmen des Katharismus und des Waldensertums und ihre sozialen Wurzeln (12.–14. Jahrhundert)*. Akademie-Verlag, 1962.

Kras, Paweł. *The System of the Inquisition in Medieval Europe*. *Geschichte— Erinnerung—Politik: Studies in History, Memory and Politics* 36, Peter Lang, 2020.

Lansing, Carol. *Power and Purity: Cathar Heresy in Medieval Italy*. Oxford UP, 1998.

Lantschner, Patrick. *The Logic of Political Conflict in Medieval Cities: Italy and the Southern Low Countries, 1370–1440*. Oxford UP, 2015.

Leeper, Thomas J., et al. *margins: Marginal Effects for Model Objects*. Version 0.3.28, 31 July 2024. https://cran.r-project.org/web/packages/margins/index.html.

McCarthy, Philip M., and Scott Jarvis. “MTLD, vocd-D, and HD-D: A Validation Study of Sophisticated Approaches to Lexical Diversity Assessment.” *Behavior Research Methods*, vol. 42, no. 2, 2010, pp. 381–92. https://doi.org/10.3758/BRM.42.2.381.

Merlo, Grado Giovanni. *Eretici e inquisitori nella società piemontese del Trecento*. Claudiana, 1977.

———. “I registri inquisitoriali come fonti per la storia dei gruppi ereticali clandestini: Il caso del Piemonte basso medievale.” *Histoire et clandestinité du Moyen-Âge à la Première Guerre mondiale: Colloque de Privas (mai 1977)*, edited by Michèle Tilloy et al., Ateliers professionnels de l’O.S.J., 1979, pp. 59–74.

———, *Valdesi e valdismi medievali I: Itinerari e proposte di ricerca*. Studi storici, Claudiana, 1984.

Mollat, Guillaume, editor. *Bernard Gui, Manuel de l’inquisiteur*. Vol. 1, Librarie ancienne Honoré Champion, 1926.

Moore, Robert Ian. “The Birth of Popular Heresy: A Millennial Phenomenon?” *Journal of Religious History*, vol. 24, no. 1, 2000, pp. 8–25. https://doi.org/10.1111/1467-9809.00098.

———. *The First European Revolution, c. 970–1215*. Blackwell Publishing, 2000.

———. *The Formation of a Persecuting Society: Power and Deviance in Western Europe, 950–1250*. Blackwell, 1987.

———. *The Origins of European Dissent*. U of Toronto P, 1994.

———. *The War on Heresy: Faith and Power in Medieval Europe*. Profile, 2012.

Orioli, Raniero. *L’eresia dolciniana*. Vol 2 of *L’eresia a Bologna fra XIII e XIV secolo*. Istituto storico italiano per il Medio Evo, 1975.

Palès-Gobilliard, Annette, editor. *L'inquisiteur Geoffroy d'Ablis et les cathares du comté de Foix (1308–1309)*. Centre National de la Recherche Scientifique, 1984.

———, editor. *Le livre des sentences de l'inquisiteur Bernard Gui, 1308–1323*. Vols. 1–2, *Sources d'histoire médiévale* 30, Centre National de la Recherche Scientifique, 2002.

Paolini, Lorenzo, and Raniero Orioli, editors. *Acta S. Officii Bononie ab anno 1291 usque ad annum 1310*. Vols. 1–3, *Fonti per la storia d'Italia* 106, Istituto storico italiano per il Medio Evo, 1982.

Pazé, Piercarlo. "Gli interrogatori di Antonio Galosna." *Valdo e Francesco: Inizi e sviluppi di due movimenti religiosi: Dai conflitti alla convivenza*, edited by Piercarlo Pazé and Luca Patria, Convegni del Laux 10, LAReditore, 2016, pp. 131–251.

Pegg, Mark Gregory. "Le catharisme en questions: Falsifiabilité, vérité historique et une nouvelle histoire du christianisme médiéval." *Le "catharisme" en questions*, *Cahiers de Fanjeaux* 55, Centre d'études historiques de Fanjeaux, 2020, pp. 331–71.

———. "Heresy, Good Men, and Nomenclature." *Heresy and the Persecuting Society in the Middle Ages: Essays on the Work of R. I. Moore*, edited by Michael Frassetto, Brill, 2006, pp. 227–39.

———. *A Most Holy War: The Albigensian Crusade and the Battle for Christendom*. Oxford UP, 2008.

———. "On Cathars, Albigenses, and Good Men of Languedoc: Historiographical Essay." *Journal of Medieval History*, vol. 27, 2001, pp. 181–95. https://doi.org/10.1016/S0304-4181(01)00008-2.

———. "The Paradigm of Catharism; or, the Historians' Illusion." *Cathars in Question*, edited by Antonio Sennis, *Heresy and Inquisition in the Middle Ages* 4, York Medieval Press/Boydell & Brewer, 2016, pp. 21–52.

Peters, Edward. *Inquisition*. U of California P, 1989.

Piron, Sylvain. "La critique de l'Église chez les Spirituels languedociens." *L'anticléricalisme en France méridionale (milieu XIIe–début XIVe siècle)*, *Cahiers de Fanje*aux 38, Privat, 2003, pp. 77–109. https://doi.org/10.3406/cafan.2003.1806.

Rehr, Jean-Paul, editor. *The Registry of the Great Inquisition at Toulouse, 1245–46: Edition and Translation of Bibliothèque Municipale de Toulouse MS 609*. 2019. http://medieval-inquisition.huma-num.fr/MS609/list.

Sackville, Lucy J. *Heresy and Heretics in the Thirteenth Century: The Textual Representations*. York Medieval Press, 2011.

Scott, James C. *Domination and the Arts of Resistance: Hidden Transcripts*. Yale UP, 1992.

———. *Weapons of the Weak: Everyday Forms of Peasant Resistance*. Yale UP, 1987.

Stará, Lenka, and David Zbíral. "Utváření nekonformní náboženské skupiny v záznamech z inkvizičního procesu s oddanými svaté Vilemíny." *Religio*, vol. 22, no. 1, 2014, pp. 55–88.

Swanson, Robert Norman. *Church and Society in Late Medieval England*. Blackwell, 1993.

Tanner, Norman P., editor. *Heresy Trials in the Diocese of Norwich, 1428–31*. Offices of the Royal Historical Society, 1977.

———, editor. *Kent Heresy Proceedings, 1511–1512*. Kent Archaeological Society, 1997.

Tanner, Norman P., and Shannon McSheffrey, editors. *Lollards of Coventry, 1486–1522*. Cambridge UP, 2003.

Taviani-Carozzi, Huguette. “Anticléricalisme et ecclésiologie: Pierre le Vénérable, le moine Guillaume et les hérétiques.” *L’anticléricalisme en France méridionale (milieu XIIe–début XIVe siècle)*, *Cahiers de Fanjeaux* 38, Privat, 2003, pp. 329–53. https://doi.org/10.3406/cafan.2003.1817.

Théry-Astruc, Julien. “Cléricalisme et hérésie des bons hommes: L’exemple d’Albi et de l’Albigeois (1276–1329).” *L’anticléricalisme en France méridionale (milieu XIIe–début XIVe siècle)*, *Cahiers de Fanjeaux* 38, Privat, 2003, pp. 471–508. https://doi.org/10.3406/cafan.2003.1822.

———. “The Heretical Dissidence of the ‘Good Men’ in the Albigeois (1276–1329): Localism and Resistance to Roman Clericalism.” *Cathars in Question*, edited by Antonio Sennis, *Heresy and Inquisition in the Middle Ages* 4, York Medieval Press/Boydell & Brewer, 2016, pp. 79–111.

Utz Tremp, Kathrin. *Quellen zur Geschichte der Waldenser von Freiburg im Üchtland (1399–1439)*. Monumenta Germaniae Historica, Quellen zur Geistesgeschichte des Mittelalters 18, Hahnsche Buchhandlung, 2000.

Vise, Melissa. “The Women and the Inquisitor: Peacemaking in Bologna, 1299.” *Speculum*, vol. 93, no. 2, 2018, pp. 357–86. https://doi.org/10.1086/696690.

Wallnerová, Daniela, and David Zbíral. *A Transcription of the Inquisition Register of John Galand and William of Saint-Seine, 1283–1302 (Fonds Doat, Vol. 26, Fol. 79r–316v)*. *Zenodo*, 25 Aug. 2025. https://doi.org/10.5281/zenodo.16944429.

Werner, Ernst, and Martin Erbstösser. *Ketzer und Heilige: Das religiöse Leben im Hochmittelalter*. Union, 1986.

Wright, Marvin N., and Andreas Ziegler. “ranger: A Fast Implementation of Random Forests for High Dimensional Data in C++ and R.” *Journal of Statistical Software*, vol. 77, no. 1, 2017. https://doi.org/10.18637/jss.v077.i01.

Wright, Marvin N., Theresa Dankowski, and Andreas Ziegler. “Unbiased Split Variable Selection for Random Survival Forests Using Maximally Selected Rank Statistics.” *Statistics in Medicine*, vol. 36, no. 8, 2017, pp. 1272–84. https://doi.org/10.1002/sim.7212.

Zanella, Gabriele. *Hereticalia: Temi e discussioni*. *Collectanea* 7, Centro italiano di studi sull’Alto Medioevo, 1995.

———. *Itinerari ereticali: Patari e catari tra Rimini e Verona*. Istituto storico italiano per il Medio Evo, 1986.

Zbíral, David, and Robert L. J. Shaw. “Hearing Voices: Reapproaching Medieval Inquisition Records.” *Religions*, vol. 13, no. 12, 2022, p. 1175. https://doi.org/10.3390/rel13121175.

Zbíral, David, Kaarel Sikk, and Robert L. J. Shaw. “Bridging Digital History Methods and Source Criticism: A Research Agenda for the Study of Inquisition Records.” *Acta Historica Tallinnensia*, vol. 31, no. 1, 2025, pp. 46–72. https://doi.org/10.3176/hist.2025.1.02.

Zeileis, Achim, Francisco Cribari-Neto, Bettina Grün, Ioannis Kosmidis,and Alexandre B. Simas. *betareg: Beta Regression*. Version 3.2–3, 10 May 2025. https://cran.r-project.org/web/packages/betareg/index.html.

Zerner, Monique, editor. *Inventer l’hérésie? Discours polémiques et pouvoirs avant l’Inquisition*. *Collection du Centre d’études médiévales de Nice* 2, Centre d’études médiévales, 1998.