

How the Catholic Church Shapes Global Cleavages: An Empirical Analysis of the  
Politicization of World Inequality from 1830 to Present

Daniele Caramani <sup>1 2</sup>, Siyana Gurova <sup>3</sup>

<sup>1</sup> University of Zurich <sup>2</sup> European University Institute, Florence, <sup>3</sup> Zurich University of Applied Sciences

**DRAFT – DO NOT QUOTE WITHOUT THE AUTHORS’ PERMISSION**

**Abstract:** The paper explores how the Catholic Church, as a major global actor, has historically politicized cultural, socio-economic and political global inequality and shaped global cleavages in the context of mass politics from the mid-19th century onward. Theoretically, the paper advances the application of cleavage theory beyond national arenas to the global level and introduces a novel typology of politicization based on territorial and membership dimensions. Methodologically, the analysis leverages a unique, large-scale historical dataset of over 27,000 papal documents (1830–present) and applies state-of-the-art large language models. Empirically, the analysis shows how global actors shape patterns of political conflict by revealing a dynamic evolution in the Church’s discourse across distinct historical junctures: initially territorialized and defensive in response to nationalism and secular liberalism during the National Revolution; subsequently shifting toward a functional cleavage after the Industrial Revolution emphasizing class and social justice in reaction to socialist ideologies; and after the Second Vatican Council in the 1960s adopting a universal, inclusive discourse addressing global issues such as peace, environmental sustainability, and human rights amid post-industrial value change.

**Keywords:** global politics, Catholic Church, cleavages, global actors, inequality, ideology, discourse, LLM, text analysis.

“Fratelli tutti”. With these words, Saint Francis of Assisi ... calls for a love that transcends the barriers of geography and distance, and declares blessed all those who love their brother “as much when he is far away from him as when he is with him” ...

Francis, Encyclical Letter *Fratelli Tutti*, 2020

## Introduction: From Global Inequality to Global Cleavages<sup>1</sup>

The paper analyses how the Catholic Church, as a major global actor, politicizes global cultural, socio-economic and political inequality and how it shapes, through the evolution of its ideology, global cleavages in different historical phases from the first half of the 19<sup>th</sup> century up to the present time.

The Roman Catholic Church is a major, yet understudied, global actor that has shaped conflict over various issues and resources. It has been politically active for centuries at the supra-national level, shaping not only international conflict (Hanson 1987) but also domestic and international policy (Kahl 2005, Grzymala-Busse 2015) and the dynamics of international relations (Philpott 2000, Chong and Troy 2011, Golan, Arceneaux and Soule 2019).

Furthermore, the Catholic Church has been a crucial side in the state–church cleavages during state formation (Grzymala-Busse 2023), nation-building and democratization in Europe and the Americas (Rokkan 1970, Kalyvas 1996, Manuel, Reardon and Wilcox 2006). The Catholic Church shapes values and influences international organizations and states on a world scale by taking positions on economic, social and environmental matters. It has aligned itself in major geopolitical conflicts, including the Cold War. Most importantly, it promotes

---

<sup>1</sup> Research for this paper is funded by the ERC Advanced Grant GLOBAL on the historical evolution of global cleavages since the 19<sup>th</sup> century. The theoretical framework is presented in Caramani (2025a.b) and partly in Caramani (2024).

ideological positions and values in competition with other global actors, be it liberal movements rooted in the Enlightenment and the French Revolution, socialists and Marxist regimes, or colonial powers and global capitalist cartels.

The analysis in this paper is guided by cleavage theory. This theory has been formulated in the context of formed national democratic systems in the 19<sup>th</sup> century (Rokkan 1970) and applied to the forming European polity (Bartolini 2005, Ferrera 2005, Caramani 2015). This paper extends cleavage models to the unformed global level. The focus is on a global arena in which cultural, socio-economic and political inequalities lead to the formation and transformation of cleavages. Differently from work on global economic inequality,<sup>2</sup> historical macro-sociological approaches show that inequalities evolve into cleavages when they are politicized by collective actors. Recent attempts have extended cleavage theory to the global level, both theoretically (Caramani 2024) and empirically in media discourse (Caramani, Gurova and Widmann 2024). Yet no research has focused on the role of specific actors in actively shaping cleavages. This paper fills this gap.

Rather than focussing on diplomacy and interactions between nation-states, our perspective is one of mass politics. The Catholic Church is an actor that seeks to mobilize mass support for its ideological positions, to defend its material and political interests at domestic and international levels, to maintain wealth and privilege, and to shape society according to a specific worldview.<sup>3</sup> The Church's global presence is endowed with a distinct platform that appeals to millions of believers across continents and enables it to shape discourse on governance, welfare and morals. This influence became especially pronounced

---

<sup>2</sup> In the vast literature on inequality, particularly relevant is the strand that shows the recent increase of inequality within countries and the simultaneous reduction between them (Milanovic 2016, Bourguignon 2015).

<sup>3</sup> Consequently, we do not define the Catholic Church as an interest group (Warner 2000) or lobby (Genovese 2015).

with the rise of mass politics in the 19<sup>th</sup> century, when political participation expanded and new ideological movements challenged the Church's authority. From this period onward, the Church increasingly articulated its positions in opposition to secular ideologies, democratizing institutions and the restructuring of the economy and of society.

For this reason, our analysis begins with the Church's engagement with mass politics as it first emerged during the National Revolution (state formation, nation-building and the expansion of democratic citizenship) in the first half of the 19<sup>th</sup> century. These transformations altered the political landscape, prompting the Papacy to recalibrate its public role and develop doctrines that address the social and political concerns of newly enfranchised populations.

Politicization manifests itself through ideologies articulated in discourses and texts. Actors politicize existing inequalities in ideologies that are either inclusive or exclusive of social groups (*membership*) and/or world regions (*territory*). Based on these two dimensions, we distinguish four types of politicization: territorial, territorialized, functional and universal (Caramani 2024). While the literature on the Catholic Church's ideology is mostly descriptive, this paper takes a theory-driven approach to empirically test expectations derived from this typology. Specifically, we examine how inclusive or exclusive the Catholic Church's political discourse at various critical junctures since the 19<sup>th</sup> century and how it positions itself in relation to competing ideologies.

In contrast to most historical accounts, our analysis adopts a quantitative strategy.<sup>4</sup> To answer these questions, we analyse the Church's discourse across a large corpus of documents (encyclical letters, messages, apostolic exhortations, etc.) from 1830 to the present. Using large language models (LLM), we measure how the Catholic Church politicizes global

---

<sup>4</sup> A notable exception is Genovese (2015).

inequalities, that is, conflicts over rights and resources that are not only economic, but also social, cultural and political, and trace how its positions evolve over time.

We test the argument that the Catholic Church's politicization of global inequality has broadly evolved through three phases. The first phase, in the wake of the National Revolution, centres on territorial oppositions. This relates to the decline of its temporal authority with the loss of the Papal States and the rise of the modern nation-state, and geographical inequalities between the European core and its colonies. The second phase, in the wake of the Industrial Revolution, centres on functional class stratification, as Catholic authorities recognize that responding to the socialist worker movements requires a distinct social doctrine. Catholic moral teachings offer guidance for emergent class conflicts. The third phase, in the wake of the Post-Industrial Revolution, centres on a universal discourse as a reaction to values change and new social movements. Principles of global brotherhood enabled the Church to intervene on challenges ranging from nuclear weapons to environmental degradation through ecumenical concepts of peace, nature and solidarity across world regions, classes, ethnicities and religions (and eventually genders).<sup>5</sup> Cleavages have emerged from each of these critical junctures (sometimes in direct opposition to the Church itself).

Ultimately, the analysis presented in the paper aims to open new research avenues by treating the globe as a single political arena. Cleavage-based models are unrealistically confined to the domestic level. Cleavages between and across world regions are neglected despite the fact that major issues and conflicts, as well as identity and solidarity, increasingly “transcend the barriers of geography and distance” (from Pope Francis' epigraph above). Economic interdependence, global communication and international agreements justify

---

<sup>5</sup> The period of World Wars I and II represent a fourth, shorter phase during which the Church dealt with rising fascism and racial discourse.

speaking of a “world system” (Wallerstein 1974). This global perspective reaches back to the early 19<sup>th</sup> century, with colonial domination, world trade and universal values. It has intensified in recent decades, as global issues such as climate change, nuclear threat and migration deepen interdependence. Together with market constraints, international regulation, cultural diffusion and supra-national institutions these dynamics make it necessary to address the globe as one system in which global actors operate.

The next section extends cleavage theory from the national to the global level and introduces a typology of global cleavages. Based on this framework, we formulate hypotheses about the evolution of the type of politicization by the Catholic Church. This is followed by a section outlining the empirical strategy to measure the Church’s politicization of global inequality over time. It presents the text corpus and its sources, describes the LLM methodology and prompts, and provides descriptive statistics. The results section tests the hypotheses and presents the findings. The conclusion discusses how this approach can be extended to cover other actors that politicize global inequality.

## The Shaping of Global Cleavages by the Catholic Church as a Global Actor

### *Theorizing Global Cleavages*

Cleavages are oppositions between groups about unequally distributed resources or, more generally, rights.<sup>6</sup> They are structural oppositions, but not simply differences (according to some trait) or inequalities. In a macro comparative politics perspective, the shift from socio-

---

<sup>6</sup> Rights are intended as defined by Marshall (1964), namely civil, political and socio-cultural and economic resources.

economic inequalities to cleavages is not deterministic. It is driven by actors who compete to politicize certain inequalities over others and to push for their preferred degree of correction and redistribution. An unequal distribution of rights becomes a cleavage when it is contested by actors who politicize it either in an effort to correct it or to defend it. Cleavages are thus inequalities that have been politicized by actors.

While familiar at domestic and European levels, does the concept of cleavage apply to the global level? At the global level, there are many instances of unequally distributed rights, from wealth and natural resources to military and diplomatic power, climate vulnerability and cultural prestige. Which inequalities become salient is a matter of political competition, not a deterministic reflection of socio-economic structures. Similarly, positions over the extent to which unequal distribution should be corrected is also conflictual. Cleavages, as opposed to mere differences or inequalities, imply contestation over which resources are re-distributed and to what extent. At the global level, one can think of types of actors that carry out this politicization: nation-states and regional organizations, social movements such as feminism or transnational parties like the Socialist International, mercantilist organizations like OPEC and the East India Company, and NGOs like Greenpeace. The Catholic Church is one of these global actors.

Cleavage models predict that contestation arises when groups are locked in closed systems: “voice” arises when “exit” is no longer an option. At the national level, Hirschman’s (1970) exit–voice model was applied by Rokkan (1974a,b) to explain the rise of cleavages in contexts of both territorial (state formation) and membership (nation-building) closure. Where exit possibilities are reduced, voice arises: first as contestation and, second, as channels of representation. Cleavages therefore appear in formed territorial and membership systems (Rokkan 1970, Bartolini and Mair 1990, Caramani 2004). The analysis of forming systems

such as the European Union supports this theory (Flora 2000, Bartolini 2005, Ferrera 2005, Caramani 2015).<sup>7</sup>

What about the global system? Does closure require a fully-fledged polity?<sup>8</sup> The view taken here is that through economic interdependence, technocratic integration, cultural diffusion, and limitations on national sovereignty, some degree of global closure is achieved. In this “world system” view, macro-historical factors contribute to making the globe one system since periods of economic domination (colonialism), interdependence (trade) and constraints (international law and global credit). Global communication and cultural diffusion add further elements of closure. Finally, issues that apply globally such as resource scarcity, climate change, nuclear threat, pandemics and migration strengthen interdependence. This favours the emergence of global contestation of the distribution of rights and resources and the conditions for the emergence of global cleavages.

### *Types of Politicization of Global Inequality*

Actors shape cleavages by politicizing inequalities through their ideologies: they articulate a world view and propose a programme for change. First, actors politicize specific inequalities (economic, political-diplomatic, military and socio-cultural). Second, they may request corrections toward more equal distribution (by including previously excluded groups) or resist such requests (by maintaining exclusion). Third, they define the balance between inclusion

---

<sup>7</sup> For details about these models at national level, see Caramani (2004: 17–21).

<sup>8</sup> The concept of closure is used differently than in IR (Keene, 2002), which focusses on categorical and gradated inequalities (Brubaker, 2015), and conflict between “in” and “out” of boundaries given by membership and procedural rights in international organisations (Viola, 2020).

Figure 1 Types of politicization by actors and their ideologies

| Territory        | Membership                                                                                                                                                                                                     |                                                                                                                                                                                                                                     |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <i>Inclusive</i>                                                                                                                                                                                               | <i>Exclusive</i>                                                                                                                                                                                                                    |
| <i>Inclusive</i> | <p style="text-align: center;">UNIVERSAL</p> <p>Dimension: <i>true–false</i></p> <p>Cleavages: not applicable to any cleavage type</p> <p>Ideologies: evangelism, pacifism, environmentalism.</p>              | <p style="text-align: center;">FUNCTIONAL</p> <p>Dimension: <i>left–right</i></p> <p>Cleavages: class, gender, educational, generational</p> <p>Ideologies: socialism, communism, liberalism, feminism.</p>                         |
| <i>Exclusive</i> | <p style="text-align: center;">TERRITORIAL</p> <p>Dimension: <i>here–there</i></p> <p>Cleavages: regional, centre–periphery, rural–urban</p> <p>Ideologies: mercantilism, protectionism, developmentalism.</p> | <p style="text-align: center;">TERRITORIALIZED</p> <p>Dimension: <i>national–cosmopolitan</i></p> <p>Cleavages: ethnic, cultural, religious, civilizational</p> <p>Ideologies: nationalism, populism, fascism, cosmopolitanism.</p> |

Note: Based on Caramani (2025b).

and exclusion across membership and/or territorial boundaries; rights can be extended or restricted across social or regional boundaries. These elements appear in the two-by-two typology in Figure 1.

A *territorial cleavage* excludes territorially but includes socially. It opposes “locations”, geographical units, which are socially inclusive. The same groups or sectors are opposed across borders as in the case, for example, of farmers in different world regions under protectionism, financial centres or oil-endowed regions. The corresponding dimension *here–there* reflects the spatial nature of the opposition. Globally, territorial cleavages may be between North and South or centre and periphery about resources, exposure to ecological risks or welfare rights. Ideologies associated with this type of politicization are imperialism,

mercantilism, colonialism and protectionism that impinge upon others' territorial resources, including labour. Among the actors that promote these ideologies one can think of international economic coalitions (OPEC) or historical chartered trading powers (the East India Company), as well as non-governmental aid organizations and international organizations such as UNDP, World Bank and the IMF.

*A functional cleavage*, on the contrary, excludes socially but includes territorially. It opposes groups irrespective of location. Solidarity among women, workers, youth or elites in other world regions is stronger than that with individuals "here" belonging to different groups. *Left-right* reflects orientations toward social inclusion and redistribution whereby the left supports extending rights to marginalized groups, while the right tends to prioritize existing membership boundaries and group hierarchies. Such claims may concern transnational classes (based on income, wealth and education levels), groups with specific sexual orientations, genders or groups with similar values (libertarians and authoritarians) irrespective of location. Ideologies associated with this politicization are communism, socialism, liberalism and feminism promoted by national and transnational parties.

*A territorialized cleavage* excludes both socially and territorially. It opposes territorially based groups that are defined simultaneously by shared identity and by place. In the *national-cosmopolitan* dimension, "national" positions favour the exclusion of other groups and regions, whereas "cosmopolitan" positions favour their inclusion. They may include cleavages between religious "lands", civilizations and cultural blocs (Western rational individualism and Eastern holistic communitarianism). Resources at stake include the prestige of identities, ways of life and values, and in extreme cases racialized boundaries. Ideologies associated with this type of politicization are nationalism, right-wing populism and fascism where identity and territory overlap. Actors include civilizational movements, such as Hindu

nationalism, pan-Arabism and nationalism anchored in cultural exceptionalism (for example, “Make America Great Again” or “socialism with Chinese characteristics” with a focus on the Han ethnicity). In its radical forms, it is associated with exclusionary movements such as fascist parties and white supremacist organizations.

The *universal* type of politicization excludes neither territorially nor socially. Its discourse transcends both territorial and social boundaries, and appeals to shared humanity, moral values and collective problem solving. This type has a non-conflictual and non-distributional dimensionality about right vs wrong, just vs unjust and true vs false. In fact, they are “pseudo-dimensions” as there is no legitimate opposing pole. Ideology is not linked to groups and territories but guided by “objective” and neutral criteria (based on various forms of expertise and knowledge, be it science or other forms).<sup>9</sup> Ideologies associated with this type of politicization are typically pacifism, environmentalism and evangelism. They are, paradoxically, an instance of “de-politicized politicization” promoting an alleged common good based on abstract values such as truth, justice, love, peace, humanity and nature. They are holistic and include the interest of future generations. This does not mean that such ideologies do not propose policies leading to conflict. However, positions are presented in necessary terms to solve societal problems, not as choices based on preferences.

### *The Catholic Church’s Politicization of Inequality and Its Evolution*

Based on the four types of politicization, the empirical investigation asks which types of cleavages the Catholic Church has shaped across different phases of its modern history. Is it a

---

<sup>9</sup> These include technocratic worldviews (Caramani 2017, Bickerton and Invernizzi Accetti 2017) but also moral teachings.

territorial state (for example, defending its sovereignty or supporting policies aimed at extracting resources from other territories), a classist actor (for example, aligned with the poor of the world), an advocate of Catholics as a group (both in non-Christian locations and in a Christian civilization) or the promoter of a universalist ideology transcending religious groups and territorial boundaries altogether?

From a theoretically agnostic position, all four types of politicization may apply to the Catholic Church. For each we define a range of possible positions between two poles on each dimension (Table 1).<sup>10</sup> Which of these types of politicization are stressed in the Catholic Church's discourse? We hypothesize that the Church shapes under the effect of critical junctures, that is moments of heightened contingency when deep socio-economic, political and cultural transformations redefine the distribution of rights and resources. To formulate hypotheses about the type of politicization by the Catholic Church, we rely on an established sequence of critical junctures: National Revolution, Industrial Revolution, International Revolution and Post-Industrial Revolution.<sup>11</sup>

Unlike actors that emerged from these junctures such as the liberal bourgeoisie, the labour movement, or later the green parties, the Catholic Church is a longstanding institution that adapted and responded to each transformation. Across these junctures, the position of the Church was challenged by liberals (state–church cleavage), by socialists and communists (secular anti-clerical Marxism) and later by social movements associated with value change (civil rights, pacifist and environmental movements). Rather than a challenger, the Church has often acted as a defender against grievances from the rising social forces opposing its

---

<sup>10</sup> For each we also give a slogan that helps us develop the prompts for the LLM. The empirical analysis aims to capture both poles within each of the four types of politicization.

<sup>11</sup> These are concepts rather than historical events (Rokkan 1970). See Caramani (2023) on this sequence. On the definition of critical junctures, see Capoccia and Kelemen (2011).

Table 1 Range of ideological position by type of cleavage

| Types of politicization | Dimensions                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                     |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Territorial</i>      | <i>Here</i> ←————→ <i>There</i>                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                     |
|                         | <p>“Money and power”<br/>Focus on the Church’s territorial sovereignty and military alliances with monarchies. Participation in international organizations. Defence of property and real estate, investments and colonial extraction.</p>                   | <p>“Help the world”<br/>Focus on international aid and development programmes in poorer regions of the world. Promotion of literacy and health standards in developing countries. Assistance in war zones.</p>                                      |
| <i>Functional</i>       | <i>Left</i> ←————→ <i>Right</i>                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                     |
|                         | <p>“Helping the poor”<br/>Focus on poverty alleviation and welfare measures. Charity and redistribution to poor. Economically progressive social teaching in market (labour protection and anti-consumerism) and education.</p>                              | <p>“Fatherland and family”<br/>Focus on traditional cultural values and gender roles in society and family. Emphasis on authority in school, family and state. Conservative stance on sexuality; skepticism toward science and cultural change.</p> |
| <i>Territorialized</i>  | <i>National</i> ←————→ <i>Cosmopolitan</i>                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                     |
|                         | <p>“Christians in Christian land”<br/>Defence of Christendom from other faiths’ conquest. Anti-immigration prejudice and exclusionary stances toward religious minorities. Protection of Christian cultural heritage within Catholic-majority countries.</p> | <p>“Brotherhood between faiths”<br/>Focus on tolerance and openness toward other religions, ethnicities and refugees. Ecumenical outreach toward other faiths. Catholics as supra-national group.</p>                                               |
| <i>Universal</i>        | <i>True</i> ←————→ <i>False</i>                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                     |
|                         | <p>“Peace among people”<br/>Focus on holistic problem solving: hunger, nuclear war, climate change. Universal mission centred on brotherhood and peace. Protection of nature as divine creation. Dialogue with science.</p>                                  | <p>Not applicable.</p>                                                                                                                                                                                                                              |

privileges and doctrines.<sup>12</sup> The sequence of “revolutions” therefore allows us to formulate hypotheses in a dynamic way across the four types of politicization (summary in Table 2).

*National Revolution.*—This critical juncture refers to the formation of the modern, centralized and liberal state through territorial unification and independence, centralization and democratization of its institutions. It also involves nation-building with national identities replacing traditional ones and a fundamental equalization of bourgeois citizenship (based on civil and political rights) against the privileges of aristocracy and clergy. It is a direct consequence of the Enlightenment and the French Revolution leading to a deep state–church cleavage over individual representation, property and education.<sup>13</sup>

During the Napoleonic Era, the Church’s territorial claims were directly challenged by the occupation of the Papal States. Defending sovereignty became central to its discourse against secular regimes. From the mid-19<sup>th</sup> century onward, the Church faced a watershed moment when the decline of its temporal authority coincided with the rise of the territorial nation-state and a restructuring of Europe.<sup>14</sup> The Papacy was not only challenged by mass politics but also by the redefinition of territorial borders. In addition, this juncture reflects geographical inequalities between the European core and its colonies (especially Africa in the First Vatican Council in 1869–70), giving rise to a global core–periphery territoriality.

---

<sup>12</sup> The findings by Genovese support this view. Political encyclicals “follow” historical events (Genovese 2015: 7, Fig. 4).

<sup>13</sup> During this period, the First Vatican Council reaffirmed the Church’s hierarchical authority through papal infallibility. Issued in 1864 by pope Pius IX, the *Syllabus of Errors* condemned a range of progressive doctrines and underscored the Church’s determination to defend its traditional prerogatives against liberal and nationalist ideologies.

<sup>14</sup> It includes secession and unification movements (in Germany and Italy among others). It is also the period of nationalist tensions in the Habsburg, Ottoman and Russian Empires. The influence of the Church in national arenas was especially acute in Italy because of Italian unification and the location of the Holy See in the Italian future capital city.

Table 2 Hypotheses about the type of politicization by the Catholic Church

| <i>Revolution</i> | <i>Politicization</i> |             |             |              |                 |             |             |                |
|-------------------|-----------------------|-------------|-------------|--------------|-----------------|-------------|-------------|----------------|
|                   | Territorial           |             | Functional  |              | Territorialized |             | Universal   |                |
|                   | <i>There</i>          | <i>Here</i> | <i>Left</i> | <i>Right</i> | <i>Cosm.</i>    | <i>Nat.</i> | <i>True</i> | <i>False</i>   |
| National          |                       | H1          |             | +            |                 | +           |             | Not applicable |
| Industrial        |                       |             | H2          |              |                 |             |             |                |
| International     |                       |             |             |              |                 | H3          |             |                |
| Post-industrial   | +                     |             |             | -            | +               |             | H4          |                |

Note: Plus and minus signs indicate changes toward or against the dimension's pole. Empty cells indicate no change.

Hypothesis 1 (first row in Table 2) is that, under the impact of the National Revolution, the Catholic Church's politicization leans first toward the "here" pole of the territorial type of politicization allying with monarchies in a protective strategy to defend its territorial sovereignty. This main mechanism is complemented by defensive civilizational stances against the influence of Ottoman Islam in Europe, and ideological and spiritual protections, in particular the "reactionary" stances against secular-liberal values and individual rights.

*Industrial Revolution.*—This critical juncture refers to the transformation of economic production from agricultural to industrial, the expansion of global trade and increased geographical mobility from rural areas to urban centres (Landes 1969). Urbanization processes also transform family structures and give rise to new social risks relating to health, old age, child labour and housing. The commodification of labour, whereby work becomes disposable and contractual, creates new forms of class poverty and welfare needs that are initially not insured through social citizenship rights (Esping-Andersen 1990).

This juncture includes the rise of trade unionism and labour parties, as well as protest movements inspired by socialist ideologies and the Marxist doctrine of class warfare (Sassoon 1996, Bartolini 2000). It witnesses the creation of transnational workers' organizations such as the Socialist International. The battle cry "Workers of the world, unite!" directly challenged the supra-national nature of Catholicism in addressing poverty not only in Europe but also in the Americas, Africa and Asia, including exploited peasants in non-Christian colonies. During this period, the Church explicitly addressed the plight of industrial workers, calling for social reforms that embodied a functional cleavage pitting labouring classes against capital, yet stressing a Catholic moral alternative to socialist solutions.

Hypothesis 2 (second row in Table 2) is that, under the impact of the Industrial Revolution, the Catholic Church's politicization leans toward functional cleavages.

*International Revolution.*—This critical juncture refers to the split within the workers' movement in the wake of the Soviet Revolution of 1917 into an international communist ideology committed to the revolution (centred on the Communist Party of the Soviet Union) and a nationally-based reformist socialist/social democrat ideology committed to reaching power through democratic elections. The rise of communist revolutionary parties that formed across many countries in the years after 1917, along with broader social, economic and political disruptions contributed to fascist parties in the 1920s. This confrontation is one between a transnational movement and a hyper-nationalist reaction, and one between the abolition and the maintenance of private property.

The impact of this juncture extends further to the end of the Cold War in the 1980s. In Europe and in Latin America, the ideological confrontation between communism and capitalism permeated political life also after World War II, as it did in de-colonizing countries

in Africa and in Asia, where many independence movements were of Marxist inspiration. Similar influences shaped the non-aligned movement and the early Baathist parties in the Middle East and dominant parties in Turkey and India. Even the early political foundations of the State of Israel included strong socialist elements, particularly in the form of labour Zionism and the kibbutz movement. The Catholic Church's position is clearly an anti-communist and anti-Warsaw Pact one in this whole period often supporting fascist regimes in Latin America. The Church also assumed anti-communist stances in the break-down of communism in Eastern Europe at the end of the 1980s with pope John Paul II.

Hypothesis 3 (third row in Table 2) is that, under the impact of the International Revolution, the Catholic Church's politicization leans toward the territorialized type of politicization (exemplified by its stances on fascism) particularly in fear of an internationalist communist, anti-clerical revolutionary threat.

*Post-Industrial Revolution.*—This critical juncture refers to the generational change in values that takes place under conditions of international stability and economic growth after World War II. With post-materialism replacing materialism in the basic attitudes of Western citizenries, values of inclusion, freedom of expression and general emancipation and self-fulfilment come to the fore (Inglehart 1977). These values place less emphasis on quantity and redistribution and more on the quality of production and consumption (Kitschelt 1994), sustainability and quality of life. The main actors in this phase are social movements advocating civil rights (particularly around issues of racism), pacifism, feminism (and more generally the sexual revolution) and environmentalism eventually leading to the formation of green parties. There is a strong focus on global issues that require common action, away from national interests, that transcend borders: nuclear, climate, pandemic and migration.

Hypothesis 4 (fourth row in Table 2) is that, under the impact of the Post-Industrial Revolution, the Catholic Church's politicization leans toward the universal type with problem-solving stances that require international cooperation. It addresses less social conflict and more common challenges to humanity as a whole promoting universal values, human rights and dialogue across cultures and religions. As a corollary, the value change in society pushes the Church to support development aid toward poorer world regions and adopt a more ecumenical openness not only toward other faiths but also toward ethnic and cultural diversity. The impact of this revolution should also be negative on the (culturally) conservative positions. This implies a relaxation of patriarchal, anti-contraception and homophobic positions, and more tolerance toward "unconventional" lifestyles, including debates on LGBTQ+ rights and women's roles.

We do not expect discourse types to be completely replaced by one another over time, but rather that their relative prevalence varies under the impact of the four critical junctures. Overall, we expect a type of politicization that de-territorializes, evolving from territorial and territorialized to functional and universalist discourse.<sup>15</sup>

## Research Design and Method

### *Sources and Data*

Given our approach of treating the Catholic Church as a global political actor, the analysis centres on how its discourse frames cleavage politics focusing on political content, rather than

---

<sup>15</sup> The expectation of a progressive de-territorialization is supported by developments at national and European level (see Caramani 2004 and 2015 respectively) and at the global level in the media (Caramani, Gurova and Widman 2024).

theological or organizational content. Accordingly, we seek to identify and classify documents that engage with socio-political issues, distinguishing them from those with predominantly theological or administrative content, while also capturing forms of discourse intended for broad public audiences.<sup>16</sup>

As we are interested in mass politics and communication in the aftermath of the National and Industrial Revolutions, the analysis starts in the first half of the 19<sup>th</sup> century. These junctures provide the historical backdrop for analysing how the Church's discourse evolved since the broad socio-political transformations, including industrialization, democratization and globalization. Therefore, although data are available for earlier periods, the main analysis focuses on the era beginning with the pontificate of Gregory XVI (1831).

We obtained the initial corpus of papal documents by web scraping the digitized holdings of the Vatican Apostolic Archive,<sup>17</sup> which contains an extensive collection of papal writings from the late 18<sup>th</sup> century to the present.<sup>18</sup> This effort yielded over 32,000 texts, ranging from short devotional messages and addresses to lengthy doctrinal and policy-oriented documents. The corpus spans 20 distinct document types, including formal declarations such as Apostolic Constitutions, Encyclicals, and Motu Proprio, as well as predominantly pastoral and ceremonial texts like Homilies, Messages, and Angelus addresses. Figure 2 provides an overview of all document types and the corpus breakdown by type.

---

<sup>16</sup> The Catholic Church in Rome is the central reference point for global Catholicism. Being a highly hierarchical organization makes it analytically suitable to be treated as a unitary actor (unlike, for example, Islam as argued by Esposito and Mogahed 2007).

<sup>17</sup> The Vatican's digitized collection of papal documents is accessible at: [https://www.vatican.va/holy\\_father/index.htm](https://www.vatican.va/holy_father/index.htm).

<sup>18</sup> Although papal discourse does not capture all Vatican communication, it constitutes the most authoritative and globally disseminated expression of the Church's political stance. We considered using the *Osservatore Romano*, the daily newspaper of the Catholic Church in Italy, as a basis for measuring its discourse. However, the newspaper is addressed exclusively to an Italian readership, is of poor technical quality to perform an OCR and is fragmented in political, theological and organizational content, as well as advertisements.

Appendix 1, Figure A.1.1, on the temporal distribution of all documents, shows a pronounced increase in papal communication after the mid-20<sup>th</sup> century, coinciding with the Second Vatican Council (1962–65) and the global expansion of mass media.<sup>19</sup>

The documents in the corpus are available in multiple languages, with many texts translated into two or more versions. To ensure consistency in the analysis, we identified a primary language for each document, prioritizing English when available. As shown in Appendix 1, Figure A.1.2, the majority of documents are in English (15,459), followed by Italian (12,350), with smaller subsets in Latin and other languages.<sup>20</sup> Appendix 1, Figure A.1.3 traces language use over time, revealing a steady shift from Latin to modern vernaculars, reflecting the Church’s transition toward broader and more accessible global communication (O’Malley 2010). Because Latin texts yield less reliable LLM results and could not be systematically validated, we restrict the analysis to documents available in English or Italian (27,809 in total).<sup>21</sup>

Appendix 1 further reports corpus descriptives by pontificate. Figure A.1.4 shows the distribution of documents by pope, reflecting differences in pontificate length and communication practices, with John Paul II and Francis contributing the largest number of texts due to the duration and communication intensity of their pontificates. Figure A.1.5 compares average document length by pope, showing generally consistent lengths across

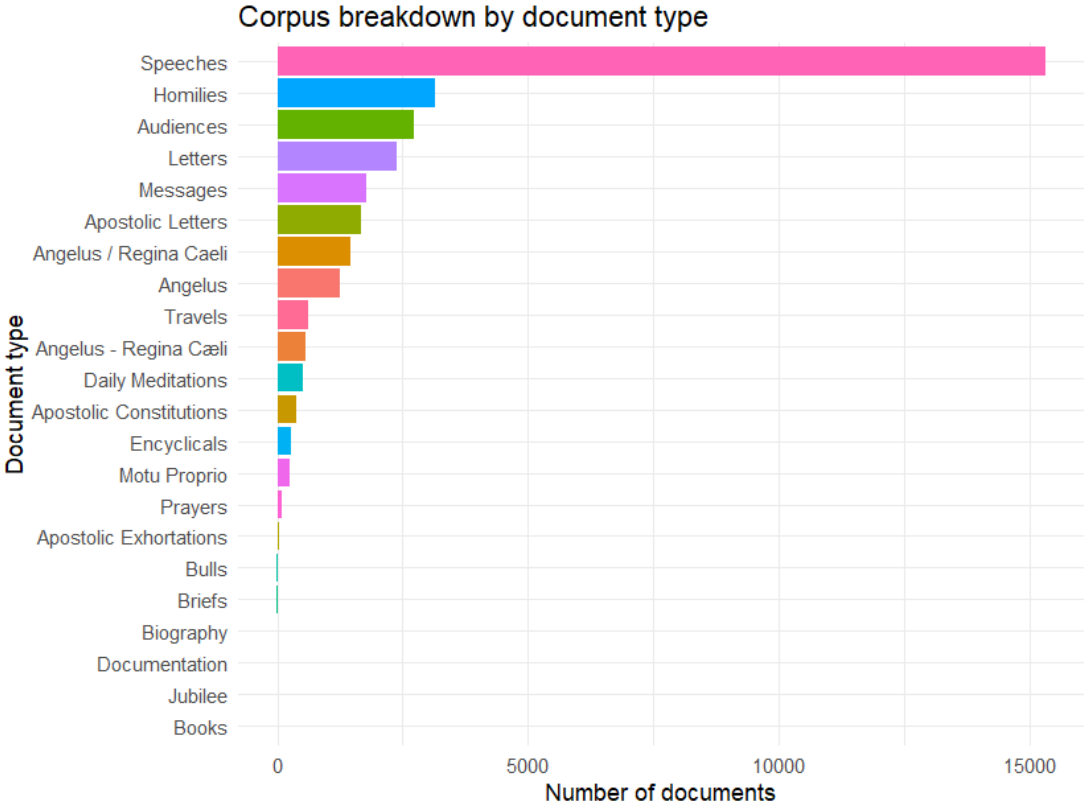
---

<sup>19</sup> We are grateful to Prof. Marco Maiorino of the Vatican Apostolic Archive for his invaluable assistance and generous guidance in the selection process, ensuring that we identified the most pertinent texts for this study.

<sup>20</sup> In earlier periods, particularly between 1775 and 1950, most papal documents were published in Italian, resulting in an overrepresentation of Italian texts in the corpus for this historical period.

<sup>21</sup> Totals refer to the deduplicated corpus after removing exact duplicates and selecting a single primary language per document.

Figure 2 Papal corpus breakdown by document type



pontificates, with moderate variation reflecting distinct writing styles and document types.

Finally, Figure A.1.6 traces these averages over time, revealing overall stability in text length with a few isolated instances of unusually long texts.

*Method*

Large language models (LLMs) are increasingly used in the social sciences to classify texts, identify ideological positions and analyse discourse patterns (Ziems et al. 2024). Recent studies have demonstrated their capacity to match or even exceed human and traditional supervised methods in tasks such as text annotation (Gilardi et al. 2023), political text positioning (Le Mens and Gallego 2025), and political affiliation detection (Törnberg 2024).

These findings suggest that LLMs are particularly well suited for content classification tasks that require fine-grained understanding of political and moral language such is the case with our dataset. Building on this growing body of work, we implement a two-stage LLM classification pipeline to identify and categorize political discourse in papal texts.

In the first step (Gate 0), we filtered the corpus to retain only documents containing political content, ensuring that subsequent classification applies only to genuinely political material. Each document was segmented with a sentence-aware chunker into units of about 350 words, a length that balances contextual coherence with the need to isolate political content. This produced 63,432 chunks across the English-language documents and 50,897 chunks across Italian-language documents.<sup>22</sup> Each corpus was processed with a language-specific prompt, written and frozen separately in English and Italian (Appendix 2). The prompts instructed the model to classify each passage as *purely theological* or *not purely theological* and to return a minimal JSON object (`{"drop": true | false, "conf": 0–1}`) indicating both the decision and the model’s confidence. All runs were executed on GPT-5-mini, a state-of-the-art LLM available at the time of analysis, selected for its accuracy, consistency and cost-efficiency in structured text classification. Each output record was automatically appended to a Gate 0 ledger containing prompt and runner hashes, model identifiers and timestamps.

After this step, approximately 55 per cent of the English corpus and 46 per cent of the Italian corpus remained (8,540 and 5,644 documents, corresponding to 20,800 and 11,500

---

<sup>22</sup> We experimented with chunk sizes of 2,000, 1,500, and 500 words, but longer segments diluted political meaning by including extensive theological content, whereas shorter segments fragmented the argument. The 350-word format therefore represents the optimal trade-off between semantic continuity and topical precision. We preserved original spelling and punctuation and performed whitespace/newline standardization to enable sentence splitting. We then packed sentences into  $\leq 350$ -word chunks without exceeding the cap, deduplicated identical entries corpus, and removed short chunks ( $\leq 20$  words).

retained chunks, respectively). Coverage is broad across time and papacies in both languages. It peaks for the late-19<sup>th</sup> to mid-20<sup>th</sup> century (for example, Leo XIII, Pius XI, Pius XII; with some very early pontificates also high in Italian), and is lower for recent popes, whose corpora contain a larger share of homilies and other devotional texts. Differences in retention across decades and papacies are statistically significant but small in magnitude (Cramér's  $V \approx 0.06$ – $0.07$  in both corpora), indicating that the filter systematically removed theological passages without substantially skewing the temporal or papal composition of the data.<sup>23</sup>

Overall, Gate 0 effectively removed purely theological content while preserving representative coverage across periods and pontificates. Confidence scores are heavily concentrated in the  $\geq 0.85$  band, and Gate 0 classifications vary systematically with chunk length and papal authorship, consistent with stable and non-random model performance. A qualitative check of low-confidence cases confirmed they were genuinely borderline passages. Appendix 3 shows document coverage by decade and pope for both corpora.

In the second stage (Gate 1), we classified the politically relevant passages retained from Gate 0 into the four types of politicization defined in our theoretical framework: (A) *territorial*, (B) *territorialized*, (C) *functional* and (D) *Universal*. A residual (E) *none of the above/other* captures political or protocol passages that do not map cleanly onto A–D.

To classify the text chunks, we first designed a few-shot prompt following best practices in recent political science applications of LLMs (Ornstein et al. 2025). Each prompt defined the four types, provided short, contextually authentic examples, and included instructions for handling ambiguous cases – an approach shown to improve reliability over

---

<sup>23</sup> For the English corpus,  $\chi^2(14) = 106.733$  ( $p < 2.4 \times 10^{-16}$ ) by decade and  $\chi^2(10) = 62.392$  ( $p \approx 1.3 \times 10^{-9}$ ) by pontificate, corresponding to small effect sizes (Cramér's  $V = 0.083$  and  $0.064$ ). For the Italian corpus,  $\chi^2(25) = 80.732$  ( $p \approx 8.8 \times 10^{-8}$ ) by decade and  $\chi^2(16) = 81.519$  ( $p \approx 8.9 \times 10^{-11}$ ) by pontificate, both with Cramér's  $V \approx 0.067$ .

zero-shot setups, especially for subtle distinctions in political and moral language (Baumann et al. 2025).<sup>24</sup>

We evaluated three GPT models (o3-2025-04-16, GPT-o4-mini, and GPT-5-mini) on a stratified 1,000-item English sample (pope  $\times$  decade). All models were run on the 1,000 items. A subset of 600 unique excerpts and 100 blinded duplicates was manually coded to serve as the human-coded validation set. Intra-coder reliability on the duplicates was high (Cohen’s  $\kappa \approx 0.87$ ; PABAK  $\approx 0.80$ ). Against this labelled subset, o3-2025-04-16 aligned best with human judgments, outperforming GPT-o4-mini and GPT-5-mini by several percentage points across all metrics (see Appendix 4 for full results). We therefore selected o3-2025-04-16 for full-scale classification, using the dated release rather than the rolling endpoint to avoid silent model updates. The full classification was executed in reproducible shards with complete metadata logging and a frozen, hashed prompt to ensure verifiable provenance.

Model evaluation was conducted separately for English and Italian against human-coded validation sets. In English (600 unique text chunks), o3-2025-04-16 achieved accuracy  $\approx 0.75$  (95% CI 0.72–0.79), Cohen’s  $\kappa \approx 0.68$ , macro-F1  $\approx 0.74$ . Two-rater agreement (human vs model) yielded Krippendorff’s  $\alpha$  (nominal)  $\approx 0.67$  (bootstrap 95% CI 0.63–0.71). The largest disagreements occurred at the D $\leftrightarrow$ E boundary (universal vs devotional/protocol), with a smaller tendency for B to be over-called relative to A/E.

For the Italian corpus, intra-coder reliability on 100 blinded duplicates was  $\kappa \approx 0.82$  (PABAK  $\approx 0.72$ ). On 400 unique excerpts, o3-2025-04-16 achieved accuracy  $\approx 0.73$  (95% CI 0.68–0.77),  $\kappa \approx 0.65$ , macro-F1  $\approx 0.71$ , close to the English results with overlapping confidence intervals. Similar boundary patterns (A $\leftrightarrow$ B, C $\leftrightarrow$ D, D $\leftrightarrow$ E) appear in both

---

<sup>24</sup> The prompts were written in plain ASCII with explicit JSON output instructions specifying both the classification label (A–E) and the model’s confidence score for each output ({"label": A–E, "conf": 0–1}). Appendix 2 reproduces the English and Italian prompts.

languages, indicating consistent behaviour. Cross-linguistic differences, such as a noisier B/E boundary and lower A recall in Italian, reflect stylistic features of Italian papal writings, where devotional or protocol language often co-occurs with political claims. Per-class precision and recall are reported in Appendix 4, Table A.4.3.

Following classification, chunk-level labels were aggregated by document and decade using an Empirical-Bayes shrinkage estimator to stabilize estimates and keep periods with uneven corpus sizes comparable.<sup>25</sup> For each document, we computed the shares of substantive categories (A–D), excluding E (none of the above/other),<sup>26</sup> assigned it to a decade by its modal publication year (ties break to the earliest) and adjusted its profile for language- and decade-specific priors ( $\tau = 2$ ) estimated within each language from well-sampled documents ( $\geq 5$  substantive chunks).<sup>27</sup> Decade-level series were then formed as reliability-weighted averages of the adjusted document scores ( $\lambda = 4$ ), which down-weight very short documents and give more influence to longer ones. Final results present a single decadal series pooling English and Italian documents.

We probed the sensitivity of our estimates to shrinkage strength, document weighting, and aggregation choices.

---

<sup>25</sup> This method assigns equal weight to each document within its decade, preventing the proliferation of post-Second Vatican Council texts from dominating the analysis. Shrinkage toward decade-specific priors stabilizes estimates for sparse early decades while preserving genuine historical variation.

<sup>26</sup> The residual “none of the above/other” (E) accounts for ~17–20% of chunks across languages. We excluded E from all subsequent denominators. Mean model confidence is high and similar across classes ( $\approx 0.81$ – $0.87$ ). See Appendix 4, Table A.4.4 for class distributions and mean confidence by language.

<sup>27</sup> A decade is treated as well supported when it has  $\geq 40$  pooled substantive chunks (A–D) or  $\geq 3$  well-sampled documents. If not, we borrow information symmetrically from adjacent decades up to  $\pm 3$  decades. This widening is frozen from 1890 onward (no widening) to preserve modern-era features. At any span, a prior is accepted if it meets either threshold (pooled chunks or document count). If no acceptable prior emerges after widening, we use the language-wide prior computed from well-sampled documents. All pooling and guardrails are applied within language only.

- First, we re-estimated the series under alternative settings ( $\tau \in \{0.5, 1, 2\}$  and  $\lambda \in \{0, 4\}$ ) and vary the prior-construction guardrail for “well-sampled” documents (Appendix 5, Figures A.5.2 and A.5.3). The resulting plots are highly similar to one another and to the main specification, indicating that patterns are not driven by the choices of  $\tau$  or  $\lambda$ , nor by the prior-construction guardrail, and are robust to early-period sparsity.
- Second, we tested an alternative aggregation: for each document we weighted chunks by the model’s confidence (A–D only), form within-document shares, assign the document to its modal-year decade, and then take the simple average of document shares across documents in that decade. We also report a companion variant that multiplies confidence by chunk length (in words) before forming shares. Both versions closely match the main specification over time (Appendix 5, Figures A.5.4 and A.5.5).
- Third, we quantified uncertainty with a stratified document-level bootstrap that re-estimates language/decade priors in each replicate ( $B = 800$ ). Appendix 5, Figure A.5.6 reports percentile 95 per cent confidence bands from this procedure. Bands widen markedly in the late-18<sup>th</sup> and early-19<sup>th</sup> century and tighten thereafter. From the last decade of the 19<sup>th</sup> century onward, the trajectories closely track the main specification, and the principal patterns remain within the bands. Estimates in the earliest decades have greater amplitude uncertainty.

## Results: Critical Junctures and the Catholic Church’s Politicized Discourse

Results are reported in three parts. First, we present the overall evolution of the four politicization types. Second, we examine the impact of each critical juncture as hypothesized. Third, we link the sequence of cleavage types with overall patterns of de-territorialization.

### *Overall Trends: From Territory to Society to Humanity*

Figure 3 shows the composition of the Catholic Church's discourse over two centuries. To help interpret the trends, the graph includes major historical events both within the Church and in world politics, alongside encyclicals associated with each critical juncture.

The core information given by Figure 3 is about the composition of the Church's discourse according to the four types of politicization of global inequalities: territorial, territorialized, functional and universal, adding up to a 100 per cent of its discourse.<sup>28</sup> Results before 1830 should be interpreted with caution because of the limited number of documents. Accordingly, this part of the graph is shaded. From 1830 onward, the pattern is to a large extent what was theoretically expected, namely a strong element of territoriality in the first part of the 19<sup>th</sup> century during phases of state formation and nationalism, followed by a decline and a corresponding increase of the functional politicization in the aftermath of the Industrial Revolution, a rise in territorialized discourse during the inter-war period in the first half of the 20<sup>th</sup> century and, finally, a clear turn toward a universal politicization from the 1960s onwards.

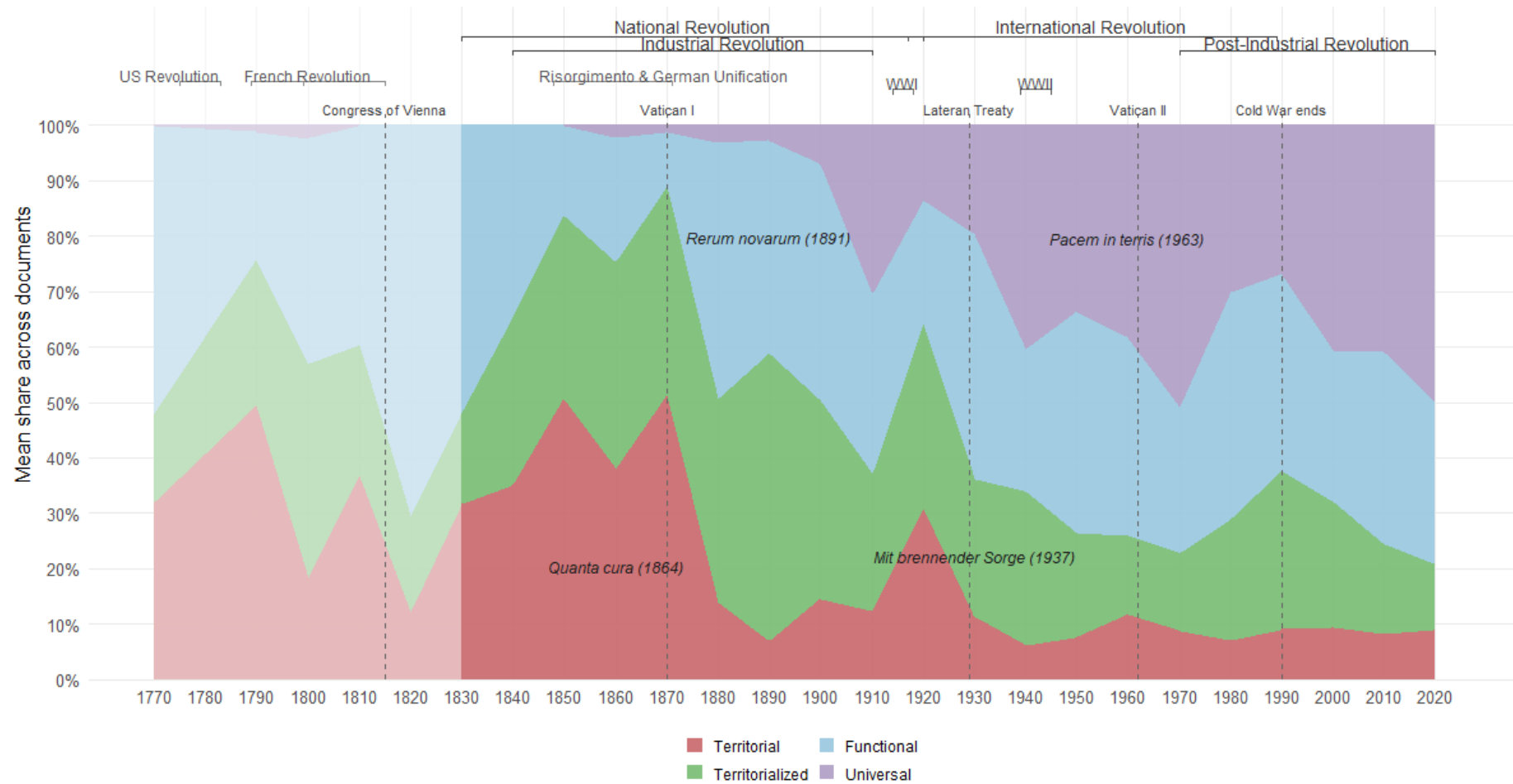
### *The Impact of Critical Junctures of Changing Types of Politicization*

To what extent do changing types of politicization support the impact of socio-economic, political and cultural transformation modelled as critical junctures in the hypotheses formulated in the theoretical section?

---

<sup>28</sup> A second version of the graph including category E (none of the above/other) is reported in Appendix 5 among other robustness checks (Figure A.5.7), showing that this residual category remains small and stable over time, and does not affect the main trends.

Figure 3 Types of politicization based on papal discourse over time (1775–2023)



Starting in 1830, territorial concerns in the Church's discourse have been increasing and became dominant over about half a century. At its peak, the territorial and territorialized types of discourse make up roughly 85 per cent of the Church's discourse at the moment of German and Italian unification in 1870. However, with the data limitation caveat for the period prior to 1830, one sees that the pattern begins earlier at the dawn of the modern era and the emerging nation-states. In the late-18<sup>th</sup> and early-19<sup>th</sup> century, papal discourse reflected the absolutist territorial order of the *Ancien régime*. Under Popes Pius VI and Pius VII, encyclicals and briefs reacted to the French Revolution, the confiscation of Church property and the Napoleonic occupation of Rome. The Concordat of 1801 subordinated the Church to French authority. In 1815, the papacy regained the Papal States and re-emerged as a pillar of the post-Vienna territorial settlement, closely aligned with the Holy Alliance.<sup>29</sup>

The pattern between 1830 and 1870 supports Hypothesis 1 displaying a predominance of the territorial type of politicization. This matches a Church preoccupied with sovereignty and borders. In this period, papal discourse becomes preoccupied with questions of sovereignty and authority, coinciding with the turmoil of European nation-building and the gradual disintegration of the Papal States, culminating in their annexation to Italy in 1870. Encyclicals such as *Quanta Cura* (1864) and documents such as the *Syllabus of Errors* (1865) exemplify this phase. They defend papal temporal power and portray the Church as a besieged territorial sovereign. Membership is still defined in narrowly exclusive terms (Catholic subjects within a threatened Christian polity) reflecting a world where faith and territory overlap. The territorialized discourse is therefore also present in this period. This

---

<sup>29</sup> A short-lived increase in functional discourse visible in the graph can plausibly be read as the Church's response to the new ideological landscape opened by 1789. Revolutionary concepts such as "the rights of man", "the people" and social equality forced the papacy to articulate counter-principles of charity and hierarchy – language that our classifier captures as functional.

type of politicization emphasizes the Church's supra-national nature and opposition to nationalism – which it viewed as a threat to Catholic mass identity.

After 1870 and the declaration of papal infallibility at the First Vatican Council, this mode of politicization drastically declines. The loss of the Papal States permanently curtails the Church's capacity to speak as a territorial ruler, which is consistent with the loss of temporal power shifting the agenda away from pure sovereignty claims. In parallel, results show the functional surge around “the social question” when Marxism appears as a competitor to the Church and when industrialization and urbanization create new forms of poverty and welfare needs. The functional discourse becoming the modal frame after 1870 supports Hypothesis 2. Throughout the early 20<sup>th</sup> century, class politicization remains high indicating durable attention to class, labour and welfare matters.

The timing of the Industrial Revolution as a critical juncture is broad. However, in most of Europe and North America, it can be roughly located at the end of the 19<sup>th</sup> century and early 20<sup>th</sup> century.<sup>30</sup> The Church's discourse in this period is concerned with class inequality as an answer to the socialist “threat”. During this phase, Catholic authorities increasingly recognize that responding to socialist and worker movements required a distinct social doctrine: one that reaffirmed Catholic moral teachings but also offered tangible guidance for emergent class conflicts. It aimed at mobilizing labourers under the Catholic banner. The landmark encyclical *Rerum Novarum* by Leo XIII exemplifies how the Catholic Church not only reacted to the rise of socialism, but also actively shaped new political cleavages in response. Confronted with exploitation, urban poverty and growing worker mobilization, the

---

<sup>30</sup> A vast literature is concerned with the timing of the Industrial Revolution (see, Landes 1969) and, more particularly, with its variation across countries and regions. Pomeranz (2000), for example, points to the very localized nature of the first industrialization in Britain (as well as other parts of the world). Early industrialized areas can be found also in China, Belgium, France and the US.

Church formulated a distinct social doctrine that positioned itself as a moral alternative to both unregulated capitalism and revolutionary socialism. While framed as a spiritual intervention, the encyclical had profound consequences on welfare politics.<sup>31</sup> *Rerum Novarum* shifted the Catholic discourse from a defensive territorial posture to a functional engagement with class inequality. Its influence is enduring. Post-1910s functional discourse oscillates but stays one of the two main types until the late 20<sup>th</sup> century, and themes have recently been made relevant again by both pope Francis and, even more explicitly by pope Leo XIV, whose name intentionally echoes Leo XIII and hints at a contemporary counterpart to *Rerum Novarum* amid today's far-reaching societal shifts.

Regarding Hypothesis 3, Figure 3 shows a spike in territorialized discourse around the interwar years. The interwar decades reveal a temporary re-territorialization of papal discourse in the context of ultra-nationalist politics in Europe. Some of this reflects stances against totalitarian nationalism. *Mit brennender Sorge* (1937), for example, was issued and widely distributed under Pius XI in German. to defend Christian civilization against totalitarian nationalism. Most elements, however, reflect the Church coming to terms with the broader turbulence of nationalist and civilizational politics during this period. During World War II, papal statements maintain this tension, emphasizing peace and human dignity while implicitly grounding them in a Christian moral order. The wartime surge of territorialized discourse against nationalism thus reflects the Church's defensive posture amid totalitarian expansion, rather than a full return to territorial politics.<sup>32</sup>

---

<sup>31</sup> *Rerum Novarum* (1891) influenced social reformers such as Fr. John A. Ryan in the United States, whose advocacy helped shape key pillars of the New Deal. Simultaneously, in Europe, it laid the ideological foundations for Christian democratic parties, which became central to post-war reconstruction, in Austria, France, Germany and Italy.

<sup>32</sup> Functional discourse type remains prominent through the interwar period. *Quadragesimo Anno* (1931) reaffirmed and systematized *Rerum Novarum*'s "social question" in the context of the Great Depression, advancing a vision of society grounded in solidarity

This shows that the interwar period heralds a transition in its discourse that becomes prominent after World War II. In addition to the anti-nationalist stances, we witness the rise of papal engagement with the rise of new secular institutions of moral governance such as the League of Nations or the International Labour Organization, placing the Church within a broader 20<sup>th</sup>-century search for social order beyond the state. In line with these developments, we see in Figure 3 that the universal politicization starts already in 1910, with a peak of the universal type of politicization.

These early developments notwithstanding, the increase of the universal discourse stabilizes at high levels not before the 1960s, which supports Hypothesis 4. Beginning in the early 1960s, the universal discourse expands steadily and becomes the dominant type by the late 20<sup>th</sup> century, remaining so to present days, while territorial discourse collapses to persistent low shares and functional discourse settles as the secondary frame.

Already with the Second Vatican Council (1962–65), the Church had begun emphasizing dialogue, inclusivity, and engagement with other cultures and faiths.<sup>33</sup> This transformation reflects both internal reform and external repositioning. Having lost its temporal sovereignty and much of its cultural authority in Europe, the Church redefined universality as inclusivity, addressing new publics in Latin America, Africa and Asia. The transition to vernacular liturgies, the creation of regional bishops' conferences, and growing missionary activity in the Global South all expanded the Church's communicative reach.<sup>34</sup> In

---

and subsidiarity. It established the moral vocabulary of Catholic social teaching for the mid-20<sup>th</sup> century and anchored the papacy's role as arbiter between capital and labour.

<sup>33</sup> An example is the encyclical *Pacem in Terris* (1963), in which John XXIII addressed "all men of good will" emphasizing human rights, disarmament and the importance of international cooperation during the Cold War.

<sup>34</sup> This is shown in Appendix 1, with Figure A.1.1 on the increase in papal communication and with Figure A.1.3 on the increase of English as a communication language.

demographic terms, Catholicism ceased to be a European religion. By the early 21<sup>st</sup> century, the majority of Catholics live outside Europe. Papal discourse adjusted accordingly: the language of “humanity”, “development” and “creation” replaced the vocabulary of Christendom and civilization. During the 1980s, under John Paul II, this universalist project acquired explicit geopolitical significance: the papacy casts the Church as a mediator able to speak across ideological East–West divides.<sup>35</sup>

This shift also mirrors broader transformations in world politics. As decolonization, economic globalization and the rise of global institutions created new arenas of norm-making beyond the state, the papacy positioned itself as a transnational moral authority. Universalist encyclicals such as *Populorum Progressio* (1967) and *Sollicitudo Rei Socialis* (1987) resonate with the language of the United Nations and global civil society addressing poverty, peace and the environment as shared human concerns. Under Pope John Paul II, the Church addressed themes of human rights, economic justice and interfaith dialogue combining both functional (socio-economic) and universalist elements. Pope Benedict XVI’s *Caritas in Veritate* (2009) was a major contribution to discussions on economic globalization, stressing the moral implications of market expansion and the need for transnational social justice. This trajectory culminated in Pope Francis’ *Laudato Si’* (2015), which articulated a strong universalist stance on environmental stewardship, condemned consumerism and called for collective action beyond national borders.<sup>36</sup> The Church’s growing focus on migration and

---

<sup>35</sup> Accordingly, data show a surge of the territorialized type of politicization in the last years of the Cold War confrontation.

<sup>36</sup> *Fratelli Tutti* (2020) by Francis proposes an ideal world of fraternity in a “larger human family”: “No one, then, can remain excluded because of his or her place of birth ... The limits and borders of individual states cannot stand in the way of this ... A healthy culture, on the other hand, is open and welcoming by its very nature ... The development of a global community of fraternity based on the practice of social friendship on the part of peoples and nations calls for a better kind of politics, one truly at the service of the common good” (p. X).

refugee issues further reflects this de-territorialized approach, emphasizing human dignity and solidarity irrespective of origin.

The fading of international confrontation after the Cold War gives way to a voluntarist discourse on problem solving and global collaboration in addressing common threats. In addition, the Church's values increasingly aligned with those of social movements.<sup>37</sup> Theological principles of brotherhood enabled it to intervene on global challenges from nuclear weapons to environmental degradation, global poverty and migration. Finally, the relative equalization in rights between world regions after decolonization allow the Church to expand its political discourse in a global way.

#### *Politicization and Patterns of De-Territorialization*

Overall, the sequence of types of politicization across the four critical junctures depicts a coherent historical transformation in the locus of the Church's politicization: from territory to society to humanity. How does this sequence relate to evolution of territoriality of cleavages over time and what are the implications for the overall trend toward de-territorialization that one expects in increasingly interconnected systems? As mentioned in the theoretical section of the paper, the expectation of a progressive de-territorialization is supported not only by developments in formed and forming systems, namely at national and European level (see Caramani 2004 and 2015 respectively), but also globally (Caramani, Gurova and Widman 2024).

---

<sup>37</sup> The Church was largely forced to open up and modernize (for example, by holding masses in vernacular rather than Latin) as a consequence of losing followers and in the wake of skating scandals. Despite this, *Humanae Vitae* by pope Paul VI reasserted traditional teachings on marriage and contraception, signalling the Church's continued resolve to hold exclusive moral positions despite widespread social changes of the 1960s.

To address this question, an index of territoriality of the Church's politicization of inequalities has been devised based directly on the model's categorical outputs. The index summarizes, for each decade, the balance between the two types of territorial cleavages (territorial and territorialized) and non-territorial cleavages (functional and universal) as a log ratio. This allows us to effectively trace the long-term decline in territorial framings as functional and universal discourse gain prominence.<sup>38</sup>

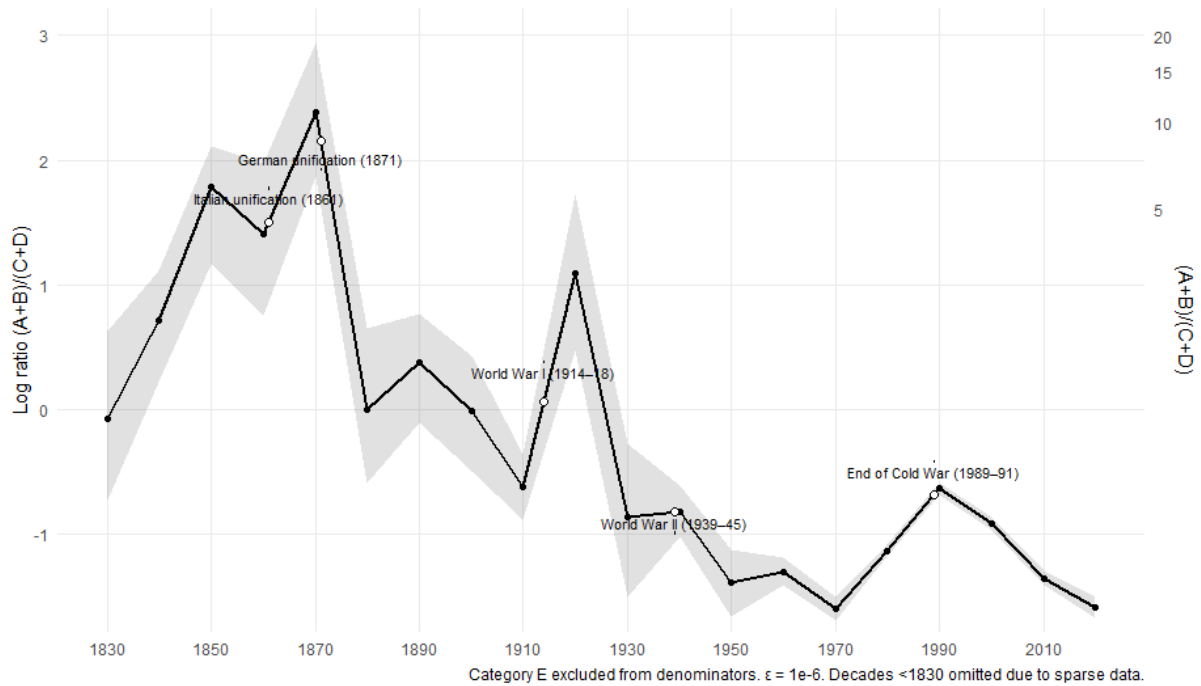
The trend appears in Figure 4. The long-term trajectory across nearly two centuries that data show is one of a structural and lasting de-territorialization of papal language mirroring the Church's shift from temporal territorial sovereignty to global moral authority. In an increasingly interconnected globe through trade, international collaboration and global communication systems, the Catholic Church's politicization clearly tends toward de-territorialization. The trend, however, is not linear and there are, in particular, three peaks of re-territorialization over the past two centuries.

The first peak of re-territorialization is during the 1830–70 period, when papal texts become overwhelmingly territorial. The Church devotes nearly three times more attention to territorial than to functional or universal themes. Subsequently, between 1880 and 1910, the balance between territorial and non-territorial framings narrows considerably, with values fluctuating around parity (index  $\approx 0$ ). This period marks a turning point, as papal rhetoric began to engage social questions that cut across national borders during a period of intense trade and economic globalization. The second peak of re-territorialization is located around World War I and the break-up of multi-national empires, colonial confrontation and nationalism. In the following period the direction reverses sharply with a steep drop of

---

<sup>38</sup> The index relies on Empirical-Bayes-weighted document averages with bootstrap confidence intervals, providing a time series grounded in the same typology we theorize. To ensure stability, we apply a small additive constant ( $\epsilon$ ) to avoid zero values.

Figure 4 Territoriality in the Catholic Church's texts (1830–2023)



territoriality. Third, the pattern toward more territoriality (but clearly at much lower levels than previously) takes place in concomitance with the end of the Cold War confrontation between East and West. After 1990, territoriality resumes its decline until the present day.

The long-term pattern of de-territorialization suggests that the Catholic Church frames global conflict and inequality in ways that transcend territorial boundaries within an increasingly integrated global system. It suggests that the Church not only has a global vision of conflict and inequality, but that this vision is one that decreasingly contrasts territories. It is a territorially inclusive worldview: either by stressing the interest of similar groups across territorial boundaries (as is the case for a variety of disadvantaged groups) or by stressing the interest of humanity as a whole (thus overcoming also membership boundaries by focussing on universal threats). This ideological change from a discourse with high territoriality to a “globalized” one is clearly visible in the overall trend in Figure 4.

Noteworthy is also the timing of de-territorialization of the Church's political discourse that takes place in the second half of the 19<sup>th</sup> century and in the early decades of the 20<sup>th</sup>. The globalization of political discourse matches the timing of patterns at the national level (nationalization) and European level (Europeanization). If one compares these three trends, it seems that actors are instrumental in overcoming territoriality in forming systems at different levels (national, regional and global).<sup>39</sup> The fact that the three patterns occur during the same period points to the effect of concurring national mobilization, mass democratization, socio-economic transformation (industrialization and global trade) and mediatic communication.

To caution against inferring the simultaneity of these trends, one can compare the Church's discourse with another analysis at the global-level based on the press (in particular the analysis of *The Economist* since 1843 by Caramani, Gurova and Widmann 2024), which reveals a de-territorialization pattern starting after World War II. While politicization plays a more limited role in press reporting – despite the outlet's clear editorial stance – the Church as an actor aims to shape the discourse about global politics in competition with other actors. Press and political texts are therefore fundamentally different, and not directly comparable. Nonetheless, that fact that both types of text analysis point to an overall pattern of de-territorialization of conflicts and inequality strengthen the conclusion of globalizing cleavages.<sup>40</sup>

---

<sup>39</sup> At national level, actors' cross-territorial strategies have been measured based on electoral data (Caramani 2004, Chhibber and Kollman 2004, Morgenstern 2017). This is the case also for the European arena (Caramani 2015). At this level, however, the trend appears also in text data with the ideological convergence of party-manifesto content between parties of the same party family. The analysis of the Catholic Church presented here is exclusively based on its discourse and does not include other indicators such as travels by the pope, diffusion of embassies, financing of charitable initiatives, etc.

<sup>40</sup> As noted also for results based on press, peaks of re-territorialization are temporary and linked to events. The overall trend, on the other hand, is driven by increasing interdependence, communication and integration.

## Conclusion: The Catholic Church and other Global Actors

The Catholic Church has evolved in the way it envisions global conflicts and inequalities by shifting from an initial focus on territoriality and Christian identities in the main phases of nationalism and state formation in Europe from the late 18<sup>th</sup> century through the 19<sup>th</sup> century, to one of class inequality in the wake of industrialization and urbanization from the 1870s onwards that cuts across national borders, and more recently, namely from the Second Vatican Council in the 1960s until the present, to a worldview that transcends territorial, ethnic, religious, class and even value-orientation boundaries. While none of the frames completely replace the others across the critical junctures of the National, Industrial, International and Post-Industrial Revolutions, our analysis points to a global actor that shapes and adapts to societal change, whether it is socio-economic (industrialization), political (democratic nationalism) or cultural (value change).

Findings are based on a broad and comprehensive analysis of papal documents since 1775 (although reliable and sufficient material is available from 1830) to the present day. This includes the analysis of over 14,000 documents with mostly political content (as opposed to theological or administrative material). Results from an LLM analysis show consistent and robust results that hold under different specifications. Given its global presence and appeal to millions of believers across continents, the neglect of this actor in political science is surprising.

However, the contribution of the paper is not only empirical, offering a new analysis of an understudied actor. By analysing one of the major actors on the world stage, the paper also offers a blueprint for the analysis of how other actors politicize inequalities at a global level. It does so theoretically, with a typology of politicization based on membership and territorial

inclusion/exclusion, and methodologically, with a long-term text analysis over roughly 200 years based on LLMs and a wealth of documents. While this paper has primarily focussed on the temporal evolution of how the Church shapes cleavages under the impact of major socio-economic, political and cultural transformations, the extension of the analysis to other actors would introduce a comparative element, allowing us to investigate whether all actors undergo similar shifts in response to critical junctures or whether their ideological differences persist over time – in other words, whether structural changes transform ideologies or ideologies shape which inequalities are politicized and how.

The paper treats the Catholic Church as an actor that shapes values among the masses. This sets our analysis apart from work on diplomacy and state-church interactions. The focus on mass politics guides the motivation to use political discourse seeking to mobilize support for its ideological positions among states, international organizations and NGOs, but also at mass level among its followers. This goal has guided the choice of temporal coverage of the analysis from the early 19<sup>th</sup> century onward, when political participation expanded and new ideological movements challenged the Church's authority. From this period onward, the Church increasingly articulated its positions in opposition to secular ideologies (the state–church cleavage), in support of welfare (influencing both Christian democracy), pacifist movements (during the Cold War and the process of European integration) and even the early environmental policies.

The quantitative trends align closely with the expectations derived from our four historical hypotheses. Hypothesis 1 (National Revolution) is strongly supported: from the 1830s through the 1870s, territorial discourse rises sharply and becomes the modal frame, reflecting the papacy's defence of temporal sovereignty during the age of state formation and nation-building. *Quanta Cura* (1864) and the Syllabus of Errors (1865) epitomize this

territorial peak, while the sharp decline after 1870 confirms the lasting effects of the loss of the Papal States. Hypothesis 2 (Industrial Revolution) is likewise supported: in the 1890s–1900s functional discourse surges and remains high through the early 20<sup>th</sup> century, consistent with the Church’s engagement with the “social question” inaugurated by *Rerum Novarum* (1891) and sustained by *Quadragesimo Anno* (1931). Hypothesis 3 (International Revolution) finds only partial confirmation. On the one hand, the data show spikes in territorialized discourse around moments of civilizational and nationalist resurgence. On the other hand, the interwar rise in territorialized discourse does not equate to a uniform nationalist shift. *Mit brennender Sorge* denounced racial nationalism, even as the Church’s relationship to contemporary authoritarian regimes remained complex and ambivalent. Finally, Hypothesis 4 (Post-industrial Revolution) is strongly supported: from the 1960s onward, when universal discourse expands, anchored in documents such as *Pacem in Terris* (1963) and *Laudato Si’* (2015), and remains dominant to the present day.

The pattern of de-territorialization in how the Church shapes cleavages reveals a long-term transition from sovereignty-defensive, territorial framings toward functional social teaching and, ultimately, universal moral appeals. The composition of discourse shifts in step with the Church’s changing position within the international system and within its own community of believers: from a territorial Church ruling a confined flock, to a social institution mediating industrial societies, and to a global Church of diffuse membership that aspires to speak for humanity. Each phase thus corresponds to a different logic of inclusion and belonging from exclusivist defence of authority and borders, through social reconciliation between classes, to inclusive appeals addressed to all peoples. Where early documents spoke to rulers and clergy, the industrial and postcolonial papacies spoke increasingly to workers, nations, and finally “all men of good will”. The evolution is therefore not only thematic but

also communicative: an expansion of the imagined audience that mirrors the global diffusion of Catholic membership itself.

As global interdependence deepens, the constraints that once anchored political conflict in territorial units weaken. In cleavage-theoretical terms, the boundaries of contestation increasingly shift from *where* rights and resources are allocated to *who* is included in their distribution and *how* inequalities are morally framed. For an actor with diminishing temporal sovereignty but expanding transnational membership, these dynamics create structural incentives to move away from sovereignty-defensive or civilizational framings and toward more functional and universal modes of politicization. We accordingly find a long-term decline in territoriality over time, reflected in a decreasing balance of territorial and territorialized discourse relative to functional and universal discourse.

Seen through the lens of political authority, this evolution marks the Church's passage from a form of territorial sovereignty to a strategy of normative authority. As the papacy lost the instruments of coercion and patronage that once bound it to states, it replaced them in discursive and moral terms. The result is a form of soft power rooted in norm entrepreneurship. As authority migrates from states to societies to the international community, papal strategies follow suit. Yet these transitions are not linear. Territorialized resurgences punctuate the 20<sup>th</sup> century, reminding us that universalism remains contested and used selectively by the Church as by other actors. The long arc, however, is unmistakable: across two centuries, the papacy adapts its instruments of authority from territorial to moral.

## References

- Bartolini, Stefano. 2000. *The Political Mobilization of the European Left, 1860–1980: The Class Cleavage*. Cambridge: Cambridge University Press.
- Bartolini, Stefano. 2005. *Restructuring Europe: Centre Formation, System Building, and Political Structuring Between the Nation-State and the European Union*. Oxford: Oxford University Press.
- Bartolini, Stefano and Peter Mair. 1990. *Identity, Competition and Electoral Availability: The Stabilization of European Electorates, 1885–1985*. Cambridge: Cambridge University Press.
- Bátora, Jozef, and Nik Hynek. 2014. *Fringe Players and the Diplomatic Order: The “New” Heteronomy*. Basingstoke: Palgrave.
- Baumann, Joachim, Röttger, Paul, Urman, Aleksandra, Wendsjö, Flor, Albert, Plaza-del-Arco, Miriam, Gruber, Johannes B. and Dirk Hovy. 2025. Large Language Model Hacking: Quantifying the Hidden Risks of Using LLMs for Text Annotation. *arXiv preprint arXiv:2509.08825*.
- Bendix, Reinhard. 1964. *Nation-Building and Citizenship: Studies of Our Changing Social Order*. New York: Wiley.
- Bickerton, Christopher and Carlo Invernizzi Accetti. 2017. Populism and Technocracy: Opposites or Complements? *Critical Review of International Social and Political Philosophy* 20(2): 186–206.
- Bourguignon, François. 2015. *The Globalization of Inequality*. Princeton, N.J.: Princeton University Press.

- Bradley, John. 2010. The Political Rhetoric of the Vatican: Aims and Strategies of the Holy See as a Transnational Actor. In Marsden, Lee and Heather Savigny. Eds. *Media, Religion and Conflict*. London: Routledge (115–28).
- Bueno de Mesquita, Bruce. 2000. Popes, Kings, and Endogenous Institutions: The Concordat of Worms and the Origins of Sovereignty. *International Studies Review* 2(2): 93–118.  
<https://doi.org/10.1111/1521-9488.00206>
- Capoccia, Giovanni and R. Daniel Kelemen. 2011. The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism. *World Politics* 59(3): 341–69. <https://doi.org/10.1017/S0043887100020852>
- Caramani, Daniele. 2004. *The Nationalization of Politics: The Formation of National Electorates and Party Systems in Western Europe*. Cambridge: Cambridge University Press.
- Caramani, Daniele. 2017. Will Versus Reason: The Populist and Technocratic Challenge to the Party Model of Political Representation. *American Political Science Review* 111(1): 1–14. <https://doi.org/10.1017/s0003055416000538>
- Caramani, Daniele. 2015. *The Europeanization of Politics: The Formation of a European Electorate and Party System in Historical Perspective*. Cambridge: Cambridge University Press.
- Caramani, Daniele. 2024. A Cleavage-Based Conceptualization of Politicized Global Integration. *Journal of European Public Policy* 31(10): 3372 -95.  
<https://doi.org/10.1080/13501763.2024.2309197>
- Caramani, Daniele, Gurova, Siyana and Tobias Widmann. 2024. The Evolution of Global Cleavages: A Historical Analysis of Territorial and Functional World Alignments Based

- on Automated Text Analysis, 1843–2020. *Comparative Political Studies*. 58(7): 1495–1532. <https://doi.org/10.1177/00104140241271085>
- Chong, Alan and Jodok Troy. 2011. A Universal Sacred Mission and the Universal Secular Organization: The Holy See and the United Nations. *Politics, Religion & Ideology* 12(3): 335–54. <https://doi.org/10.1080/21567689.2011.596417>
- Esping-Andersen, G. 1990. *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.
- Esposito, John L. and Dalia Mogahed. 2007. *Who Speaks for Islam? What a Billion Muslims Really Think*. New York: Simon and Schuster.
- Ferrera, Maurizio. 2005. *The Boundaries of Welfare: European Integration and the New Spatial Politics of Social Protection*. Oxford: Oxford University Press.
- Flora, Peter. 2000. Externe Grenzbildung und interne Strukturierung: Eine Rokkanische Forschungsperspektive. *Berliner Journal für Soziologie* 2: 151–65.
- Genovese, Federica. 2015. Politics ex Cathedra: Religious Authority and the Pope in Modern International Relations. *Research & Politics* 2(4).  
<https://doi.org/10.1177/2053168015612808>
- Gilardi, Fabrizio, Alizadeh, Meysam and Maël Kubli. 2023. ChatGPT Outperforms Crowd Workers for Text-Annotation Tasks. *Proceedings of the National Academy of Sciences* 120(30): e2305016120.
- Golan, Guy J., Arceneaux, Phillip C. and Megan Soule. 2019. The Catholic Church as a Public Diplomacy Actor: An Analysis of the Pope’s Strategic Narrative and International Engagement. *The Journal of International Communication* 25(1): 95–115.  
<https://doi.org/10.1080/13216597.2018.1517657>

- Grzymala-Busse, Anna. 2015. *Nations under God: How Churches Use Moral Authority to Influence Policy*. Princeton, N.J.: Princeton University Press.
- Grzymala-Busse, Anna. 2023. *Sacred Foundation: The Religious and Medieval Roots of the European State*. Princeton, N.J.: Princeton University Press.
- Hanson, Eric O. 1987. *The Catholic Church in World Politics*. Princeton, N.J.: Princeton University Press.
- Inglehart, Ronald. 1977. *The Silent Revolution: Changing Values and Political Styles among Western Publics*. Princeton, N.J.: Princeton University Press.
- Kahl, Sigrun. 2005. The Religious Roots of Modern Poverty Policy: Catholic, Lutheran, and Reformed Protestant Traditions Compared. *European Journal of Sociology* 46(1): 91–126.
- Kalyvas, Stathis, N. 1996. *The Rise of Christian Democracy in Europe*. Ithaca, N.Y.: Cornell University Press.
- Kitschelt, Herbert. 1994. *The Transformation of European Social Democracy*. Cambridge: Cambridge University Press.
- Landes, David. 1969. *The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present*. Cambridge: Cambridge University Press.
- Le Mens, Gaël and Aina Gallego. 2025. Positioning Political Texts with Large Language Models by Asking and Averaging. *Political Analysis* 33(3): 274–82.
- Li, Nan, Hilgard, Joseph, Scheufele, Dietram A., Winneg, Kenneth M. and Kathleen Hall Jamieson. 2016. Cross-Pressuring Conservative Catholics? Effects of Pope Francis' Encyclical on the U.S. Public Opinion on Climate Change. *Climatic Change* 139: 367–80. <https://doi.org/10.1007/s10584-016-1821-z>

- Manuel, Paul Christopher, Reardon, Laurence C. and Clyde Wilcox. Eds. 2006. *The Catholic Church and the Nation-State: Comparative Perspectives*. Washington, D.C.: Georgetown University Press.
- Marshall, Thomas H. 1964. *Class, Citizenship, and Social Development* (with the 1950 essay *Citizenship and Social Class*). Garden City, N.Y.: Doubleday.
- Milanovic, Branko. 2016. *Global Inequality: A New Approach for the Age of Globalization*. Cambridge, Mass.: Harvard University Press.
- Moore, Barrington Jr. 1966. *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World*. Boston, Mass.: Beacon Press.
- Morgenstern, Scott. 2017. *Are Politics Local? The Two Dimensions of Party Nationalization around the World*. Cambridge: Cambridge University Press.
- Murphy, Francis X. 1974. Vatican Politics: Structure and Function. *World Politics* 26(4): 542–59. <https://doi.org/10.2307/2010100>
- O'Malley, John W. 2010. *What Happened at Vatican II*. Cambridge, Mass.: Harvard University Press.
- Philpott, Daniel. 2000. The Religious Roots of Modern International Relations. *World Politics* 52(2): 206–45. <https://doi.org/10.1017/S0043887100002604>
- Pomeranz, Kenneth. 2000. *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton, N.J.: Princeton University Press.
- Sassoon, Donald. 1996. *One Hundred Years of Socialism: The West European Left in the Twentieth Century*. London: Tauris.
- Skocpol, Theda. 1979. *States and Social Revolutions: A Comparative Analysis of France, Russia, and China*. Cambridge: Cambridge University Press.

Törnberg, Petter. 2024. Large Language Models Outperform Expert Coders and Supervised Classifiers at Annotating Political Social Media Messages. *Social Science Computer Review*. 08944393241286471.

Wallerstein, Immanuel M. 1974. *The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.

Warner, Carolyn M. 2000. *Confessions of an Interest Group: The Catholic Church and Political Parties in Europe*. Princeton, N.J.: Princeton University Press.

Ziegler, Jeffrey. 2020. Responsiveness and Unelected Leaders: Lessons from the Catholic Church. Pre-print. <https://doi.org/10.31219/osf.io/kvz48>

Ziems, Caleb, Held, William, Shaikh, Chen, Omar Jiaao, Zhang, Zhehao and Diyi Yang. 2024. Can Large Language Models Transform Computational Social Science?. *Computational Linguistics* 50(1): 237–91.

## Appendices

### Appendix 1 Corpus descriptives

Table A.1.1 Types of documents and level of political content

| <i>Document type</i>   | <i>Level of political content</i> | <i>Content</i>                                                                                                                                                                                                                                                                                                                           |
|------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Encyclicals            | Very high                         | Major teaching documents in which the Pope addresses significant issues affecting the global community. They often delve into social justice, human rights, economic systems, environmental concerns, and peace which are central themes for investigating global cleavages.                                                             |
| Speeches               | Very high                         | Speeches, especially those delivered to international bodies (like the United Nations) or during state visits, frequently address current political situations, international relations, and global challenges, making them highly pertinent.                                                                                            |
| Apostolic Exhortations | High                              | Papal documents, typically issued after synods, that offer guidance or reflections on specific themes related to faith and pastoral care. They often reflect on topics that intersect with political issues, such as migration, family, economic inequality, and environmental stewardship, providing insights into the Church's stance. |
| Messages               | High                              | Communications from the Pope associated with particular events or commemorations. Papal messages for specific observances (for example, World Day of Peace) directly tackle global issues and advocate for action, aligning with topics of universal values and solidarity.                                                              |
| Letters                | Medium to high                    | Formal communications from the Pope to individuals, groups, or the entire Church. When addressed to political leaders, organizations, or the global community, these letters can offer valuable perspectives on the Church's responses to contemporary political events.                                                                 |

continued

continued

|                         |                |                                                                                                                                                                                                                                                                                                                          |
|-------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Homilies                | Medium         | Sermons delivered by the Pope during liturgical celebrations, interpreting Scripture and applying its lessons to current circumstances. Delivered during liturgical celebrations or events, homilies sometimes address pressing social and political issues.                                                             |
| Audiences               | Medium         | Audiences refer to regularly scheduled gatherings (General Audiences) or special meetings where the Pope addresses pilgrims or specific groups. The Pope sometimes uses Audiences to comment on international crises, peace efforts, or social concerns.                                                                 |
| Apostolic Constitutions | Medium to high | A form of legislative documents issued by the Pope, often establishing or modifying Church governance, doctrine, or law. While primarily focused on Church governance, they can have political implications, especially when they affect Church-state relations.                                                         |
| Motu Proprio            | Medium         | Documents issued by the Pope on his own initiative, typically enacting legislative changes or clarifications within the Church's canonical framework. These documents may address issues like financial reforms, abuse scandals, or other matters with broader societal impact, indirectly touching on political themes. |
| Apostolic Letters       | Variable       | Brief formal letters addressing particular persons, groups, or events. They can be doctrinal, commemorative, or pastoral in nature.                                                                                                                                                                                      |
| Briefs                  | Low to Medium  | Short administrative or diplomatic documents dealing with specific acts, appointments, or permissions within Church governance.                                                                                                                                                                                          |
| Bulls                   | Low to Medium  | Formal papal decrees used for official proclamations such as canonizations or the establishment of dioceses.                                                                                                                                                                                                             |
| Travels                 | Low to Medium  | Texts and addresses delivered during papal journeys and visits abroad, often containing greetings, homilies, or reflections on the visited country.                                                                                                                                                                      |
| Jubilee                 | Low to Medium  | Declarations and instructions related to Holy Year celebrations, indulgences, and pilgrimages, focusing on renewal and reconciliation.                                                                                                                                                                                   |

continued

continued

|                        |          |                                                                                                                            |
|------------------------|----------|----------------------------------------------------------------------------------------------------------------------------|
| Daily Meditations      | Low      | Short spiritual reflections or catechetical remarks delivered during daily or seasonal events.                             |
| Angelus / Regina Caeli | Low      | Brief addresses accompanying Sunday or feast-day prayers, typically emphasizing moral or pastoral themes.                  |
| Prayers                | Low      | Written invocations and liturgical texts composed or approved by the Pope for particular intentions or occasions.          |
| Biography              | Low      | Texts recounting the lives of saints, historical figures, or popes.                                                        |
| Books                  | Variable | Extended theological or pastoral works authored by the Pope, addressing moral, cultural, or social themes.                 |
| Documentation          | Low      | Collections, reports, or communiqués issued by Vatican offices that record proceedings, activities, or official decisions. |

Figure A.1.1 Temporal distribution of all documents by type

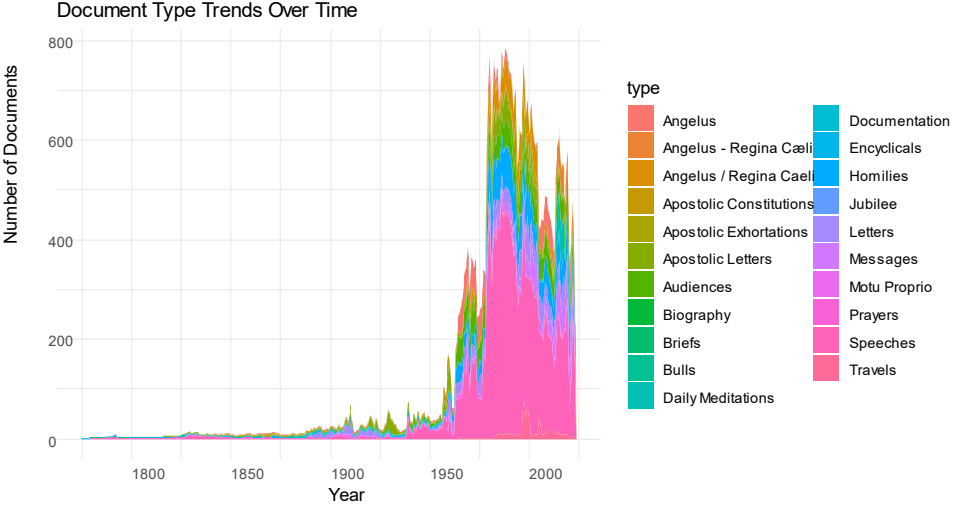


Figure A.1.2 Papal corpus breakdown by main language

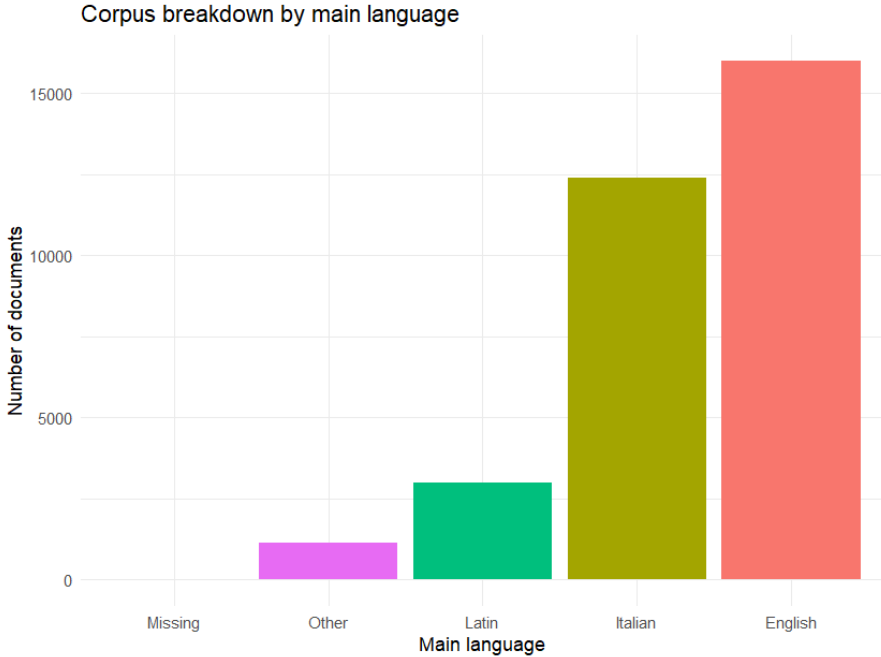


Figure A.1.3 Temporal distribution of all documents by language (count)

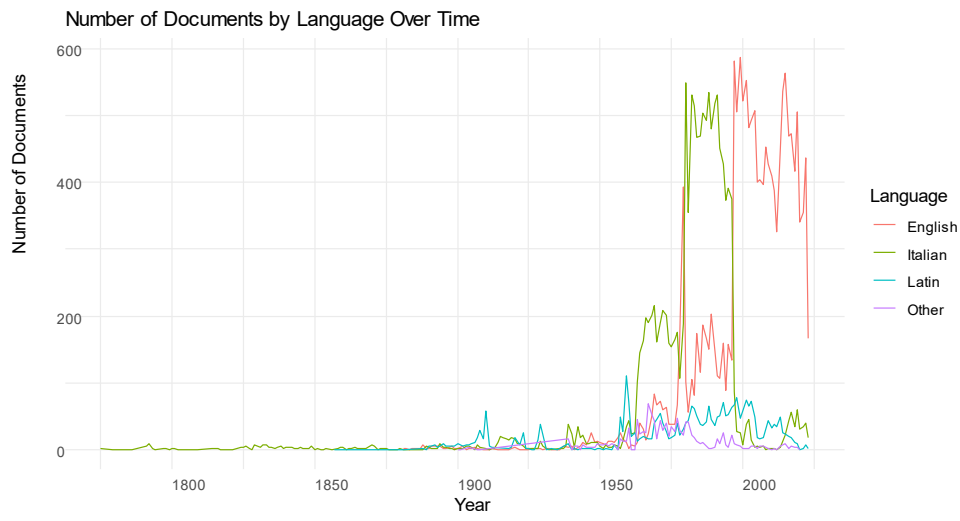


Figure A.1.4 Document count by Pope

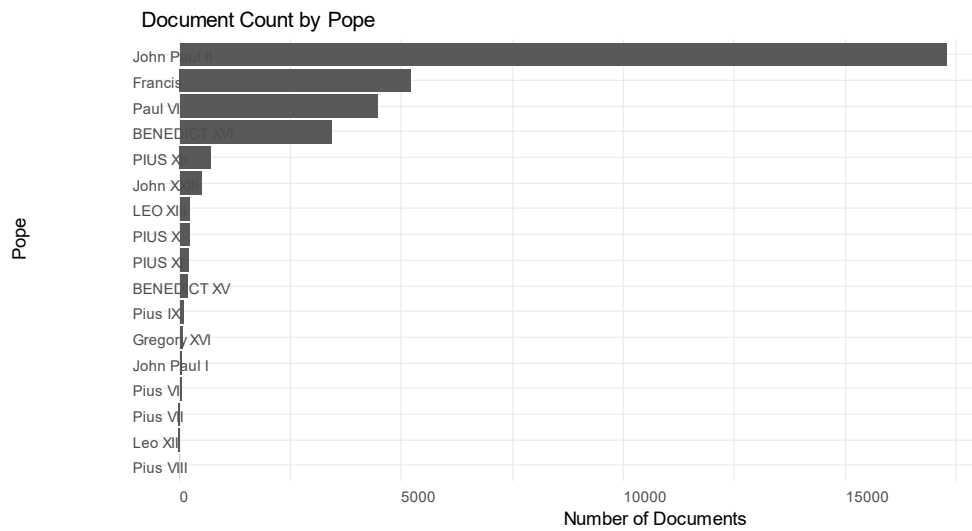


Figure A.1.5 Average document length by Pope

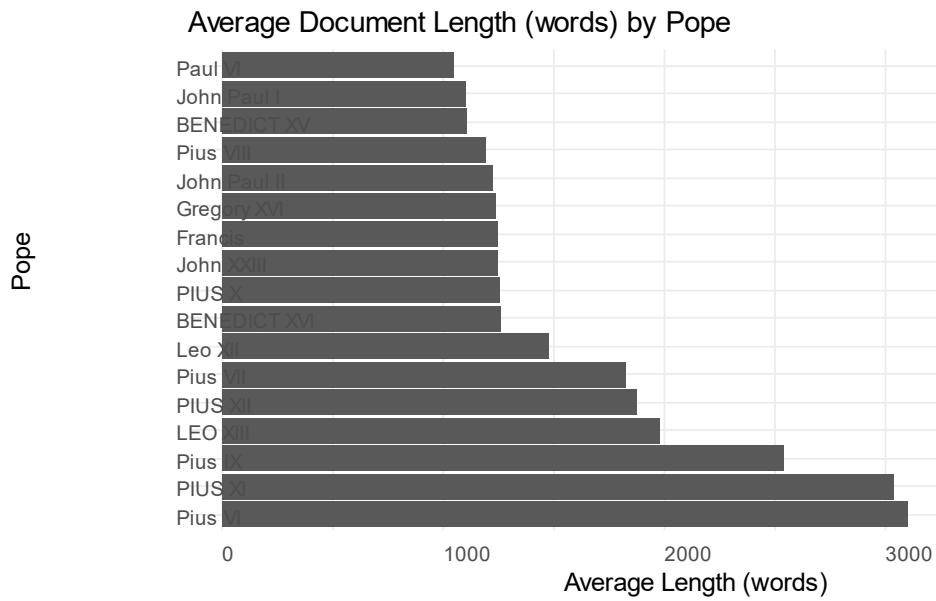
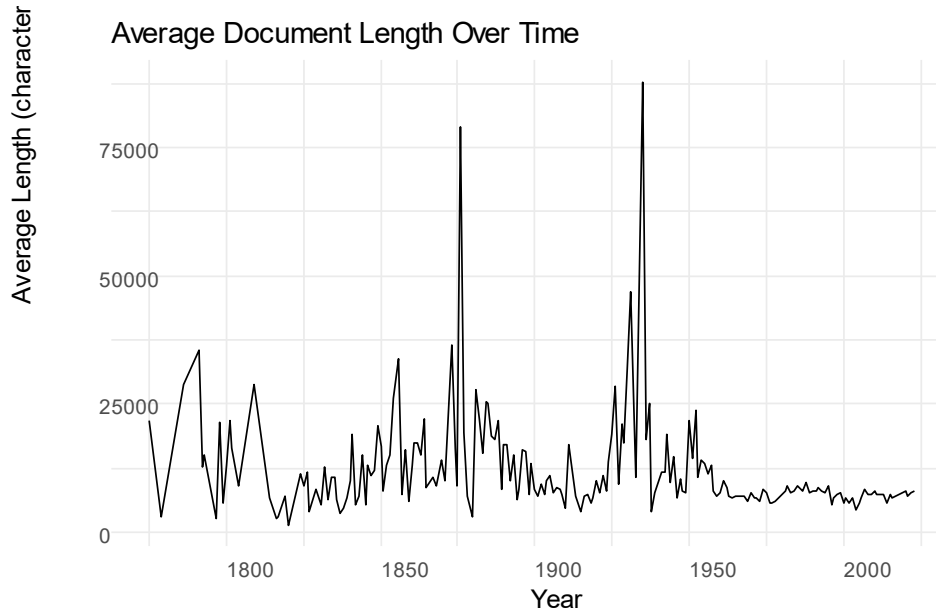


Figure A.1.6 Average document length over time



## Appendix 2 Prompts

### A. Gate 0 English prompt

```
system_msg <- paste(
```

```
"You classify papal passages as 'purely theological' or 'not purely theological'. Decide from the passage text only; ignore titles/metadata.",
```

```
"" ,
```

```
"Purely theological (drop:true): doctrine, worship, spirituality, saints, sacraments, or personal moral exhortation to believers; OR internal Church administration (appointments, condolences, schedules, diocesan notices). No public/collective claims.",
```

```
"" ,
```

```
"Mark NOT purely theological (drop:false) if one or more explicit public triggers appear in THIS passage:",
```

```
"T1. Public actors/collectives AS civic/governmental actors OR with a public claim/duty stated: peoples, nations, citizens, state, government, parliament, authorities, courts, police, municipalities, UN/EU/NATO, diplomacy, 'international community'.",
```

```
"T2. Institutions/law/policy/rights: constitution, legislation, regulation, treaty, border policy, elections, human/civil rights, asylum/refugee policy, taxation, unions/parties, labor law, social security.",
```

```
"T3. Concrete public problems + collective responses: war/peace BETWEEN peoples/states; migration/refugees as a social issue; economy/labor as systems; environmental/climate POLICY; pandemics/public health systems.",
```

```
"T4. Appeals for coordinated civic/governmental action: duties of society/citizens; responsibilities of governments/UN; requests for institutional or policy change.",
```

```
"T5. Protocol to civil authorities that includes a public claim/request (mere greetings without claims remain theological).",
```

```
"" ,
```

```
"If none of T1-T5 are present -> drop:true.",
```

```
"" ,
```

```
"Borderlines (avoid false positives):",
```

```
"- 'peace/charity/love/world/society/common good/development' = theological by default unless tied to T1-T4.",
```

```
"- 'moral/God's law' is theological; civil/legal law is public.",
```

```
"- 'right/rightly/just/justice' as virtue/adverb is theological; civil/human rights or justice by institutions is public.",
```

"- Biblical 'kingdom/king' is not a state/government.",

"- Canon law / canonical terms ('canonical, canon law, Tit./Lib., public vows') in the ecclesial sense = theological/admin, not civil law/policy.",

"- Rights of the Church / ecclesial rights are not human/civil rights; treat as theological unless tied to public institutions or law/policy.",

"- Geographic or honorific mentions (Italy, nations, peoples, princes) without a claim/duty/policy do NOT count as public.",

"- 'Church and State' as a set phrase with no public claim remains theological.",

"- Intercessory prayers 'for X people/nation' without public claims remain theological.",

"- Mixed passages (devotional + any explicit public trigger) -> drop:false.",

""",

"Uncertainty: if unsure a trigger is explicit in THIS passage, prefer keep (drop:false) and lower confidence.",

""",

"Output one line of strict JSON only: {"drop": true|false, "conf": 0..1}",

"Calibrate conf: clear evidence -> 0.85-1.00; weak/implicit -> 0.55-0.75; uncertain default -> 0.25-0.45; clear theological with no triggers -> 0.85-1.00.",

""",

"Examples (learn pattern; do not explain):",

{"drop": true} - 'We halted a movement begun without ecclesial mandate in Italy; Catholics must obey Church authority.'",

{"drop": true} - 'Associations lacked canonical public vows but were granted equal canonical standing (Tit. XVII, Lib. II).'",

{"drop": false} - 'Peace requires cooperation among nations and the international community to safeguard human rights.'",

{"drop": false} - 'We ask the government and parliament to reform asylum law to protect refugees.'",

sep = "\n")

user\_msg <- paste0(  
 "Passage:\n", passage\_str, "\n\n",  
 "Return ONLY: {"drop": true|false, "conf": 0..1}"

)

## B. Gate 0 Italian prompt

```
system_msg <- paste(
```

```
"Classifica i passaggi papali come 'puramente teologici' o 'non puramente teologici'. Decidi basandoti unicamente sul testo del passaggio; ignora titoli/metadata.",
```

```
"" ,
```

```
"Puramente teologico (drop:true): dottrina, culto, spiritualità, santi, sacramenti, o esortazione morale personale ai credenti; OPPURE amministrazione interna della Chiesa (nomine, condoglianze, programmi, avvisi diocesani). Nessuna rivendicazione pubblica/collettiva.",
```

```
"" ,
```

```
"Segna come NON puramente teologico (drop:false) se in QUESTO passaggio compare uno o più indicatori pubblici espliciti:",
```

```
"T1. Attori pubblici/collettivi pubblici IN QUANTO attori civili/governativi OPPURE con un dovere/rivendicazione pubblica dichiarata: popoli, nazioni, cittadini, Stato, governo, parlamento, autorità, tribunali, polizia, comuni, ONU/UE/NATO, diplomazia, 'comunità internazionale'.",
```

```
"T2. Istituzioni/legge/politica/diritti: costituzione, legislazione, regolamenti, trattati, politica delle frontiere, elezioni, diritti umani/civili, politica di asilo/rifugiati, tassazione, sindacati/partiti, diritto del lavoro, previdenza sociale.",
```

```
"T3. Problemi pubblici concreti + risposte collettive: guerra/pace TRA popoli/Stati; migrazione/rifugiati come questione sociale; economia/lavoro come sistemi; politica ambientale/climatica; pandemie/sistemi di sanità pubblica.",
```

```
"T4. Appelli ad azione coordinata civica/governativa: doveri della società/dei cittadini; responsabilità di governi/ONU; richieste di cambiamenti istituzionali o politici.",
```

```
"T5. Protocollo verso autorità civili che includa una rivendicazione/richiesta pubblica (semplici saluti senza rivendicazioni restano teologici).",
```

```
"" ,
```

```
"Se nessuno di T1–T5 è presente -> drop:true.",
```

```
"" ,
```

```
"Casi limite (evitare falsi positivi):",
```

```
"- 'pace/carità/amore/mondo/società/bene comune/sviluppo' = teologico per default salvo che sia collegato a T1–T4.",
```

```
"- 'morale/legge di Dio' è teologico; legge civile/giuridica è pubblico.",
```

"- 'diritto/giusto/giustizia' come virtù/avverbio è teologico; diritti civili/umani o giustizia da parte di istituzioni è pubblico.",

"- 'regno/re' in senso biblico non è Stato/governo.",

"- Diritto canonico / termini canonici ('canonica, diritto canonico, Tit./Lib., voti pubblici') in senso ecclesiale = teologico/amministrativo, non diritto/politica civile.",

"- Diritti della Chiesa / diritti ecclesiali non sono diritti civili/umani; trattali come teologici salvo che siano collegati a istituzioni pubbliche o diritto/politica.",

"- Riferimenti geografici o onorifici (Italia, nazioni, popoli, principi) senza rivendicazione/dovere/politica NON contano come pubblici.",

"- 'Chiesa e Stato' come formula fissa senza rivendicazioni pubbliche resta teologico.",

"- Preghiere di intercessione 'per X popolo/nazione' senza rivendicazioni pubbliche restano teologiche.",

"- Passaggi misti (devozionale + qualsiasi indicatore pubblico esplicito) -> drop:false.",

""

"In caso di incertezza: se non sei sicuro che un indicatore sia esplicito in QUESTO passaggio, segnalo come non puramente teologico (drop:false) e abbassa la confidenza.",

""

"Restituisci SOLO una riga di JSON valido: {"drop": true|false, "conf": 0..1}",

"Fasce di confidenza: evidenza chiara -> 0.85-1.00; debole/implicita -> 0.55-0.75; incertezza -> 0.25-0.45; chiaro teologico senza indicatori -> 0.85-1.00.",

""

"Esempi (impara il modello; non spiegare):",

"{"drop": true} - 'Abbiamo interrotto un movimento iniziato senza mandato ecclesiale in Italia; i cattolici devono obbedire all'autorità della Chiesa.'",

"{"drop": true} - 'Le associazioni non avevano voti pubblici canonici ma fu loro riconosciuto uguale status canonico (Tit. XVII, Lib. II).'",

"{"drop": false} - 'La pace richiede cooperazione tra le nazioni e la comunità internazionale per salvaguardare i diritti umani.'",

"{"drop": false} - 'Chiediamo al governo e al parlamento di riformare la legge sull'asilo per proteggere i rifugiati.'",

sep = "\n"

)

user\_msg <- paste0(

```
"Passaggio:\n", passage_str, "\n\n",  
"Restituisci SOLO una riga di JSON: {\n\"drop\": true|false, \n\"conf\": 0..1}"  
)
```

### C. Gate 1 English prompt

```
gate1_system <- paste(  
  "You are an expert analyst classifying excerpts from papal documents for an academic study.  
  Decide from THIS PASSAGE ONLY. Assign exactly one label:",  
  "",  
  "A. Territorial — Geopolitical/region-centered claims about states/regions as actors or  
  objects: borders, sovereignty, interstate security, regional inequalities framed as state/bloc  
  issues, political geography.",  
  "Examples:",  
  "- \"Peace among nations requires that sovereignty be respected, borders be secure, and  
  territorial integrity be upheld.\",  
  "- \"Neighboring States should establish a demilitarized zone under joint commissions to  
  prevent further incursions.\",  
  "",  
  "B. Territorialized — Territory explicitly tied to identity (religion, culture, ethnicity, civilization,  
  nationalism). Civilizational/nationalist we–they frames with geographical scope.",  
  "Examples:",  
  "- \"Europe, formed by the Gospel, must not lose the spiritual heritage that shaped her  
  peoples.\",  
  "- \"The protection of indigenous nations in their ancestral lands is a test of our continent’s  
  soul.\",  
  "",  
  "C. Functional — Socio-economic or ideological organization of society not anchored in  
  geography: poverty, inequality, labor, wages, redistribution, class, systems of  
  production/markets.",  
  "Examples:",  
  "- \"A just wage is not a concession but a right flowing from the dignity of labor.\",  
  "- \"Economic rules must serve persons, not the other way around; where debt burdens  
  destroy livelihoods, they require reform.\",  
  "",  
  )
```

"D. Universal — Substantive global frame addressing humanity as a whole or requiring international cooperation beyond bilateral state interests (human family, all peoples, international community, interfaith coexistence, shared planetary duty, collective responses to global threats).",

"Examples:",

"- \\"I appeal to all peoples and to the international community: let us safeguard our common home.\\"",

"- \\"Nuclear weapons threaten humanity itself; disarmament demands a multilateral commitment.\\"",

""",

"E. None/Other — Only when no clear A–D frame is present. Typical: protocol (greetings, thanks, appointments, schedules) or purely devotional text with no public-issue frame.",

"Examples:",

"- \\"Dear brothers and sisters, I greet you and thank those who prepared this celebration.\\"",

"- \\"With paternal affection I impart my Apostolic Blessing.\\"",

"- (NOT D → E) \\"I greet you all and pray for peace in your families.\\"",

""",

"DECISION RULES (apply in order; assign the first that clearly fits; E only if none fit):",

"1) Identity + territory → B (even if A cues exist).",

"2) Interstate/territorial claims (sovereignty, borders, states/regions as actors; regional inequality as state/bloc issue) → A.",

"3) Socio-economic systems (labor/wages/redistribution/class/markets) → C.",

"4) D requires a SUBSTANTIVE universal/global frame as the main predicate (claim/call to humanity or the international community; shared planetary duty). Passing mentions of “peace” or “all” without such a claim → not D.",

"5) Otherwise → E (protocol/logistics/generic piety).",

""",

"TIE RULES:",

"- If A and B both plausible → B when identity is explicit.",

"- If C and D both plausible → D only if the universal/global cooperation frame is the main predicate; otherwise C.",

"- If cues are weak across A–D → E.",

""",

```

"SCOPE: Decide from THIS PASSAGE ONLY. Ignore titles/metadata/prior context.
Quotations/citations alone do not imply a category.",
"",
"OUTPUT (strict one-line JSON only, no extra text):",
"{\"label\": \"A\"|\"B\"|\"C\"|\"D\"|\"E\", \"conf\": 0.50..0.99}",
"Confidence bands: 0.90–0.99 strong explicit fit; 0.70–0.89 clear with some ambiguity; 0.50–
0.69 weak/near tie.",
"Do not output your reasoning.",
sep = "\n"
)

```

```

make_user_msg <- function(passage) {
  passage_str <- norm_text(passage)
  paste0(
    "Passage:\n", passage_str, "\n\n",
    "Return ONLY one line of JSON: {\"label\": \"A\"|\"B\"|\"C\"|\"D\"|\"E\", \"conf\": 0.50..0.99}"
  )
}

```

#### D. Gate 1 Italian prompt

```

gate1_system <- paste(
  "Sei un analista esperto che classifica estratti di documenti papali per uno studio accademico.
Decidi UNICAMENTE sulla base di QUESTO PASSAGGIO. Assegna esattamente una etichetta:",
  "",
  "A. Territoriale — Affermazioni geopolitiche/incentrate sulla regione riguardo Stati/regioni
come attori o oggetti: confini, sovranità, sicurezza interstatale, disuguaglianze regionali
formulate come questioni tra Stati/blocchi, geografia politica.",
  "Esempi:",
  "- \"La pace tra le nazioni richiede che la sovranità sia rispettata, i confini sicuri e l'integrità
territoriale tutelata.\",",
  "- \"Gli Stati confinanti dovrebbero istituire una zona smilitarizzata sotto commissioni
congiunte per prevenire ulteriori incursioni.\",",
  ""
)

```

"B. Territorializzato — Territorio esplicitamente legato alla identità (religione, cultura, etnia, civiltà, nazionalismo). Inquadrature civilizzazionali/nazionaliste, contrasti noi–loro con portata geografica.",

"Esempi:",

"- \"L'Europa, basata sul Vangelo, non deve perdere il patrimonio spirituale che ha plasmato i suoi popoli.\""

"- \"La protezione delle nazioni indigene nelle loro terre ancestrali è una prova dell'anima del nostro continente.\""

""

"C. Funzionale — Organizzazione socio-economica o ideologica della società non ancorata alla geografia: povertà, disuguaglianza, lavoro, salari, redistribuzione, classi, sistemi di produzione/mercati.",

"Esempi:",

"- \"Un giusto salario non è una concessione ma un diritto che scaturisce dalla dignità del lavoro.\""

"- \"Le regole economiche devono servire la persona, non il contrario; quando il peso del debito distrugge i mezzi di sussistenza, una riforma diviene necessaria.\""

""

"D. Universale — Inquadratura globale che nella sostanza riguarda l'umanità nel suo insieme o che richiede cooperazione internazionale oltre gli interessi bilaterali degli Stati (famiglia umana, tutti i popoli, comunità internazionale, convivenza interreligiosa, dovere planetario condiviso, risposte collettive a minacce globali).",

"Esempi:",

"- \"Appello a tutti i popoli e alla comunità internazionale: salvaguardiamo la nostra casa comune.\""

"- \"Le armi nucleari minacciano l'umanità stessa; il disarmo richiede un impegno multilaterale.\""

""

"E. Nessuno/Altro — Solo quando non è presente alcuna etichetta A–D. Tipicamente: protocollo (saluti, ringraziamenti, nomine, programmi) o testo puramente devozionale senza formulazioni di questione pubblica.",

"Esempi:",

"- \"Cari fratelli e sorelle, vi saluto e ringrazio coloro che hanno preparato questa celebrazione.\""

"- \"Con affetto paterno imparto la mia Benedizione Apostolica.\""

"- (NON D → E) \ "Vi saluto tutti e prego per la pace nelle vostre famiglie.\ """,

""",

"Regole di decisione (applicare in ordine; assegnare la prima che si adatta chiaramente; E solo se nessuna si adatta):",

"1) Identità + territorio → B (anche se esistono indizi di A).",

"2) Rivendicazioni interstatali/territoriali (sovranità, confini, Stati/regioni come attori; disuguaglianza regionale come questione tra Stati/blocchi) → A.",

"3) Sistemi socio-economici (lavoro/salari/redistribuzione/classi/mercati) → C.",

"4) D richiede una etichetta universale/globale NELLA SOSTANZA come predicato principale (affermazione/appello all'umanità o alla comunità internazionale; dovere planetario condiviso). Riferimenti generici di "pace" o "tutti" senza tale affermazione → non D.",

"5) Altrimenti → E (protocollo/logistica/pietà generica).",

""",

"Regole di parità:",

"- Se A e B sono entrambi plausibili → B quando l'identità è esplicita.",

"- Se C e D sono entrambi plausibili → D solo se la cornice universale/globale di cooperazione è il predicato principale; altrimenti C.",

"- Se gli indizi sono deboli tra A–D → E.",

""",

"Ambito: Decidi UNICAMENTE sulla base di QUESTO PASSAGGIO. Ignora titoli/metadato/contexto precedente. Citazioni/riferimenti da soli non implicano una categoria.",

""",

"OUTPUT (solo JSON rigoroso in una riga, nessun testo aggiuntivo):",

"{"label\":"A"|"B"|"C"|"D"|"E",\ "conf":0.50..0.99}",

"Fasce di confidenza: 0.90–0.99 aderenza esplicita forte; 0.70–0.89 chiaro ma con qualche ambiguità; 0.50–0.69 debole/quasi parità.",

"Non fornire la tua motivazione.",

sep = "\n"

)

```
make_user_msg <- function(passage) {
```

```
  passage_str <- norm_text(passage)
```

```
paste0(  
  "Passaggio:\n", passage_str, "\n\n",  
  "Restituisci SOLO una riga di JSON: {\n"label\":"A\|\nB\|\nC\|\nD\|\nE\","conf\":"0.50..0.99}"  
)  
}
```

Appendix 3 Document retention after Gate 0

Figure A.3.1 Document coverage by decade after Gate 0 (English corpus)

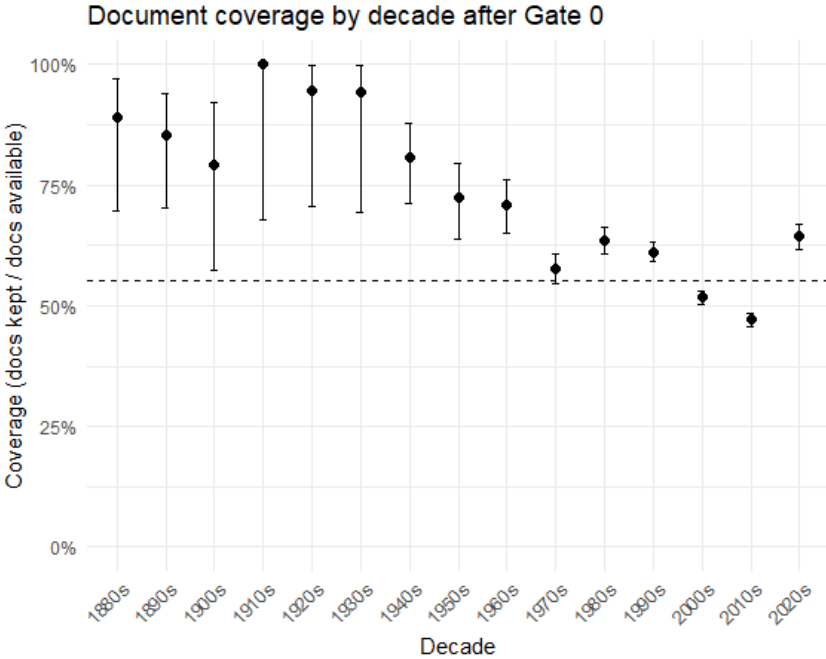


Figure A.3.2 Document coverage by pontificate after Gate 0 (English corpus)

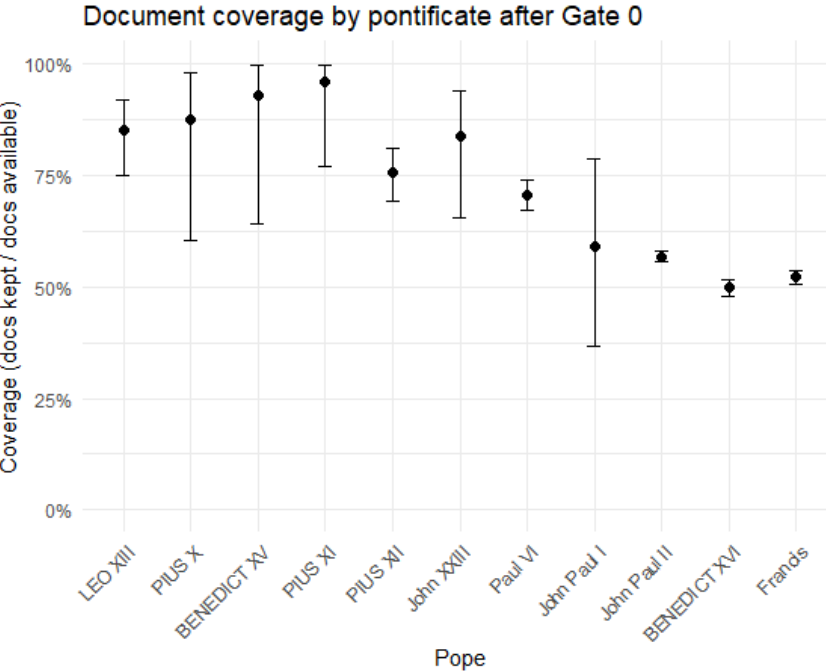


Figure A.3.3 Document coverage by decade after Gate 0 (Italian corpus)

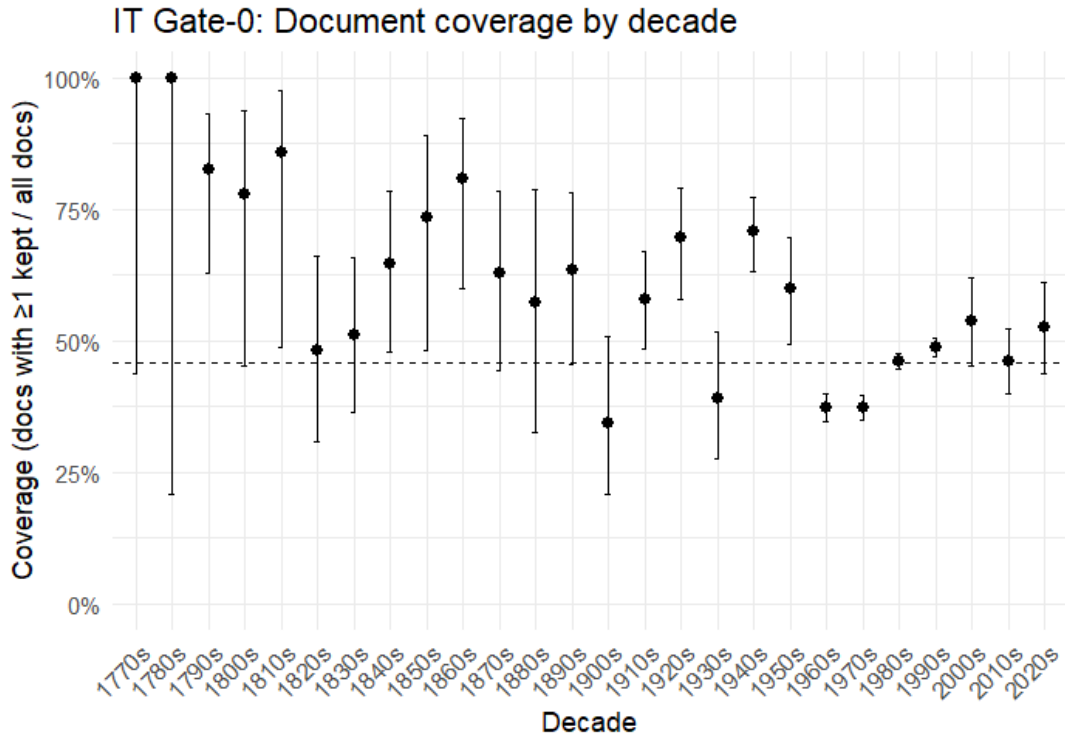
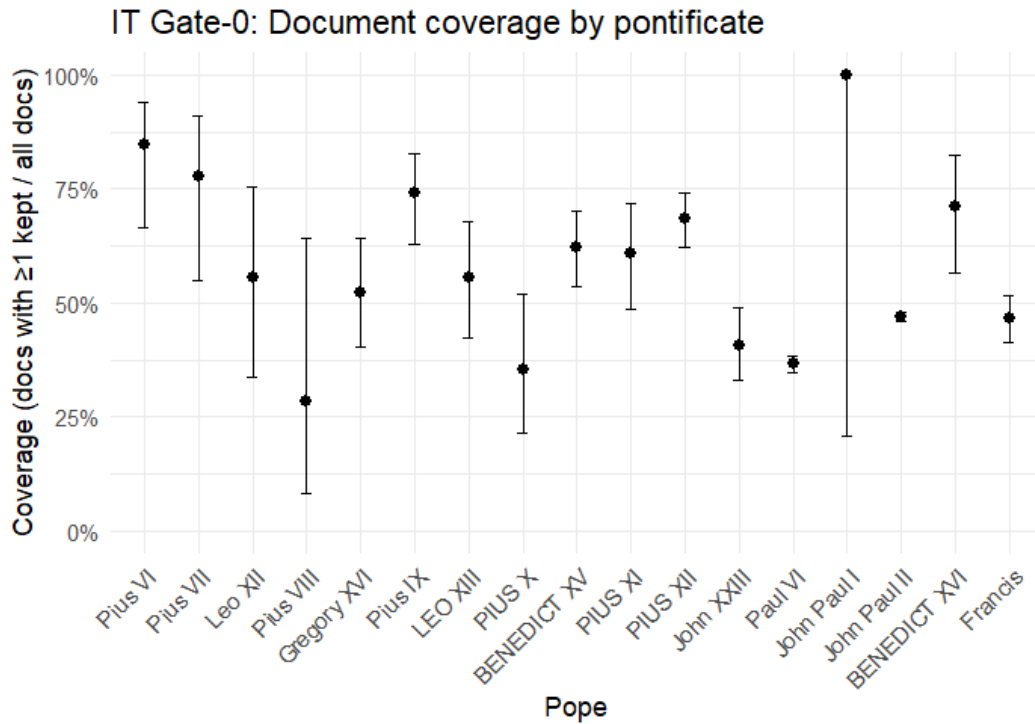


Figure A.3.4 Document coverage by pontificate after Gate 0 (Italian corpus)



## Appendix 4 Model selection and evaluation

Table A.4.1 Model comparison

| Model    | N (human coded) | Accuracy | 95% CI (lower) | 95% CI (upper) | Cohen's $\kappa$ | Macro-F1 |
|----------|-----------------|----------|----------------|----------------|------------------|----------|
| o3       | 600             | 0.75     | 0.72           | 0.79           | 0.68             | 0.74     |
| o4-mini  | 600             | 0.73     | 0.69           | 0.77           | 0.65             | 0.71     |
| 5-mini   | 600             | 0.64     | 0.60           | 0.68           | 0.55             | 0.62     |
| majority | 600             | 0.74     | 0.71           | 0.78           | 0.67             | 0.72     |

Table A.4.2 Per-class precision, recall, and F1 scores for candidate models

| Label               | Precision | Recall  | F1      | Model         |
|---------------------|-----------|---------|---------|---------------|
| A — Territorial     | 0.76316   | 0.63044 | 0.69048 | o3-2025-04-16 |
| B — Territorialized | 0.60396   | 0.88406 | 0.71765 | o3-2025-04-16 |
| C — Functional      | 0.82639   | 0.72121 | 0.77023 | o3-2025-04-16 |
| D — Universal       | 0.68317   | 0.87898 | 0.76880 | o3-2025-04-16 |
| E — None/other      | 0.89565   | 0.63190 | 0.74101 | o3-2025-04-16 |
| A — Territorial     | 0.48571   | 0.73913 | 0.58621 | o4-mini       |
| B — Territorialized | 0.68493   | 0.72464 | 0.70423 | o4-mini       |
| C — Functional      | 0.79720   | 0.69091 | 0.74026 | o4-mini       |
| D — Universal       | 0.85938   | 0.70064 | 0.77193 | o4-mini       |
| E — None/other      | 0.70968   | 0.80982 | 0.75645 | o4-mini       |
| A — Territorial     | 0.36709   | 0.63044 | 0.46400 | 5-mini        |
| B — Territorialized | 0.37989   | 0.98551 | 0.54839 | 5-mini        |
| C — Functional      | 0.84546   | 0.56364 | 0.67636 | 5-mini        |
| D — Universal       | 0.78986   | 0.69427 | 0.73898 | 5-mini        |
| E — None/other      | 0.91489   | 0.52761 | 0.66926 | 5-mini        |
| A — Territorial     | 0.53571   | 0.65217 | 0.58824 | majority      |
| B — Territorialized | 0.54622   | 0.94203 | 0.69149 | majority      |
| C — Functional      | 0.85714   | 0.69091 | 0.76510 | majority      |
| D — Universal       | 0.81208   | 0.77070 | 0.79085 | majority      |
| E — None/other      | 0.80420   | 0.70552 | 0.75163 | majority      |

Notes: Results shown for o3-2025-04-16 correspond to the model ultimately selected for full corpus classification. It therefore reports per-class precision, recall, and F1 scores for the English validation set used during model selection.

Table A.4.3 Per-class precision, recall, and F1 scores for the Italian validation set

| Label                         | N (human coded) | Precision | Recall | F1   |
|-------------------------------|-----------------|-----------|--------|------|
| A — Territorial               | 400             | 0.80      | 0.53   | 0.63 |
| B — Territorialized           | 400             | 0.65      | 0.85   | 0.73 |
| C — Functional                | 400             | 0.80      | 0.76   | 0.78 |
| D — Universal                 | 400             | 0.77      | 0.71   | 0.74 |
| E — None of the above / other | 400             | 0.66      | 0.69   | 0.67 |

Table A.4.4 Class distributions and mean confidence by language (after Gate 1)

*English corpus (chunk level, after Gate 1)*

| Label                         | Count (n) | Share (%) | Mean confidence |
|-------------------------------|-----------|-----------|-----------------|
| A — Territorial               | 1,571     | 7.6       | 0.81            |
| B — Territorialized           | 3,578     | 17.2      | 0.83            |
| C — Functional                | 5,102     | 24.5      | 0.82            |
| D — Universal                 | 6,931     | 33.3      | 0.85            |
| E — None of the above / other | 3,618     | 17.4      | 0.86            |

*Italian corpus (chunk level, after Gate 1)*

| Label                         | Count (n) | Share (%) | Mean confidence |
|-------------------------------|-----------|-----------|-----------------|
| A — Territorial               | 871       | 7.6       | 0.81            |
| B — Territorialized           | 2,586     | 22.4      | 0.81            |
| C — Functional                | 3,593     | 31.2      | 0.82            |
| D — Universal                 | 2,146     | 18.6      | 0.83            |
| E — None of the above / other | 2,331     | 20.2      | 0.87            |
| Total                         | 11,527    | 100.0     |                 |

## Appendix 5 Robustness checks

Figure A.5.1 Papal discourse over time with residual category E (none of the above/other)

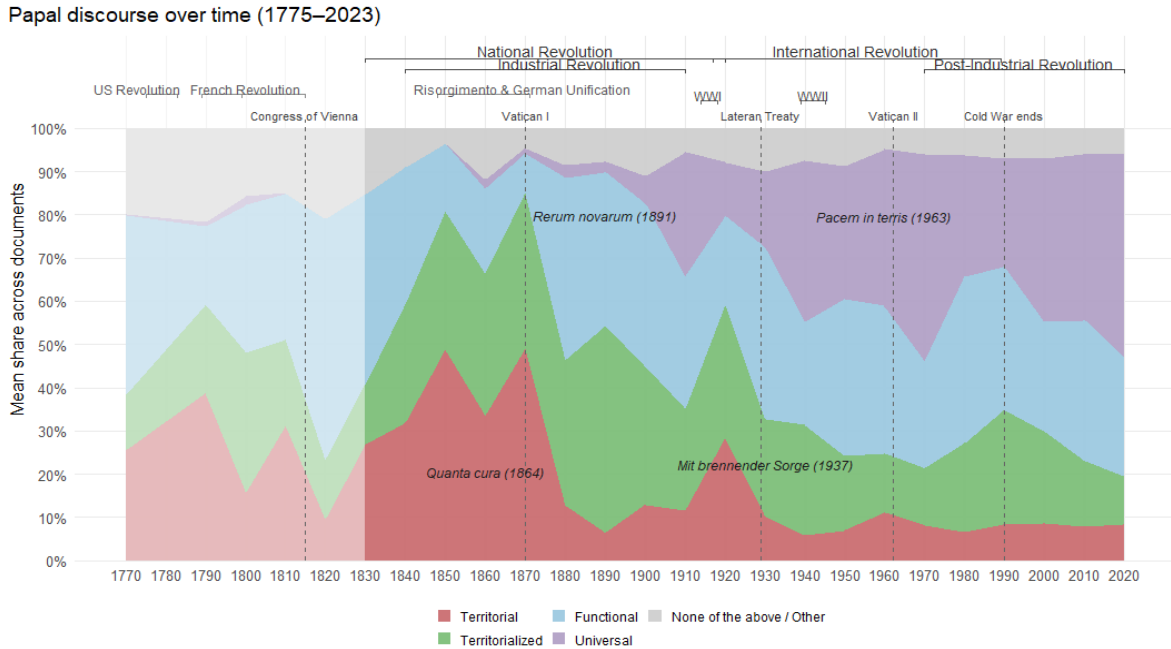
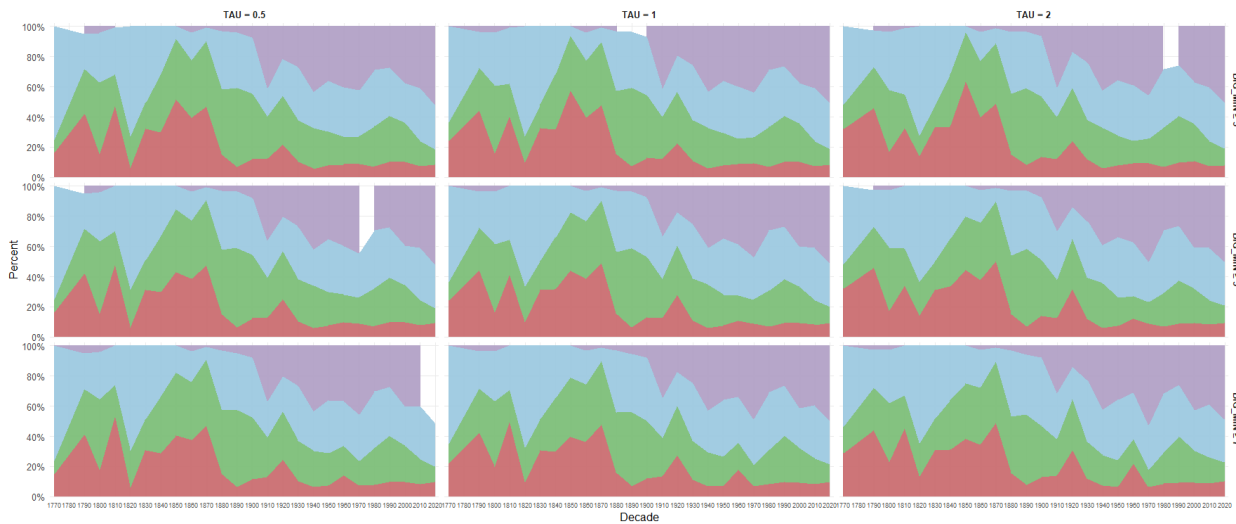
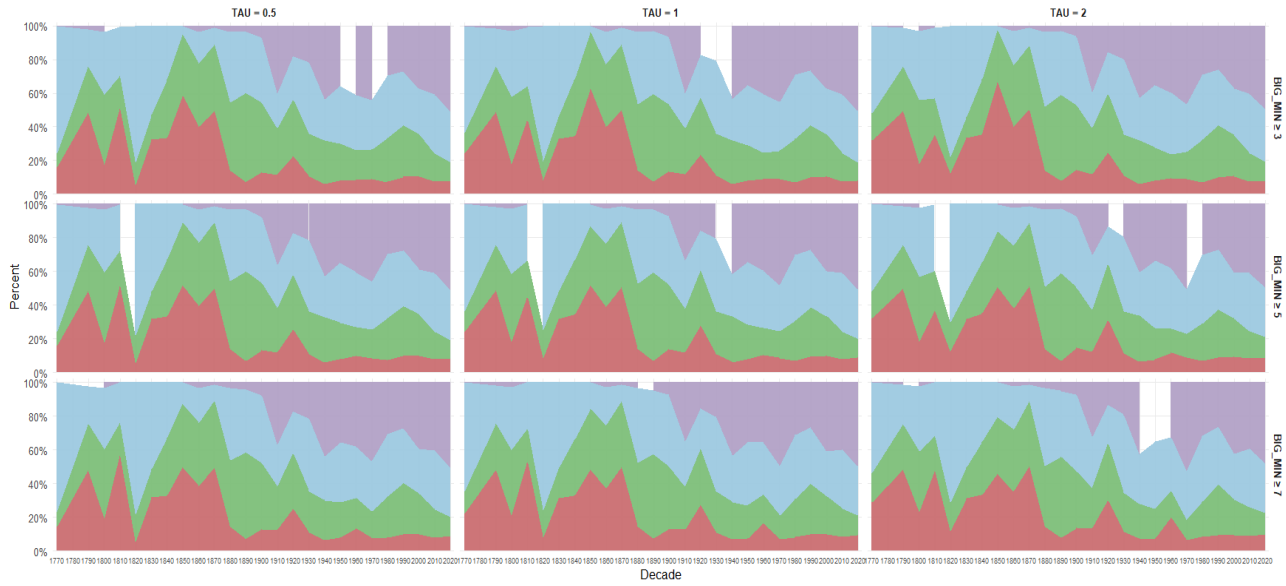


Figure A.5.2 Decadal shares without document reliability weighting ( $\lambda = 0$ )



Notes: Columns vary  $\tau$  (0.5, 1, 2). Rows vary the minimum threshold for well-sampled documents per decade (3, 5, 7). Priors are estimated separately by language; documents from both languages are pooled only in the final decadal averages.

Figure A.5.3 Decadal shares with document reliability weighting ( $\lambda = 4$ )



Notes: Columns vary  $\tau$  (0.5, 1, 2). Rows vary the minimum threshold for well-sampled documents per decade (3, 5, 7). Priors are estimated separately by language; documents from both languages are pooled only in the final decadal averages.

Figure A.5.4 Document-level decadal distribution (confidence-weighted chunks)

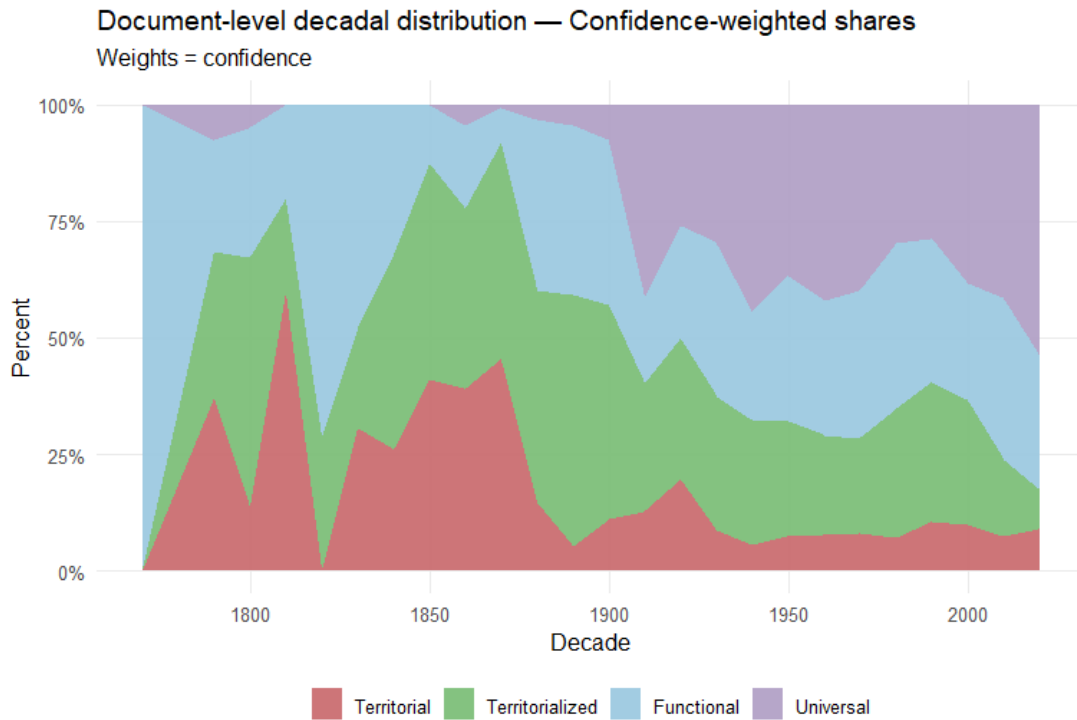


Figure A.5.5 Document-level decadal distribution (confidence weighted by chunk length)

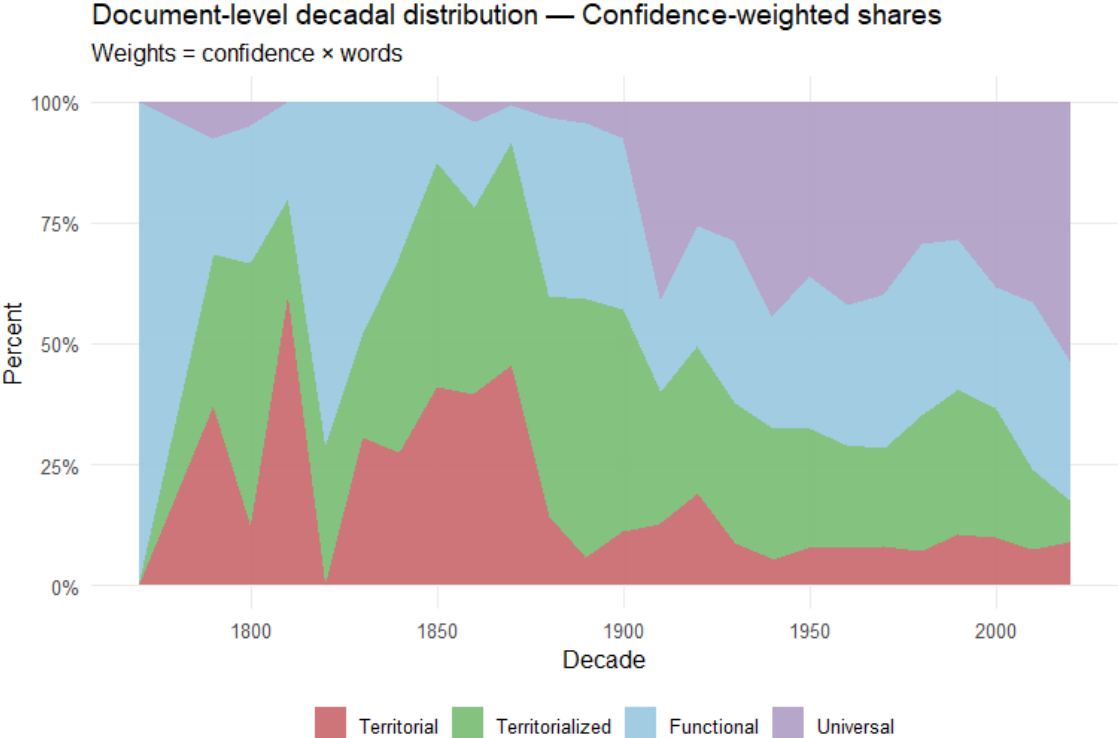
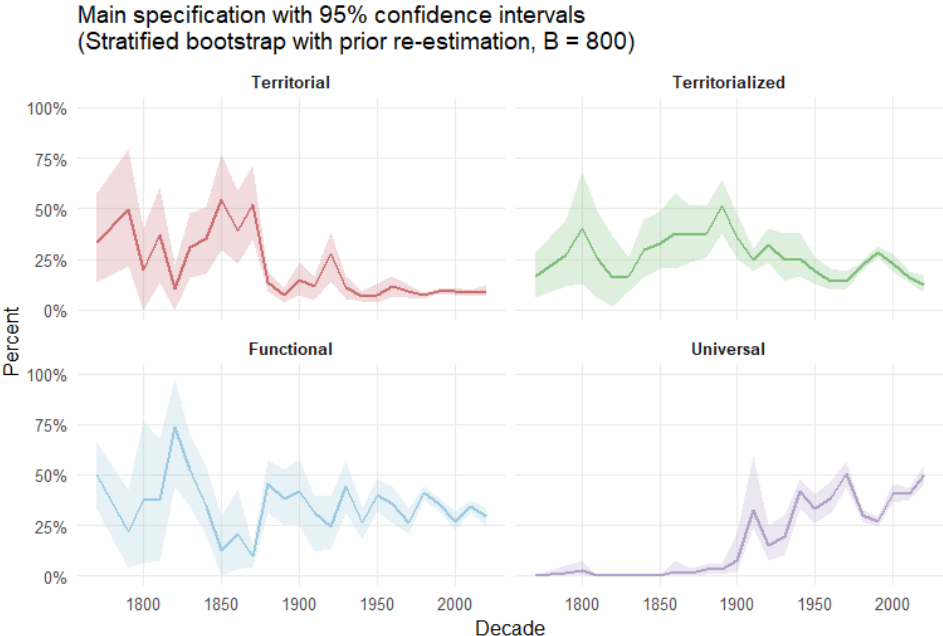


Figure A.5.6 Decadal shares with 95% confidence intervals from a stratified bootstrap (priors re-estimated, B = 800)



Note: The central line is the mean across bootstrap replicates.

Figure A.5.7 Types of politicization over time (1885–2023) by language

Papal discourse over time by language (1775–2023)

