

Diffusion through multiple domains.

The spread of romantic nationalism across Europe, 1770-1930¹

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Note: The appendices start on page 66

Abstract

We examine an extraordinarily consequential case of ideational diffusion: how cultural nationalism spread across Europe during the long 19th century, “awakening” nation after nation. Through which pathways did this new frame proliferate and where did it fall on fertile ground? Using regression analysis with 2300 cities as observational units and a large number of geo-coded data sources, we show that romantic nationalism resonated most in states ruled by dynasties of foreign origins, which contradicted nationalist ideals of self-rule. Other frame resonance mechanisms (such as cultural compatibility) do not seem to have been at play. Regarding pathways, we show that romantic nationalism spread across linguistic, religious, and political boundaries and simultaneously through personal networks, cultural institutions, and within clusters of culturally similar cities. The article advances the study of multiplex diffusion processes, introduces frame resonance mechanisms into diffusion research, and offers the first quantitative account of the rise of cultural nationalism.

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1. Introduction

1.1 What is romantic nationalism and why study it?

Romantic nationalism profoundly transformed the intellectual culture of Europe. Similar to other well-studied cases of the global diffusion of culture, such as Protestantism (Becker et al. 2020), democratic ideals (Wejnert 2005), or more recently neo-liberalism (Fourcade-Gourinchas and Babb 2002), romantic nationalism was extraordinarily consequential for the political organization of the world.

It prepared the ground for the nationalist political revolutions of the 19th and 20th centuries (Hroch (2000 (1968)), which radically changed the political landscape of Europe and beyond: multi-ethnic empires (such as the Habsburg) and dynastic states (such as the Grand Duchy of Tuscany) were replaced by nation-states self-ruled in the name of a particular nation (such as Hungarians or Italians). Before political movements could “liberate” Hungarians from “foreign rule” or “unite” Italians under one political roof, nations had to be imagined: someone needed to describe the speakers of the various Hungarian and Italian dialects as specific and unique “nations,” held together by shared history and common culture.

This is what romantic nationalists achieved.² They wrote the history of their nation’s golden age and its contemporary struggle for independence or unity, replacing the dynastic histories of before. They systematized vernacular languages, hitherto overlooked and despised as plebeian tongues, in grammar books and vocabularies and thus made them fit for poetry as well as languages of administration to replace Latin or Ottoman. They inventoried the folk tales, peasant

² Kedourie 1960; Kohn 1960; Hroch 2000 (1969); Smith 1986, chaps. 7 and 8.

customs, and popular music that expressed the “national culture” in its purest forms, uncontaminated by urbanization, industrialization, and transnational elite cultures.

Romantic nationalism not only had massive political consequences, but also durably shaped perceptions, both lay and scholarly, of the social world as well as our everyday behavior in it (often termed “banal nationalism”, following Billig 1995; Bonikowski 2016). Furthermore, it provides the intellectual foundations of important strands of contemporary politics, including identity politics on the left (Taylor 1992) or populist nationalism on the right (Bonikowski 2017).

Famous examples of work from the early days of cultural nationalism include the orchestral piece “The Moldau”, composed by Czech nationalist Smetana. The melody evokes the landscape around the Moldau river as it swells from a small brook in the Bohemian mountains to a mighty river majestically streaming past Prague. It is part of an orchestral suite tellingly named *Má Vlast* (“My Country”) ... composed almost half a century before the country Czechoslovakia arose from the rubble of the Habsburg empire.

A canonical example of a written text is Fichte’s “Address to the German nation” of 1808, a series of lectures held in Berlin while it was occupied by Napoleon’s troops and penned down half a century before Bismarck hammered together a unified German nation-state. Fichte extended the Enlightenment concept of a social contract across generations, thus suggesting that the nation represents a living body beyond the experience of any individual life.

In the visual arts, we can point at paintings from the “national history” genre, such as Johann Peter Krafft’s 1796 portrait of the legendary Swiss marksman William Tell, finished more than half a century before the Swiss city states unified into a modern nation-state. Tell led the original three Swiss cantons towards independence from their Habsburg overlords in the late 13th century

and became one of the linchpins of official Swiss nationalism from the middle of the 19th century onward.

1.2 Preview of the argument, data, and findings

How do we sociologically understand and comparatively explain the spread of romantic nationalism across Europe's long 19th century? Early scholarship weighed its positive (Smith 1986, chaps. 7 and 8) and negative (Kohn 1960; Kedourie 1960) political consequences or debated if it merely re-configured earlier narratives and symbols of collective identity or broke away from these entirely (see the summary by Ozkirimli 2000). Here, we aim for a comparative explanation of the specific mechanisms behind this momentous, epoch-defining cultural transformation.

We study romantic nationalism as a case of the diffusion of a new cultural frame, examining the channels through which it occurred and the social contexts where it resonated most strongly. Regarding channels, we go beyond simpler, single-network approaches and extend existing studies of diffusion in multiplex networks (Gould 1991; Becker et al. 2020) by exploring a whole range of possible conduits through which romantic nationalism may or may not have percolated. Introducing theories of frame resonance into the diffusion literature, we explore three distinct reasons for which romantic nationalism may have fallen on more fertile grounds in certain parts of the Continent than in others.

To realize this twofold project empirically, we assembled a novel dataset from a wide variety of sources. The units of observations in most analyses are the roughly 2300 cities and towns of Europe with more than 10 thousand inhabitants (using the well-known database of Bosker,

Buringh and Van Zanden 2013), which we follow from 1770 to 1929 with decadal observations. The dependent variable is the number of romantic nationalist works in the genres of writing, music, and the visual arts produced in a town, as recorded in the online version of the monumental *Encyclopedia of Romantic Nationalism in Europe* (*ERNiE*; Leerssen, van Baal and Rock 2018). *ERNiE* was produced by around 350 humanities scholars specializing in specific writers or artists or particular romantic nationalist movements. The three examples of romantic nationalist works cited above are all taken from *ERNiE*. Our sample consists of 1454 writings, 1047 pieces of music, and 3499 works of visual art produced between 1770 and 1929.

A considerable amount of data work was required to code the independent variables that allow us to assess where romantic nationalism resonated and through which channels it diffused. To avoid looking at only those channels through which diffusion actually occurred—a common problem in diffusion research—we explored a wide range of plausible possibilities. The resulting city-level dataset also helps to overcome the “methodological nationalism” (Wimmer and Glick Schiller 2002) of many existing studies that document the “awakening” and eventual political mobilization of a nation in an internalist and often teleological analytical style, mostly using would-be nations as units of observation and analysis.

We find that romantic nationalism flourished in cities ruled by foreign dynasties or that fell under the Napoleonic empire, both of which contradicted the nationalist ideals of self-rule and lent nationalist claims more appeal (what we will call the “contradicting ideals” type of resonance). By contrast, we do not find that romantic nationalism took roots where it was “culturally compatible” with already established frames, such as the proto-nationalist communities imagined by Protestantism, or where it was “empirically credible”, such as in areas

of shared vernacular language that nationalists often saw as the empirical foundation of nationhood.

Through which channels did early nationalism diffuse? We show that it proliferated simultaneously through multiple pathways. Towns and artists/writers who received letters from prominent romantic nationalists were subsequently more likely to produce nationalist writings—thus confirming the importance of personal networks even for macro-cultural change, as recently highlighted by Becker et al (2020).³ Romantic nationalism also spread in proximity to universities and newspaper located in towns that already had become “infected” with romantic nationalism. Finally, it expanded within regions of dense communication and cultural similarity that had been established since late antiquity. These domains of connectivity are all specific to production of intellectual objects. More generic channels that are relevant for the circulation of other types of objects as well, such as those established by shared statehood or networks of stagecoaches and railroads, did not seem to provide conduits for the proliferation of nationalist work.

Overall, the viral spread of romantic nationalism resembles how French sociologist Gabriel Tarde (1890) imagined, in the late 19th century, most large-scale cultural change to happen: as the result of the concatenation of multiple chains of imitation that proceed independently through different channels, moderated by how much the new ideas resonate in local cultural contexts (Katz 1999). In the concluding section, we discuss more specifically how our findings contribute to the literatures on diffusion, on nationalism, and on transformative cultural change more broadly.

³ Similarly for macro-political change Padgett and Ansell 1993; Bearman 1993.

2. Theory

Diffusionist accounts see romantic nationalism not so much as a product of domestic, endogenous processes, as in the classical modernist theories for example of Ernest Gellner (1983). Rather, it represents a cultural frame that travels independently of how far modernity has already advanced locally. This perspective was pioneered by Kedouri (1960), who deplored the spread of romantic nationalism because it eventually brought an end to the relative peace that had prevailed in multi-ethnic empires. It was central to Anderson's account of the "modular" nature of nationalism, which is "capable of being transplanted ... to a great variety of social terrains, to merge and be merged with a correspondingly wide variety of political and ideological constellations" (Anderson 1991: 4; chapter 7), leading from the early republican versions developed in the Americas to the language based popular nationalisms of the romantic era, to the top-down, imperial nationalisms of the late 19th century all the way into the various revolutionary or fascist blends of the 20th.⁴ Building on Anderson, Brubaker's (1996) constructivist approach sees nationalism as a flexible mode of social classification that can be adopted by different actors for varying political ends. Political scientist Timur Kuran (1998) models the spread of nationalism between individuals as a contagion process propelled forward by social influence mechanisms. In the humanities, cultural historian Joep Leerssen (e.g., 2006; 2013; 2020) has studied romantic nationalism extensively, arguing that it spread through a complex network of

⁴ There is also related work on the global spread of the nation-state (see for example Strang 1990; Strang 1991; Wimmer and Feinstein 2010)

personal connections that crisscrossed the political and language communities of the 19th century.⁵

We further develop this diffusionist account theoretically and conceptually and for the first time use systematic empirical data to substantiate it. Theoretically, we rely on arguments about frame resonance from the social movement literature on the one hand and on recent advances in the study of multiplex diffusion networks on the other hand.⁶

2.1 Three variants of frame resonance

Diffusion research examines through which channels and networks new ideas spread. However, not everyone who is exposed to a new idea through these channels will eventually adopt it. A crucial part of diffusion studies (Katz 1999) is therefore to identify those features of individuals or the local context that will increase the propensity to adopt the new way of thinking or acting. To conceptualize local receptivity, we go back to the concept of frame resonance, originally

⁵ A good example is the diffusion of the “national epos”, as detailed by Leerssen, which was adopted from the original, Icelandic model (the Edda) by French nationalists (in the *Chanson de Roland*), Germans (in the *Nibelungenlied*), Russians (in the *Lay of Prince Igor*), Dutch (*Caerle ende Eelegast*), English (*Beowulf*), Irish (the tale of *Deirdre*), and so on (Leerssen 2013: 22).

⁶ Other, equally interesting questions arising from the diffusion literature are not addressed here. Obvious ones are the origin of an innovation, the mechanisms of diffusion at work (such as competition or emulation), the role of network topology, or how an innovation changes during the process of diffusion.

developed in social movement research (Snow et al. 1986; for a more general formulation, see McDonnell, Bail and Tavorly 2017).⁷

Frame resonance comes in three different variants (following McCammon 2013),⁸ all of which could be relevant for understanding the spread of nationalism. While not mutually exclusive, they represent distinct mechanisms of how a new idea gains local traction. Only one of these is regularly considered in diffusion studies. The potential of the frame resonance perspective for our understanding of cultural diffusion processes more generally has therefore yet to be fully harnessed (cf. Snow et al. 2014: 37).⁹ We move in this direction by testing whether any of the three main resonance mechanisms are relevant for the case at hand.

In both movement and diffusion research, many researchers have considered the role of cultural compatibility, that is, the overlap between new and old cultural frames. It should facilitate

⁷ The idea of cultural or discursive frames bears a family resemblance with the terminology of pragmatist cultural sociology, which uses the terms of “cultural repertoires” (Lamont and Thévenot 2000) or “toolkits” (Swidler 1986). In this pragmatist tradition, the emphasis lies on how individuals choose between different repertoires/tools or combine elements from various such repertoires/toolkits to pursue their own ends. In our context, we are less interested in these questions, but in the more basic problem of understanding how new repertoires or tools enter the toolkits, in line with movement research that studies how a cultural movement can introduce and spread new ideas about cultural community and political legitimacy. We also prefer “frame” over “schema”, borrowed from cognitive sciences (DiMaggio 1997), because it is associated with individual-level processes, rather than with the society-level emergence of new ideology.

⁸ For a more fine-grained typology, see Benford and Snow 2000: 619-622; for a differently structured typology, Wetts 2023.

⁹ Researchers who study diffusion of and between movements don’t seem to rely on frame resonance mechanisms (see overview in Soule and Roggeband 2018).

adoption, as argued by a range of authors, from early diffusion scholars (Rogers 1995, pp. 240–56) to more recent organizational sociologists (Czarniawska and Sevon 1996; Strang and Soule 1998, pp. 276–79; Levitt and Merry 2009; Love and Cebon 2008), international relations scholars (Cortell and Davis 2000, pp. 73–76), sociologists of science (Cheng et al. 2023), and adherents of world polity theory (Pope and Meyer 2016). To cite an example, the idea of gender equality may not sit well with cultural expectations that are widespread throughout the “patriarchal belt”, stretching from the Middle East to South Asia.

In the nationalism literature, many have argued that Protestantism prepared the ground for nationalism by generating the concept of an egalitarian community to which individuals belong in an unmediated, direct way, by promoting vernacular languages as vehicles of shared faith, and by demanding that ruler and ruled belonged to the same creed (see the summary in Brubaker 2012: 6-8), thus all pre-configuring core characteristics of the idea of the nation.

A second variant of frame resonance is that new discursive frames can be more or less empirically credible (Snow and Benford 1988; Benford and Snow 2000), a mechanism rarely considered in diffusion research.¹⁰ For example, a well-documented description of gender inequalities in pay should enhance the credibility of feminist frames. We derive a specific hypothesis from this argument: romantic nationalism should become more plausible in the eyes of those sharing the same national background if nationalists have already empirically documented the existence of the nation’s unique language, music, history, or folk culture. Most romantic nationalists identified nations, following in the footsteps of philosopher Johann

¹⁰ For studies of social movements that focus on the empirical credibility mechanism, see Zuo and Benford 1995; McVeigh, Welch and Bjarnason 2003; Williamson, Trump and Einstein 2018.

Gottfried Herder (1744–1803), on the basis of linguistic commonality (Leerssen 2013: 12-14). As argued by Strang and Meyer (1993: 490-492), such similarity could also enhance diffusion through homophilious imitation as well as mutual orientation towards each other (see also McAdam and Rucht 1993).

In some parts of Europe, nationalists used religion as a distinguishing feature of the nation as well, especially where this allowed them to further differentiate the national culture from the culture of imperial elites,¹¹ as was the case in Southeastern (e.g., in Greece) and Eastern Europe (notably in Poland) as well as in Ireland.¹² If empirical credibility was a major mechanism, Romantic nationalism should spread within linguistic or religious communities, with early nationalist work laying the empirical ground for future work.

A third variant of frame resonance is much less often studied (McCammon 2013; Maney, Woehrle and Coy 2005; see also McDonnell, Bail and Tavory 2017). We call it the “contrasting ideals” mechanism, where a frame resonates with the population because it offers the image of an ideal world, an utopia of sorts, that contrasts with the current state of social reality (see also the idea of “oppositional consciousness” as developed by Mansbridge and Morris 2001). For

¹¹ Religious domains could also gain relevance through the associated organizational networks. Some nationalisms (e.g. in Slovenia, Serbia, and Ukraine) were propagated by the clergy, especially in the early phases (for a case study, see Himka 1979). This would relate to a diffusion mechanism proper, however, rather than a frame resonance mechanism.

¹² In Northwestern Continental Europe, by contrast, nationalists downplayed the historical divide between Catholics and Protestants and emphasized linguistic commonalities instead (e.g. in Germany or the Netherlands). In religiously homogenous (Catholic) Southern and Southwestern Europe, religion did not serve as a marker for national difference either.

example, the ideal of equality before God that characterizes both Islam and Christianity appealed to those at the bottom of the ritual hierarchy of Hinduism, which explains a good deal of modern conversions to the two monotheistic faiths in India (Bauman 2008).

For the case at hand, we hypothesize that in areas where nationalist principles of legitimacy—the rule of like-over-like—are violated, romantic nationalism should be more attractive for local intellectuals and artists compared to self-ruled, culturally homogenous states where nationalist calls for cultural autonomy and political self-determination seem less relevant.¹³

In the history of the 19th century, foreign rule expanded across the continent with the conquests of Napoleon. It has been widely demonstrated that French military occupation and political domination stimulated nationalist resentment.¹⁴ It exposed formerly “self-ruled” peoples (e.g., in modern-day Germany) to foreign rule and thus made them aware of the unique characteristics of their own culture and history. Romanticism also opposed the rationalist, universalist principles embodied by the French enlightenment, revolution and empire, thus making it attractive as a counter model for the intellectual elites of subjugated peoples.

¹³ This hypothesis is observationally compatible with a modernization account, as developed by Hechter (2000), according to which political centralization and the rise of modern bureaucracies made foreign rule more relevant for the everyday lives of individuals and thus spurred nationalist reactions. We lack systematic data on political centralization across the cities of Europe to disentangle the political modernization from a diffusionist frame resonance mechanism.

¹⁴ More generally on the role of resentment in generating nationalism, see Greenfeld 1992.

2.2 Diffusion through multiple channels

The second strand of research that inspired our project is the study of multiple networks of diffusion. The possibility of multiple channels has recently attracted the attention of diffusion scholars from a variety of angles. In international relations, researchers have discussed how to determine which networks of ties between countries empirically channel diffusion processes (Zhukov and Stewart 2013). Scholars working in the tradition of world polity theory have recognized that global organizational networks are increasingly fragmented into regional clusters (Beckfield 2003). Similarly, Velasco (Forthcoming) has shown that the world polity is segmented into different networks of non-governmental organizations through which different—even opposed—cultural frames diffuse. At a more theoretical level, Wimmer (2021) has suggested accounting for multiple and overlapping networks of influence to understand how different, often conflicting cultural templates simultaneously spread around the world.

In sociological network studies, scholars have considered the multiplexity of networks, where the same actors might be linked through different kinds of ties (Gould 1991; Becker et al. 2020).¹⁵ Building on these studies, Hsiao and Pfaff (2022: 8) have called for the study of “multiplex networks” and “multiple diffusion processes” to understand the spread of radically new ideas. Similarly, an authoritative recent review of network and diffusion research concludes:

The unidimensional quality of many network studies to date, focusing on one type of tie, misses much of the richness present in social life. Reincorporating multiplicity provides ... another way to balance depth

¹⁵ Work in physics has started to mathematically model diffusion in such multiplex models (Gomez et al. 2013; Battiston, Nicosia and Latora 2014).

and breadth to answer important comparative questions (Rawlings et al. 2023: 412, echoing Wang and Soule 2012 :1715).

These various strands of inquiry lead to a question this paper seeks to address empirically: through which of the various channels of connectivity are cultural templates more likely to diffuse? Distinguishing between different possible channels of influence and diffusion is also important to avoid confirmation bias: Most research (with important exceptions such as Simmons and Elkins 2004) simply reports those channels through which diffusion actually occurred. We thus cannot ask which networks are more likely to channel which kind of diffusion processes and why.

We adopt Wimmer’s (2021) terminology and describe a network of individuals, institutions, or localities that are connected with each other through a particular type of tie as a “domain”: a relatively bounded but overlapping area of connectivity within which diffusion processes are more likely to occur. For simplicity, we also use the term domain to describe areas where a frame should be more resonant, for the three reasons discussed above, and thus also more likely to be adopted by the local population.

We distinguish, as is common in the literature (e.g. Rogers 1995, chapter 5; Becker et al. 2020; Soule and Roggeband 2018), between personal networks—where influence travels through connections between individuals—and other channels of diffusion. For non-personal channels, we further distinguish between cultural, political, and economic domains of diffusion, thus covering a large range of plausible influence channels¹⁶—with the notable exception of

¹⁶ We note here that our literature search did not produce a systematic typology of diffusion channels. We integrate, however, the most prominent distinctions. We also note that the various channels we consider here provide examples of all types of network ties foreseen in Borgatti’s (2009) typology.

professional networks (such as through membership in academies or Free Mason Lodges), for which we lack empirical data. Further below, we will differentiate between domains that are more specific to intellectual production and those of a more generic nature relevant for other sectors of social life as well.¹⁷

For personal networks, we rely on letters written by the most prominent romantic nationalists, following up on Becker et al.'s (2020) analysis of the role of Luther's letters in diffusing Protestantism. Ideally, we would have information on letters written by all intellectuals, whether or not they were romantic nationalists. Hélas, no such data is available. We hypothesize that writers and artists who received letters from prominent romantic nationalist before they produced their first nationalist work were more likely and more quickly to subsequently do so. At the city level, cities that received such letters should produce more nationalist work in the future and more quickly.

For cultural channels, we gathered data on the spatial proximity to university or newspaper towns that had seen nationalist production already. Universities and newspapers were major centers of cultural innovation and dissemination in Europe's long 19th century Europe. More specifically, universities were often hotbeds of romantic nationalist activism (cf. Leerssen 2006: 597). Newspapers provided not only the discursive raw material for imagining a nation, as in Anderson's (1991) canonical account, but often also disseminated nationalist content (or even

¹⁷ Conceptually, this distinction maps onto those made by scholars of technology diffusion (where geographic proximity is opposed to more specific channels such as R&D foreign direct investment; Keller 2004) or the diffusion of policies (where sectoral ties are distinguished from more generic ties between countries; Jordana, Levi-Faur and i Marín 2011).

propaganda) themselves. Not surprisingly, mass media are one of the most cited channels in diffusion research more generally, from Rogers' (1995, chapter 5) seminal work onward.

But cultural frames could also have disseminated along more informal, less institutionalized cultural channels, such as the regions of long-standing connectivity and commonality that emerged since Roman times and consolidated throughout the Middle Ages. As others have shown, these connected regions—proxied by Roman road networks that dominated Europe's transportation system from late Antiquity until the 18th century—produced, over the centuries, areas of cultural similarity that show up in contemporary survey data on normative preferences (Flückiger et al. 2022). Romantic nationalism may very well have diffused within these regions because mutual awareness of and cultural familiarity with each other enhances the borrowing of new ideas (Rogers 1995: 305-308; Strang and Meyer 1993: 490-492).

Romantic nationalism could also have spread within political networks, especially those contained within the states that existed at various points throughout the 19th and early 20th centuries. States bundled and bounded networks of artists and writers, for example, in artistic or (proto-)political associations within which artists and writers got to know each other. Equally importantly, members of the same polity share the orientation towards the state, its decisions, narratives and symbols, and thus form an arena of mutual awareness within which diffusion processes can unfold (McAdam and Rucht 1993).

For economic and infrastructural domains of connectivity, we focus on the stagecoach networks that expanded across Europe from the late 17th century onward—replacing the medieval road system inherited from the Romans—as well as on the railroad networks that proliferated from the middle of the 19th century onward. An idea should be adopted more quickly if its origins lie 10 miles down the road than if it takes 5000 miles of roads to get there. Indeed, previous research

suggests that Christianity diffused along the Roman road network in antiquity (Fousek et al. 2018), that the establishment of railways in British India increased trade between regions (Donaldson 2018), and that scientific innovations travelled along the railway lines of 19th century Germany (Chiopris 2024).

These infrastructural domains were obviously more general than most others discussed above, as they fostered the spread of religion, the trade of material goods, as well as the exchange of scientific ideas. This leads us to distinguish between more specific and more generic domains, as mentioned above. Specific domains are those within which intellectual objects (such as romantic nationalism) are particularly likely to circulate, while other kinds of objects (say, sacks of coffee) are less likely to be transmitted. More generic domains are those within which many different things circulate—from goods and merchandises to individuals or ideas.

The following table gives an overview over the various domains that are candidates for the diffusion of romantic nationalism as well as the areas particularly receptive to the new creed through the three frame resonance mechanisms. We note which of these domains are more specific to intellectual life and which ones are of a more generic nature.

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3 Hypotheses and data on independent variables

In contrast, for example, to the study of contemporary diffusion between countries, no data on these domains exist for 19th-century Europe. Most existing diffusion research on these and earlier periods is therefore limited to a single measurement of relationships between units.¹⁸ Other research simply uses geographic distance between places as a measure of connectivity and assumes that diffusion must be at work if proximity between two locales predicts adoption (as criticized by Everton and Pfaff 2022).

To empirically execute our multiple domain approach and to explore the various frame resonance mechanisms, considerable data work was therefore needed. We synthesized and geocoded nearly two dozen sources, from linguistic maps to information on which railroad line was opened in which year across the Continent. They are listed in Appendix A, together with descriptive statistics.

In line with the spatial lag approach, which is now standard in much diffusion research, we define influence as proximity to prior nationalist work. However, we refine this approach by adding geographic specificity to the idea of proximity, measuring it as miles of distance in a

¹⁸ Wurpts et al (2018) rely on trade relationships or membership in an alliance of cities. Fousek et al (2018) use a road network. Gould (1991) relies on two measurements, one for organizational ties and one for neighborhood co-residency, in his famed network study of the French insurrection of 1871. Becker et al. (2020) consider three types of personal ties of Luther in their study of the Reformation. Even research on contemporary diffusion often restricts the analysis to one or two indicators of network connectivity, such as, at the country level, membership in International Government Organizations or the presence of International Non-Governmental Organizations, as in much diffusion research inspired by World Polity theory (e.g. Boli and Thomas 1997).

spatially defined network (e.g., distance within a railway network) rather than as linear geographic distance (for which we control, however, in robustness models). Where we don't have spatially specified networks (as is the case with shared polities) and to test some of the frame resonance mechanisms, we use a temporal lag and measure influence as the number of nationalist works produced in the previous decade within the same domain. A number of theoretically meaningful control variables are added, which we discuss in the next section.

Some other plausible arguments linking the rise of nationalism endogenously to political turmoil and conflict (such as the failed revolutions of 1848) or to memories of lost statehood (as in Poland) or to industrialization (à la Gellner 1983) will be briefly discussed in the section with robustness checks and alternative explanations, along with the corresponding measurements and data sources.

3.1 Language and religion

Two of the three frame resonance arguments refer to the religious or linguistic properties of cities. According to a cultural compatibility argument, Protestant cities should produce more nationalist work than other cities (H1). The empirical credibility argument suggests that the more romantic nationalist work has already been produced within an area of shared language or religion, the more it should encourage further such production in the future (H2).

We used two language maps covering 57 languages, which we also group into 16 language families for robustness, to code which vernacular language the majority of city inhabitants spoke during the 19th century: one published in a Rand McNally Atlas (1897) for non-Russian countries and the Russian Census language map of 1897 (based on Troinitskii 1905) for Russia. We

georeferenced the two language maps to determine which linguistic “zone” a given city coordinate falls into. We adopt a similar approach to identify Protestant cities and religious groups more generally, using two different maps (Times 1900; Andrees 1887) to code cities as majority Catholic, Protestant, Greek Orthodox, Armenian Orthodox, Muslim, or Buddhist. Some regions have overlapping religions (e.g. Muslim and Armenian Christian in central and eastern Turkey), in which case we counted nationalist artworks for both religions. For robustness purposes, we regrouped the Christian religions into the two categories of Western and Eastern Christianity. Appendix B displays robustness tests and additional information about the linguistic and religious data.¹⁹

¹⁹ We unfortunately could not find comprehensive maps of the geographic distribution of religious and language groups in earlier decades. We believe, however, that linguistic and religious change was relatively minor over the long nineteenth century and should have changed the majority population in very few of the 2300 cities. According to Bade (2008), a major historian of European migration, the main flows during the long 19th century were rural-urban migrations of a usually short distance (almost always within language groups) as well as a massive emigration wave to the New World, which obviously didn’t affect the religious or linguistic majorities in European cities. The Napoleonic wars were not associated with major population displacement, while the Balkan wars of 1912/13 were, which are situated at the very tail end of our time period, however. Other European wars in our time period (e.g. the German wars of unification or the German-French war) also didn’t change the linguistic or religious population compositions at the local level. Similarly, the *cuius regio eius religio* rule that was re-affirmed and codified in the peace of Westfalia in the 17th century largely froze the religious map in Europe and prohibited forced conversions. Finally, the language map we used is not at the level of granularity to include dialects (e.g. of Italian or German), thus language standardization during the late 19th century should not represent a major issue.

3.2 Foreign rule

Cities situated in dynastic states whose rulers were of “foreign” origin should be more likely to embrace nationalism than other cities (H3). To test this frame resonance argument, we first coded the polity to which each city belonged in each decade according to Wimmer (2023), who uses ESS NUTS regions as units of observation. We then added a dummy variable for “foreign rule,” coded as 1 if the governing elites of a state were perceived by themselves and the population at large to be of different ethnic or religious origin from the majority of their subjects. Thus, Ottoman territories in Christian Europe are coded as 1 but as 0 in Turkey. The British or Romanov monarchy is not considered “foreign” (despite both dynasty’s German origins), while Habsburg rule over Greece is.

There is a temporal and a spatial aspect to the Napoleonic occupation, generating two distinct hypotheses. First, we expect that romantic nationalist work appears most often in the decades during and immediately after Napoleonic rule (H4). Second, romantic nationalism should emerge in towns that belonged to a state occupied by Napoleon (thus generating a nationalist backlash) but lying outside of direct control of the empire or one of its puppet states (H5). In these towns, writers and artists could produce nationalist, anti-Napoleonic work without being censored by the well-organized French imperial agencies. The history of the Free Masons in Belgium under Napoleonic rule illustrates their effectiveness: they transformed the lodges from proto-nationalist organizations into cults of the emperor (Arvelle 1995).

Data concerning the geographic extent and duration of Napoleonic occupation across Europe are provided by Acemoglu et al. (2011). We distinguish between cities outside of Napoleon’s empire, cities that were not part of the empire but situated within countries that were conquered by it, and cities that were occupied and lied within countries that were conquered. If an

occupation spans a decade boundary (e.g., Switzerland from 1798–1803), we code both decades as occupied.

3.3 Letters

As mentioned above, we lack data on letters between European artists and intellectuals more generally. However, the *Encyclopedia of Romantic Nationalism in Europe* documents which influential nationalist writers wrote letters to whom and when (similar to the data structure used in Becker et al. 2020). This allows us to shift to a writer/artist level of analysis. We hypothesize that writers and artists who had not yet produced any nationalist work and who received letters from prominent nationalists were more likely to subsequently produce nationalist work themselves (H6). Since *ERNiE* only lists writers and artists who eventually produced a nationalist work, the analysis at the writer/artist level effectively asks if receiving letters from nationalists accelerates the production of the first nationalist work.

Shifting back to cities as units of analysis, this hypothesis would predict that receiving a letter written by a nationalist would increase the likelihood that some inhabitants of that city will subsequently produce a romantic nationalist piece of writing as well (H7). The effect of such letters could be stronger if the letters come from a hotbed of romantic nationalism: the larger the total number of nationalist writings near the senders of a letter, the more likely a receiving city is to produce romantic nationalist writings (H8).

The authors of *ERNiE* focused on the most prominent and prolific letter writers, as they had emerged from their qualitative study of hundreds of biographies of writers and artists across Europe. They chose the four most prominent German nationalists whose letters were already

edited and digitalized and complemented these with the hand-coding of the letters of other prominent and prolific writers from Denmark, France, and Germany. The analysis thus includes the central nodes in the letter networks but omits some bridging nodes that emerged from their analysis later on.²⁰

The letters are not filtered by content, impact, or type of addressee and thus includes romantic nationalist as well as non-nationalist addressees (such as librarians or family members) in the city-level analysis, which should therefore produce conservative estimates of the letters' influence. A total of over 38000 letters were included, which were directed at ca. 2700 individuals. We focus on the production of nationalist writings as the outcome in this analysis²¹ because the overwhelming majority of correspondence was directed at writers. We conduct extensive robustness checks, which we report below, to make sure our results are not biased by differential overall productivity of cities or individual writers / artists, their geographic move across cities, or the fact that letter writers themselves produced nationalist work.

²⁰ In personal correspondence, Professor Leerssen mentions nine romantic nationalists as playing an important role as bridging nodes, which are omitted from ERNiE and thus from our analysis.

²¹ As a possible example of diffusion through letters, we point at the letters of Jakob Grimm, the famed German philologist and folklorist, to the historian Heinrich Schreiber, who originally was focused on the local history of Freiburg and formed part of the late enlightenment movement. Years after he corresponded with Grimm (Leitzmann, Gürtler and Grimm 1923: 125f.), he seems to have become a romantic nationalist, publishing a collection of local folk tales and joining the German Catholic church, a nationalist splinter organization that seceded from Rome.

3.4 Universities and newspapers

Regarding cultural institutions, we hypothesize that the proximity to a university town in which romantic nationalist work had already been produced should encourage nationalist adoption as well (H9). We distinguish this diffusionist from a modernist argument about universities, according to which the exposure to modern, secular centers of learning and teaching should facilitate the emergence of nationalist imaginations. We will therefore test if proximity to a university town *without* previous nationalist production increases the probability of future such production as well.

University data—their foundation, the years of operation, and their locations—were collected from two volumes of the monumental *Geschichte der Universität in Europa* (Rüegg and Briggs 1996; Rüegg and Briggs 2004). We matched the university towns to our list of cities (with a success rate of over 90%). Distinguishing between university towns that already have been the site of nationalist productions and those who have not generated two different distance measures.

Newspapers present another possible channel of diffusion. While Anderson thought that newspapers generated romantic nationalism endogenously, our diffusionist argument is that newspapers were exogenous conduits specifically for the dissemination of romantic nationalism. If that was true, only proximity to a newspaper-producing town that was also the site of previous nationalist cultural production should encourage the further spread of nationalism (H10). By contrast, proximity to other newspapers should have no such effects.

Newspaper data were sourced from the comprehensive, pan-European catalogue of the *Zeitschriftendatenbank* (ZDB) of the German National Library.²² We complemented this with

²² <https://zdb-katalog.de/imprint.xhtml#aboutus> (accessed February 2023)

data for Belarus, Armenia, Georgia, and Turkey from other sources. We again calculated two distance measures, one to newspaper towns that had already been sites of nationalist production and one for those that had not yet seen any such production.

3.5 Regions of cultural similarity

Europe is divided into zones of cultural similarity produced by the Roman road network that persisted for over a thousand years (e.g., Flückiger et al. 2022). It is reasonable to assume that these regions of cultural similarity existed throughout the long 19th century as well. We hypothesize that the shorter the distance of a town on the Roman road network to another town where romantic nationalism had already taken roots, the likelier it should be the site of future nationalist production as well (H11). Note that the mechanism here is not contemporary diffusion on the Roman road network, but the cultural similarity that a short distance on the Roman roads had generated in prior centuries.

Geospatial data on the Roman road network come from McCormick et al (2013). Many of the cities in our database were not situated on a Roman road during antiquity or had even developed after the end of the Roman empire. We therefore constructed two distance variables: distance *to* the nearest point on a road and distance to the nearest nationalist production during the previous decade *via* the road, as long as that previous nationalist work was within 5 miles of a road. Using different thresholds for road proximity, such as 10 miles or 50 miles, produced substantively identical results (Appendix D). When no nationalist work is accessible through the road network, the distance to nationalism variable is treated as missing (N = 3,561). We also top-coded these observations to check for the robustness of results, which hold up (Appendix D2).

Another, perhaps more intuitive way to explore regional culture effects is to identify such regions using clustering techniques. If the Roman roads had created historically meaningful cultural regions within which romantic nationalism diffused, then the number of nationalist works produced in a cluster during the previous decade should be associated with the number of nationalist works in the present within that same cluster (H12). Note that these regions often cross-cut language boundaries, for example along the Rhine, or only comprise certain areas of a linguistic territory (see Figure 3 below). They are thus distinct from domains of shared language. We identify clusters using the greedy modularity maximization algorithm (Clauset, Newman and Moore 2004). Using a Louvain CDA or the Girvan and Newman CDA produced substantially identical results (Appendix D, Table 2).

3.6 Shared statehood

Romantic nationalism could also have diffused within polities that bound networks of intellectual organizations and provided a shared focus for writers and artists. More romantic nationalist pieces of work in the past decade could thus encourage even more such work within the same contemporary state (H13). To test this argument, we again determined to which polity each city belonged in each decade using data from Wimmer (2023) and coded a variable for the number of works produced in each city's polity during the previous decade.

3.7 Transportation infrastructures

The final type of domain is generated by the transportation infrastructure through which goods, ideas, and people travelled. These networks changed dramatically during the long 19th century.

The Roman/medieval road network mentioned above was expanded considerably from the 18th century onward. Postal services, with their new networks of stations, horse changing posts, restaurants and hotels transformed the way Europeans moved around space. From the 1870s onwards, and in the pioneering industrial countries even before that, railroads rapidly replaced stagecoaches. If stagecoaches and railways map onto general exchange networks, we would expect towns that are close, in terms of distance on stagecoach roads (H14) or railways tracks (H15), to towns where nationalist work has been recently produced to be more likely to do the same.

We coded spatial lag variables for stagecoaches (the main mode of transport until ca. 1870) and for railways (which took over from the 1870s onward). All variables were logged to avoid skewedness. We use two continental stagecoach maps detailing the roads along which stagecoaches traveled, created by Franz Güssefeld in 1793 and Auguste-Henri Dufour in 1848, which we both acquired from the *Bibliothèque Nationale de France*. The former was used to map the stagecoach routes from 1770s to 1840s, and the latter was used for the 1850s and afterwards. For each city, we created two variables, similar to how we coded the Roman road variables: distance from a city to the nearest stagecoach stop and distance to the nearest romantic nationalist work of the previous decade on the stagecoach network. We again define all nationalist works that are within 5 miles from the next stagecoach route as being accessible through the network. When there is no nationalist work reachable through the network, the second variable was again coded as missing (N=1,873; or top-coded in robustness models, shown in Appendix D Table 4).

We follow the same process for rail networks by measuring the distance from a city to the nearest railway station and the distance to the nearest nationalist work produced in the previous

decade, measured along the rail network. But we now have time-varying data such that the railway network is coded differently for each decade. We use two sources for rail data: Berkeley's Historical GIS of Europe database (generously provided by Martí-Henneberg 2013) and the online database produced by Cima (1998-2008). 2219 city-decades have no nationalist work accessible through the railway and are coded as missing or were top-coded (the latter results are again shown in an appendix).

4 Units of observation, dependent and control variables, and model specification

4.1 Units of observation and dependent variable

Cities from the Clio-Infra database (Bosker, Buringh and Van Zanden 2013) are the most fine-grained units of observation on which some basic control variables are available. These cities are observed once every decade, generating city-decades as units of observation and analysis (e.g., Paris 1820s, Paris 1830s, etc.) from 1770s to 1920s. We restricted the sample to cities in European countries only (to match the coverage of *ERNiE*), including Turkey and the European parts of Russia. In total, 2270 cities were included, yielding 36320 city-decade observations. The locations of these cities are shown in Figure 1.

FIGURE 1 HERE

The main dependent variable of interest is the number of romantic nationalist works produced in a given city during a given decade, as cataloged in *ERNiE* (published in print as Leerssen, van Baal and Rock 2018). We focus on the most complete lists, which are those of paintings, writings, and works of music. *ERNiE* provides not only information about the work itself, but also the coordinates of the place where it was first published, exhibited, or performed²³ as well as the year of production.

There are 6,438 romantic nationalist works in the database; 192 were dropped because either coordinates or year of publication was missing. We assigned each nationalist product to the nearest city if it originated within 5 miles of a city centroid. 98% of the nationalist products in the database were created within 5 miles from the coordinate of a city and fall within our time period between 1770 and 1920. Of these, 1461 were writings, 1048 were musical works, and 3504 paintings.

²³ We validated the location coding of *ERNiE* with a randomly chosen sample of 100 works, using resources available on the internet. In 80% of cases, we confirm the location assigned to the work by *ERNiE*. In the remaining 20%, almost all of which were attributed to capital cities, we do not know if a) *ERNiE*s researchers had additional (e.g. offline) resources available that indicated that the place of production was indeed the capital or b) the location of the production/exhibition/performance was impossible to determine and the coders thus assigned the work to the capital, following *ERNiE*'s coding rules. Overall, 67% of works were located in a capital city, a maximum of one fifth of which might be attributed to the capital due to the lack of more specific information. Thus, between 0 and 13% of the overall location codings might be attributed to capital cities due to missing information. To make sure that our analyses were not affected by this potential measurement error, we ran all our analyses without capital cities as well. As shown in Appendix C Table 1, the results don't differ substantially from the main findings. All main analysis include a control for capital city, as discussed in the next section.

4.2 Control variables and model specification

We include a suite of control variables for each city-decade observation. In the main analysis, we do not include network measures, such as the centrality of a city in the various transportation networks described above. This is because our goal is to understand how romantic nationalism spread through networks that connected cities to nationalist artworks, rather than to other cities. Our approach thus adds specificity to the idea of diffusion by detailing the channels through which it operated, rather than by identifying the nodes most susceptible to influence. In robustness models (available upon request), we show that city centrality measures for the various transportation networks are never associated in significant ways with nationalist production (in line with the results of Becker et al. 2020), while including these measures does not change any of our results.

We include eight controls that are relevant for the production of nationalist work. These are:

- a dummy variable for each decade to account for unmeasured historical specificities of each period;
- logged city population (Bosker, Buringh and Van Zanden 2013), with intervening decade populations (the dataset provides population estimates for every 50 years) interpolated via a simple exponential growth function; larger cities should generate more nationalist works if these were randomly distributed over the population;
- a dummy variable indicating capital cities, which should increase the likelihood of nationalist production given that capitals are often centers of intellectual and political innovation;

- dummy variables indicating whether the major religion of the city is Catholic and whether the city had a bishop seat. The seats of bishops and archbishops were usually centers of intellectual life and the arts.
- logged distance to the nearest river and logged distance to the nearest sea, with shapefiles downloaded from the Global Runoff Data Centre and from Patterson and Kelso (2012) respectively. These control for other possible diffusion pathways through water transportation. One wonders whether the emergence of universities and newspapers is endogenous to these two geographic variables, which means that including them would produce biased estimates. Models with or without these geographical controls (not shown) are substantially identical, however.
- logged distance to the nearest artist/writer since cities without artists/writers are less likely to be the site of romantic nationalist production (see the note on model specification further below). We collected the list of artists/writers who were active during the 18th, 19th, and 20th centuries from Wikipedia, using the Wikipedia “subcategory” classification scheme as a guide.²⁴ We collected data on artists, painters, writers, novelists, poets, dramatists and playwrights, essayists, non-fiction writers, short story writers, memoirists, musicians, and composers (thus mirroring the scope of *ERNiE*), excluding those who died before 1770 and those who were born after 1900. This produced a list of 27,704 artists/writers. We then calculated the logged geodesic distance between each of the 2270 cities and the locations of each artist/writer’s birth, work life, and death, retaining the smallest value as a control. For robustness purposes, we also

²⁴ https://en.wikipedia.org/wiki/Category:Container_categories (accessed in October of 2021).

included the total number writers and artists in each city as a control (Appendix C Table 2, Column 4).

4.3 Model specification

We use zero-inflated negative binomial regression models for two reasons. First, there are excess zeros in the outcome variable. Most city-decades do not have any romantic nationalist production. Only 185 out of 2270 cities ever produced a nationalist work, and only 747 out of 36320 city-decades have ever saw such work emerging. Second, the probability of having excess zeros is determined by a different mechanism than the one determining how many nationalist works a city produced, if any. In the case at hand, many cities may not host any artists/writers at all and therefore cannot produce any nationalist work. In such cases, zero-inflated models are useful because they fit both excess zeros and the count of the event when the outcome is non-zero. Zero-inflated negative binomial models are preferred over zero-inflated Poisson models because the likelihood ratio tests for alpha are significantly positive in all models.

In the zero-inflated part of the model, we include logged distance to the nearest known artist/writer to proxy for the probability that the city contained *any* professional artists/writers. In the non-zero count part of the model, we include the main independent variables of interest to test our hypotheses, described in section 3, as well as controls for the 8 covariates described in section 4.2. For robustness purposes, we included the number of (instead of the distance to the nearest) writer / artists as a control and we also ran logistic regressions without cities that did not house at least one known artist/writer. Results are substantially identical. The same goes for models with bootstrapped standard errors, for an event history specification, which only looks at

the first nationalist production in each city, or for a two-way-fixed effects specification (with city and decade fixed effects), which controls for omitted variables in a difference-in-difference design²⁵ (online Appendix C).

5 Results

Before discussing the regression results, a look at the aggregate temporal trend is illuminating. Figure 2 depicts the cumulative number of nationalist works per decade in all of Europe. It shows the classic S-shape well-known from diffusion studies (Geroski 2000). It is generated by an acceleration of the adoption rate in the middle of the process and a slowing down towards the end. This offers preliminary evidence in support of a diffusionist interpretation of the rise of romantic nationalism across Europe.

... Figure 2 about here ...

Obviously, the cumulative trend says nothing about the channels through which this diffusion process operated, nor about which cities were more receptive to romantic nationalism and why. In the following, the regression results are presented in the same order as above, moving from

²⁵ Two-way-fixed effects models, while ideal for purposes of causal identification, are problematic when applied to datasets such as ours where the outcome is staggered, where there is causal heterogeneity over time, and where treatments are continuous, which is why we prefer the ZINB model specification overall. Most results hold up in a TWFE specification, as shown in the appendix.

frame resonance mechanisms to personal networks and to cultural, political, and infrastructural domains.

5.1 Frame resonance

Table 2 summarizes the results regarding the various domains where, according to the three frame resonance hypotheses, romantic nationalism could have fallen on more fertile grounds. Model 1 shows that Protestant-majority cities are not more likely than others to develop romantic nationalist work, in contrast to the cultural compatibility argument specified in H1. In Model 2, we explore domains of shared language and in Model 3 of shared religion. Previous nationalist production in neither of these two domains stimulates further contemporary production in a city (in contrast to H2). Changing the lag from 10 years to the entire period before the focal period did not change these findings, nor did grouping languages or religions into families (Appendix B, Table 3). In other words, we don't find much evidence for an empirical plausibility mechanism. However, interaction models with decades (Appendix G Table 1) show that nationalist production within a language group did inspire further such work during the first third of the time period under consideration—though these interaction terms fail to reach standard levels of significance except in 1800 and 1810. In supplementary analysis, we also find that shared language does provide a domain for the diffusion of written work—for which linguistic commonality plays an obvious role—while it doesn't do so for paintings (Appendix B Table 5;

the models for music do not converge).²⁶ We conclude that language commonality is not a main driver in the diffusion of nationalist work beyond the early time period and the genre of writing.

In Model 4, we find that cities under foreign rule produced more nationalist works, in line with H3 about the role of contrasting ideals in the process of diffusion, the third frame resonance mechanism. Model 5 addresses the specifics of Napoleon's empire as a special case of foreign rule. It shows that compared to cities in countries that had not been occupied by Napoleon, cities in occupied countries produced more nationalist works (confirming H5). However, only cities that remained outside of the direct control of the empire did so, while cities that were also occupied did not produce any more nationalist art, likely because of the massive apparatus of censorship that the empire had rolled out, as the brief discussion of the case of Belgium suggested.

Figure 4 shifts to an aggregate time-series mode of analysis to further explore the effect of Napoleonic occupation and to test H4. It visualizes the temporal increase and decrease of nationalist production in 19th-century Europe, using the predicted values generated by the decade dummies. The number of romantic nationalist works begins to increase slowly in late 18th century and then spikes after the Napoleonic Wars in the beginning of the 19th century, further supporting the argument about foreign rule.

²⁶ Some other results from the within-genre analysis reported in Appendix B, Table 5, diverge from the main findings (for details, see the comments to that Appendix table). The other substantially interesting divergence is that the number of previous writings within a polity influences the chances of subsequent nationalist writings, which is in line with the domain specificity argument since some of these writings (such as Fichte's *Address to the German Nation* mentioned in the introduction) are explicitly political in nature.

FIGURE 4 HERE

5.2 *Personal ties*

We now shift to examine the various possible channels of diffusion. In contrast to the rest of the analyses, Models 1 and 2 in Table 3 use writers and artists as units of observation, rather than cities. 2,059 writers were considered and observed every decade (generating a total of 32,944 writers/artists-decades). Only writers/artists that have not yet produced any nationalist work were included, however, dropping 12,435 observations. Note that all letters are included in the analysis, whether or not they inspired the receiver to produce nationalist work during the following decade. The analysis leverages the fact that all artists and writers eventually produced nationalist work (the inclusion criteria in *ERNiE*), but not all writers and artists received a letter from a prominent nationalist.

Model 1 shows that the more letters a writer/artist received, the more nationalist writings she or he produced in the subsequent decade (supporting H6). We arrive at the same conclusion in Model 2 that dichotomizes the incoming letter variable and thus compares writers/artists who had received at least one letter in the prior decade with those who had not received any such letters (yet).²⁷ In Appendix E Table 1, we re-specify the model as an event history model, exploring if receiving letters shortens the time span until the first nationalist work is produced

²⁷ In Appendix E Table 2 we show that receiving letters does not stimulate nationalist paintings or music composition, indicating that influence is channeled through very specific networks of connectivity, in line with other findings we discuss below.

(which will eventually happen in all cases; there are thus no censoring problems), as well as an OLS specification. The results of both are as expected.

The results are supported by city-level analyses as well, for which we consider all letters, whether or not they were directed at writers and artists who eventually produced nationalist work, thus producing more conservative estimates of the possible influence of letters. Models 3 and 4 in Table 3 predict the number of nationalist writings in a city by the letters its residents received previously.²⁸ Model 3 shows that having received a letter from a nationalist outside of the city is significantly related to a greater amount of subsequent nationalist writings (in support of H7). In Model 4, the independent variable is the number of nationalist writings that had previously appeared within 5 miles of the sender of the letters. It is significantly associated with the outcome, indicating that letters from hotbeds of nationalist activity are especially consequential (H8).

To exclude some obvious problems of identification, we checked (in Appendix E Table 3 as well as Appendix F) if receiving letters simply indicates an (unobserved) higher level of activity by the recipient. We added, in the artist / writer models, a control for the total number of received letters before the preceding decade. In a similar vein, we also controlled, at the city level, for the total number of letters *sent from* a city, the number of letters *sent from and received by* the same city, as well as the total number of artists within a city who had already produced a nationalist work. This is to make sure the received letter variable doesn't capture some unobserved

²⁸ In contrast to the writer/artist-level analysis, the data don't tell us if the writer who received a letter produced his/her first nationalist work subsequently or whether it was another writer from the same city who didn't receive a letter who did so. In this latter case, the mechanism could be a two-step influence: first, from the senders to the receivers of a letter, and second, from the receivers to other writers in the city.

propensity of a city to be involved in letter correspondence or to produce nationalist work of writing or art.

TABLE 3 HERE

5.3 Cultural and political domains

The results from Table 4 show that romantic nationalism spread within specific domains of cultural connectivity. Model 1 evaluates the role of universities. The shorter the distance between a city and the nearest university town that had already seen nationalist production, the more nationalist products emerged (in support of H9). But not all universities acted as conduits of romantic nationalism. Distance to universities that had not seen previous nationalist production had no such effect, in contrast to a possible modernist account of the role of universities in the generation of romantic nationalism. While indicative of a diffusion process, our research design and results cannot rule out the role of omitted variables that could be correlated with the proximity to nationalist production as well universities (but see the results of a two-way fixed effects model specification in Appendix C, Table 1, which support the above interpretation).

Model 2 looks at newspapers as possible channels of diffusion. The results are similar to the ones we obtained for universities: the closer a city from a newspaper town with previous nationalist production, the more likely nationalist writings or artwork will appear later on (in support of H10). But this is not due to a general effect of newspapers as such, as one reading of Anderson's work might suggest: proximity to newspaper towns that had not seen previous nationalist production did not show such an effect. It thus seems that romantic nationalism diffused *through* newspapers, but was not generated *by* them.

Next, we move away from institutionalized cultural domains to informal ones, established by cultural characteristics of the population at large. Results from Models 3, 4, and 5 show that romantic nationalism diffused through regional networks of long-lasting connectivity and cultural similarity generated by the Roman roads. We need to disentangle diffusion proper from the possible legacy effect that having been part of the Roman empire might have on the propensity to embrace Romantic nationalism. In Model 4, we thus exclude all cities from the sample that were never part of the Roman empire. Both the results of models with (Model 3) and without (Model 4) these cities support the hypothesis that when a nationalist work was produced in a culturally similar city (proxied by distance on the Roman roads), more nationalist works were produced in the focal city subsequently (H11).

FIGURE 3 HERE

Another way to evaluate the role of these regions of cultural similarity is to generate clusters in the Roman road network. Figure 3 represents the 15 clusters produced by the greedy modularity maximization algorithm (Clauset, Newman and Moore 2004; see Appendix D, Table 2 for alternative clustering algorithms). Model 5 of Table 4 shows that the number of nationalist works that had been produced in the same cluster in the prior decade is associated with increased nationalist production in the present (in line with H12). This supports our interpretation of how the Roman road legacy operated: by generating regions of cultural similarity that facilitated mutual orientation and observation and that produced similar responses to cultural innovations.

TABLE 4 HERE

The final model in Table 4 evaluates if romantic nationalism spread through political domains, as established by shared statehood, independent of whether these were foreign ruled or not. Model 6 shows that such generic political domains, operationalized as the number of previous nationalist works in the same polity, do not affect future nationalist production (in contrast to H13).²⁹

5.4 Infrastructural domains

Next, we turn to the generic infrastructural networks that linked cities through the flow of people, goods, and ideas. Models 1 and 2 in Table 5 refer to stagecoach routes. Model 1 uses all decades from 1770 to 1920, and Model 2 drops all observations after 1870, when railways had begun to replace stagecoaches. Model 3 refers to the railway network and is limited to decades after the 1860s, when railways became a major mode of transportation (models for the full time span are substantially identical and not shown here). As shown in Table 5, none of the variables was significantly associated with the number of nationalist works produced in a city, controlling for the distance to the next stagecoach or railway station. We do not find any evidence that the ties established by generic networks of transportation and communication contributed to the diffusion of romantic nationalism (in contrast to H14 and H15).

²⁹ For robustness purposes, we constructed the polity variable in different ways, as discussed above in a footnote to the data section. We also tested non-logged counts or extended the time period to the entire span available and the results are not different either. They are presented in the Appendix B Table 4.

TABLE 5 HERE

5.5 Fully specified models

The previous analysis suggests that the diffusion process operated through a variety of specific domains. Did they operate simultaneously through all of them or did one of them dominate the process? One way to explore this question is to generate a fully specified model with all variables combined, as in Table 6. Model 1 refers to the entire universe of cities while model 2 is restricted to the former Roman world, for the same reasons as in some of the above models that evaluated the role of cultural regions. All results hold up and the size of most coefficients changes little, indicating that diffusion occurred simultaneously through these various networks specifically relevant for intellectual life. We arrive at a similar conclusion in additional analyses, available upon request, where we explored if the diffusion variables are mainly operating in foreign-ruled territories, which is not the case. Frame resonance and diffusion mechanisms seem to work independently from each other.

TABLE 6 HERE

6 Alternative explanations and robustness checks

6.1 Some alternative explanations

The diffusionist account we have pursued so far is obviously not the only possible explanation of the spread of cultural nationalism. It could also have been generated endogenously and in parallel way in each of the cities that became sites of nationalist production. First, romantic nationalism could be side-effects of political turmoil or violence such as experienced during the many attempted or successful bourgeois revolutions of the long 19th century. To test this possibility, we link our cities to the polities that existed at the time and use the PolityIV dataset (Marshall, Gurr and Jaggers 2017) to identify periods of political instability. We define these, following Fearon and Laitin (2003), as substantial changes in the combined democracy/autocracy score as well as periods of state break-down or interregnum. To evaluate the possible impact of war at the local level, we use data from a massive encyclopedia of battle field locations (geocoded by Wimmer 2023) and code the distance of our cities to these locations.

Second, memories of lost statehood could endogenously generate nationalist longing to regain cultural independence and political autonomy, as the Polish case suggests. From that same dataset, we create a dichotomous variable indicating if a city was part of a state that had existed sometimes after 1500 but was no longer a political entity during the time period under consideration. None of these three variables show a significant association with the outcome.

Third, we briefly check if industrialization might endogenously propel nationalist production, as maintained by Gellner (1983) in his classic account of the emergence of nationalism as providing the cultural uniformity that an industrialized economy with a flexible labor force needs. We use

three variables to test this argument, if in a preliminary way given the coarse temporal resolution of the available data. We measure the linear geographic distance from a city to the nearest center of coal or textile production or to the nearest area where new industries based on mechanized production were located. The coal data come from Fernihough and O'Rourke (2021) and the textile data from the International Committee for the Conservation of the Industrial Heritage (2013). Information on industrializing regions is taken from two maps published by Pollard (1981), the leading historian of the industrial revolution at the regional level. They refer to 1815 and 1875 respectively. We assign decades up to 1840 to the 1815 map and the later ones to the 1875 map.³⁰ There is no evidence that any of these three measures of industrialization are associated with nationalist production.

6.2 Robustness checks

The online appendices show the results of a series of robustness checks. Appendix B presents results when using different levels of aggregation to identify language and religious groups as well as different ways to code the shared polity variable. Appendix B Table 5 introduces disaggregated models that look at nationalist writings separately from paintings.

In Appendix C Table 1, we replicate all the main models with different specifications (bootstrapped standard errors; logistic regression; an event history specification; two-way-fixed-effects) as well as with two additional covariates: the geodesic distance to the next nationalist work and a lagged dependent variable, i.e., the number of nationalist productions in that city in

³⁰ Changing these coding decisions (e.g. by relating the 1815 map to decades between 1810 and 1860 and the 1875 map to decades from 1870 onward) leads to substantially identical results (not shown).

the previous decade. The first control puts the domains argument to a hard test, since it might very well be that simple geographic distance drives the imitation process, not distance as measured through various ties of connectivity that make up the different domains. The second control variable captures local imitation processes, that is, the propensity of nationalist works of art or writing to inspire more such work within the same town. Most results hold.

Appendix C Table 2 shows a variety of tests that check for identification problems (beyond those that could affect the letter analysis, which were summarized above in section 5.2). It could be that nationalist writers and artists moved from city to city producing nationalist work, or that an unobserved variable leads to a higher or lower propensity of a city to produce nationalist work, or that some cities are simply producing more work, both nationalist and non-nationalist, or that the especially productive decade of the 1810 drives all the result. The models reported in the table address these concerns with additional controls for the number of nationalist writers / artists in a city, or for the total number of writers / artists (nationalist or not) in a city, by only looking at the first nationalist work produced by writers and artists (circumventing the traveling people problem), and by running a sample that excludes the 1810 decade.

Appendix D is dedicated to the coding of transportation networks and explores different distance thresholds to determine if a nationalist production could influence artists and writers; top-codes (rather than omitting as missing) cities that cannot be accessed via a transportation network; uses different clustering algorithms for identifying groups of cities connected through Roman roads.

Appendices E and F look at analysis of the influence of letters (in E at the writer/artist level and in F at the city level) by using different model specifications, disaggregating by genre, and by adding additional controls to circumvent identification problems.

Appendix G seeks to discover linear and non-linear temporal heterogeneity over the 150 year time span of our data. It shows models that include interactions with linear time as well as with decade dummies.

It is worth discussing some reverse causality issues. One could imagine that nationalism *created* domains, rather than *diffusing through* them. For example, it could be that the flourishing of nationalism made nationalist writers/artists send letters to each other, as much as the letter correspondence between the artists/writers served as the conduit to diffuse nationalism.

Similarly, it is possible that nationalism created the demand for newspapers and universities, and so on. Our analyses mitigate some of these concerns in five ways.

First, all independent variables are temporally lagged: in the case of the Roman road networks, the lag is more than one millennium; universities and newspapers are lagged one decade. Second and for the letter analysis, we carefully coded the variable to make sure the direction of causality is as predicted by our theory: we only include pre-nationalist writers/artists in the models focused on networks of letter exchange. Third, for some variables reverse causation is empirically implausible: it is unlikely that Napoleon avoided conquering cities that housed nationalist artists or writers within countries that his troops overran. Similarly, it is unlikely that romantic nationalists invited foreign rulers to conquer the states in which they lived. Fourth, the results are robust when we additionally control for the lagged outcome variable, as mentioned above. Fifth, most results (except for the Roman road and the Napoleon variables) hold up in a two-way-fixed effects specification (see Appendix C), a difference-in-difference design that minimizes endogeneity problems.

7 Conclusion and outlook

This article explored the dynamics of large-scale and long-term cultural change, using the example of an exceptionally well documented and important aspect of the cultural history of 19th-century Europe: the spread of a new artistic and intellectual frame that highlighted the cultural uniqueness, the deep historical roots, and the distinct political destiny of particular peoples, usually defined as communities of shared vernacular languages or religion. This worldview proved to be extraordinarily consequential for the political future of the Continent and the world, as it constructed and identified the nations that political activists later demanded to be the sovereign basis of independent statehood.

We make two contributions to the scholarship on diffusion. First, we substantiated a “multiplex network and multiple diffusion process” perspective, both theoretically and empirically, that others (Hsiao and Pfaff 2022: 8) have called for in order to better understand ideational revolutions. Empirically, we studied a large range of channels of connectivity through which romantic nationalism could have plausibly diffused. This demanded corresponding data. We found information about many different systems of connectivity along which romantic nationalism could have spread. This rich data allowed asking which channels actually did transmit social influence and which ones did not, thus helping to overcome the endemic confirmation bias in the study of diffusion.

We find that diffusion operated simultaneously through multiple domains, rather than a single network of connectivity, as so often assumed in mainstream research. These domains differ fundamentally from each other, confirming the utility of a multiplexity approach to the study of

diffusion: from the communication networks between artists and writers to the grid of Roman roads that established regions of cultural similarity during the Middle Ages, from the webs of universities within which the new ideas circulated to the nets of newspapers that channeled nationalist messages. While made up of different ties, all channels through which Romantic nationalism diffused share a high level of specificity, that is, they are closely tied to intellectual life. The more general, multi-sectorial spheres of exchange established by shared membership in states or proximity in transportation networks do not seem to have served as conduits of diffusion.

Future work may go beyond what we have achieved here by coding an even larger number of channels, by measuring their levels of specificity directly, and by including a range of different diffusion outcomes. This would allow identifying which domains are particularly susceptible to circulate what kind of objects, to further test the above findings about domain specificity, and to explore other domain characteristics and their possible consequences for diffusion processes, as suggested by Wimmer (2021). It would also allow to model interactions between various channels of diffusion (cf. Gould 1991), their sequencing over time, or their intertwining into a single influence network (as modeled in physics, e.g. Gomez et al. 2013). We thus see our study in part as a proof of concept, in line with a recent call for future work (Rawlings et al. 2023: 412) and a forthcoming case study (Velasco Forthcoming): that it is worth exploring which domains enhance the diffusion of which kinds of objects.

Second, our study not only asked through which channels diffusion occurred, but also whether these lead to fertile grounds where a new ideology can take roots. Introducing key arguments from research on social movements into the diffusion literature, we identified and empirically specified three distinct frame resonance mechanisms: areas of high cultural compatibility

between existing cultural frames and romantic nationalism (specifically in Protestant towns); areas where the idea of a national community built on cultural commonality was empirically more credible (in towns that shared the same language or religion); and areas where nationalism represented an ideal that contradicted the reality of foreign rule. We found support for this third mechanism, again the one that is most specifically tied to the political substance of nationalist thought. While the diffusion literature has almost exclusively focused on the cultural compatibility mechanism, this study shows that it is worthwhile to also consider other variants of frame resonance.

Two other contributions address the social science literature on nationalism. To begin, our study offers the first systematic, empirically detailed account of how nationalist frames diffused before they triggered political revolutions across the world, thus substantiating the diffusionist perspective in the study of nationalism. In supplementary analysis (see Section 6.1), we showed that alternative explanations, such as classical modernist accounts that focus on internal processes of development, are not supported by the data. Rather than propelled forward by parallel local modernization, romantic nationalism spread through various networks of connectivity in a process that resembles contagion in epidemiology. And as in epidemiology, fashion, or finance, these influence networks reached across linguistic and religious groups and across political borders, thus confirming an argument put forward in a series of qualitative studies by the cultural historian of romantic nationalism, Joop Leerssen (2006). Future work in this area could explore the precise link between cultural nationalism, with which we were concerned here, and political nationalism. For example, one could relate the rise of romantic nationalism at the city level to nationalist political events occurring in these cities, such as the upheavals during the revolutionary crises of 1848.

Second, this diffusionist account was made possible by our research design and data. Rather than taking national communities as units of observation and analysis and documenting the inevitable rise of national consciousness within them, as in all major accounts of cultural nationalism (e.g. Hroch 2000 (1969); Smith 1986, chaps. 7 and 8; Hutchinson 1987), we created a dataset with cities as observational units, independent of their membership in particular nations. This overcomes the methodological nationalism of traditional internalist accounts and allows documenting the spread of nationalist ideas *across* national communities. It is worth noticing here that the authors of the monumental *Encyclopedia of Romantic Nationalism*, on which we relied for the empirical analysis, also wanted to create a source of information on the spread of nationalism that would not be distorted by the blinders of methodological nationalism.

Improving on the city level dataset we used here and on the selectivity of *ERNiE*, which our dataset mirrors, it would be worth constructing an individual level dataset with all writers and artists in Europe's 19th century, whether they eventually produced nationalist work or not, and collect more information on the relationships between them, the organizations they belonged to, their political stances and the relationships to the states where they lived, and so on; a monumental task that we leave to future research perhaps using newer methods and sources of text analysis.

It would also be interesting to follow up on Anderson's notion of the "modularity" of nationalism and study the relationship between nationalism and other political frames that diffused concurrently, a challenge that has not been taken up consistently in either diffusion studies, social movement research, or nationalism studies. Romantic nationalism was originally intertwined with liberalism and the idea of popular democracy (Nodia 1992): nationalism offered an answer to the moral and organizational boundary problem of enlightened universalism by

delineating a confined, but morally legitimate community within which liberal and democratic rights should be guaranteed.

Later in the century, ideas about civilizational and racial superiority, developed in the context of the expansion of colonial empires, intertwined with nationalist ideologies in Northwestern Europe, while anti-imperial nationalism spread in the global South and in Eastern Europe in another example of the parallel diffusion of multiple ideological strands. Today, we witness the spread of ideas about structural racism and racial privilege across the world, from the US to Germany, Singapore, or South Africa (e.g. Milman et al. 2021), which in turn is intersecting with the parallel, oppositional rise of neo-nationalist populism, often with a majoritarian, chauvinist bent, which diffuses through different channels to similar places. The study of such complex, interlocking diffusion of multiple ideational frames goes well beyond what we aimed for in this paper and remains a core task for the future.³¹

Finally, our case study of cultural nationalism also speaks to the sociology of macro-cultural change in general and to the World Polity tradition (Krücken and Drori 2009) in particular. According to this theory, local societies are more or less integrated into world culture, depending on how much their governments participate in international organizations and how many globally operating civil society organizations are locally present. World cultural models (such as the nation-state template analyzed by Meyer 1997) diffuse through these organizational channels across the globe, driven by the mechanism of normative emulation. But how do certain models rather than others become part of this hegemonic world culture and how can this culture evolve

³¹ For a recent example from the policy diffusion field, see Genovese, Kern and Martin 2017; in political sociology, see Velasco Forthcoming.

over time? We answered this question by shifting the focus away from hierarchical ties between local societies and “world society,” as embodied in international organizations, and towards the horizontal channels between local societies. This allowed us to show that cultural diffusion can operate through multiple, variegated, and overlapping domains in a bottom-up and rhizoid process. It can thus generate a new, globally hegemonic cultural script than then propels itself further across the globe through imitation, competition, and emulation.

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Tables and Figures

Table 1. A typology of domains

<i>Type of mechanism</i>	<i>Domain</i>	<i>Specificity</i>
<i>Frame resonance</i>	<i>Cultural compatibility</i>	Protestant cities
	<i>Empirical credibility</i>	Language or religious communities
	<i>Contrasting ideals</i>	Foreign ruled territories Napoleon's empire
<i>Connectivity / proximity</i>	<i>Diffusion through personal networks</i>	Letters of nationalist writers High
	<i>Diffusion through cultural channels</i>	Proximity to towns with newspapers or universities with previous nationalist production High
		Regions of long-established connectivity and cultural similarity High
	<i>Diffusion through political channels</i>	Polities Low
<i>Diffusion through infrastructural channels</i>	Proximity to nationalist work via the stagecoach or railways networks Low	

Table 2: Frame resonance and the number of nationalist works

	Model 1	Model 2	Model 3	Model 4	Model 5
Negative binomial model					
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes	Yes
City is majority Protestant	0.447 (0.404)				
Logged number of previous nationalist productions in same language group		0.0212 (0.0609)			
Logged number of previous nationalist productions in same religious group			0.0953 (0.134)		
Country is foreign ruled				0.964*** (0.230)	
Country not occupied by Napoleon					Ref.
Country occupied; city not occupied					1.253*** (0.357)
Both country and city occupied					0.634 (0.394)
French city					-0.772 (0.480)
Zero-Inflation model					
Distance to a renowned artist/writer	Yes	Yes	Yes	Yes	Yes
Observations	36320	36320	36320	36320	36320

Table 3. Personal networks and the number of nationalist writings

	Model 1	Model 2	Model 3	Model 4
	Writer/artist- level N.B.	Writer/artist- level N.B.	City-level Z.I. N.B.	City-level Z.I. N.B.
Controls				
Decade dummies	Yes	Yes	Yes	Yes
Controls for population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	No	No	Yes	Yes
Writer/artist -level IVs				
Number of letters received during the last decade	0.0720* (0.0366)			
Received at least one letter during the last decade		2.125*** (0.562)		
City-level IVs				
Received at least one letter			1.738*** (0.269)	
Logged number of nationalist writings near letter sender				0.387*** (0.0557)
Zero-Inflation model				
Distance to a renowned artist			Yes	Yes
Observations	20509	20509	36320	36320

In Models 1 and 2, the unit of analysis is writer/artist-decade. 2,059 writers/artists were considered. Of the 32,944 writer/artist-decades, 12,435 were dropped because the writer/artist had already produced at least one nationalist work before receiving a letter. In Models 3 and 4, the unit of analysis is city-decade. There are 2270 cities and 16 decades (N=36320). Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Table 4. Cultural and political channels and the number of nationalist works

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
				Only cities with a Roman past	Only cities in Roman road network	
Negative binomial model						
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes	Yes	Yes
Distance to university town with previous nationalist production	-0.412*** (0.0580)					
Distance to university town without previous nationalist production	-0.0872 (0.0798)					
Distance to the nearest newspaper town with previous nationalist production		-0.470*** (0.0535)				
Distance to the nearest newspaper town without previous nationalist production		0.0160 (0.0480)				
Distance to the next Roman road			0.0666 (0.046)	0.0809 (0.0738)		
Distance to the nearest previous nationalist production on the Roman road network			-0.232* (0.097)	-0.353*** (0.105)		
Logged number of previous nationalist productions in the same Roman road cluster					0.277*** (0.0720)	
Logged number of previous nationalist productions in the same polity						0.0336 (0.0842)
Zero-Inflation model						
Distance to a renowned artist	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34050	36320	33271	22749	18240	36320

In Model 1, observations for the 1770s were dropped (N=2,270) because there was no university town with nationalist production nearby in the 1770s. In Model 3, 3,049 observations were dropped because there was no nationalist event accessible through the Roman road network. Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Table 5. Infrastructural channels and the number of nationalist works

	Model 1	Model 2 Years before 1870	Model 3 Years after 1870
Negative binomial model			
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes
Distance to the nearest stagecoach station	-0.0723 (0.0451)	-0.0964 (0.0553)	
Distance to the nearest nationalist production on the stagecoach network	0.0886 (0.122)	0.0309 (0.0759)	
Distance to the nearest railway station			-0.0892 (0.104)
Distance to the nearest nationalist production on the railway network			0.146 (0.138)
Zero-Inflation model			
Distance to a renowned artist/writer	Yes	Yes	Yes
Observations	34447	21937	11401

Observations with no nationalist works accessible through the transportation network were dropped (N=1,873 in Model 1, N = 763 in Model 2, and N = 2,219 in Model 3). Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Table 6. Fully specified models

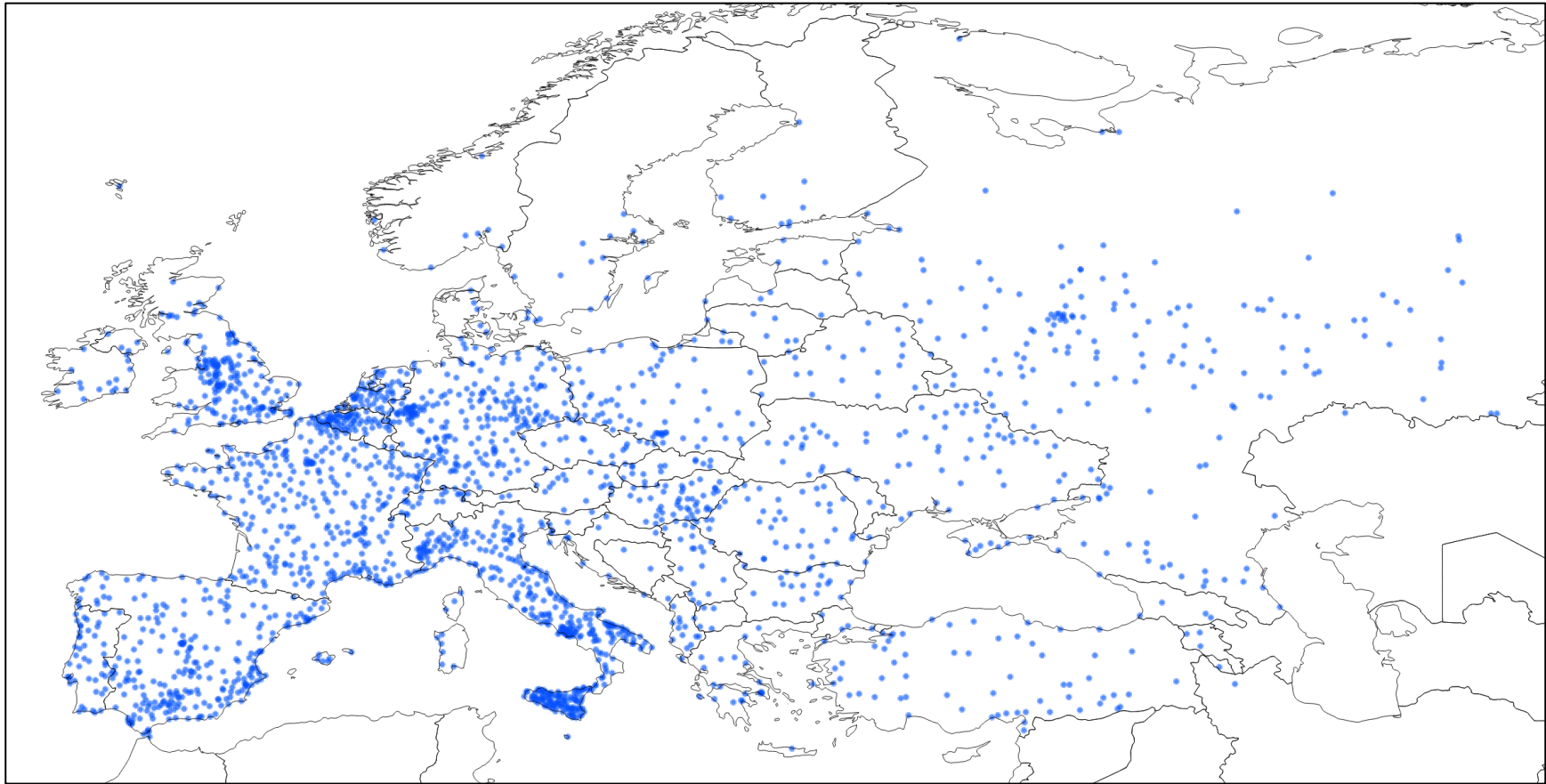
	Model 1	Model 2 Only cities with a Roman past
Negative binomial model		
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes
Received at least one letter (1=yes)	1.027*** (0.282)	0.989** (0.375)
Distance to university close to previous nationalist production	-0.257*** (0.0740)	-0.236** (0.0856)
Distance to the nearest nationalist newspaper	-0.328*** (0.0668)	-0.209** (0.0795)
Logged number of previous nationalist productions in the same Roman road cluster	0.0164 (0.0525)	0.190** (0.0689)
Napoleon		
- Country not occupied by Napoleon	Ref.	Ref.
- Country occupied; city not occupied	0.869** (0.296)	1.424** (0.466)
- Both country and city occupied	0.279 (0.301)	1.004* (0.413)
- French city	-0.508 (0.444)	0.0939 (0.550)
Foreign ruled (1=yes)	1.097*** (0.227)	0.679* (0.269)
Zero-Inflation model		
Distance to a renowned artist	Yes	Yes
Observations	34050	17100

In both Model 1 and 2, observations for the 1770s were dropped (N=2,270) because there was no university town with nationalist production nearby in the 1770s.

In Model 2, cities that were not part of the Roman road networks (5 miles or further away from the road, N = 16,950) are dropped.

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Figure 1. Cities included in the analyses (with contemporary state boundaries)



Blue dots indicate cities in the dataset (N=2,270).

Figure 2. Cumulative number of nationalist works over time

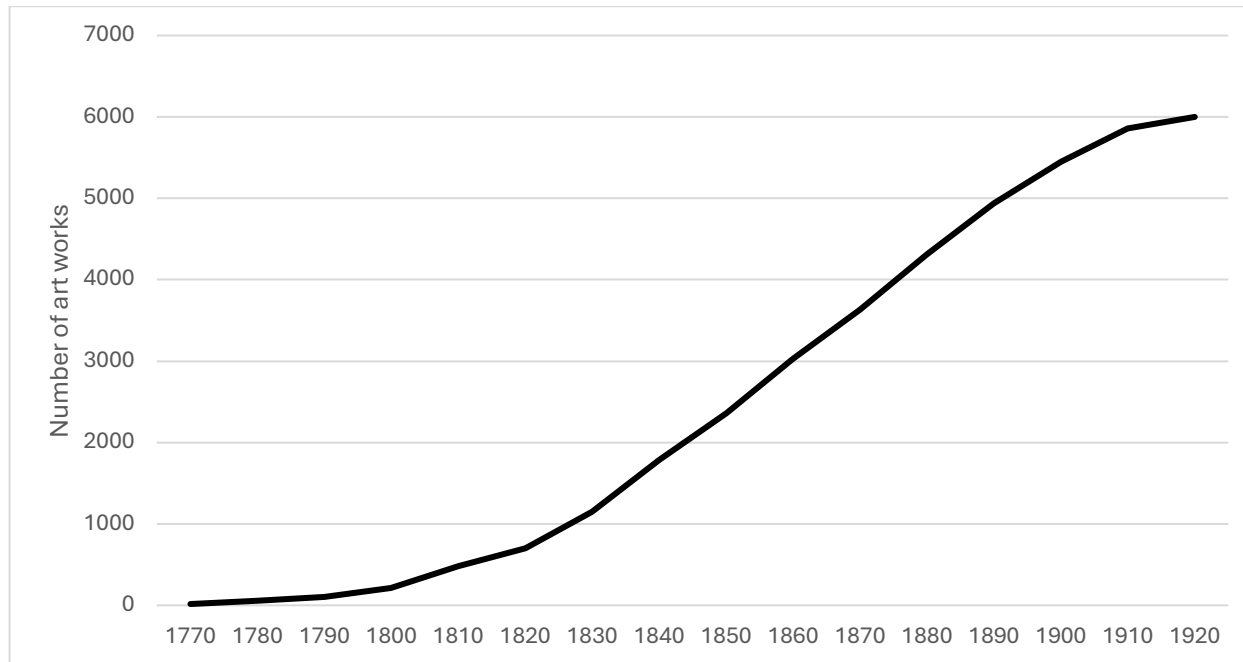


Figure 3. Clusters of cities in the Roman road network

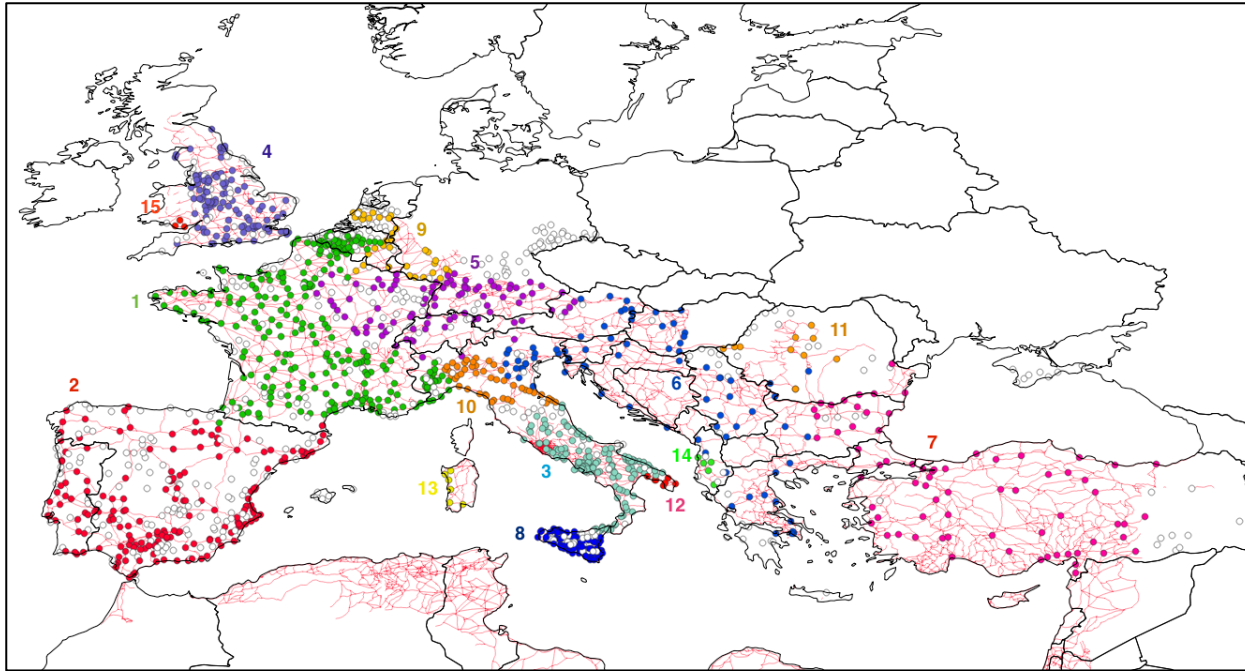
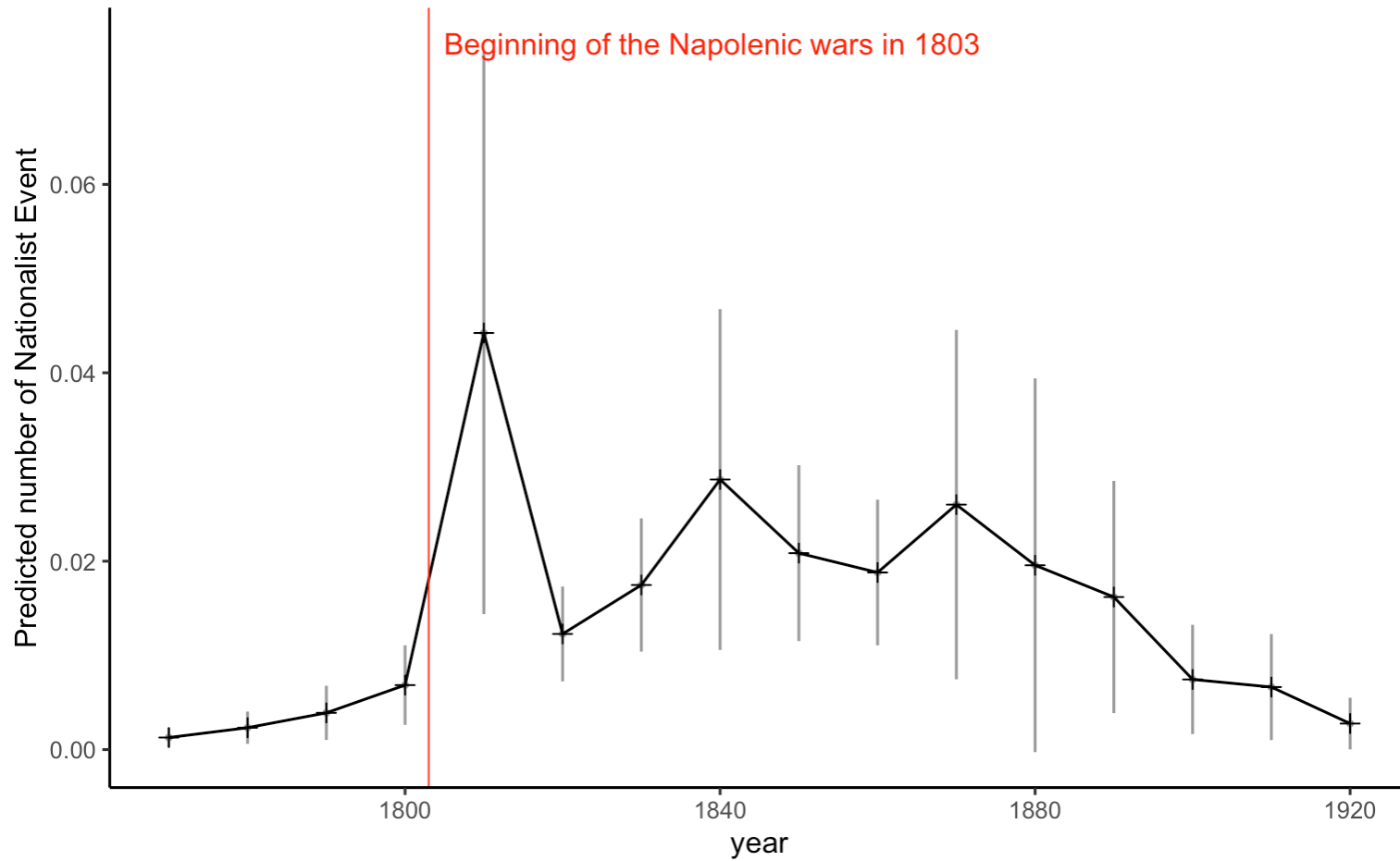


Figure 4. Temporal trend of in the production of nationalist work



A zero-inflated negative binomial model was used to predict the number of nationalist works per decade. Covariates in the negative binomial part include decade dummies, logged population size, a capital dummy, a bishop city dummy, a catholic city dummy, logged distance to the next river, and logged distance to the sea. Logged distance to any renowned artist/writer was controlled for in the zero-inflated part.

Appendices

for Wimmer, Lee, and LaViolette, “Diffusion through multiple domains. The spread of romantic nationalism across Europe, 1770-1930”, in *American Journal of Sociology*, forthcoming

Table of Content

Appendix A. Data sources, descriptive statistics, and illustrative figures.....	67
Appendix B. Robustness tests for shared language, religion, and polity	82
Appendix C. Robustness tests for main models	88
Appendix D. Robustness tests for the transportation networks.....	96
Appendix E. Robustness tests for letters in artist-level analyses.....	100
Appendix F. Robustness tests for letters in city-level analyses.....	103
Appendix G. Temporal heterogeneity	105

Appendix A. Data sources, descriptive statistics, and illustrative figures

Appendix A Table 1. Data sources and coverage

Variable	Type of variable	Sources	Temporal coverage
Number of nationalist works produced in a city	Dependent	ERNiE	1770-1920
Number of nationalist works produced by an artist/writer	Dependent	ERNiE	1770-1920
Number of first nationalist works by artists in a city	Depend. for robustness	ERNiE	1770-1920
Protestant majority dummy	Independent	Times (1900); Andrees (1887)	Ca. 1900
Majority language	Independent	Rand McNally Atlas (1897); Troinitskii (1905)	Ca. 1900
Majority religion	Independent	Times (1900); Andrees (1887)	Ca. 1900
Foreign ruled dummy	Independent	Wimmer (2023) and new coding	1770-1920
Ruled by Napoleon	Independent	Acemoglu et al. (2011)	1770-1920
Number of letters received in previous decade	Independent	ERNiE	1770-1920
Number of nationalist writings near letter sender	Independent	ERNiE	1770-1920
Distance to universities with prev. nat. prod.	Independent	Rüegg and Briggs (1996; 2004); ERNiE	1770-1920
Distance to universities	Independent	Rüegg and Briggs (1996; 2004); ERNiE	1770-1920
Distance to newspapers with previous nationalist production	Independent	Zeitschriftendatenbank of the German National Library, ERNiE	1770-1920
Distance to newspapers	Independent	Zeitschriftendatenbank of the German National Library	1770-1920
Distance to nationalist production on Roman roads	Independent	McCormick et al (2013), ERNiE	1770-1920
Number of nationalist works in Roman road cluster	Independent	McCormick et al (2013), ERNiE	1770-1920

Distance to nationalist production on stagecoach roads	Independent	Franz Güssefeld (1793); Auguste-Henri Dufour (1848), ERNiE	1793, 1848
Distance to nationalist production on railway roads	Independent	Martí-Henneberg (2013); Cima (1998-2008); ERNiE	1770-1920
Political instability dummy	Independent for alt. expl.	Wimmer (2023); PolityIV (Marshall et al. 2017)	1770-1920
Lost independent statehood dummy	Independent for alt. expl.	Wimmer (2023)	1770-1920
Distance to battle fields	Independent for alt. expl.	Wimmer (2023)	1770-1920
Distance to coal mining	Independent for alt. expl.	Fernihough and O'Rourke (2021)	Time invariant
Distance to textile production	Independent for alt. expl.	International Committee for the Conservation of the Industrial Heritage (2013)	Time invariant
Industrializing region dummy	Independent for alt. expl.	Pollard (1981)	1815; 1875
Population size	Control	Bosker et al. (2013)	1770-1920 (interpolated)
Capital city dummy	Control	Bosker et al. (2013)	1770-1920 (interpolated)
Bishop seat dummy	Control	Bosker et al. (2013)	1770-1920 (interpolated)
Catholic majority city dummy	Control	Times (1900); Andrees (1887)	Ca. 1900
Distance to the nearest river	Control	Global Runoff Data Centre	Time invariant
Distance to the nearest sea	Control	Patterson and Kelso (2012)	Time invariant
Distance to the nearest renowned artist/writer	Control	Wikipedia	1770-1920
Number of renowned artists/writers in a city	Control for robustness	Wikipedia	1770-1920
Dummies for five most frequent letter writers	Control for robustness	ERNiE	1770-1920
Number of letters received prior to previous decade	Control for robustness	ERNiE	1770-1920
Number of letters sent from a city	Control for robustness	ERNiE	1770-1920
Number of letters sent from and received in the city	Control for robustness	ERNiE	1770-1920

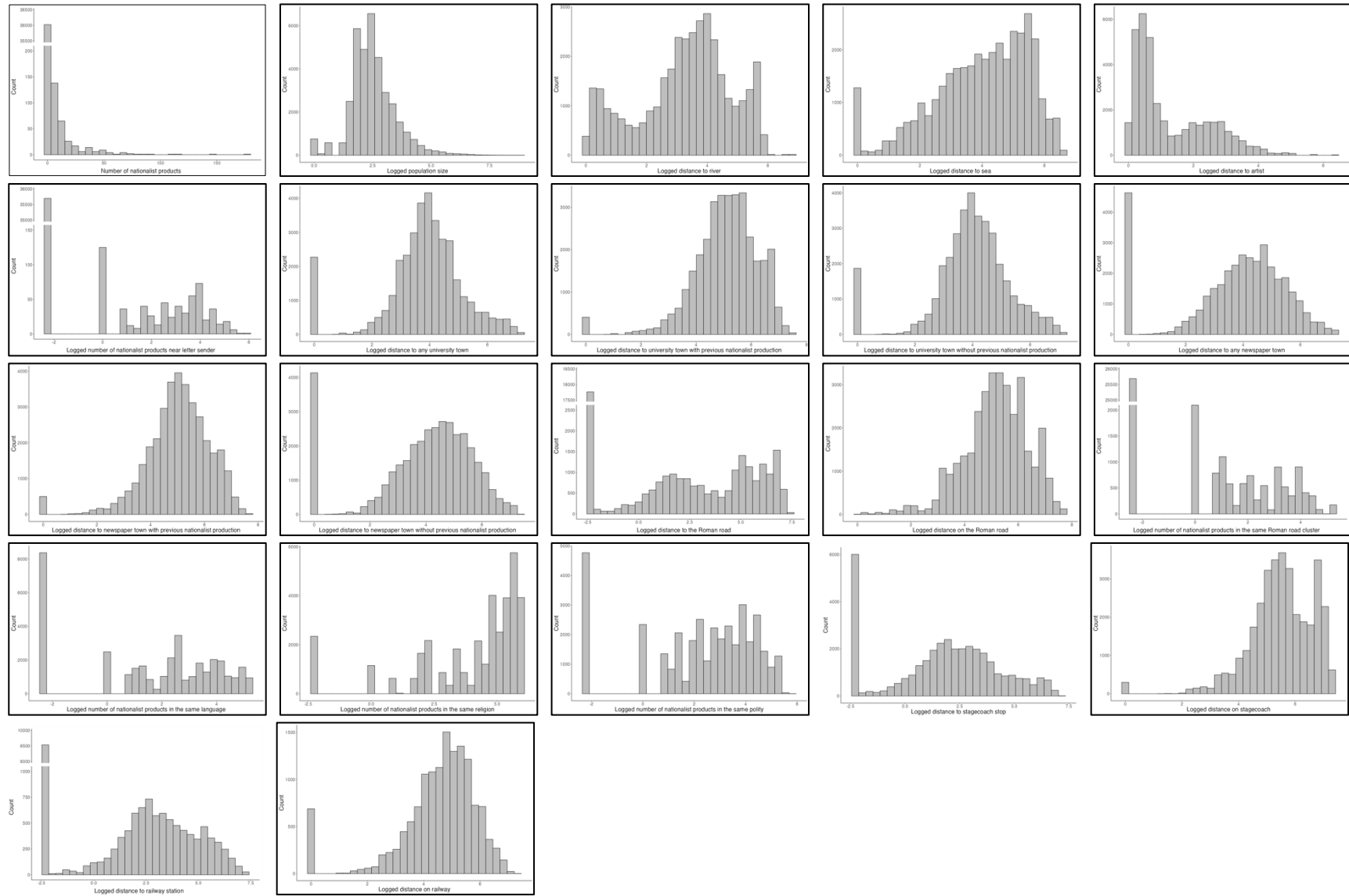
Note: For references see the bibliography in the main text

Descriptive statistics are presented in Appendix A Table 2 and Appendix A Figure 1. Appendix Table 2 shows the distributions of categorical variables and Appendix A Figure 1 shows the histograms of continuous variables. The spatial distributions of some of the key variables are shown in Appendix A Figures 2 to 5.

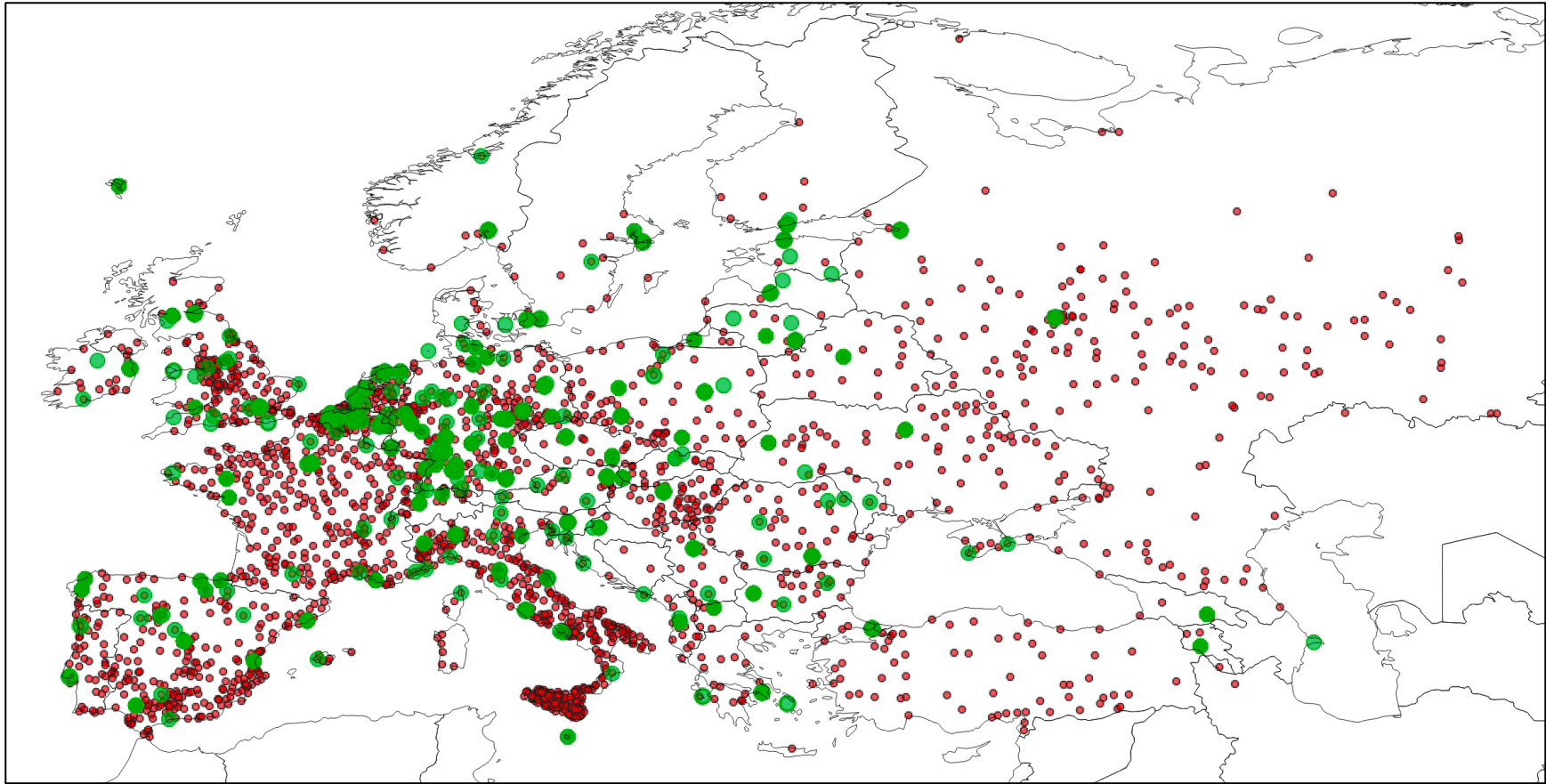
Appendix A Table 2. Descriptive statistics of categorical variables

Variable	No		Yes		Total
Capital city	35,776	(98.50%)	544	(1.50%)	36,320
Bishop city	31,648	(87.14%)	4,672	(12.86%)	36,320
Catholic city	15,392	(42.38%)	20,928	(57.62%)	36,320
Protestant city	27,984	(77.05%)	8,336	(22.95%)	36,320
Received a letter from a nationalist	35,292	(97.17%)	1,028	(2.83%)	36,320
Roman empire city	10,992	(30.26%)	25,328	(69.74%)	36,320
Napoleon					
- Country not occupied by Napoleon	25,311	(69.69%)	11,009	(30.31%)	36,320
- Country occupied; city not occupied	24,875	(68.49%)	11,445	(31.51%)	36,320
- Both city and country occupied	27,398	(75.44%)	8,922	(24.56%)	36,320
- French city	31,376	(86.39%)	4,944	(13.61%)	36,320
Foreign ruled	23,367	(64.34%)	12,953	(35.66%)	36,320

Appendix A Figure 1. Distributions of continuous variables

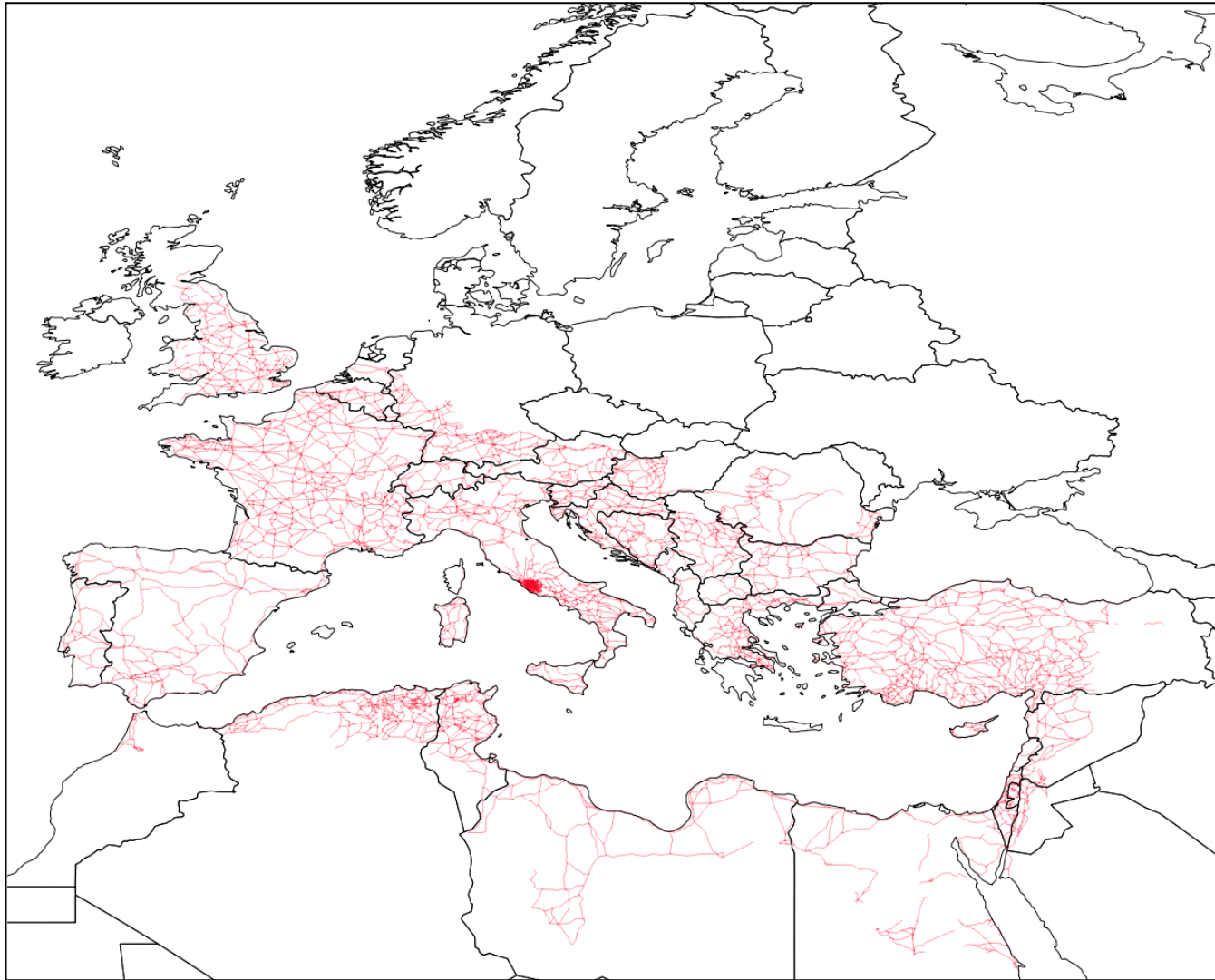


Appendix A Figure 2. Spatial distribution of the Romantic nationalist art works



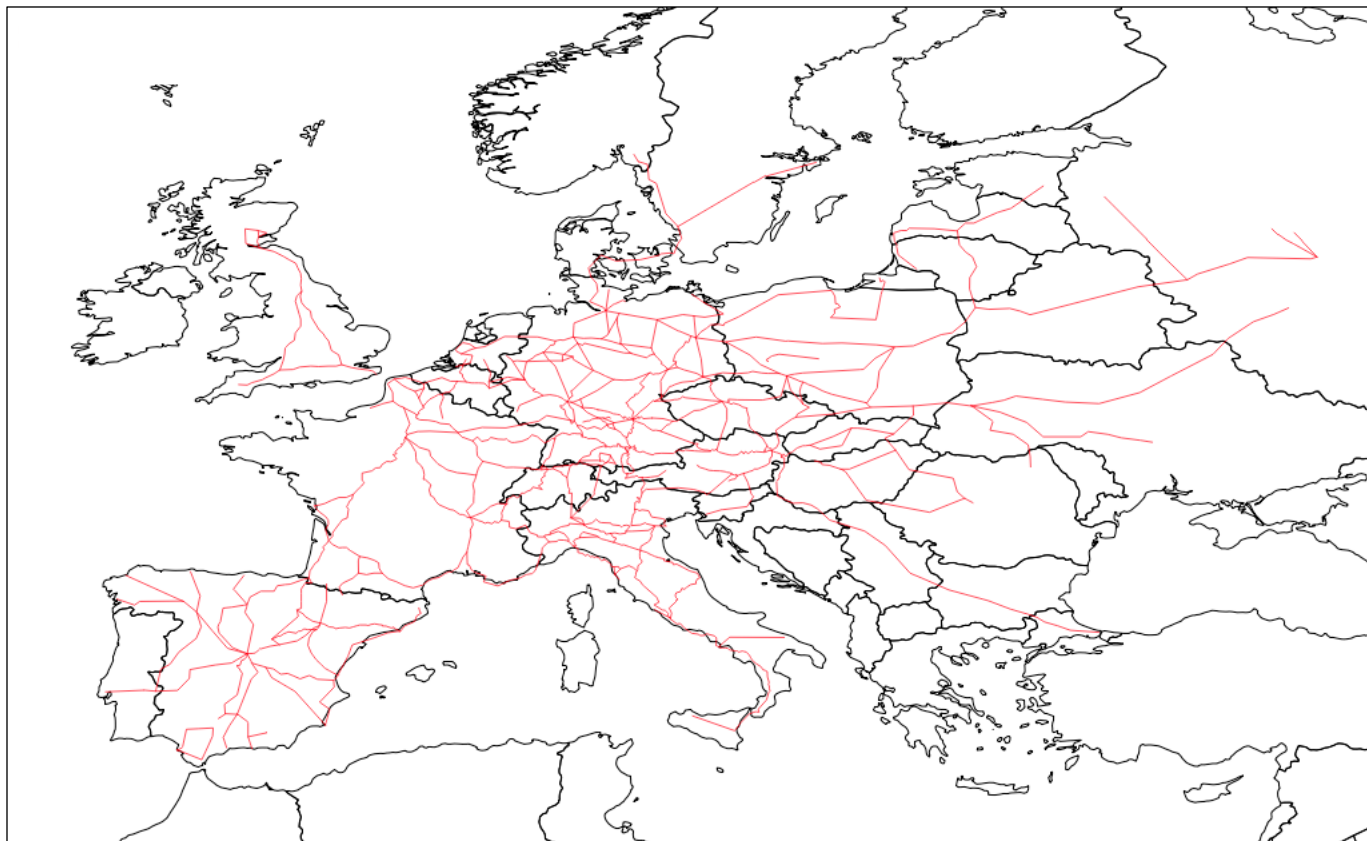
Note: Red dots represent cities and green circles represent nationalist works.

Appendix A Figure 3. Spatial distribution of Roman roads

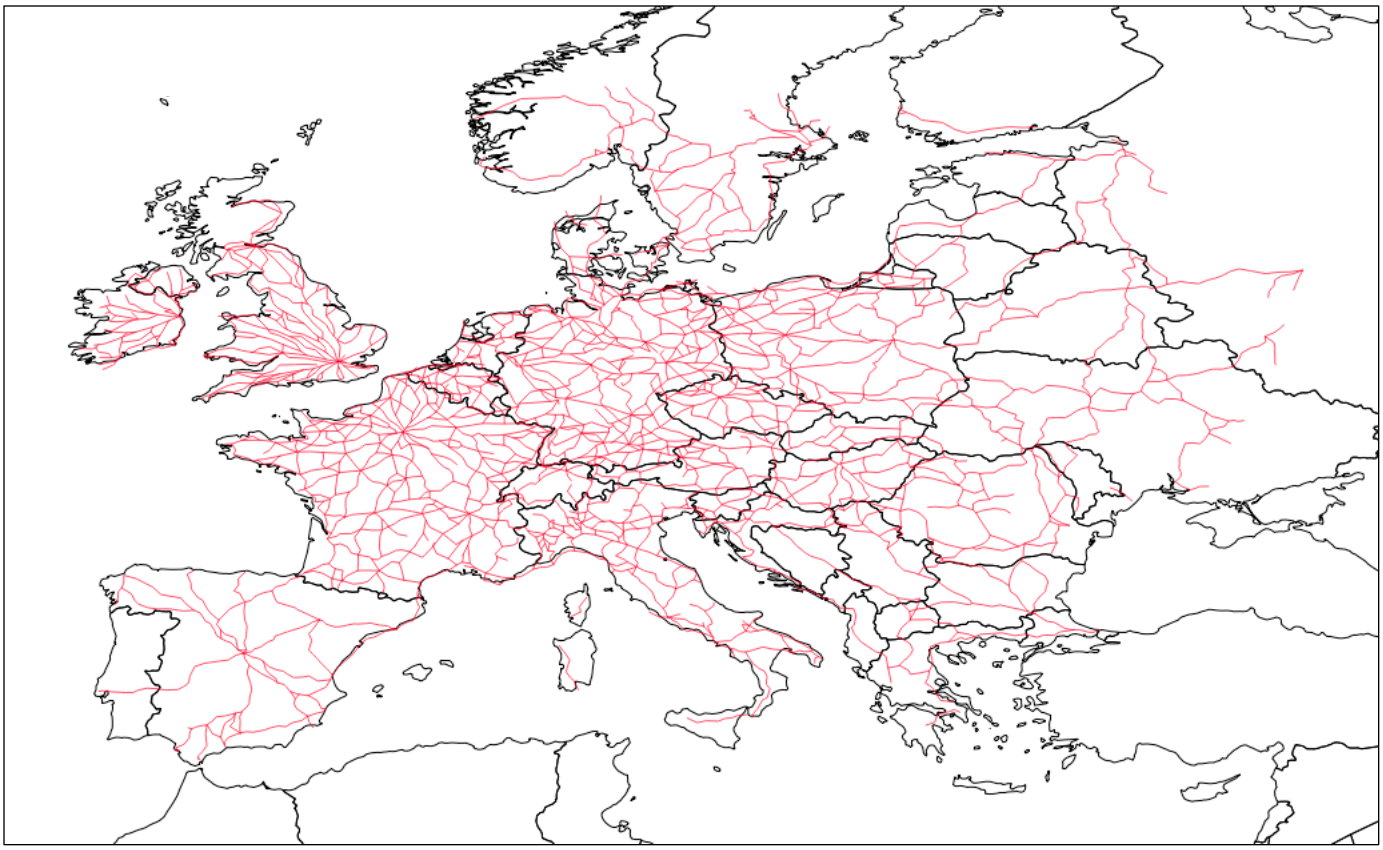


Appendix A Figure 4. Spatial distribution of stagecoach routes

Stagecoach routes in 1793

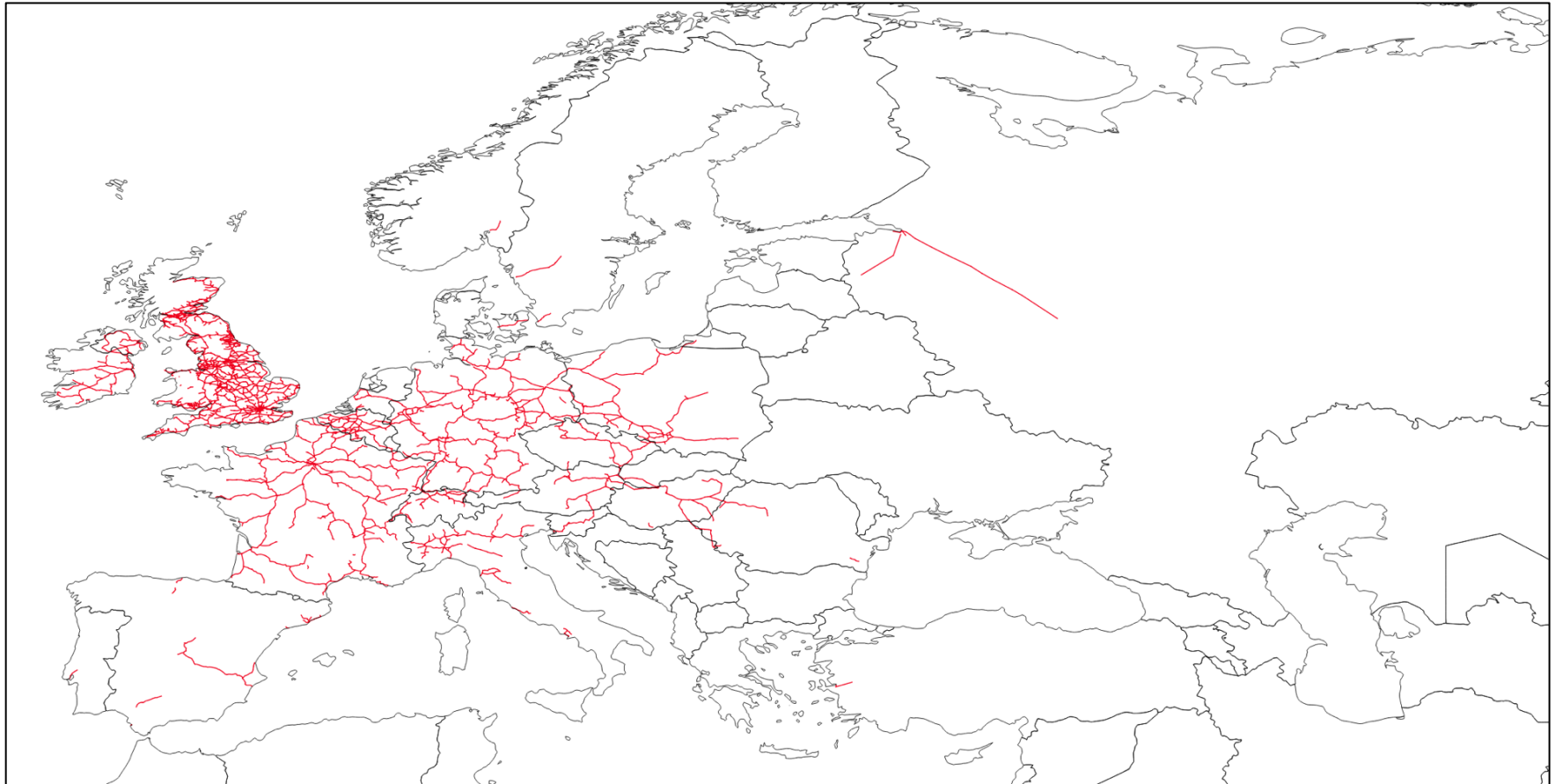


Stagecoach routes in 1848

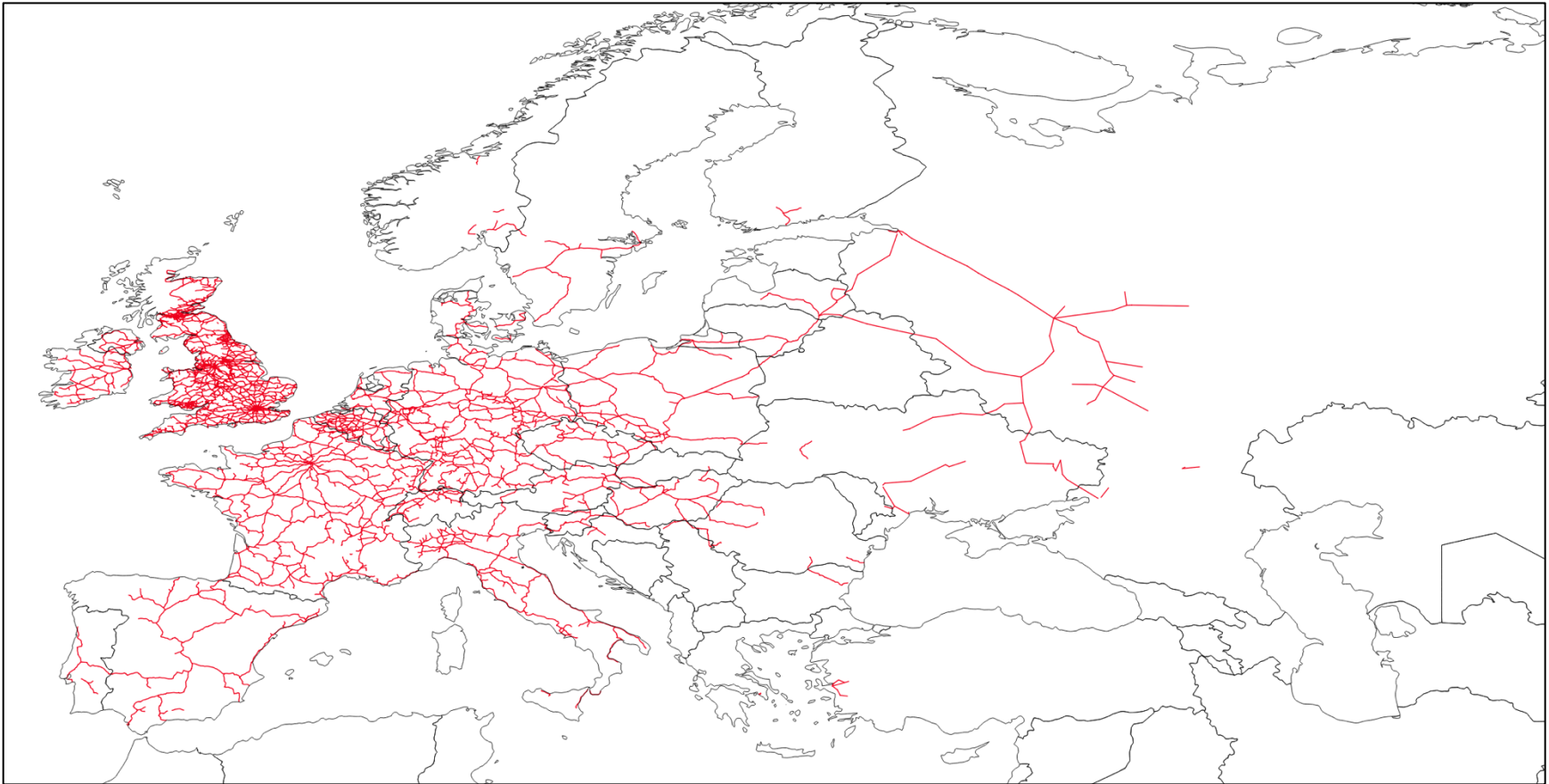


Appendix A Figures 5. Spatial distribution of railways in different periods

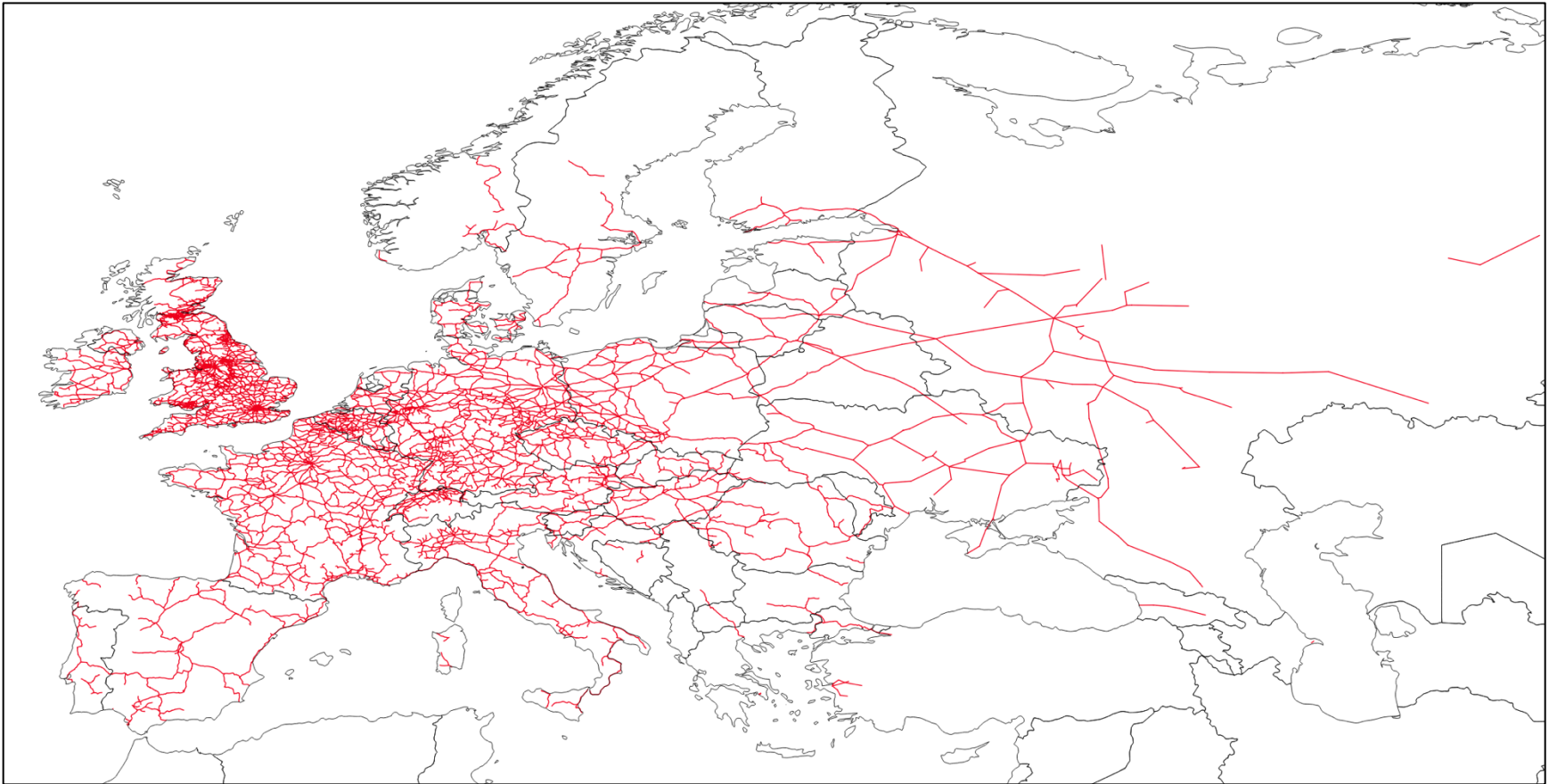
Railways in the 1860s



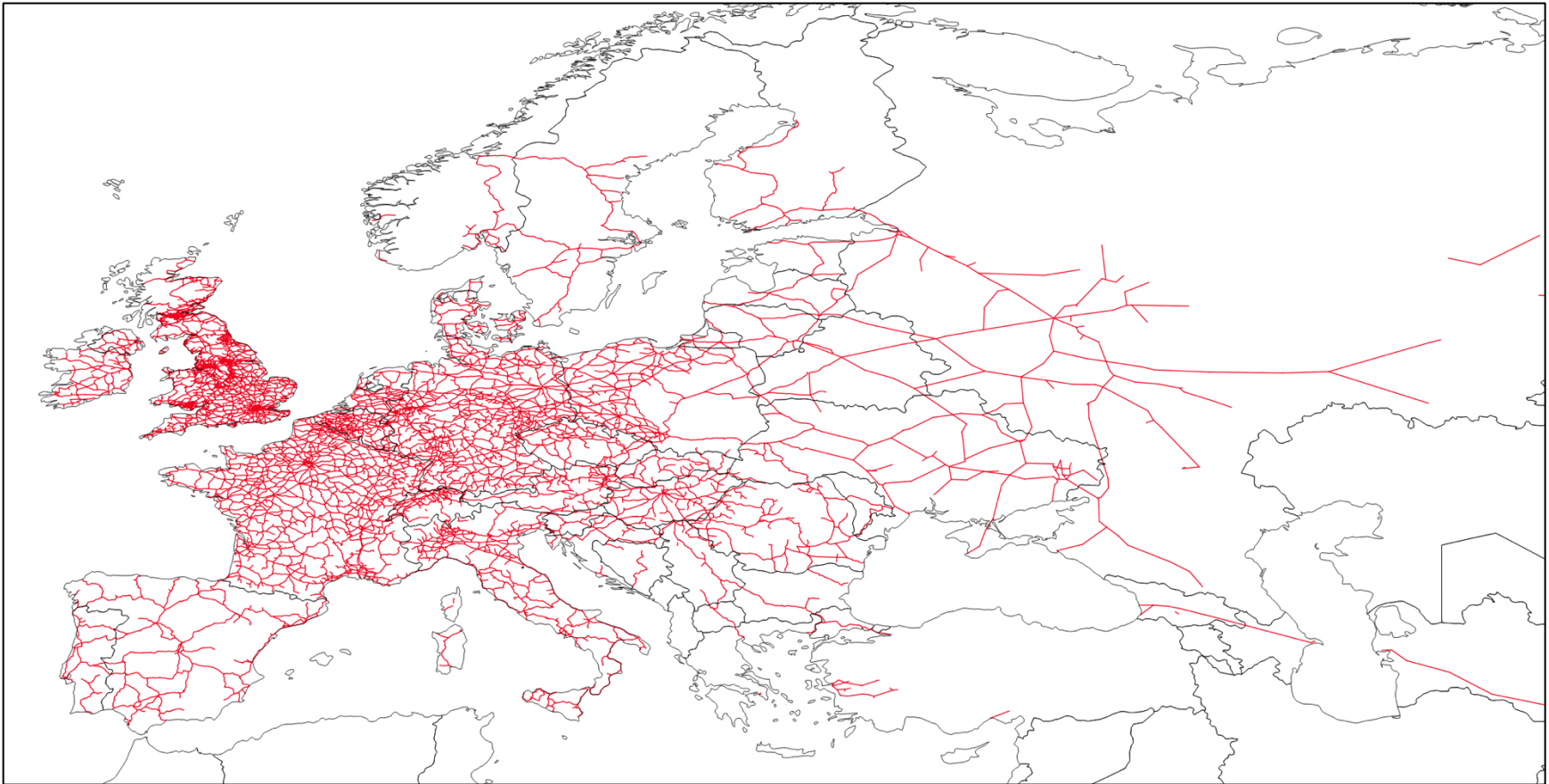
Railways in the 1870s



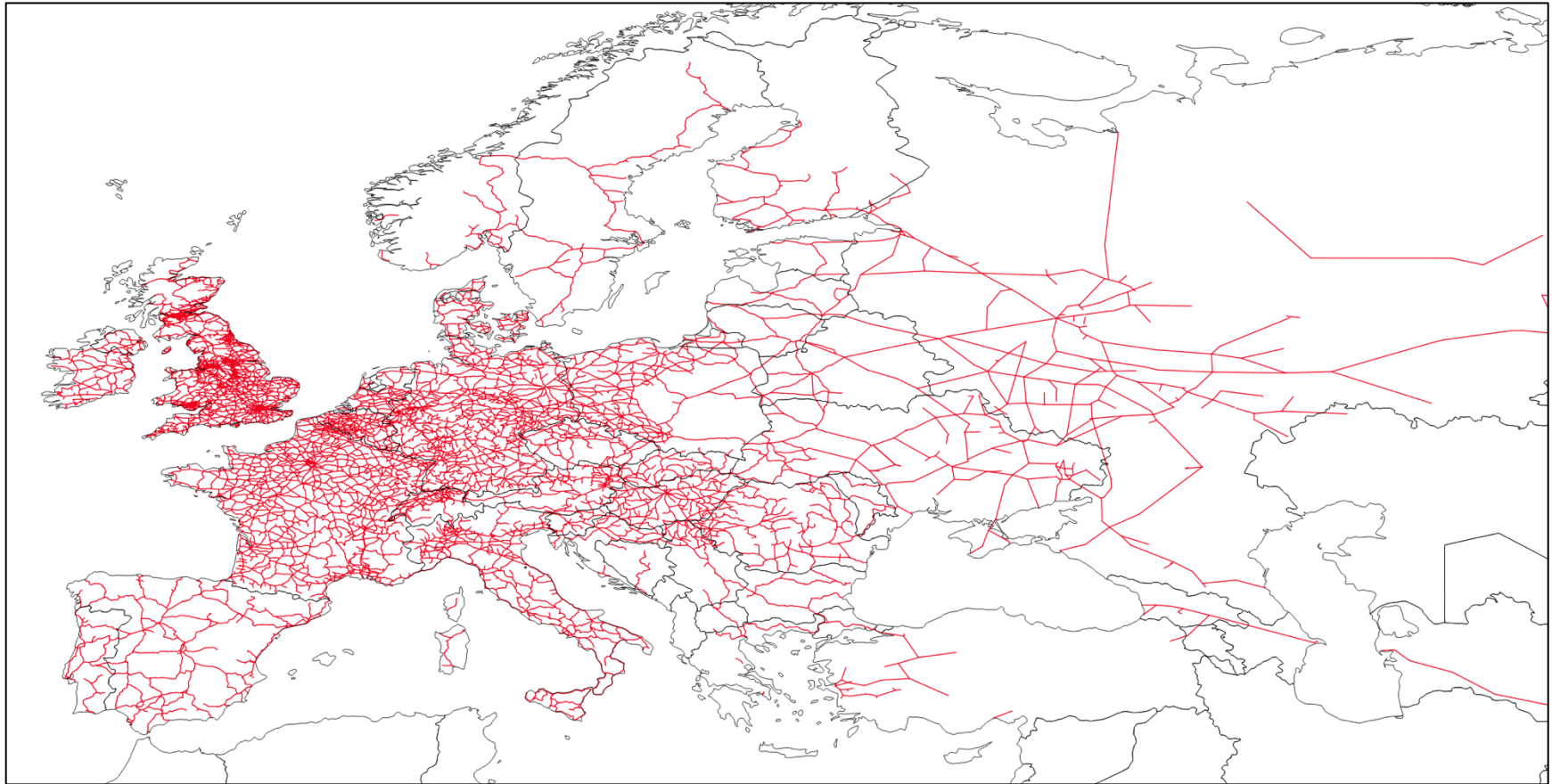
Railways in the 1880s



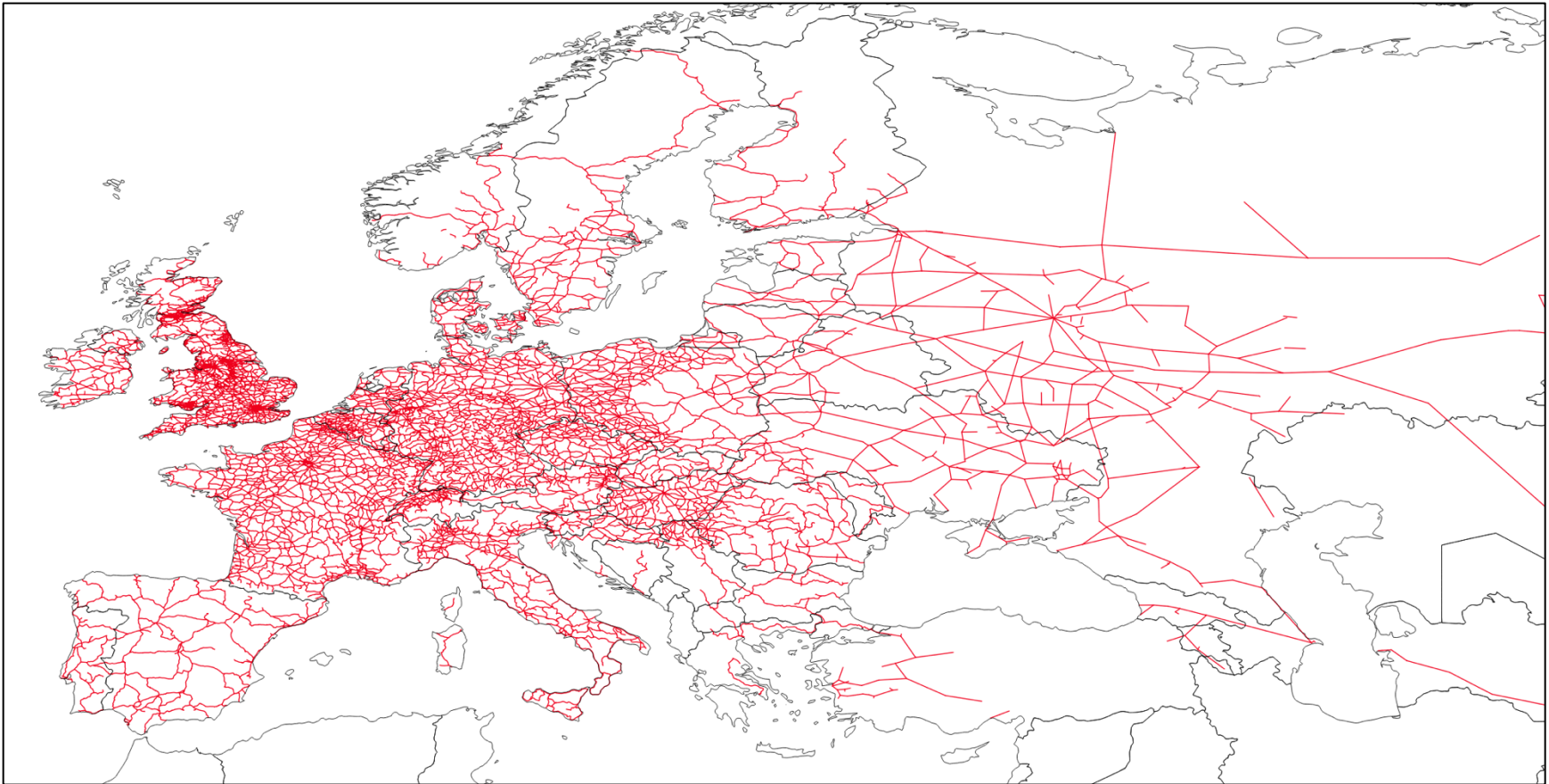
Railways in the 1890s



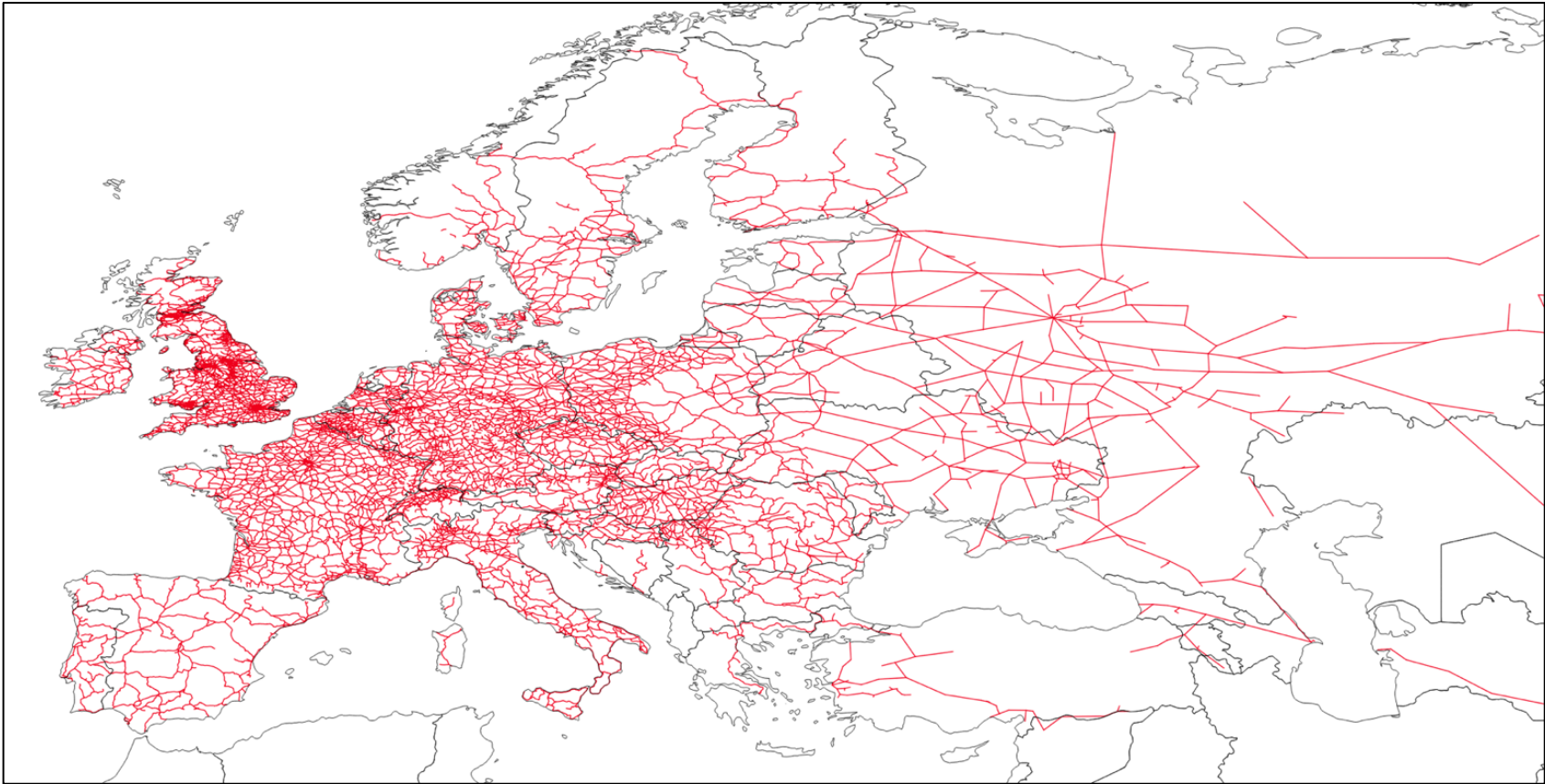
Railways in the 1900s



Railways in the 1910s



Railways in the 1920s



Appendix B. Robustness tests for shared language, religion, and polity

In total, 57 languages were identified on the basis of the two maps. They can be subsumed into 16 language families. Languages and families are listed below.

Appendix B Table 1. List of languages and language families

Language family	Language	Language family	Language
Armenian	Armenian	Romance	Catalan
Baltic	Lettish	Romance	French
Baltic	Lithuanian	Romance	Friulian
Basque	Basque	Romance	Gallegan
Caucasian	Caucasian	Romance	Italian
Celtic	Breton	Romance	Portuguese
Celtic	Irish	Romance	Romanian
Celtic	Welsh	Romance	Spanish
Finno-Ugrian	Cheremissian	Semitic	Arabic
Finno-Ugrian	Finnish	Semitic	Maltese
Finno-Ugrian	Karelian	Slovanic	Bulgarian
Finno-Ugrian	Livonian	Slovanic	Czech
Finno-Ugrian	Magyar	Slovanic	Macedonian Slavs
Finno-Ugrian	Ostyak	Slovanic	Polish
Finno-Ugrian	Samoyedic	Slovanic	Russian
Germanic	Danish	Slovanic	Serbo-Croatian
Germanic	Dutch	Slovanic	Slovakian
Germanic	English	Slovanic	Slovenian
Germanic	Flemish	Slovanic	Ukrainian
Germanic	Frisian	Slovanic	White Russian
Germanic	German	Thraco-Illyrian	Albanian
Germanic	Norwegian	Turkish-Tataric	Bashkirian
Germanic	Swedish	Turkish-Tataric	Chuvashian
Hellenic	Greek	Turkish-Tataric	Karachaic
Iranic	Ossetic	Turkish-Tataric	Kirghizic
Kamchadal	Kamchadal	Turkish-Tataric	Kumyikian
Mongolian	Buryat	Turkish-Tataric	Tataric
Mongolian	Kalmuckian	Turkish-Tataric	Turkish
		Turkish-Tataric	Yakut

Seven religions were identified in the maps: Catholic, Protestant, Greek Orthodox, Armenian Orthodox, Muslim, Buddhism, and “Heathen”. Some regions have overlapping religions (e.g. Muslim and Armenian Orthodox in mid-to-eastern Turkey or Muslim and Greek Orthodox in the Balkan region). In these cases, nationalist production were counted for both religions.

Appendix B Table 2. List of religions and religious groups

Religious group	Religion
Western Christian	Catholic
Western Christian	Protestant
Orthodox Christian	Greek Orthodox
Orthodox Christian	Armenian Orthodox
Muslim	Muslim
Buddhist	Buddhist
Heathen	Heathen

Appendix B Table 3. Robustness test results for different levels of aggregation of language and religion

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Negative binomial model								
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Logged number of nationalist productions in the same religion	0.0953 (0.134)							
Logged number of nationalist productions in the same religious group		0.182 (0.122)						
Logged number of nationalist productions in the same religious group (with a broader time window)			0.122 (0.146)					
Logged number of nationalist productions in the same religious group (with a broader time window)				0.163 (0.115)				
Logged number of nationalist productions in the same language					0.0212 (0.0609)			
Logged number of nationalist productions in the same language family						-0.0466 (0.0821)		
Logged number of nationalist productions in the same language (with a broader time window)							0.0103 (0.0575)	
Logged number of nationalist productions in the same language family (with a broader time window)								-0.0350 (0.0844)
Zero-Inflation model								
Distance to a renowned artist (logged miles)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36320	36320	36320	36320	36320	36320	36320	36320

Standard errors in parentheses
 * p<0.05, ** p<0.01, *** p<0.001

Appendix B Table 4. Robustness test results for polity variables

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Logged number of nationalist productions in the same polity (numbers added when multiple polities)	0.0336 (0.0842)							
Logged number of nationalist productions in the same polity (numbers added when multiple polities & broader time window)		-0.0311 (0.0771)						
Logged number of nationalist productions in the same polity (numbers averaged when multiple polities)			0.0162 (0.0862)					
Logged number of nationalist productions in the same polity (numbers averaged when multiple polities & broader time window)				-0.0497 (0.0793)				
Number of nationalist productions in the same polity (numbers added when multiple polities)					0.00149 (0.00246)			
Number of nationalist productions in the same polity (numbers added when multiple polities & broader time window)						-0.000536 (0.000475)		
Number of nationalist productions in the same polity (numbers averaged when multiple polities)							0.00101 (0.00270)	
Number of nationalist productions in the same polity (numbers averaged when multiple polities & broader time window)								-0.000749 (0.000542)
Observations	36320	36320	36320	36320	36320	36320	36320	36320

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea included in the negative binomial part, distance to a renowned artists included in the zero-inflated part

Appendix B Table 5: Models disaggregated by genre

Each cell or group of cells in a column (separated by lines) shows the results of a different model.

Variables	Column 1 DV: Writings	Column 2 DV: Paintings	Possible explanations for divergence from aggregate results (in italics)
Frame resonance			
Protestant city	0.642 (0.465)	0.339 (0.563)	
Foreign ruled	0.857** (0.272)	1.030** (0.355)	
Napoleon			
- Country not occupied by Napoleon	Ref.	Ref.	
- Country not occupied by Napoleon	1.021** (0.391)	1.519** (0.482)	
- Country occupied; city not occupied	0.396 (0.343)	1.225 (0.685)	
- French cities	-1.330* (0.628)	-0.176 (0.743)	
Logged number of previous nationalist writings (C1) or paintings (C2) in the same language group	0.209** (0.0696)	-0.00400 (0.0726)	Aligns with the argument about domain specificity; Writing is more language bound than painting, thus linguistic domains should be more relevant for writings.
Logged number of previous nationalist writings (C1) or paintings (C2) in the same religion group	0.181 (0.171)	0.0274 (0.138)	
Personal ties			
Received at least one letter	1.738*** (0.269)	0.762* (0.365)	
Logged number of nationalist writings (C1) or paintings (C2) near letter sender	0.387*** (0.0557)	0.0682 (0.0534)	The dummy above is significant, which tests the same mechanism.
Cultural domains			
Distance to university town with previous nationalist writings (C1) or paintings (C2)	-0.513*** (0.0707)	-0.358*** (0.0838)	

Distance to university town without previous nationalist writings (C1) or paintings (C2)	-0.217* (0.0857)	0.0392 (0.0807)	The size of the coefficient is about a half compared to distance to a university town with previous nationalist writings, in line with the overall argument.
Distance to newspaper town with previous nationalist writings (C1) or paintings (C2)	-0.372*** (0.0532)	-0.534*** (0.0778)	
Distance to newspaper town without previous nationalist writings (C1) or paintings (C2)	-0.125** (0.0482)	0.0967 (0.0676)	The size of the coefficient is about a third compared to distance to a university town with previous nationalist writings, in line with the overall argument.
Distance to the next Roman road (logged miles)	0.0788 (0.0429)	0.0272 (0.0601)	
Distance to the nearest previous nationalist writing (C1) or painting (C2) on the Roman road network (logged miles)	-0.442*** (0.113)	0.134 (0.129)	The variable below is significant, which tests the same mechanism.
Logged number of previous nationalist writings (C1) or paintings (C2) in the same Roman road cluster	0.349*** (0.0955)	0.266*** (0.0798)	
Political domains			
Logged number of previous nationalist writings (C1) or paintings (C2) in the same polity	0.230*** (0.0505)	-0.00792 (0.137)	Aligns with the argument about domain specificity; Writing is more closely reflecting political issues (e.g. in political essays), thus political domains become relevant.
Economic / infrastructural domains			
Distance to the nearest stagecoach station (logged miles)	-0.055 (0.052)	-0.214** (0.0685)	
Distance to the nearest nationalist writing (C1) or painting (C2) on the stagecoach network (logged miles)	-0.111 (0.073)	0.198 (0.192)	
Distance to the railway station (logged miles)	Did not converge	Did not converge	
Distance to the nearest nationalist writing (C1) or painting (C2) on the railway network (logged miles)	Did not converge	Did not converge	

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea included in the negative binomial part, distance to a renowned artist included in the zero-inflated part

Appendix C. Robustness tests for main models

We conduct two types of robustness test, reported in the two tables below. The first table (Appendix C Table 1) shows the coefficients from the main analyses reported in the article (Column 1) and the coefficients from five different robustness tests. Each row represents a different model, of which we only present the coefficients for the main variable of interest. Column 2 represents results with bootstrapped standard errors, which are substantially identical to our main results. Column 3 summarizes a series of models with two additional control variables: the geodesic distance to the nearest nationalist production and a lagged outcome variable. The third robustness test (see Column 4) uses a logistic regression model instead of a zero-inflated negative binomial and includes only cities that had at least one artist according to the Wikipedia data described in the main text (generating an N of 24,928 artist-decades). The results are substantially identical. Column 5 shows the results from yet another modeling strategy: an event history set-up where the dependent variable is the first nationalist work produced, after which the city is dropped from the dataset. Results are substantially similar. Exceptions are protestant city, foreign-ruled, and institutionalized cultural channels. Regarding the latter, distance to university or newspaper towns are no longer affecting nationalist production due to the fact that such towns are dropped from the analysis after the first nationalist production appears, thus obscuring the influence they might have had on other cities. Column 6 shows the results of a difference-in-difference specification, which we model as a two-way-fixed effects OLS regression. All results hold up except the variables related to Napoleon's occupation and the Roman road variables, for which we have to drop control variables that don't vary over time. Column 7 shows the results from models where capital cities were dropped. These analyses are important because ERNiE assigns capital cities as location when the exact locations are unknown. The results show the robustness of our findings even when the cases were dropped where the ERNiE could possibly have assigned the locations incorrectly.

The second table (Appendix C Table 2) reports results from additional robustness checks that address concerns about causal inference and influential observations (for details see section 5.8 of the main text). Column 1 again reports the main results as rendered in the main tables. Column 2 adds a control for the number of artists who lived in a city and who had already produced a nationalist work. Column 3 addresses concerns about the city-level analysis that may be confounded by nationalist artists moving

from city to city. In this model, only the first nationalist work of artists is taken into account when constructing the dependent variable. In Column four, the inflated part of the ZINB regression includes the number of writer or artist who lived in the city, whether or not they had produced nationalist work. The final column omits the influential decade of 1810 to see if these observations dominate the results.

Appendix C Table 1. Five robustness tests with different model specifications, controls, and samples

Each cell or group of cells in a column (separated by lines) shows the results of a different model.

Variables	Column 1 Main results	Column 2 Bootstrapped SE	Column 3 Additional covariates	Column 4 Logistic regression	Column 5 Event history	Column 6 Two-way-fixed effects	Column 7 Without capital cities
Frame resonance							
Protestant city	0.447 (0.404)	0.447 (0.503)	0.551 (0.388)	0.216 (0.418)	0.693** 0.266	NA	0.565 (0.420)
Foreign ruled	0.964*** (0.230)	0.964** (0.366)	0.814** (0.286)	0.844*** (0.179)	0.0774 (0.158)	0.0839* (0.0351)	1.097*** (0.267)
Napoleon	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
- Country not occupied by Napoleon's empire	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
- Country occupied; city not occupied	1.253*** (0.357)	1.253* (0.574)	1.103* (0.444)	0.590* (0.246)	0.553** (0.202)	-0.0306 (0.0849)	1.311*** (0.386)
- Both country and city occupied	0.634 (0.393)	0.634 (0.495)	0.496 (0.380)	0.267 (0.321)	0.552** (0.208)	-0.0496 (0.0857)	0.722 (0.442)
- French city	-0.772 (0.480)	-0.772 (0.613)	-0.766 (0.550)	-0.705 (0.485)	-0.470 (0.291)	NA	-0.795 (0.504)
Logged number of previous nationalist productions in same language group	0.0212 (0.0609)	0.0212 (0.0728)	-0.0459 (0.0553)	-0.0345 (0.0529)	0.0230 (0.0399)	0.0366* (0.0149)	0.0113 (0.0691)
Logged number of previous nationalist productions in same religious group	0.0953 (0.134)	0.0953 (0.152)	0.0362 (0.148)	0.0896 (0.185)	0.258 (0.147)	0.0159 (0.0326)	0.102 (0.136)
Personal ties							
Received a letter from a nationalist	1.738*** (0.269)	1.738** (0.492)	1.495*** (0.250)	1.381*** (0.237)	0.782** (0.246)	0.316** (0.104)	1.990*** (0.256)
Logged number of nationalist writings near letter sender	0.387*** (0.056)	0.387** (0.105)	0.306*** (0.0621)	0.320*** (0.0475)	0.153* (0.0644)	0.0913* (0.0423)	0.436*** (0.060)

Cultural domains							
Distance to university town with previous nationalist production (logged miles)	-0.412*** (0.0580)	-0.412*** (0.104)	-0.323*** (0.0893)	-0.481*** (0.0757)	-0.182 (0.106)	-0.228*** (0.069)	-0.428*** (0.0630)
Distance to university town without previous nationalist production (logged miles)	-0.0872 (0.0798)	-0.0872 (0.0779)	-0.161* (0.0802)	0.0674 (0.0677)	-0.150* (0.0691)	0.00201 (0.034)	-0.138 (0.034)
Distance to newspaper town with previous nationalist production (logged miles)	-0.470*** (0.0535)	-0.470*** (0.141)	-0.432*** (0.122)	-0.503*** (0.0704)	-0.0433 (0.117)	-0.240*** (0.041)	-0.459*** (0.0667)
Distance to newspaper town without previous nationalist production (logged miles)	0.0160 (0.0480)	0.0160 (0.0545)	-0.0675 (0.0548)	0.0369 (0.0430)	-0.181*** (0.0347)	0.0653* (0.028)	-0.00109 (0.0501)
Distance to the next Roman road (logged miles)	0.0666 (0.0455)	0.0666 (0.0580)	0.0580 (0.0393)	0.0745 (0.0387)	0.0534 (0.0292)	NA	0.0646 (0.0505)
Distance to the nearest previous nationalist production on the Roman road network (logged miles)	-0.232* (0.0973)	-0.232 (0.1222)	-0.179 (0.118)	-0.194** (0.0744)	-0.247*** (0.0519)	-0.0105 (0.012)	-0.308* (0.127)
Logged number of previous nationalist productions in the same Roman road cluster	0.277*** (0.0720)	0.277** (0.0888)	0.244** (0.066)	0.222** (0.0837)	0.102 (0.0627)	0.027 (0.038)	0.294*** (0.0712)
Political domains							
Logged number of previous nationalist productions in the same polity	0.0336 (0.0842)	0.0336 (0.0970)	0.0111 (0.0833)	0.0998 (0.0656)	0.0526 (0.0515)	0.0149 (0.014)	0.00735 (0.0907)
Economic / infrastructural domains							
Distance to the nearest stagecoach station (logged miles)	-0.0723 (0.0451)	-0.0723 (0.0572)	-0.0624 (0.0407)	-0.0555 (0.0331)	-0.0882** (0.0310)	0.009 (0.014)	-0.0538 (0.0538)
Distance to the nearest nationalist production on the stagecoach network (logged miles)	0.0886 (0.122)	0.0886 (0.125)	0.209 (0.124)	0.0628 (0.0745)	-0.0390 (0.0541)	0.0028 (0.015)	0.0698 (0.015)

Distance to the nearest railway station (logged miles)	-0.0892 (0.104)	-0.0892 (0.0920)	-0.0243 (0.0684)	0.0298 (0.0694)	0.0578 (0.0794)	-0.025** (0.009)	-0.159 (0.134)
Distance to the nearest nationalist production on the railway network (logged miles)	0.146 (0.138)	0.146 (0.147)	0.265 (0.194)	0.0278 (0.0926)	0.212 (0.223)	0.0284 (0.029)	0.112 (0.165)

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea included in the negative binomial part, distance to a renowned artist included in the zero-inflated part

Appendix C Table 2. Four robustness tests with additional control variables, different outcomes and samples

Each cell or group of cells in a column (separated by lines) shows the results of a different model.

Variables	Column 1 Main results	Column 2 With control for No of nationalist artists in the city	Column 3 Outcome is first nationalist works of artists only	Column 4 With control for number of artists in the city	Column 5 Without the 1810 decade
Frame resonance					
Protestant city	0.447 (0.404)	0.673* (0.331)	-0.216 (0.358)	-0.367 (0.488)	0.286 (0.402)
Country is foreign ruled	0.964*** (0.230)	0.712*** (0.204)	1.016*** (0.204)	1.063*** (0.254)	1.144*** (0.231)
Country not occupied by Napoleon	Ref.	Ref.	Ref.	Ref.	Ref.
Country occupied; city not occupied	1.253*** (0.357)	1.103*** (0.287)	0.619 (0.335)	1.054** (0.335)	1.204*** (0.360)
Both country and city occupied	0.634 (0.393)	0.591 (0.316)	0.335 (0.340)	0.286 (0.360)	0.672 (0.402)
French city	-0.772 (0.480)	-0.675 (0.415)	-1.004 (0.521)	-0.877 (0.476)	-0.635 (0.485)
Logged number of previous nationalist productions in same language group	0.0212 (0.0609)	0.0173 (0.0524)	-0.104* (0.0451)	0.0142 (0.0606)	-0.0183 (0.0617)
Logged number of previous nationalist productions in same religious group	0.0953 (0.134)	0.0864 (0.124)	-0.0588 (0.102)	-0.0336 (0.106)	0.0347 (0.126)
Personal ties					
Received at least one letter	1.738*** (0.269)	1.634*** (0.229)	0.922*** (0.210)	0.910*** (0.202)	1.760*** (0.282)

Logged number of nationalist writings near letter sender	0.387*** (0.0557)	0.351*** (0.0542)	0.232*** (0.0694)	0.189*** (0.0544)	0.402*** (0.0567)
Cultural domains					
Distance to university town with previous nationalist production	-0.412*** (0.0580)	-0.277*** (0.0582)	-0.276*** (0.0531)	-0.272*** (0.0390)	-0.383*** (0.0620)
Distance to university town without previous nationalist production	-0.0872 (0.0798)	-0.157* (0.0781)	0.0451 (0.0676)	0.0811 (0.0698)	-0.0249 (0.0849)
Distance to the nearest newspaper town with previous nationalist production	-0.470*** (0.0535)	-0.370*** (0.0812)	-0.358*** (0.0545)	-0.337*** (0.0453)	-0.458*** (0.0519)
Distance to the nearest newspaper town without previous nationalist production	0.0160 (0.0480)	-0.0338 (0.0497)	0.0621 (0.0499)	0.131* (0.0518)	0.0953* (0.0465)
Distance to the next Roman road	0.0666 (0.0455)	0.0679 (0.0378)	0.0338 (0.0382)	0.108** (0.0408)	0.0686 (0.0452)
Distance to the nearest previous nationalist production on the Roman road network	-0.232* (0.0973)	-0.258** (0.0806)	-0.0444 (0.0790)	0.0184 (0.0892)	-0.156 (0.100)
Distance to the next Roman road (Roman cities only)	0.0809 (0.0738)	0.0933 (0.0683)	0.0861 (0.0724)	0.127 (0.0734)	0.0804 (0.0761)
Distance to the nearest previous nationalist production on the Roman road network (Roman cities only)	-0.353*** (0.105)	-0.348*** (0.0945)	-0.0642 (0.105)	-0.104 (0.148)	-0.260* (0.103)
Logged number of previous nationalist productions in the same Roman road cluster	0.277*** (0.0720)	0.239*** (0.0610)	0.262** (0.0806)	0.246*** (0.0730)	0.306*** (0.0764)
Political domains					
Logged number of previous nationalist productions in the same polity	0.0336 (0.0842)	0.0344 (0.0741)	0.0484 (0.0773)	0.0680 (0.0726)	0.0736 (0.0884)
Economic / infrastructural domains					
Distance to the nearest stagecoach station	-0.0718 (0.0569)	-0.0827* (0.0414)	-0.0670 (0.0345)	-0.0165 (0.0415)	-0.0621 (0.0447)

Distance to the nearest nationalist production on the stagecoach network	0.0929 (0.130)	0.0556 (0.112)	0.180* (0.0740)	0.220* (0.109)	0.0845 (0.128)
Distance to the nearest stagecoach station (Before 1870)	-0.0871 (0.0547)	-0.0908 (0.0482)	-0.0685 (0.0438)	-0.0348 (0.0506)	-0.0845 (0.0523)
Distance to the nearest nationalist production on the stagecoach network (Before 1870)	0.0247 (0.0755)	-0.0046 (0.0690)	0.0889 (0.0744)	0.143 (0.0868)	0.00925 (0.0822)
Distance to the nearest railway station	-0.0892 (0.104)	-0.0572 (0.0824)	Did not converge	-0.0919 (0.0844)	-0.0892 (0.104)
Distance to the nearest nationalist production on the railway network	0.146 (0.138)	0.142 (0.134)	Did not converge	0.367*** (0.110)	0.146 (0.138)

Standard errors in parentheses

Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea included in the negative binomial part, distance to a renowned artist included in the zero-inflated part

* p<0.05, ** p<0.01, *** p<0.001

Appendix D. Robustness tests for the transportation networks

Appendix D1: Using different distance thresholds and clustering algorithms

In the main analyses, we use 5 miles as a threshold to define which cities were within reach of the road, stagecoach, or railway networks. In other words, if a nationalist work of art or writing was produced farther than 5 miles away from these networks, they were not considered as part of an influence network. Given that it takes around 1 hour and 40 minutes for an adult to walk 5 miles, we believe it is a reasonable threshold. However, we also use 10 miles and 50 miles as a threshold to test the robustness of our findings. The results are not too different from the main findings.

This appendix also shows the results of using different clustering algorithms to identify regions of dense connectivity through the Roman road networks.

Appendix D Table 1. Roman road networks using different thresholds

Variables	Model 1	Model 2	Model 3	Model 4
Negative binomial model				
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes
Distance to the next Roman road (logged miles)	0.0692 (0.0456)	0.0996 (0.0749)	0.0686 (0.0456)	0.0999 (0.0751)
Distance to the nearest production on the Roman road network (logged miles) (10 miles threshold)	-0.220* (0.0933)	-0.308* (0.128)		
Distance to the nearest production on the Roman road network (logged miles) (50 miles threshold)			-0.161 (0.0893)	-0.255 (0.139)
Zero-Inflation model				
Distance to a renowned artist (logged miles)	Yes	Yes	Yes	Yes
Observations	33284	22756	33286	22756

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Appendix D Table 2. Roman road clusters using different algorithms

Variables	Model 1	Model 2	Model 3
Negative binomial model			
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes
Logged number of previous nationalist productions in the same Roman road cluster (<i>Louvain</i>)	0.277*** (0.0720)		
Logged number of previous nationalist productions in the same Roman road cluster (<i>Girvan-Newman</i>)		0.251*** (0.0699)	
Logged number of previous nationalist productions in the same Roman road cluster (<i>Clauset-Newman-Moore</i>)			0.182* (0.0766)
Zero-Inflation model			
Distance to a renowned artist (logged miles)	Yes	Yes	Yes
Observations	18240	18240	18240

Standard errors in parentheses
 * p<0.05, ** p<0.01, *** p<0.001

Note: The Louvain algorithm automatically chooses the number of clusters based on the modularity of the resulting clusters (i.e. how strong the within-cluster connections are compared to between-cluster connections). In contrast, the Girvan-Newman algorithm is hierarchical in structure, so researchers need to set a number of clusters.

Since we don't have any theory as to how many clusters we expect, we ran the Louvain algorithm and then used the number of clusters we got for the Girvan-Newman algorithm as well.

Appendix D Table 3. Transportation domains using different distance threshold

Variables	Model 1	Model 2	Model 3 Years before 1870	Model 4 Years before 1870	Model 5 Years after 1870	Model 6 Years after 1870
Negative binomial model						
Controls for decades, population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes	Yes	Yes
Distance to the Stagecoach station (logged miles)	-0.0520 (0.0436)	-0.0251 (0.0435)	-0.0763 (0.0578)	-0.0575 (0.0562)		
Distance to the nearest production on the Stagecoach (logged miles) (10 miles threshold)	-0.0534 (0.0786)		-0.1228 (0.0788)			
Distance to the nearest production on the Stagecoach (logged miles) (50 miles threshold)		-0.0481 (0.0352)		-0.0884* (0.0396)		
Distance to the nearest railway station (logged miles)					-0.0916 (0.104)	-0.166 (0.132)
Distance to the nearest production on the railway (logged miles) (10 miles threshold)					0.120 (0.146)	
Distance to the nearest production on the railway (logged miles) (10 miles threshold)						0.0902 (0.0741)
Zero-Inflation model						
Distance to an artist (logged miles)	Yes	Yes	Yes	Yes	Yes	Yes
Observations	34600	35023	21987	22164	11593	12296

Standard errors in parentheses
 * p<0.05, ** p<0.01, *** p<0.001

Appendix D2: Top-coding transportation variables with missing values

Appendix D Table 4

Variables	Model 1	Model 2 Only cities with a Roman past	Model 3	Model 4 Years before 1870	Model 5
Control variables					
Decade dummies, controls for population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes	Yes
Roman roads					
Distance to the next Roman road	0.0792 (0.0433)	0.0710 (0.0731)			
Distance to the nearest previous nationalist production on the Roman road network (top-coded)	-0.234** (0.0881)	-0.383*** (0.0938)			
Stagecoach routes					
Distance to the nearest stagecoach station			-0.0635 (0.0440)	-0.0921 (0.0537)	
Distance to the nearest nationalist production on the stagecoach network (top-coded)			0.139 (0.119)	0.0371 (0.0784)	
Railways					
Distance to the nearest railway station					-0.179 (0.108)
Distance to the nearest nationalist production on the railway network (top-coded)					0.290* (0.117)
Observations	36320	25328	36320	22700	13620

Standard errors in parentheses; a control for distance to a renowned artist is included in the zero-inflated part; * p<0.05, ** p<0.01, *** p<0.001

Appendix E. Robustness tests for letters in artist-level analyses

The main results of the writer/artist-level analyses presented in Table 2 are based on negative binomial regression models. To test the robustness of our findings, we report the results from survival models as well as an OLS specification. They are substantially identical.

Appendix E Table 1. Writer/artist-level analyses using event history and OLS regression models

Variables	Model 1 Event history model	Model 2 Event history model	Model 3 OLS	Model 4 OLS
Controls				
Decade dummies	Yes	Yes	Yes	Yes
Writer/artist-level IVs				
Number of letters received during the last decade	0.0147*** (0.002)		0.0085** (0.0026)	
Artist received at least one letter in the last decade		2.215*** (0.255)		0.331** (0.113)
Observations	26,326	26,326	20,509	20,509

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Appendix E Table 2 present results disaggregated by genre. The results show that receiving letters only affected the number of writings (these results are identical to those in Table 2 in the main text), but not musical works or paintings. We arrive at similar results if we disaggregate by type of writer/artist, distinguishing between the nationalist works produced by writers, musicians, or painters (results not shown). This is not surprising as written words can more easily transmit ideas that manifest themselves in other written words than in music or paintings. These results thus further support our argument about the domain specificity of diffusion processes.

Appendix E Table 2. Writer/artist-level analyses disaggregated by genre

Variables	Model 1 DV: Writings	Model 2 DV: Writings	Model 3 DV: Music	Model 4 DV: Music	Model 5 DV: Paintings	Model 6 DV: Paintings
Controls						
Decade dummies	Yes	Yes	Yes	Yes	Yes	Yes
Writer/artist-level IVs						
Number of letters received during the last decade	0.0720* (0.0366)		-0.339 (0.735)		-0.127 (0.190)	
Writer/artist received at least one letter in the last decade		2.125*** (0.562)		-0.255 (1.137)		-0.0707 (0.598)
Observations	20509	20509	20509	20509	20509	20509

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix E Table 3 addresses concerns about the validity of the writer/artist level analysis with additional controls: the number of letters received in the time span before the previous decade (measuring the overall productivity / activity of an artist/writer); and fixed effects for the most prominent and prolific letter writers to account for unobserved heterogeneity across correspondences.

Appendix E Table 3. Writer/artist-level analyses with additional controls

Variables	Model 1	Model 2	Model 3	Model 4
Controls				
Decade dummies	Yes	Yes	Yes	Yes
Number of letters received prior to the preceding decade	Yes	Yes	No	No
Fixed effects for the 5 most frequent letter writers	No	No	Yes	Yes
Writer/artist -level IVs				
Number of letters received during the last decade	0.0737* (0.0372)		0.0383 (0.0372)	
Received at least one letter during the last decade		2.214*** (0.594)		2.495** (0.891)
Observations	20509	20509	20509	20509

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Appendix F. Robustness tests for letters in city-level analyses

The following table reports the results from models with additional covariates to alleviate concerns about the inference gained from city-level analysis of the influence of letters written by prominent romantic nationalists. They include, in various combinations, controls for the number of letters that originated in a city, where addressee and writer lived in the same city, as well as the total number of writers / artists who had already produced nationalist work in the city. They all account for the possibility that cities with more active or more nationalist writers /artists will generate more letters written by nationalists, thus raising doubt of whether receiving such letters stimulates nationalist production.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Basic control variables								
Decade dummies, controls for population size, capital city, bishop seat, catholic city, distance to river, and distance to sea	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional control variables								
Number of letters sent from the city	Yes	Yes	No	No	Yes	Yes	No	No
Number of letters circulated within the city	No	No	Yes	Yes	No	No	Yes	Yes
Number of writers / artists living in a city who had already produced a nationalist work	No	No	No	No	Yes	Yes	Yes	Yes
Independent variables of interest								
City received at least one letter	1.714*** (0.264)		1.750*** (0.268)		1.612*** (0.227)		1.651*** (0.228)	
Logged number of nationalist writings near letter sender		0.370*** (0.0545)		0.397*** (0.0557)		0.334*** (0.0600)		0.363*** (0.0563)
Observations	36320	36320	36320	36320	36320	36320	36320	36320

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

A control for distance to a renowned artist is included in the zero-inflated part

Appendix G. Temporal heterogeneity

Given the long duration of our observation period, it is worth asking to what extent the findings vary over time. Appendix G Table 1 shows the results of linear interactions with time (in the first column) and non-linear interactions with each decade (the remaining columns), allowing us to test whether our conclusions are driven by particular sub-periods or display other non-linear patterns.

The results suggest that diffusion through specific channels is the main driver of romantic nationalism throughout our observation period. It further highlights the unique nature of the 1810s (highlighted in gray), either because otherwise insignificant variables are relevant during this period, or because the coefficient reverses its sign compared to other decades. We attribute this to the effect of the Napoleonic occupations and wars, which represent the equivalent of a “super-spreader” event, in the language of the epidemiology of contagious diseases, that brought romantic nationalism to many corners of Europe.³² The main results of our analysis hold up, however, when dropping the 1810 decade from the sample (see Appendix C Table 2, Column 5). Finally, there is no consistent pattern for generic domains, especially if we take coefficients on the borderline of significance into account as well. The only exception is nationalist production within language communities, for which there is a more consistent trend already discussed in the preceding analysis.

³² In a subsample analysis for 1810 that includes all variables that are significant in individual models, as reported in Table 7, we find that the standardized coefficient for the Napoleon variable is 6 to 8 times larger than those of the other variables.

Appendix G Table 1. Temporal heterogeneity

		Sign. linear interactions with time, flipping signs	Interactions with individual decades															
			1770	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920
Diffusion																		
Personal	Letters	No	-	+	+	+	****	**	**	**	**	+						
Cultural	Newspaper (nat.)	No	+	+	-	+	****	+	+	+	+	+	+	+	+	+	+	+
Cultural	University (nat.)	No	-	+	-	****	****	+	+	+	+	+	+	.	-	+	-	
Cultural	Cultural region	Yes	+	+	.	+	****	+	+	+	+	+	****	+	-	+	-	-
Political	Polity	Yes	+	**	.	+	.	.	-*	-*	.	.	.	.	.	.	+	-*
Infrastructural	Stagecoach	Yes	+	+	-*	+	****	.	+	+	-	-	-	.	-	-	-*	
Infrastructural	Railway	No								+	-	+	+	-	-	+	-	
Frame resonance																		
Contrasting	Foreign ruled	Yes	-	-	+	-	****	+	+	+	****	****	**	**	****	****	**	+
Contrasting	Napoleon	No			+	**	****	+	**	**	+	+	+	+	****	+	**	+
Compatibility	Protestant	No	+	+	+	+	+	+	-	+	+	-	+	-	+	+	+	-
Credibility	Language	Yes	+	+	+	+	****	.	.	.	.	.	.	.	.	.	.	****
Credibility	Religion	Yes	+	+	.	.	**	.	.	.	.	.	.	.	.	.	.	.

Note: Each cell of the right-hand side panel reports the results from a ZINB model with interactions between the main independent variable and decades; + indicates that the coefficient points in the right direction in that decade; - indicates that the coefficient points in the wrong direction; a dot (.) indicates that the coefficient is minuscule
 * p<0.05, ** p<0.01, *** p<0.001