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Struggling over the Boundaries of Belonging: A Formal Model of Nation Building, Ethnic Closure, and Populism[1]

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This article explores the conditions under which political modernization leads to nation building, to the politicization of ethnic cleavages, or to populism by modeling these three outcomes as more or less encompassing exchange relationships between state elites, counterelites, and the population. Actors seek coalitions that grant them the most advantageous exchange of taxation against public goods and of military support against political participation. Modeling historical data on the distribution of these resources in France and the Ottoman Empire from 1500 to 1900 shows that nation building results from strong state centralization and well-established civil societies; ethnic closure, from weak state capacity and civil societies; and populism, from medium centralization and weak civil societies. The results are consistent with French and Ottoman political histories of the 18th and 19th centuries.

The Western nation-state is based on a new form of drawing political boundaries, replacing the horizontal strata of agricultural empires with the vertical division between various national communities and their respective states. In many modernizing states in the global South, however,

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ethnic communities, rather than the more encompassing national category, became the focus of political loyalty and popular identification, while the populist alliance between elites and masses against the oligarchic enemies of the nation has characterized the political histories of many countries in Latin America and beyond. All three trajectories of political modernization lead to a (more or less encompassing) alliance between political elites and segments of the population, in contrast to the premodern polities in which the relationship between political elites and the rest of the population was mostly based on coercion and resource extraction.

How can we understand the logic of these different trajectories of political modernization? We propose an empirically calibrated, formal model of how different systems of political alliance and identification emerge. These systems result from a struggle between actors endowed with different resources and unequal power who seek to enter into an exchange relationship with some actors while excluding others from their alliance system. Basing its assumptions on carefully researched data from France and the Ottoman Empire, we then identify the historical conditions under which nations, ethnic groups, or populism results from these struggles.

In line with the comparative historical sociology of nation-state formation, we focus on three different aspects of the process of political modernization and assess how they affect which actors ally and identify with each other. First, central state elites were more or less able to establish direct rule and to monopolize the political decision-making process (Hechter 2000), control over taxation (Tilly 1975), and the provision of public goods (Wimmer 2002; the state centralization aspect). Second, the population at large was more or less mobilized in military and political terms: It played a more or less important role in the rulers' armies (Lachmann 2011), and it was more or less aware of, interested in, and indeed involved in political matters of the state rather than just local communities (Mann 1995; the mass mobilization aspect). Third, political modernization also has an organizational aspect, changing the nature of ties between members of the population at large and between these and political elites.

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The emergence of civil society organizations—of trade unions, reading circles, professional associations, and the like—represents a crucial development on which comparative historical research has focused in the past.

The model shows that encompassing systems of alliances and identities (or nation building for short) were most likely to emerge in highly centralized states as well as when dense networks of civil society organizations had emerged to provide a basis for mobilizing political support independent of degrees of cultural similarity between actors. Under these conditions, a new relationship between state elites and the nonelite segments of the population evolved, a new social contract that institutionalized the exchange of political participation against taxation and of public goods against military support. Elites and masses then identified with each other over time and defined and perceived themselves as members of an encompassing national family worthy to defend and to commit to, thus completing the process of nation building.

In less centralized states, no such encompassing exchange system could emerge. The central elites disposed of only enough decision-making power and public goods to ally themselves with their own ethnic constituencies. The counterelite thus had the opportunity to do the same with their ethnic followers, who preferred an exclusive alliance with these still powerful ethnic elites over the promise of national solidarity that state elites could not keep. This tendency toward ethnic segmentation of alliances and identities was reinforced when civil society organizations were only weakly developed and actors thus relied on cultural commonality to stabilize their alliance networks. Our analysis also demonstrates, however, that such ethnic closure emerged even when actors either did not care about matters of cultural commonality at all or did care but found themselves culturally closer to their class peers rather than their ethnic brethren.

Finally, populism resulted from a situation in between these two trajectories of political modernization. The state elite was strong and resourceful enough to offer an alliance attractive for the entire population, irrespective of ethnic divisions. But they preferred to exclude the counterelite, which remained an effective competitor for the population's support and loyalty—in contrast to the nation-building scenario, in which the counterelite no longer controlled enough decision-making power or public goods to compete with state elites. Populism becomes all the more likely the more the political and military mobilization of the masses had proceeded because this increased elite competition over the political loyalty and military support of the masses and thus provided further incentives for state elites to exclude other elite factions from the alliance system.

Nation building, ethnic closure, and populism thus represent three dif-

ferent equilibrium outcomes of the process of political modernization. By identifying the conditions under which history travels down one or the other of these three paths of political development, this article shows that a precise specification of actor-based, "robust" mechanisms (Tilly 2001) on which sociology has increasingly come to rely can deepen our understanding of macrohistorical processes as well. Overall, the article helps to illuminate one of the more interesting puzzles posed by modern history: why the 19th and 20th centuries have been characterized by ethnic politics, populist mobilizations, and national solidarity rather than politics, mobilizations, and solidarities based on social class, as Karl Marx had predicted during the heydays of the industrial revolution.

FIVE CONTRIBUTIONS

This analysis offers five contributions to our understanding of political modernization and the formation of collective identities. First, it integrates a literature that remains divided along disciplinary lines and according to geographic focus. While sociological work on the rise of nationalism and the nation-state deals mostly with Europe (see the overviews in Smith [1998] and Ozkirimli [2000]), a long line of work in comparative politics has sought to explain how ethnic pluralism has been politicized in the global South in the course of political development, often leading to the ethnic segmentation of the national political arena (Furnivall 1939; Despres 1975; Young 1976; Rothschild 1981). Finally, Latin Americanists have discussed the reasons for and conditions under which populist forms of nationalism have emerged repeatedly in the history of many countries on the continent (Ionescu and Gellner 1969; Laclau 1977; Canovan 1981). Others have extended this analysis to other regions, from late 19th-century Russia to contemporary Africa (for references, see Jansen [2011, p. 78]).

We suggest seeing nationalism, the politicization of ethnicity, and populism as different outcomes of a single process of political modernization during which political alliances and collective identities are reorganized along new lines of inclusion and exclusion. Exploring the conditions under which these three different outcomes will emerge, we contribute to a theoretical integration and empirical conversation between studies of Western nation building, ethnic pluralism in the South, and Latin American populism.

Second, these insights are gained through an innovative use of the tools of formal modeling. Rather than conceiving of isolated actors who choose between various given identities, as in many formal models of nationalism and ethnicity, we seek to understand the formation of political alliances and identities as an interactive process of group formation and social

closure (see Weber [1922] 1968; Brubaker 1992; Wacquant 1997; Wimmer 2002). To achieve this, we combine an exchange-theoretic approach to preference formation with a game-theoretic model of strategic interaction. The exchange-theoretic part of the model explains which actors seek to exchange resources with which other actors and whom they would rather exclude from their coalition (Coleman 1990; Kalter 2000). We then use game theory to determine which overall alliance system emerges from the strategic interaction between actors with different such preferences. Going beyond the purely instrumentalist approach that characterizes most rational choice approaches in historical sociology (Kiser and Hechter 1998, p. 799), we also build an additional component into the model by letting actors consider with whom they can identify on the basis of cultural similarity when choosing alliance partners.

Third, modeling political alliances and identities as the outcome of a (however partial and conflictual) agreement allows reconciling explanations that focus on the actions and strategies of political elites with those that emphasize the importance of mass sentiment. Elite-focused models (Brass 1979; Tilly 1994; Gagnon 2006) have difficulty explaining why even well-crafted historical narratives or impressive public rituals (Hobsbawm and Ranger 1983) sometimes fail to convince the population at large to shift their focus of loyalty and identity to the nation or ethnic group (see, e.g., Anonymous 1989; Smith 1990; Kirschbaum 1993). "Bottom-up" theories attribute the power of popular ethnic or national sentiment to existing folk myths, to established symbols and legends (Smith 1986), to mass resentment against alien rule (Hechter 2000), or to the spread of literacy that makes it possible to imagine national communities (Anderson 1991). But they struggle to explain why many myths, symbols, and legends are forgotten; why only few ethnicities find the political elites necessary to form effective nationalist movements even when ruled by ethnic others; [2] and why many nationalisms were supported by populations who spoke different tongues.

We overcome this division of the literature by conceiving of nation building, the politicization of ethnicity, and populism as the result of a contentious and conflictual negotiation that involves both elites and masses and leads to a more or less inclusive alliance between them. More specifically, we argue that the population at large embraces national, ethnic, or populist identities only if this offers them a favorable exchange relationship with elites. Nation building, ethnic closure, and populism require more than popular sentiment, on the other hand, because they

[2] For examples of nonpoliticized ethnicities, see Young (1976, pp. 105–10), Winnifrith (1993), and Wimmer (1995, pp. 219–29).

need to offer elites an alliance that serves their varying political ends as well.[3]

Fourth, the article contributes to the debate on formal modeling in historical sociology by exploring the middle ground between micronarratives and macrostructural approaches. Departing from the analytic narratives approach (Bates et al. 1998), we do not account for specific chains of events in particular societies. Instead, we attempt to model the shift from one macrosocietal equilibrium to another that takes place over the *longue durée* (see Carpenter 2000). We are thus considering how political modernization shifted the balance of interests and power in favor of new modes of political alliance and identity, without maintaining that our model captures the different event chains, the conjectures of processes, and the historical reversal and contingencies through which these transformations were eventually achieved. In other words, we do not model the forces that steer the daily event chains into a certain direction, but rather the equilibria that lock in these outcomes once, for a variety of reasons exogenous to the model, they come about.

On the other hand, our formal approach is better able than most macrostructural accounts to explore the key mechanisms through which modernization brings about a transformation of political alliances and identities. Macrostructural accounts argue that industrialization is functionally related to nation building (Gellner 1983), ethnic politics to unequal modernization (Horowitz 1985), or populist nationalism to a certain type of industrialization (Cardoso and Helwege 1991), without systematically showing that the mechanisms postulated can indeed logically and empirically bring about the observed outcomes. By contrast, our formal model follows the program of an analytical sociology (Hedström and Bearman 2009) and fully specifies all key mechanisms and assumptions.

Fifth, the article makes some methodological advances as well. The specific assumptions regarding the distribution of resources over actors are not based on plausibility arguments alone, as in much of the rational choice literature. Indeed, one of the most frequently raised criticisms against that literature is that model builders often play around with input parameters until the actually observed historical outcome is produced (the problem of "post-hocery"; see Skocpol 1994, p. 325; see also Elster 2000, pp. 686–87; Parikh 2000). The model introduced here will operate with carefully researched historical data on the distribution of taxing capabilities, public goods provision, and military support in France (1300–1900)

[3] Treating collective identities as a negotiated accomplishment extends the line of nationalism studies pioneered by Hroch ([1969] 2000) and pursued by Mann (1993, chap. 4) and Wimmer (2002).

and the Ottoman Empire (1500–1900).[4] These data help to ground the model in empirical reality and prevent us from simply assuming the parameter values that will generate the hypothesized outcomes. Online appendix A documents this extensive historical research.

Such calibration is not possible for the preferences of actors (for this problem in general, see Kiser and Hechter [1998]). We do believe, however, that it is necessary not simply to deduce preferences from general theoretical propositions but to show their plausibility for concrete, historically situated actors (in line with Somers [1998], Parikh [2000], Skocpol [2000], and the "critical realism" of Bhaskar [1979]). Without interview or survey data, this is best done by paying attention to revealed preferences through assuming—according to a weak version of standard rationality assumptions—that actors did X because they wanted to achieve Y, which is often the consequence of doing X (see Bates et al. 2000, p. 698). Our assumptions about preferences are based on such historically grounded plausibility arguments that we derive from the literature on France and the Ottoman Empire.

These assumptions obviously involve a considerable degree of uncertainty. We thus go beyond standard practices in the formal modeling literature and perform a cutting-edge sensitivity analysis (Saltelli et al. 2004, 2008; Campolongo, Cariboni, and Saltelli 2007). As online appendix C documents, this establishes the robustness of our main findings against reasonable variation in parameter values.

The next section describes the model architecture. We then introduce the empirical data used to calibrate the model and specify hypotheses derived from the comparative historical literature. The following three sections present results and show, through a detailed analysis of actors' preferences and the strategic interactions between them, how these results were brought about. The next section demonstrates that this model meaningfully relates to the histories of nation building in France and of the ethnopolitical fragmentation of the Ottoman Empire. The final section concludes with an outlook on how the model architecture can be modified to study other aspects of the politics of nation building and ethnic closure.

[4] We choose these two societies since they are sufficiently removed from each other to rule out any direct influence on each other's development (at least until the 19th century) and because they are considered in the comparative literature to represent starkly different examples of the process of modern state building (Barkey 1991). France is one of the first states in which nationalist ideologies emerged endogenously and is considered a prime example of successful nation building. The Ottoman Empire, by contrast, is one of the very earliest examples of a multiethnic empire from which ethnonationalist secessionist movements emerged (of Greeks, Serbs, Armenians, etc.). These two societies thus represent ideal cases for the analysis of the endogenous political forces behind the politicization of ethnicity and the formation of national communities that form the core of our analysis.

A GAME-THEORETIC EXCHANGE MODEL

Actors and Alliance Systems

The model architecture is based on a simple two-dimensional social structure. On a horizontal dimension, we distinguish between actors according to the amount of power they hold, that is, between political elites and masses, similar to the well-known polity model of Tilly (1978). We thus do not differentiate, as in some Weberian and Marxian traditions in sociology, between economic, political, and cultural elites, but focus exclusively on the political domain—in line with the thematic focus of this article.

On a vertical dimension, we introduce a center-periphery cleavage by distinguishing between a central and a peripheral segment of the population. This division between core and peripheral regions and populations is a universal feature of states (Gerring et al. 2011), especially of premodern states that relied on indirect rule through peripheral elites to control the peripheral regions of the kingdom or empire.[5] The division between core and periphery often goes together with a marked differentiation of cultural traits and often with a corresponding ethnic cleavage or at least strong regional identities. This vertical, ethnic or regional division is thus orthogonal to the horizontal division between elites and masses.

We therefore arrive at four types of actors: the *central elite* (cE), the *peripheral elite* (pE), the *central masses* (cM), and the *peripheral masses* (pM).[6] To illustrate, it is useful to briefly envisage real-world exemplars of these actors in the context of the two historical cases that we will use for empirical calibration. The central elites (cE) represent those groups in control of the central state. In France, this refers to the king and his extended family and entourage, the royal house, until the Revolution, and to the Parisian political elite thereafter. The central elite in the Ottoman

[5] For empires, see Howe (2002, pp. 14–16) and Lieven (2000, chap. 2), who also discusses the Chinese exception; for elite divisions in premodern centralized bureaucratic polities, including postfeudal Europe, see Eisenstadt (1963); on indirect rule within center-periphery relations in premodern polities, see Hechter (2000).

[6] Note that in the model introduced below, the two masses do not constitute groups with the ability to act collectively, but merely represent placeholders for different sets of individuals who face the same objective social conditions (i.e., who share the same position in the distributions of resources, interests, and cultural traits). As in similar game-theoretic models (e.g., Kiser and Linton 2002; Gehlbach 2006), this means that we do not have to presuppose some kind of collective identity or capacity to act. Also note that this general framework can in principle be adapted to any number of actors, although a sufficiently realistic model of nation building can be already constructed with these four types of actors. Robustness analyses showed that increasing the number of peripheral elites and masses makes inclusionary coalitions less likely (in line with Kalter [2000, p. 437]) but otherwise produced substantially similar results.

Empire consisted of the sultan and his government, including the slave administrators and elite soldiers that formed the inner palace.

The peripheral elite is composed of all those who exert political authority in the state but who are not a member of the central elite, thus the provincial French nobility outside of Versailles under the *ancien régime* and the provincial political elites after 1789 and, in the Ottoman Empire, the provincial *timar* holders and governors, including the leadership of Christian *millets* that held official state functions.

The masses consist of the inhabitants of the towns and villages, including their notables and local leaders, who are not directly involved in the governance of the state: commoners and nonfunctionaries in France and, in the Ottoman Empire, all those who are not members of the military-administrative caste. The differentiation between central and peripheral masses might correspond in the case of France to the division between Paris and the provinces (or more broadly but relatedly between speakers of *langues d'oïl* vs. *langue d'oc*) and in the Ottoman Empire to the provinces with Muslim majorities versus the largely Christian Rumelia or, after the loss of many of the European provinces in the 19th century, the Arabic-speaking provinces versus those with Turkish-speaking majorities.

These four actors can enter into various exchange and alliance relationships. Each alliance system assigns the four actors to one of a series of mutually exclusive groups within which resources are exchanged. Logically, they can combine into 15 possible alliance systems. Figure 1 contains those alliance patterns that are the most interesting from our point of view because they come close to empirically observable patterns. We assume that actors who enter into an alliance with each other will also develop a shared identity over time.[7] This assumption is grounded in a long line of research in social psychology that stretches from Tajfel (1981) to Kurzban, Tooby, and Cosmides (2001), who have shown how coalitional alliances determine identity patterns and that newly formed coalitions can even trump over established modes of categorization such as race in the United States.

An *estate order* separates elites and masses, corresponding to Gellner's (1983) classic description of the social order of agrarian empires. We represent this alliance system as {cE, pE}{cM, pM}. Although central and peripheral actors can be distinguished from an observer's point of view, the politically salient boundary here runs along the horizontal divide,

[7] Similarly, Posner (2005, p. 3) conceives "ethnic politics . . . in terms of the politics of coalition building and ethnic identity choice . . . in terms of the quest to gain membership in the coalition that will be most politically and economically useful."

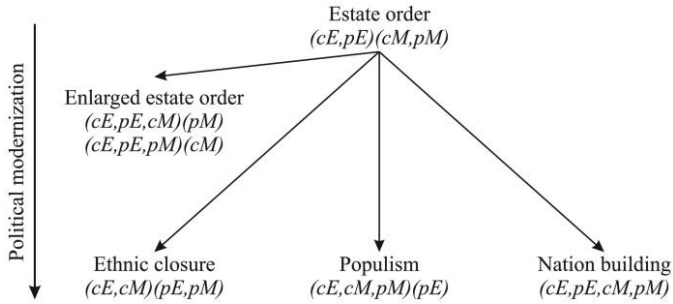

FIG. 1.—Types of alliance systems in modernizing states. cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses.

creating a single elite and a single mass.[8] In a more inclusive variation of such elite rule, one of the masses is included in the alliance system. An example for such an *enlarged estate order* is post-Napoleonic France under the Orléanists, when the younger Bourbon king ruled a constitutional monarchy that granted full voting and citizenship rights to small segments of the population in and around Paris.

In contrast to these two essentially premodern alliance patterns, the three remaining groupings in figure 1 represent varieties of modern systems of alliance and identity. They are all structured around at least one alliance between elites and masses, thus replacing a relationship between elites and masses characterized primarily by force and resource extraction (as in the estate order) with one that is relying more on consent, mutually beneficial exchange, and thus reciprocal identification (for a similar analysis, see Levi [1997]).

Ethnic closure describes an exchange system, and thus social identities, that is segmented along ethnic lines such that the central elites ally with the central masses and the peripheral elites with the peripheral masses. Such closure along ethnic rather than along national lines can be observed in a variety of contexts such as in the pre–Civil War era United States and many postcolonial states in the South in which political arenas and identities are thoroughly compartmentalized along ethnic lines (Horowitz 1985; Wimmer 2002).

In *populism*, the peripheral elite is excluded from the domain of ex-

[8] In our notation, the braces that separate different categories (e.g., between estates in {cE, pE}{cM, pM}) denote political salience. They thus show in which alliance group the four actors end up without implying that the center-periphery distinction was the most salient in all of these alliance systems, even if there might be plenty of political conflict between central elites (e.g., the king's house) and peripheral elites (the aristocracy) (see Eisenstadt 1963).

change and shared identity that encompasses all other actors. Best known are the Latin American cases (Roberts 1996; Weyland 1996), in which the state elite portrays itself as the defender of the entire population's interest against an exploitative (agrarian or industrial) oligarchy allied with the forces of imperialism. As we will see below, however, populism is not restricted to Latin America. The Bonapartism of the Second Empire and the ideology of Tanzimat reformers in the Ottoman Empire are other examples of this form of political organization and alliance. Note that in our understanding, populism represents not a particular rhetorical style or mode of popular mobilization (as in Jansen [2011]) but a specific structure of political alliances.

Finally, *nation building* corresponds to an exchange involving all four actors, thus the idea and institutionalized practice of solidarity among all elite and nonelite sections of the population. This represents the most inclusive alliance system, drawing the boundaries of belonging against nonnational others rather than against a particular segment of the domestic population (Brubaker 1992; Wimmer 2002). France during the Third Republic represents a classic example, as we will see further below.

In the following, we formally model key mechanisms through which political modernization leads to the emergence of these three varieties of modern alliance systems and identities. Starting from the estate order as the established alliance system (status quo) at time t_0, we analyze the conditions that support the institutionalization of ethnic closure, populism, or nation building at time t_1. The model has two parts: We first seek to understand which actors prefer to ally themselves with which other actors. This is derived through a modification of Coleman's well-known exchange model. The second, game-theoretic part of the model then determines how the various actors who have different preferences regarding the structure of alliances strategically negotiate with each other and arrive at a—more or less partial, more or less exclusionary—settlement regarding who is included in which exchange group.

The Model in a Nutshell

For readers who are not interested in the particulars of the model and who would like to directly move on to the hypotheses, we offer a brief summary of the main model features here. The exchange-theoretic part determines which actor prefers which of the possible alliance systems discussed above (nation building, ethnic closure, etc.). One therefore first needs to know who has what and who wants what: the distribution of resources over all actors as well as which actor shows how much interest in these resources. If many actors want the same resource and few actors have them, prices for these resources will be high (a simple market mech-

anism). If an actor already has a lot of what she wants, she will be less interested in additional amounts of that resource (a marginal utility assumption).

Actors can choose not only what to exchange but also with whom: They want to keep those who offer the same resources at arm's length (because competition depresses prices) and, on the other hand, to get what they want from as many sources as possible (because a supply monopoly increases prices). All these elements together then allow us to calculate if an actor would be better off than at present under the different possible alliance systems, such as ethnic closure, the national community, an estate order, and so forth. Actors prefer those exchange systems from which they gain the most, leading to a ranked order of preferences for all alliance systems for each individual actor.

Going beyond this purely utilitarian logic, we introduce cultural similarity as another element of how actors might evaluate different alliance systems. The cultural difference between each pair of actors is expressed as a number between 0 and 1. A value of 1 means that two actors do not share a single cultural trait in common and 0 that they share all cultural traits with each other. Each possible exchange system can be expressed in a similar way (0 if two actors ally with each other, 1 if they do not). Comparing these two sets of figures, one can calculate how well each possible alliance system fits onto the map of cultural similarities. Whether or not actors really care about such cultural similarity can change, and the model allows varying the relative weights given to the resource gain component and the cultural similarity component when actors rank different alliance systems.

The first part of the model thus determines which actors prefer which alliance system. Since actors are unequal in the kind and amount of resources they control and those they want, they will have different preferences (one actor prefers ethnic closure, others a national community, etc.). How then do they arrive at a settlement regarding who will finally exchange what and thus will end up identifying with whom? To answer this question, we use a simple game-theoretic setup: State elites first make a proposal (e.g., "let's all exchange with each other," or nation building); the peripheral elites then can make a counterproposal ("let's exchange between those who share the same ethnic background," or ethnic closure); the masses evaluate these proposals and decide whether to accept one of them or stick to the status quo. Actors who embrace the same proposal will then enter into an alliance with each other. All these alliances together then form the exchange system that will prevail in a society. In what follows, we describe the two parts of the model in more detail.

The Exchange Model in Detail

In line with recent work in political sociology that emphasizes the relational networks underlying processes of state formation and political modernization (see Gould 1995, 1996; Wimmer 2002; Ikegami 2005; Tilly 2006; Barkey 2008; Martin 2009), we model alliances as a series of resource exchanges that bind state elites and other actors together. We consider those economic and political resources that the comparative historical literature has identified as crucial for the development of the modern state (Tilly 1990; Mann 1993; Hechter 2000; Kiser and Linton 2001; Wimmer 2002):[9] taxation and public goods provision on the one hand and military support and political decision making on the other hand. Each of these resource dyads is symmetrical: Elites can offer access to public goods and services in exchange for the taxation of the masses. Masses can offer military support and loyalty in exchange for being granted political participation.

This exchange of resources is modeled using Coleman's (1990) "linear system of action." The basic elements of this exchange model are actors' interest in and control over resources: c_{ij} describes the control that actor i ($i = 1, \ldots, n$) exercises over resource j ($j = 1, \ldots, m$) and x_{ji} describes her interest in this resource. These parameters are arbitrarily scaled such that all actors' control over each resource sum to 1.0 and the interests of each actor sum to 1.0. Hence, an actor's control over a resource equals her share of control, relative to shares held by the other actors. Likewise, her interest in a resource is measured relative to her interest in the other resources. The initial distributions of interests in and control over resources can be summarized in a control matrix C and an interest matrix X.

The preferences of actor i are expressed by the Cobb-Douglas utility function

$$U_i^{\text{control}} = c_{i1}^{x_{1i}} \cdot c_{i2}^{x_{2i}} \cdot \cdots \cdot c_{im}^{x_{mi}}. \tag{1}$$

It implies the usual assumption that the marginal utility of a resource for an actor diminishes when all other resources at her disposal are held constant. The model also assumes that actors demand control over resources proportional to their interests in them, while taking into consid-

[9] Tilly (1990) and Kiser and Linton (2001) have laid most emphasis on taxation and the military aspect of modern state formation, Hechter (2000) underlined the centralization of political decision-making power, while Mann (1993) added the political mobilization of the population to the equation and Wimmer (2002) has pointed to the role of public goods, including policing, infrastructure, and welfare support. Our model also builds on and extends the work of Barzel and Kiser (2002), who have analyzed the exchange of voting rights (granted by the state) against consensual taxation for public works projects in early medieval France and England.

eration their prices and their own budget (see Coleman 1990, pp. 682–84).

The control over resource k exercised by an actor i *after exchange*, that is, in *equilibrium*, can be shown to equal

$$c_{ik}^{*} = \frac{x_{ki} b_i}{v_k}, \tag{2}$$

where v_k is the value or price of this resource and b_i denotes the actor's initial budget. Intuitively, this formula states that an actor i's control over resource k after the exchange will be higher the more she is interested in the resource (x_{ki}), the lower its price (v_k), and the more she has to offer in return (b_i).

The budget of each actor can be interpreted as an actor's *exchange power*. It is equal to the sum of her initial shares of control, each weighted with the price of the respective resource:

$$b_i = \sum_{j=1}^{m} v_j \cdot c_{ji} \quad \text{for all } i = 1, \ \ldots, \ n. \tag{3}$$

The *prices* of the resources derive from the distributions of interests and control. In equilibrium, they can be computed by solving the matrix equation

$$v = XCv; \tag{4}$$

that is, they equal the elements of the eigenvector v of the matrix XC (for the derivation, see Coleman [1990, pp. 682–84]).

Coleman's exchange model describes a simple logic of trading.[10] Those who are mutually more interested in the resources controlled by others than in their own will engage in exchanges until no further mutually beneficial exchange is possible. In general, all actors gain from the possibility of mutual exchanges. We extend and modify Coleman's exchange model in a crucial point, following Kalter (2000): Actors may also want to exclude others from the exchange system because their exchange power and thus their gains crucially depend on who exchanges resources with

[10] We adopt Coleman's model precisely because it allows for a simple representation of exchange systems from which the value of resources and the exchange power of actors can be determined. This analytical power rests on a number of simplifying assumptions that it shares with traditional market models (e.g., the possibility of a centralized exchange among all actors or the absence of externalities; see Coleman 1990). While it is crucial to relax some of these assumptions in other analyses, the task to model long-term historical processes calls for the high degree of abstraction found in Coleman's original model, not the least because this makes it easier to empirically calibrate the model given the scarcity of historical data.

whom.[11] In other words, the distribution of interests and control within an exchange system depend on the structure of alliances. The price that actors' can get for the resources they control is determined by who else is exchanging these very same resources with the same exchange partner. Therefore, actors not only consider what they want and at which prices they are willing to exchange resources; they also are concerned with whom to enter into an exchange relationship. In general, actors attempt to monopolize the supply of resources they offer by excluding competitors, and they try to demonopolize the demand for these resources by including as many potential buyers as possible.[12] The exchange model thus assumes that actors make an exclusive choice of alliance partners: When they have decided and agreed on with whom to ally themselves, they will exclude all others from this network of relationships. In other words, we model a process of monopolistic closure with drastic consequences for the structures of political exchanges and identities (Tilly 2006; Wimmer 2008).[13]

Adding Considerations of Cultural Similarity

So far, the model assumes that actors prefer an alliance that allows them to maximize their control over political and economic resources. However, it is not enough to focus exclusively on such instrumental interests, as the majority of rational choice models do (Elster 2000). Rather, a sufficiently realistic model should incorporate the insight that some boundaries and collective identities are more plausible than others in view of a given

[11] This article is the first to empirically apply Kalter's (2000) extension of Coleman's model. It involves a simple method to analyze situations in which actors split up into two or more subgroups with exchanges taking place only within these separated systems of exchange. Technically, one simply has to normalize the shares of control within each subgroup (Kalter 2000, p. 447). This is done by dividing the shares of control over a resource k by the sum of control that remains in the respective system of exchange. Aside from that, one can derive the equilibrium in the same way as before. To compare the equilibrium values of demand, supply, and utilities across exchange systems, one has to get rid of the normalization again by multiplying the equilibrium control values by the respective weighting factor (i.e., with the total share of control over the respective resource available in the subgroup).

[12] Note that expanding a group to incorporate an additional exchange partner can yield costs but also benefits to group members. Thus, we do not model social closure as a *zero-sum* game and therefore do not predict coalitions of minimum winning size as does Riker's (1962) classical work on coalitions in political science.

[13] Assuming total closure between groups of exchange partners is not to deny that individuals from different sides of a boundary engage in transactions in their everyday lives (such as in paternalistic and clientelistic social systems). However, we want to capture only exchanges that are institutionalized and involve major political and economic resources.

distribution of cultural traits over the population (Chandra and Boulet 2005).

We therefore assume that actors also consider the varying degrees to which possible systems of alliance map onto empirical distributions of traits such as religion, language, skin color, cultural dispositions, and the like (cf. the "diacritical markers" in Barth [1969]).[14] Why should correspondence between possible alliance systems and the trait distribution matter? The literature offers various suggestions (see Cornell 1996; McElreath, Boyd, and Richerson 2003; Hale 2004). We shall argue that actors care about the empirical correspondence between an alliance system and the landscape of cultural similarity and difference when civil society organizations are only weakly developed. This argument will be more fully developed below. We limit the discussion here to how we formally represent the correspondence between possible alliance systems and the trait distribution.

We assume a stable distribution of traits over actors. For simplicity, we express the empirical difference between each pair of actors as a number between 0 (no difference at all) and 1 (maximum possible difference).[15] This allows representing the empirical distribution of traits over actors as a vector *TD* in which each element corresponds to the dissimilarity between a pair of actors (for a similar approach, see Shayo [2009]). In the analysis that follows, we distinguish between two ideal-typical trait distributions. In one of them, dissimilarity runs along ethnic divides. In the other, class boundaries are marked by differences in cultural traits, as in the following example:

	cE|pE	cE|cM	cE|pM	pE|cM	pE|pM	cM|pM
TD =	(0.2	0.8	0.8	0.8	0.8	0.2)

We can now compare this structure of similarity with that of each possible alliance system. In an alliance system, two actors find themselves

[14] Agent-based models offer the most sophisticated formal approach to this aspect of group formation processes (Axelrod 1997; Lustick 2000). They start from two-dimensional grids inhabited by a high number of agents who are characterized by strings of cultural traits. In Cederman's (2002) artificial social world, e.g., actors in each grid choose the most likely neighboring actors as conationals as soon as the ideology of "nationalism" enters this world from the outside. Cultural difference and similarity therefore start to matter for the structure of political alliances and processes of cultural drift and assimilation come to an end. Since we operate in a simpler game-theoretic environment with far fewer actors, we adopt a more parsimonious but comparable specification of how cultural similarity influences social boundary making.

[15] Conceptually, this number should be thought of as expressing differences in averages between groups with respect to the relevant traits, so that empirical plausibility is judged on the basis of those group averages. Hence, we do not have to assume trait homogeneity within groups.

either on the same or on opposite sides of a boundary.[16] Hence, an alliance system can also be represented in the form of a vector whose elements correspond to pairs of actors indicating either the presence (1) or absence (0) of a boundary between them. We illustrate this with the example of an estate order:

	cE|pE	cE|cM	cE|pM	pE|cM	pE|pM	cM|pM
S =	(0	1	1	1	1	0)

We can now measure the correspondence between an exchange system and the trait distribution by simply aggregating the differences between the two vectors. Formally, we define the empirical correspondence $m(S_j)$ of an alliance system S_j as 1 minus the average of the absolute differences between all elements k of S_j and the elements k of the empirical distribution of traits:

$$m(S_j) = 1 - \left(\sum |S_j(1, k) - TD(1, k)|\right)/n, \tag{5}$$

where n denotes the number of columns of the vectors S_j and TD.[17]

We are now ready to fully specify actors' preferences over different exchange systems. Actors evaluate them with respect to the gains they would allow and with respect to how well they correspond to an observed distribution of cultural traits. The exchange gains that an actor i can expect from an alliance system S_j are equal to the difference $\Delta U_i^{\text{control}}(S_j)$ between her utility after exchange under this system and her utility after exchange under the established system of alliances. The second part of the utility function consists of the empirical correspondence $m(S_j)$, that is, the perceived match between the exchange system S_j and the empirical distribution of cultural traits across actors, weighted by U_i^{meaning}. The exogenous parameter U_i^{meaning} describes the relative impor-

[16] This is a simplifying assumption that would need to be relaxed in an analysis of systems of graduated and overlapping classifications, such as those associated with different degrees of racial admixture in the Caribbean.

[17] This averaging of perceived differences over multiple traits is broadly in line with principles of categorization in social psychology (see Turner 1985). However, in assuming that the similarities between groups are common knowledge, we abstract from the variable- and context-dependent nature of group and self-perception in micro encounters (Haslam and Turner 1992; Haslam et al. 1992). Rather, the traits are meant to represent institutionalized cultural practices and publicly recognized cultural differences that provide a basis for political mobilization and discourse. These are thus more stable and path dependent (see Cornell and Hartman 1998). This perspective has some affinity with the view in social psychology that individuals tend to perceive groups in a way that helps to rationalize and perpetuate existing social structures and often adopt an essentialistic stance to support such perceptions (Yzerbyt, Rocher, and Schadron 1997; Hamilton 2007).

tance of such empirical correspondence in the actor's utility function, which later on will be interpreted as a consequence of how well developed civil society organizations are. This produces the following simple, additive utility function:[18]

$$U_i(S_j) = \Delta U_i^{\text{control}}(S_j) + m(S_j) \cdot U_i^{\text{meaning}}. \quad (6)$$

The Game-Theoretic Model in Detail

Now that we have described actors and their preferences for different types of exchange systems, we turn to the strategic interaction between actors with different such preferences and differential power to attract the exchange partners they desire. The outcome of this struggle will determine which exchange system eventually prevails and, thus, who will eventually come to identify with whom, and who will remain excluded from this emerging system of alliance and identification. An alliance system should be stable as long as no actor has an incentive to unilaterally deviate from it. From a game-theoretic perspective, the struggle over the boundaries of belonging therefore constitutes a noncooperative game.

We model this struggle as a sequential game because this allows us to capture the effects of symbolic power in two simple ways. First, we assume that only elites are able to formulate and propose new alliance systems, whereas masses can react toward these publicly communicated proposals or choose to stick to the existing alliance system. This assumption is realistic since in modernizing states the power to effectively propose new identities and political alliances was restricted to political elites, even if such new models of political organization and identity were originally developed by others, such as nationalist intellectuals, street-level populist firebrands, or ethnic entrepreneurs at the village level. Masses lacked both the necessary communicative skills and the access to the public sphere. Note, however, that the masses influence the proposals of the elites through their control over crucial economic and political resources (e.g., military support) and through their capacity to reject any proposal that does not conform to their perceived interests. As we will show below, this is why elites sometimes envision inclusive alliance systems and propose the national community as a new form of collective identity. Our model therefore stays clear of the elite manipulation arguments criticized in the introduction.

A second assumption is that the central elites move first. This reflects

[18] This additive specification allows analyzing the impact of empirical correspondence above and beyond that of instrumental considerations. Robustness analyses that used a multiplicative linkage produced qualitatively identical results.

their superior symbolic power compared to that of peripheral elites. The central elites have more control over cultural institutions such as schools or the print media and can thus more effectively propagate their "vision of the legitimate divisions" of society, to paraphrase Bourdieu. In any case, we modified the order in which actors move to check the results for robustness and report results in footnotes.

As depicted in figure 2, the resulting model comprises three stages: First, the central elites propose one out of eight possible alliance groups of which they are a part (or an "in-group" for short). In the next stage, the peripheral elites likewise propose an in-group. In the third and last stage, the central and peripheral masses choose simultaneously between the central elites' proposal, the peripheral elites' proposal, and the established in-group.[19] Since elites propose in-groups, the masses accept membership either in one of these two in-groups (if it includes them) or in the corresponding out-group (if they are excluded). Thus, the sets of alternatives among which actors choose are not entire exchange systems but in-group proposals, reflecting the greater psychological and instrumental importance that individuals attach to their own identity and interests vis-à-vis those of others.

The outcome of the game is derived according to the following aggregation rule: Two actors i and j belong to the same category if and only if both propose identical in-groups (cf. Hart and Kurz 1983; Yi and Shin 2000). Consider the example given in figure 2, following the path marked in bold that leads to the second outcome from the top. The central elite proposes {cE, pM}, while the peripheral elite proposes {pE, cM, pM}. Assume further that the dominant masses follow the central elite by choosing the complement of their proposal, {pE, cM}, whereas the peripheral masses agree to the peripheral elite's proposal, {pE, cM, pM}. The resulting exchange system then is {cE}{cM}{pE, pM} since only the peripheral elite and the peripheral masses propose identical in-groups. This so-called principle of consensus means that actors who enter into an exchange relationship with each other have to agree to belong to the same group.[20]

[19] These are obviously not necessarily distinct alternatives since the elites' proposals and the established alliance system could imply identical in-groups for the masses. Thus, the number of distinct alternatives faced by the masses varies between one and three.

[20] Our model therefore assumes that group formation and collective identities cannot be directly generated by force. In extreme cases of subordination, actors might be forced to display certain markers of identity (as the example of the Star of David in Nazi Germany illustrates), but whether or not they will adopt and embrace that category of identification is a different matter. In line with Scott's (1990) writings, we tend to believe in the possibility and relevance of "hidden" forms of resistance, especially when it comes to subjective identification processes. Note that our model does not

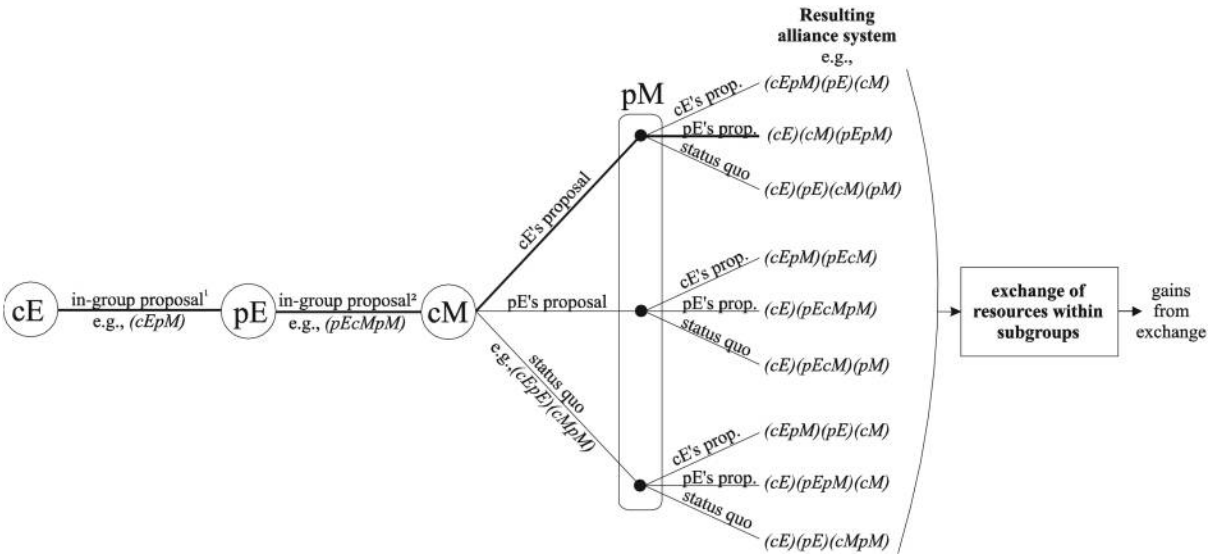

FIG. 2.—The structure of the sequential game. cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses. [1]Out of choice set: {(cEpEcMpM), (cEpEcM), (cEpEpM), (cEcMpM), (cEpE), (cEcM), (cEpM), (cE)}. [2]Out of choice set: {(cEpEcMpM), (cEpEcM), (cEpEpM), (pEcMpM), (cEpE), (pEcM), (pEpM), (pE)}.

Notwithstanding this consensus principle, the struggle over the boundaries of belonging involves conflicting interest and often results in the exclusion of weaker actors by more powerful ones—whether the former like it or not.

As a solution concept for this sequential game, we employ subgame perfect equilibrium in pure strategies. Nontechnically, this means that in equilibrium, actors' strategies are mutually best responses that involve no incredible threats (see, e.g., Osborne and Rubinstein 1994). Actors therefore have no incentive to unilaterally deviate from the equilibrium outcome. Basically, actors anticipate the exchange system that might result from their proposal and evaluate their empirical correspondence as well as the exchange gains that would result. The elites take into account the interests and equilibrium behavior of the actors who move after them. On the side of the masses, however, no such sequential rationality needs to be assumed since they move last and simultaneously.[21]

The Characteristics of the Model in Comparative Perspective

Taking its different parts together, the model displays certain features that it shares with other approaches or that distinguish it from them. First, in most rational choice models, either actors choose between an ethnic and a national affiliation (e.g., Congleton 1995; Laitin 1995; Kuran 1998; Penn 2008) or their ethnic group membership is exogenously given and stable (Fearon and Laitin 1996; Dickson and Scheve 2006). In contrast, our model describes a process of group *formation* that foresees a variety of possible alliances and identities, including of a nonethnic nature, that emerge and disappear over time.

Second and relatedly, the model also avoids the solipsistic bias that characterizes many formal models of individual identity choice (e.g., Chai 2005). It recognizes that social classifications result from the interplay between self-identification and classification by others (in line with the theoretical propositions of Jenkins [1997] as well as the analysis of role taking by Leifer [1988]). Other formal models that pursue a similarly

preclude, however, that those excluded from an exchange system might develop a shared identity precisely based on their common fate.

[21] The only rationality assumptions with regard to the masses are that they have consistent preferences regarding the three alternative exchange systems and that they choose mutually best responses in equilibrium, i.e., arrive at an outcome from which they have no incentive to unilaterally deviate. This makes sure that no unrealistic claims are made with regard to the rationality of everyday actors (see the critique by Elster [2000]).

interactionist logic are Cederman (1996), Fearon and Laitin (1996), or McElreath et al. (2003).[22]

Third, the model contributes to a growing literature that attempts to translate certain strands of the constructivist literature on nationalism and ethnicity into a formal modeling architecture (Lustick 2000; Chandra and Boulet 2005; Chandra, in press). Adopting a markedly different modeling strategy, evolutionary and agent-based models have shed light on the diffusion and spatial aspects of identity and group formation processes as well as on their multilevel nature (Young 1998; Lustick 2000; Cederman 2002). Our model complements these approaches since it disregards diffusion mechanism and spatial dynamics and instead focuses on the political economy of group formation within societies. To adequately capture these domestic dynamics, it is crucial to move the exchange of resources between collective actors center stage, which so far has escaped evolutionary and agent-based modeling strategies.

Finally, we go beyond standard game-theoretic models that do not consider the unequal distribution of resources and treat the preferences of its players as exogenous—a major point of critique by scholars both sympathetic (Elster 2000) and unsympathetic to rational choice theory (Somers 1998). Combining a game-theoretic model of strategic interaction with an exchange-theoretic approach to preference formation allows us to endogenize how actors come to prefer certain political alliances and identities over others. While this is crucial for our analytical purposes, it comes at the price of an increase in the model's complexity. The high number of exogenous parameters makes a general analytical, that is, mathematical, solution infeasible. We therefore derive the equilibrium outcomes of the model computationally.[23]

[22] How identity processes are embedded in social interaction has been prominently discussed by the identity theories of Stryker, Burke, and colleagues. These have been concerned with internal, cognitive identity formation and with the impact that social networks and role relationships have on these processes (see the overview by Stryker and Burke [2000]). While being compatible with these perspectives, our model is concerned with group-level boundary making, i.e., the process of forming and changing these networks and roles over time.

[23] The model is programmed in the following way: The user specifies the distributions of control and interests, the trait distribution, the status quo, and the relative weight of empirical correspondence in the overall utility function (U^{meaning}). On the basis of the control and interest matrices, a C++ program calculates exchange equilibria and actors' gains from exchange for all 15 alliance systems, using eqq. (1)–(4) and Kalter's (2000) normalization method for segregated exchange systems. On the basis of the trait distribution, the program computes the empirical correspondence of the 15 alliance systems, using eq. (5). Combining these results according to eq. (6) gives the overall utility of each alliance system for each actor. This yields complete preference rankings over alliance systems, which provide the basis for the strategic interaction model. To calculate the subgame perfect equilibria of the sequential game (depicted in fig. 2), the

HYPOTHESES AND EMPIRICAL CALIBRATION

Hypotheses

This model architecture allows us to analyze the key mechanisms through which the estate order of premodern polities is transformed into an encompassing national community, an ethnically segmented political arena, or a populist mode of alliance and identity. Under which conditions do we expect these three different political trajectories to emerge? The following series of hypotheses is derived from the relevant literatures in comparative historical and political sociology. First, a highly centralized state will lead actors to settle on an encompassing nationalist compromise. We define state centralization as the degree to which the central elites have been able to establish direct rule and thus to monopolize control over political decision making, taxation, and the provision of public goods (Tilly 1994; Hechter 2000). Second, other authors have argued that nation building is also a consequence of the political and military mobilization of the masses, that is, the degree to which they have become engaged in the politics of the center and to which they provide manpower for the ruler's armies (Mann 1995; Lachmann 2011).

Combining hypotheses 1 and 2, we arrive at two different scenarios. In a centralized state with a highly mobilized mass of citizens, which we term the "strong scenario," we expect an exchange of political and military loyalty of the masses against political participation and public goods provision by the state elite—and thus the most encompassing system of alliances and identity (nation building). Conversely, ethnic segmentation will emerge in states that are weakly centralized and whose population is less mobilized, in other words, in a "weak scenario" (see Wimmer 2002). Under these conditions, the elites do not have the political and economic resources to distribute public goods and political participation evenly over the population. The masses, on the other hand, can expect less from the state elites and thus will less likely identify themselves with an encompassing nationalist project and more likely find the ideology and practice of ethnic solidarity attractive. The result should be political closure along ethnic lines.[24]

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program uses the Python interface of the game theory software Gambit (McKelvey, McLennan, and Turocy 2007). The code is available from the authors on request.

[24] As this discussion makes clear, we treat state centralization and the political and military mobilization of the masses as two exogenous variables. We do not model how the structure of the international system, especially the nature and frequency of war between competing states, affects state centralization and mass mobilization. This is the object of Tilly's (1975) classic work on early modern state formation, which thus provides the backdrop for our analysis. Our model focuses on how domestic exchange relationships are affected by different degrees of centralization and mobilization without further exploring the reasons for such variation.

Our third hypothesis states that ethnic closure is all the more likely in states with a weak civil society. This hypothesis is derived from Wimmer's (2002) comparative work on nation building in Iraq, Switzerland, and Mexico, as well as from Varshney's (2003) study of the conditions under which communal violence is more likely in Indian cities. A civil society is strong if a dense network of clubs, associations, trade unions, and the like has emerged. When only a few such organizations have been established, political elites and followers alike will be more likely to rely on ethnocultural similarity as a means to organize transclass alliances. In other words, they prefer to ally themselves with actors who share certain ethnocultural traits. Conversely, where civil society organizations are strong, elites will rely on these established networks in order to mobilize followers and to gain political support. Elite competition is then more likely to follow the dividing lines of ideology and interest.

Fourth, populism should result from medium state centralization. Drawing on analysis of the reemergence of populist nationalism in Latin America (Roberts 1996; Weyland 1996), we suggest that medium state centralization leaves the central state elite with too few resources and too little political power to be willing to integrate and co-opt all elite segments of society. But they are resourceful enough to ally themselves with the masses who will follow populist and anti-elite appeals in the hope of gaining access to public goods and political participation. Thus, by being able to attract both masses with an attractive exchange offer, the central elites win the struggle for support against competing elite factions. We therefore expect populist forms of political closure to lie between the nation building and the ethnic closure variants, in terms of both the conditions that produce it and the degree of inclusiveness that follows from it.

Fifth, populism will be more likely in societies with weak civil societies because appeals to the undifferentiated "people" are especially attractive, as the literature on waves of populist mobilizations in Latin America suggests, where large segments of the population are not integrated into stable, institutionalized networks of political organizations and thus constitute a reservoir of political support that can be used in the struggle against competing elite segments. A weak civil society thus makes nation building less likely by providing incentives to settle on ethnic closure or a populist compromise.

We use the game-theoretic exchange model to test whether these hypotheses hold against an explicit specification of the underlying micro mechanisms. In order to proceed in as transparent a way as possible, we first model scenarios in which civil society is strong and actors therefore need not care about cultural similarity when choosing alliance partners (setting the parameter U^{meaning} to 0). In a second step (in the section When Cultural Traits Matter), we will modify this assumption and calculate

scenarios with a weak civil society and different distributions of cultural traits over actors, following class divisions in one scenario and ethnic division in the second. Before we present results, however, we familiarize the reader with the empirical data used to calibrate the model.

Empirical Calibration 1: Empire and Strong Scenario

As online appendix A documents, the empirical data used for model calibration refer to various stages in the process of political modernization: the French Renaissance kingdom (13th and 14th centuries) and the Ottoman Empire of the classical age (16th and 17th centuries) provide the data for modeling the premodern imperial scenario; the absolutist French state of the 18th century, a comparably highly centralized state under the modernist last sultan, Abdulhamid, who reigned until the Young Turk revolution in 1908, as well as the fully centralized state under the French Third Republic before World War I represent further points along the continuum of state centralization and mass mobilization. The model calibration for the strong scenario—defined as a combination of high state centralization and high mass mobilization—lies in between those of absolutist France and the late 19th-century Ottoman Empire, thus reflecting the points in the developmental trajectory just before nationalism emerged in the French and Young Turk revolutions.

Before we discuss the calibrations for the strong scenario in more detail, a word about the premodern situation is in order. According to the model calculations that are detailed in online appendix B, the specific distribution of resources and interests in the French Renaissance kingdom and the Ottoman Empire of the classical age lead the four actors to settle on an estate order—pitting masses against elites. The model thus adequately retrodicts the premodern alliance system prevalent in these two societies and can thus capture the historical starting point of subsequent historical developments. In the following tables, we include the empirical estimations of resource controls in the French Renaissance kingdom and the Ottoman Empire of the classical age in order to provide the benchmark information against which the different paths of modernization can be specified.

Let us now turn to the calibration of the strong scenario that combines high state centralization with high mass mobilization. According to the historical research described in online appendix A, the central elite almost exclusively control public goods provision in such highly centralized states (from an average of about 0.05 in the two premodern empires to 0.91)[25]

[25] As described in online app. A, we use data on expenditures to estimate control over public goods provision. We assume that the highest institutional level through which

and hold the greatest share of control over taxation as well (from 0.1 in the premodern empires to 0.5).[26] This reflects the change from indirect rule through peripheral elites to direct rule, a key aspect of political modernization. Conformingly, the peripheral elites gradually lost control over their two main sources of power—public goods provision and taxation—and thus no longer served as intermediaries between the central elites and the masses of the population. As part of the same transition, we assume that the central elite came to almost exclusively control political decision making (from 0.6 in empires to 0.9 in strongly centralized states). Given the scarcity of historical data, we could not empirically calibrate control over political decisions and instead had to rely on plausibility assumptions here. Sensitivity analyses (documented in online app. C) establish that our results are robust to variation in these assumptions.

It is realistic to assume that the development of such strong, centralized states also changed the interests of actors. The masses and the peripheral elite show a heightened relative interest in public goods, given that the absolute volume and quality of state-provided goods and services increase so dramatically. Conversely, their relative interest in control over taxation decreases compared to the situation in a premodern empire.

The other aspect of the strong scenario relates to the mobilization of

money used for public service provision circulates also controls these resources. Compared to earlier periods, the Ottoman state of the classical age had vastly wider concerns in the area of public goods provision and was involved in public works, education, the administration of justice in both Muslim and non-Muslim areas, policing, pensions for former government workers, postal and telegraph services, funding of the holy cities and pilgrimages, and so on. In 18th-century France, the king financed the police, postal services, major infrastructure construction and repair projects, and education and also spent considerable sums for the support of hospitals. Under the Third Republic, the state provided all of this and declared major public services (including caring for the needy, policing, and mandatory schooling) a municipal task mandated by law and financed through centrally collected taxes (see online app. A for details).

[26] These initial shares of control over taxation were empirically calibrated indirectly because it was possible to measure only postexchange values in this case. In equilibrium, our model generates postexchange shares of control close to the empirical measures. As described in online app. A, these measures are based on of tax revenue data. In France, the development of a centralized bureaucracy under absolutism, such as through the system of royal intendants (Harding 1978), is well documented, as are the corresponding efforts under the Tanzimat reformers in the Ottoman Empire (Lewis 1962, chap. 4). The capacity to directly tax the population increased accordingly (see the research documented in online app. A). By the late 18th century, the French state was collecting a wide variety of taxes, both direct (property taxes, income taxes, and a general head tax) and indirect (mostly sales taxes levied on a wide variety of goods). Some of these indirect taxes were collected by the state, while others were handled through tax farming, the state lacking the bureaucratic capacity for gathering taxes directly, contrary to the tax collectors under Abdulhamid (Shaw 1975) and the Third Republic (Kiser and Kane 2001), which formed part of a more modern, bureaucratically integrated state apparatus.

the masses. This process had a military as well as a political dimension. First, the transition to the modern territorial state implied a shift in control over military support in favor of the masses (from an average of about 0.05 in the empires to 0.45 each, as the historical data documented in online app. A show).[27] The second, political aspect of mass mobilization is best modeled as a change in the interests of the masses. We assume that they became strongly interested in political decision making (relative interest of 0.50) because the shift from indirect to direct rule, the centralization of power, and the administrative penetration of society dramatically increased the relevance of the decisions of the central state for the everyday life of its citizens (see Mann 1995). Together with their increased interest in public goods provision discussed above, this implied that the masses' relative interest in taxation sank considerably (from 0.85 in empires to 0.10).[28]

This model specification is supported by the fact that after the Fronde rebellion of the mid-17th century, tax increases no longer resulted in popular rebellions in France (Kiser and Linton 2002), arguably because the king was becoming more efficient at preventing them, but also, as Kiser and Linton (p. 905) suggest, because the population may have started to identify with the state and envision, as we would argue, a different exchange relationship with the central elites. Also note again that we test, in online appendix C, whether a certain degree of variation in the specific values of relative interests and control change our main findings, which is not the case.

The various model assumptions and the empirical data that support them are reported in table 1.

Empirical Calibration 2: The Weak Scenario

The weak scenario of political modernization ends in a state with a lower capacity to tax directly, a lower degree of centralization of decision-making

[27] Historically, the reason for their increased importance as a source of military support was the dramatic evolution of military technology that, in the case of France, made the feudal *arrière ban*, and thus the military power of the peripheral elite, gradually irrelevant, all the while constantly increasing the importance of navy sailors and infantrymen, who either were foreign mercenaries or were recruited from the general population—a development that culminated in the introduction of universal conscription by the French Revolution and the Ottoman army reforms of 1843 and 1869 (see online app. A for details). In the Ottoman Empire, the tribal militias that Abdulhamid institutionalized in 1892 and that wreaked havoc on the Armenian population of Anatolia were the only remaining bulwark of military power left for the peripheral elites, while their role in the army of the Third Republic was comparatively much smaller.

[28] Note, though, that this does not imply a decrease in absolute interest in maintaining a low taxation level.

power, and the provision of public goods divided between the central and the peripheral elites, as well as lower levels of popular mobilization. We specified the control and interest matrices for a weakly centralized state by using the midpoints between the empirical values of the premodern empire scenario and those of a highly centralized state. We preferred this strategy over collecting historical data on additional cases because we realized that the various "snapshots" of the French and Ottoman control distributions aligned almost perfectly along a linear continuum, leading from Renaissance France to the 16th and 17th-century Ottoman Empire of the classical period to 18th-century absolutist France, Abdulhamid's empire, and finally the Third Republic (see again online app. A). It thus made sense to define the weak transition as any development that would stop halfway on this continuum, thus a situation resembling the Ottoman Empire in the Tanzimat era or France in the 16th century.

However, we deviated from this interpolation principle on one point because weak states—such as the 19th-century United States—also differed from the Tanzimat Ottoman Empire or 16th-century France. While in these societies the midpoints represent transitory phases in a steady political development, in weak states they conform to a longer-term equilibrium. This has two consequences. First, the masses regain some control over taxation because neither indirect rule nor direct rule is fully institutionalized in a permanently weak state (0.10 of control over taxation by each mass vs. 0.05 under the empire and 0.20 under the strong transition scenario). Second, when the weak state is permanent, the peripheral elites become predominately interested in control over military support in order to secure their position in a situation of uncertainty given the weakness of the political center (0.38 vs. 0.15 under the empire scenario and 0.25 under the strong scenario). The interpolation procedure plus these two modifications produces the control and interest matrices for the weak scenario (table 2).

RESULTS: STRONG AND WEAK SCENARIOS WITH WELL-DEVELOPED CIVIL SOCIETIES

We are now ready to present the results that the game-theoretic exchange model produces for strong and weak scenarios. Figure 3 depicts the alliance systems that result in equilibrium for different levels of state centralization (y-axis) and mass mobilization (x-axis). We first focus on panel A of the figure, in which we are still assuming that civil societies are well developed and actors thus do not take the distribution of cultural traits into account. This assumption is modified in panel B of the figure, to which we will turn below (in the section When Cultural Traits Matter).

TABLE 1
CONTROL AND INTEREST DISTRIBUTIONS IN EMPIRES AND IN THE STRONG SCENARIO

	Control over					Interest in			
	Political Decision Making	Public Goods	Military Support	Taxation		cE	pE	cM	pU
Model Assumptions for the Strong Scenario									
cE	.9	.91	.05	.5	Political decision making	.2	.3	.5*	.5*
pE	.1	.03	.05	.1	Public goods	.01	.2	.4	.4
cM	0	.03	.45*	.2	Military support	.2	.25	0	0
pM	0	.03	.45*	.2	Taxation	.59	.25	.1	.1
Empirical Data for the Strong Scenario									
France, 1690–1789:									
cE	NA	.865	.12	.873					
pE	NA	.018	.08	.083					
cM	NA	.0585	.4	.022					
pM	NA	.0585	.4	.022					
Ottoman Empire, 1876–1908:									
cE	NA	.934	.005	.9					
pE	NA	.915	.12	0					
cM	NA	.03	.44	.05					
pM	NA	.03	.435	.05					

France, 1870–1914:				
cE	NA	.934	.004	.9
pE	NA	.06	.042	.04
cM	NA	.003	.477	.03
pM	NA	.003	.477	.03

	Empirical Data for the Empire Scenario			
France, 1280–1350:				
cE	NA	.005	.185	.42
pE	NA	.915	.68	.46
cM	NA	.04	.065	.06
pM	NA	.04	.065	.06
Ottoman Empire, 1470–1670:				
cE	NA	.152	.325	.36
pE	NA	.588	.61	.49
cM	NA	.13	.05	.07
pM	NA	.13	.015	.07

	Model Assumptions for the Empire Scenario			
Political decision making	.2	.45	0	0
Public goods	.01	.1	.15	.15
Military support	.2	.15	0	0
Taxation	.59	.3	.85	.85

NOTE.—cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses. The control matrix gives the preexchange distribution of control for each resource (i.e., the relative shares of control exercised by the actors). The interest matrix gives the distributions of interest for each actor (i.e., his relative interest in the resources). Empirical data on control over taxation, however, represent postexchange values because preexchange controls cannot be measured empirically. The comparable postexchange values generated by our model in equilibrium are (.876, .05, .037, .037) for the strong scenario and (.42, .48, .05, .05) for the empire scenario.

* Indicators of a strong mass mobilization.

TABLE 2
CONTROL AND INTEREST DISTRIBUTIONS UNDER THE WEAK SCENARIO

	CONTROL					INTEREST			
	Political Decision Making	Public Goods	Military Support	Taxation		cE	pE	cM	pM
cE	.75	.56	.13	.20	Political decision making	.20	.10	.20*	.20*
pE ...	.25	.38	.38	.20	Public goods	.01	.15	.20	.20
cM ...	0	.03	.25*	.30	Military support	.20	.50	0	0
pM ...	0	.03	.25*	.30	Taxation	.59	.25	.60	.60

NOTE.—cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses. The control matrix gives the preexchange distribution of control for each resource (i.e., the relative shares of control exercised by the actors). The interest matrix gives the distributions of interest for each actor (i.e., his relative interest in the resources).

* Indicators of a weak mass mobilization.

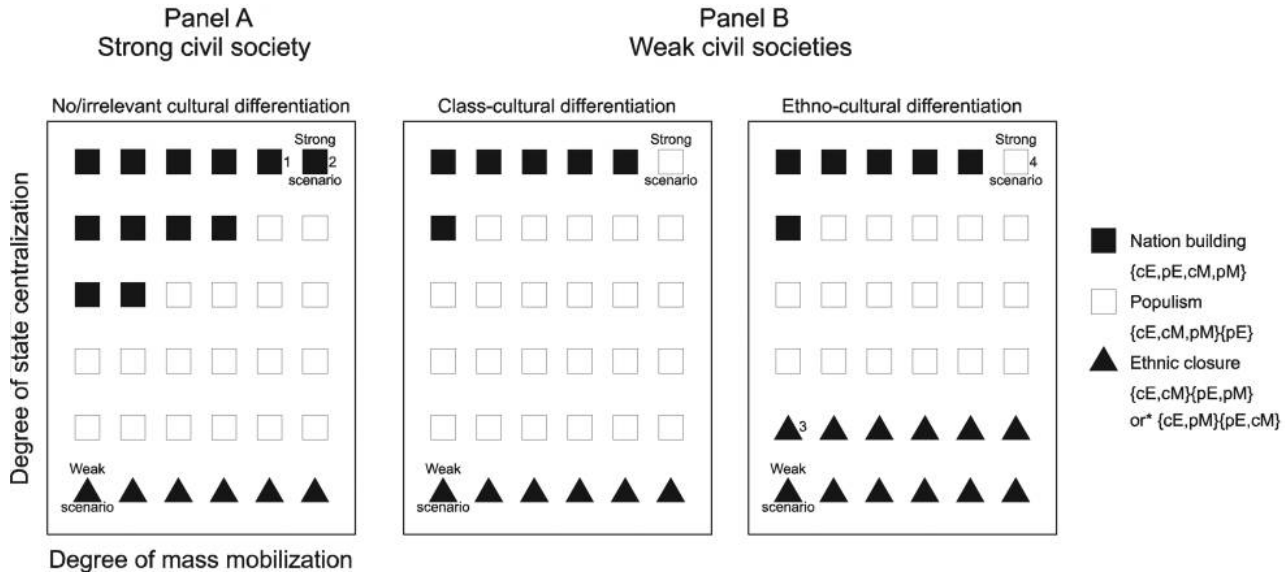

FIG. 3.—Alliance systems as a function of state centralization and mass mobilization under no cultural differentiation, a status, and an ethnic differentiation. cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses. *In the right graph, only {cE,cM}{pE,pM}. Numbers indicate simulations that correspond most closely to empirical measures: 1 = France 1690–1780s, 2 = France 1870–1900, 3 = Ottoman Empire circa1800, and 4 = Ottoman Empire 1870–1908.

Each point in the graphs corresponds to a specific distribution of control and interest. The point in the lower-left corner represents the weak scenario. The point in the upper-right corner conforms to the strong scenario; the diagonal connecting them thus represents a continuum between weak and strong scenarios. All other points were calculated by varying the indicators of state centralization and of mass mobilization in equal-sized steps from their weak to their strong scenario values. This gives a more complete picture of the separate effects that increasing state centralization and mass mobilization have on the emerging system of exchange and alliance.

The strategic interaction process results in three types of equilibria: nation building (black squares in fig. 3), populism (white squares), and a multiple equilibrium in which each elite group aligns with only one of the masses (black triangles). For simplicity, we refer to the latter equilibrium as ethnic closure, although it also includes the reverse assignment of elite groups and masses. If we allowed for only an infinitesimal significance of an ethnocultural trait distribution in actors' preferences, ethnic closure would obviously be the sole equilibrium in these cases.

Overall, the results in panel A of figure 3 lend strong support to the first hypothesis: Nation building results only if the state is strong, whereas ethnic closure results only if the state is weakly centralized. Populism results for medium state centralization, thus confirming that state centralization is positively related to more inclusive forms of alliance and identity. We also see that the mobilization of the masses has hardly any effect on the resulting exchange system, contrary to hypothesis 2. It is only under conditions of medium to high levels of state centralization that mass mobilization matters, by leading to populism and away from nation building. Thus, contrary to our expectations, mass mobilization does not emerge as a factor promoting nation building and acting against ethnic closure. We will discuss this result in the subsection on the Populist Equilibrium.

Remarkably, our model also shows that given our assumptions, ethnic closure can be the equilibrium outcome even if actors do not care at all about the empirical correspondence between exchange systems and the distribution of cultural traits. In other words, ethnic closure may result from a purely instrumental interaction process that is exclusively geared toward maximizing exchange gains and is not influenced by considerations of cultural commonality. The mechanisms underlying this finding will become clear as soon as we discuss actors' preferences and their strategic interaction in detail.

MECHANISMS UNDER THE MAGNIFYING GLASS

How did elites and masses, according to our model, arrive at these different, more or less encompassing settlements over where the boundaries of belonging will lie? We begin explicating the underlying mechanisms in the weak scenario, that is, the point in the lower-left corner of figure 3 (still focusing on panel A only).

Ethnic Closure

We proceed in the two steps foreseen in our model architecture. First, we show how actors' preferences over alliance systems derive from the exchange gains that these would imply for them. Note that these preference orders are not based on plausibility assumptions but are calculated on the basis of the exchange-theoretic part of the model, which is in turn based on the historical data documented in online appendix A. Second, we describe the strategic interaction process, modeled with the help of game theory.

The lower part of table 3 shows the preference orderings in the weak scenario. Strikingly, the first preference of both elite groups is to form a coalition with both masses while excluding the other elite group (i.e., populism). The two elite groups compete for the military support of the masses and therefore have an incentive to draw a political boundary that excludes the other elite group. This can be seen from the upper part of table 3, which shows actors' exchange power, the prices of resources, and the demand and supply that would result under the three major alliance systems: nation building, populism, and ethnic closure. If all actors were to exchange resources with each other (nation building), both elite groups would compete for the military support of the masses. When the peripheral elite is excluded (populism), the central elite becomes the sole demander of military support. The price of military support would fall from .200 (in the nation-building system) to .095 (under populism) and the central elite's exchange power would increase from .312 to .467. The same considerations hold for the peripheral elites.

Further down the preference order, the peripheral elite also prefers ethnic closure over nation building, whereas the central elite prefers nation building over ethnic closure. For both elites, these alliance systems involve a trade-off since ethnic closure would allow them to circumvent the competition of the other elite group at the cost of losing the military support of one of the masses. For the central elite, this trade-off plays out in favor of nation building, since they control more of the resources demanded by the masses: political decision making and public goods provision. As can be seen from table 3, the central elite holds greater exchange power under

TABLE 3

THE WEAK SCENARIO: EXCHANGE RELATIONS UNDER THREE POSSIBLE ALLIANCE SYSTEMS AND RESULTING ACTORS' PREFERENCES

	Nation Building {cE, pE, cM, pM}	Populism {cE, cM, pM}{pE}	Ethnic Closure {cE, cM}{pE, pM}
Power of actors:			
cE	.312	.467	.563
pE	.272		.617
cM	.208	.266	.437
pM	.208	.266	.383
Price of resources in subgroup 1:			
Political decision making	.172	.199	.200
Public goods	.113	.111	.093
Military support	.200	.095	.114
Taxation	.515	.595	.594
Price of resources in subgroup 2:			
Political decision making			.138
Public goods	No subgroups	No exchange partner	.138
Military support			.310
Taxation			.414

Equilibrium supply and demand (changes in initial shares of control)

	Pol.	Pub.	Milit.	Tax.
cE	−.33	−.54	+.19	+.16
pE	−.14	−.13	+.31	−.04
cM	+.24	+.34	−.25	−.06
pM	+.24	+.34	−.25	−.06

	Pol.	Pub.	Milit.	Tax.
cE	−.37	−.54	+.49	+.17
cM	+.19	+.27	−.24	−.09
pM	+.19	+.27	−.24	−.09

	Pol.	Pub.	Milit.	Tax.
cE	−.31	−.53	+.25	+.08
cM	+.31	+.53	−.25	−.08
	Pol.	Pub.	Milit.	Tax.
pE	−.17	−.19	+.25	+.02
pM	+.17	+.19	−.25	−.02

RANK-ORDERED PREFERENCES OVER ALLIANCE SYSTEMS (Equilibrium Outcomes in Bold)

	1	2	3	4	5
cE	cEcMpM/pE	cEpEcMpM	**cE*M/pE*M**	cEpE*M/*M	cEpE/cMpM
pE	pEcMpM/cE	**cE*M/pE*M**	cEpEcMpM	cEpE*M/*M	cEpE/cMpM
*M	cEpE*M/-M	**cE*M/pE-M**	cEpEcMpM	**pE*M/cE-M**	cEcMpM/pE

NOTE.—cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses. *M = either cM or pM, −M = the other masses (−M = pM if *M = cM, −M = cM if *M = pM).

nation building than the peripheral elites (.312 vs. .272). As a consequence, they would be able to increase their control over taxation by 16 percentage points, supplied by the three other actors. In contrast, the peripheral elite prefer ethnic closure over nation building because they would do less well when competing with the central elites.[29]

We now turn to the preferences of the masses. Generally, the masses compete for the elite-controlled resources and therefore have an incentive to exclude the other mass from the exchange system. This is one of the main mechanisms that produce ethnic closure in the weak scenario. In more detail, both masses are willing to give away their military support. However, they receive less political participation and public goods when the elites can simultaneously also exchange with the other masses. To see this, compare populism and ethnic closure in table 3 from the dominant masses' point of view: The dominant mass can trade their military support at a higher price (.114) in an ethnically segmented exchange system compared to populism (.095).

This is why the masses prefer ethnic closure over populism. However, ethnic closure carries a trade-off for them similar to that for the elites: It prevents competition with the other masses but also means losing one supplier of political participation and public goods. The masses' most preferred outcome is therefore to be included in an enlarged estate order, that is, to exchange with both elites while excluding the other masses. Their second preference is to align themselves with the central elite only, as this would allow the masses to exchange with the more resourceful elite group while excluding the other masses. Nation building is their third-most preferred alliance system, followed by aligning with the peripheral elite and populism.

Given these preferences, ethnic closure is the equilibrium outcome. To understand this, one has to turn from preferences to the strategic interaction between actors (the game-theoretic part of our model). It is easy to see that the central elite can enforce neither their first preference (populism) nor their second preference (nation building) and therefore cannot do better than ethnic closure. If the central elite proposed populism, the peripheral elite could counter by proposing ethnic closure, which the masses prefer over populism. Alternatively, the central elite could offer nation building, their second preference. This proposal would be preferred by both masses relative to aligning with the peripheral elite only. However, the latter can make nation building unfeasible: They can decline to form an encompassing national community by proposing to align only with

[29] In an exchange with only one of the masses (ethnic closure), the peripheral elites would gain somewhat less in control over military support (+.25 instead of +.31 under nation building). However, this is more than outweighed by their gains in taxes.

one or both masses. This will again lead to ethnic closure: One of the masses will follow the proposal of the central elite, while the other will agree to exchange with the peripheral elite. The peripheral elite likewise cannot do better than ethnic closure, which is their second preference. Their first preference, a common exchange with both masses under exclusion of the central elite, is not attractive for the masses. Compared to this outcome, both prefer to align themselves with only one of the elites.

A critical assumption of this analysis is that the masses know the value of the public goods and decision-making power in the hands of the elites. The masses do not align with the central elites but follow the peripheral elites' counterproposal of ethnic closure because they know about the limited amount of goods that the central elite has at its disposal. This assumption of perfect information can be relaxed in the following way: While both elites know that the state is only weakly centralized, the masses attach probability p to the possibility that the state is highly centralized, while they believe in engaging a weakly centralized state with probability $(1 - p)$. In this variant of the model, populism becomes more prevalent the higher the value of p, that is, the more the masses falsely believe that they are facing a strongly centralized political center (results not shown). Thus, by misleading the masses about their resourcefulness, the central elites can more easily attain their most preferred outcome. This might elucidate why populists often overemphasize their capacity to deliver public goods and their effective political power.

Negotiating the Nation

We now turn to the strong scenario that leads to nation building. It corresponds to the upper-right corner of the graph of panel A in figure 3. As the figure reveals, the high level of state centralization is crucial to bring about this outcome. Contrary to what the second hypothesis postulated, however, high levels of mass mobilization are irrelevant. More specifically, where the state is strongly centralized, the preference orderings of the central elite and the masses, as shown in table 4, stay the same regardless of the degree of mass mobilization. We can therefore abstract from this dimension for the moment (see the next subsection) and focus on the mechanisms by which high levels of state centralization lead to nation building.

Under the strong scenario, nation building (rather than populism) becomes the first preference of the central elite. In a strongly centralized state, central elites have almost monopolized political decision making and public goods provision, while peripheral elites as well as the masses show more interest in these resources. Table 4 shows how these developments affect the exchange relations among actors. Most significant is

TABLE 4

THE STRONG SCENARIO: EXCHANGE RELATIONS UNDER THREE POSSIBLE ALLIANCE SYSTEMS AND RESULTING ACTORS' PREFERENCES

	Nation Building {cE, pE, cM, pM}	Populism {cE, cM, pM}{pE}	Ethnic Closure {cE, cM}{pE, pM}
Power of actors:			
cE	.614	.672	.733
pE	.083	0 (isolated)	.598
cM	.152	.164	.267
pM	.152	.164	.402
Price of resources in subgroup 1:			
Political decision making	.299	.298	.280
Public goods	.144	.137	.114
Military support	.144	.135	.147
Taxation	.413	.429	.459
Price of resources in subgroup 2:			
Political decision making			.380
Public goods	No subgroups	No exchange partner	.280
Military support			.151
Taxation			.189

Equilibrium supply and demand (changes in initial shares of control)

	Pol.	Pub.	Milit.	Tax.
cE	−.49	−.87	+.80	+.38
pE	−.02	+.09	+.09	−.05
cM	+.25	+.39	−.45	−.16
pM	+.25	+.39	−.45	−.16

	Pol.	Pub.	Milit.	Tax.
cE	−.49	−.86	+.89	+.33
cM	+.25	+.43	−.45	−.17
pM	+.25	+.43	−.45	−.17

	Pol.	Pub.	Milit.	Tax.
cE	−.43	−.85	+.45	+.16
cM	+.43	+.85	−.45	−.16
	Pol.	Pub.	Milit.	Tax.
pE	−.05	−.00	+.45	+.14
pM	+.05	+.00	−.45	−.14

RANK-ORDERED PREFERENCES OVER ALLIANCE SYSTEMS (Equilibrium Outcomes in Bold)

	1	2	3	4	5
cE	**cEpEcMpM**	cEcMpM/pE	cEpE*M/*M	cE*M/pE*M	cEpE/cMpM
pE	cEcMpM/cE	cEpE/cMpM	cE*M/pE*M	cEpE*M/*M	**cEpEcMpM**
*M	cE*M/pE-M	cEpE*M/-M	cEcMpM/pE	**cEpEcMpM**	pE*M/cE-M

NOTE.—cE = dominant elites, pE = subordinate elites, cM = dominant masses, and pM = subordinate masses. *M = either cM or pM, −M = the other masses (−M = pM if *M = cM, −M = cM if *M = pM).

the dominating role of the central elites, whose exchange power in the nation-building scenario (.614) by far exceeds that of either the peripheral elites (.083) or the masses (.152). The successful transition to direct rule leaves the peripheral elites in a weak position. This is also indicated by the fact that under the encompassing (nationalist) exchange system, the peripheral elites would switch from being a supplier of public services to demanding them, along with the masses. Likewise, the peripheral elites no longer are a serious competitor to the central elites when it comes to offering political participation to the masses.[30]

Nation building therefore becomes the first preference of the central elite, while populism drops to the second rank of their preference order compared to the weak scenario. Also owing to the attenuated elite competition, the enlarged estate order replaces ethnic closure as the central elite's third preference.

The preferences of the masses are also markedly different compared to the weak scenario. Because they find the public goods controlled by the central elite highly attractive, the masses prefer any alliance system in which they end up together with the central elite over an exchange exclusively with the peripheral elites (see the lower part of table 4). This has drastic consequences for the role of the peripheral elites in negotiating the boundaries of belonging: The preferences of the peripheral elites simply do not matter anymore because the masses are no longer interested in an alliance with them. Consequently, the strategic interaction process (as modeled in the game-theoretic part) becomes very simple: The central elite propose nation building, and the three remaining actors follow this proposal.[31]

[30] Still, populism would provide the central elites with nine additional percentage points of control over military support—the share of control acquired by the peripheral elites under nation building. However, the temptation to exclude the peripheral elites is more than outweighed by the benefits of including them in an encompassing alliance system. The peripheral elites represent an additional supplier of control over taxation and their additional demand for public goods allows the central elite to exchange this resource at a higher price (.144 instead of .137 under populism).

[31] Additional robustness analyses show that these and the following results are independent of the assumption that the central elite moves first. Letting the peripheral elite move first produces identical equilibria. Letting both elites move simultaneously, however, leads to some additional equilibria: Owing to a coordination problem between the elites, nation building ceases to be a unique equilibrium and is then always accompanied by populism as a second (Pareto-inferior) equilibrium outcome. However, we deem strict simultaneity (or nonobservability) to be an unrealistic assumption if one thinks of elites proposing alliance systems in the public sphere and reacting to the proposals by others. When one of the masses moves first, the general pattern is similar, but there are more multiple equilibria than in the other variants of the game. Especially in the middle ranges of state centralization, these multiple equilibria include ethnic closure. This finding adds another aspect to our overall argument: Symbolic power of

The Populist Equilibrium

We now briefly turn to populism as the most prevalent outcome in between strong and weak scenarios. On the basis of our foregoing analyses, one can easily explain its emergence and its relationships to state centralization and mass mobilization. First and as shown above, more state centralization makes the central elite a more attractive exchange partner. Populism therefore becomes more interesting for the masses than ending up in an exchange with the peripheral elites only, as in the ethnically segmented exchange system of the weak scenario. But the central elite are not yet powerful enough to tolerate the competition of the peripheral elites (as in the strong scenario). Together, these forces lead to populism as the equilibrium outcome for medium state centralization, in line with hypothesis 4.

Second and contrary to hypothesis 2, we find that increasing mass mobilization does not support nation building. Rather, it produces a shift from nation building to populism in moderately centralized states because the preferences of the central elites change. As shown above, the elites always compete over the military support of the masses. The military aspect of mass mobilization fuels this competition, as the elites increasingly rely on the masses' supply. The central elite's exchange power vis-à-vis that of the masses is weakened the more they depend on the military support of the latter, and they therefore can less and less afford the competition with peripheral elites. The strategic interaction process (as captured by the game-theoretic part of the model) then assumes a simple form: With the central elite putting forward a populist system of alliances, the masses can decide only either to agree to it or to align with the peripheral elites. When state centralization has reached a certain level, they prefer the former option. Through these mechanisms, mass mobilization tends to promote populism.

Our model thus suggests that the increasing military role of the masses in and of itself may not be a major driving force in nation building (contrary to Lachmann [2011]). Rather, it leads to populism as long as the central elites cannot swim free of the competition with peripheral elites and thus allow themselves to integrate them into an encompassing exchange system. We conclude that state centralization may well be the crucial driver of successful nation building, as argued by Tilly (1994) and Hechter (2000).

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elites (represented by the fact that they move first) increases the chances of nation building.

WHEN CULTURAL TRAITS MATTER: WEAK CIVIL SOCIETY SCENARIOS

So far our analyses assumed that actors care only about the resources they obtain under various exchange systems. We now take into account that they might also care about how well the various alliance systems fit the empirical landscape of cultural difference and similarity. In the context of our theoretical framework, we interpret a lack of such concerns as evidence of a well-established, densely woven network of civil society organizations that may serve as a basis for the organization and stabilization of alliances between actors (Wimmer 2002). When such civil society organizations are absent, however, actors will take cultural similarity into account when forming alliances, no other institutional channels to support and stabilize a coalition being available.

In the following, we compare such a weak civil society scenario with the strong civil society scenario that we have considered in the previous two sections. Obviously, the results for the weak civil society scenario depend in part on how cultural traits are distributed over actors. We analyze two ideal types of empirical trait distribution: a horizontal, or class-cultural, differentiation between elites and masses and a vertical, or ethnocultural, differentiation between peripheral and dominant segments of the population.

Recall that we represent cultural differentiation as a vector in which each element corresponds to the dissimilarity between a pair of actors and varies between 0 (no difference at all) and 1 (maximum possible difference). In the following analysis, an ethnocultural differentiation will be defined as a dissimilarity of 0.4 between central elites and masses, as well as between peripheral elites and masses, whereas all other pairs of actors are assumed to be dissimilar by 0.6. In this situation, ethnic closure obviously has the best empirical fit, followed by populism. Nation building, the estate order, and the reverse assignment of elites and masses have the lowest correspondence to this distribution of cultural traits.

In order to model a class-cultural differentiation, we assume a dissimilarity of 0.4 between the elite groups and between the masses and a dissimilarity of 0.6 for all other pairs. The alliance system corresponding best to this trait distribution is the estate order, with ethnic closure, populism, and nation building following.[32] Finally, we set the parameter

[32] As these rankings suggest, common membership among groups that are relatively dissimilar reduces overall correspondence more than do boundaries between relatively similar groups. This is less an implication of the way the empirical correspondence is calculated than of the assumed trait distributions. The latter entail two dissimilarities of only 0.4 but four of 0.6. This means that the absence of a boundary (0) between two relatively dissimilar groups (0.6) can lead to a greater reduction of overall correspondence twice as often as do boundaries (1) between relatively similar groups (0.4).

U_i^{meaning} to 0.4. It expresses the weight of the correspondence between alliance systems and cultural traits in actors' utility functions (relative to the exchange gains that come with an alliance system). Other parameter values either lead to qualitatively similar results or are less interesting.[33]

Panel B of figure 3 reports the results. The middle graph represents the outcomes when cultural differentiation has proceeded along status lines. The right-hand-side graph depicts the equilibria for the ethnic trait distribution. Overall, there are only six instead of 12 instances of nation building in the two scenarios in which culture matters, and there are 12 instead of only six instances of ethnic closure when cultural differentiation follows ethnic lines. Thus, less encompassing alliance and identity systems emerge when civil society organizations are weak and actors take cultural similarities into account when fostering alliances. This supports our hypothesis that the strength of civil society promotes inclusive forms of political alliance and identity.

It is more surprising that populism becomes more prevalent under both trait distributions. More specifically, it replaces some instances of nation building when state centralization reaches medium to high levels. The reason is that populism instead of nation building is now the first preference of the central elites because of its better correspondence with the trait distribution. As shown in the previous section, the central elites can push through their vision of the legitimate division of society in a strongly centralized state.

The structure of trait distributions also produces some interesting divergences at low levels of state centralization. Compared to a strong civil society scenario, we observe an additional row of ethnic closure when cultural differentiation follows ethnic lines. Remarkably, analyses of preferences (not reported here) show that this is true even though the central elites' first preference continues to be populism (as under the strong civil society scenario). The reason is that the masses prefer ethnic closure when civil society organizations are weak, although in terms of exchange gains, both masses would do better under populism. Thus, if the central elites propose populism, the peripheral elite can successfully counter by suggesting a political alliance and identity based on ethnic commonality.

Under the class-cultural differentiation, the gains from the exchange of resources still dominate preferences when the state is only weakly cen-

[33] Trivially, assuming a very high U_i^{meaning} ultimately leads to the alliance system with the highest correspondence, irrespective of the gains from exchange. In turn, a weight close to 0 makes correspondence irrelevant and brings back the equilibria of the "strong civil society" scenario discussed above. Different specifications of the trait distributions yield similarly straightforward results. As robustness analyses show, more extreme trait distributions lead actors to develop stronger preferences for alliance systems that are in line with the respective distribution.

tralized. Thus, we observe the same equilibria as in the strong civil society scenario mostly because the estate order is rather uninteresting in terms of resource exchanges for the masses, thus offsetting any preference they might have for the estate order on the basis of cultural similarity.

We thus arrive at the counterintuitive finding that even when cultural markers are aligned with class cleavages and actors do care about cultural similarity, modernization will lead to the politicization of ethnic or national dividing lines and to corresponding forms of political alliances, thus replacing the horizontal divisions that had characterized imperial polities. These findings support the "modernist" school in ethnicity and nationalism studies, according to which political closure along either ethnic or national lines forms integral parts of the modern world order of states (Geertz 1963; Young 1976; Rothschild 1981; Wimmer 2002). Our model allows us to understand the micromechanisms that produce this global pattern even when the cultural landscape is not structured along ethnic divisions.

HISTORICAL ANALOGIES: FRENCH NATION BUILDING, OTTOMAN DISINTEGRATION

Although retrodictions are not the aim of this article, it is encouraging to see that the model produces results in line with the political identities and alliances that emerged in the two societies from which our historical data were derived. Figure 3 contains numbers that display where in these matrices the historical data on resource distribution would locate France and the Ottoman Empire at various points in time. In order do so, we needed to assign the two cases to one of the three scenarios related to civil society development and the type of cultural trait distribution. While we can find both ethnocultural and class-cultural types of differentiations in early modern France and the Ottoman Empire, it is probably safe to say that there was *less* ethnocultural differentiation in France and *more* cultural differences along status lines than in the Ottoman Empire.[34]

In any case, cultural difference mattered much less in France than in

[34] Intergenerational status mobility was institutionalized in the Ottoman Empire, which knew no *de jure* hereditary caste of nobles comparable to that in France but had long relied on the peripheral Christian provinces for recruiting its top slave administrators and generals (Shaw 1976, pp. 113–50). At the same time, the Sublime Port made much less conscious effort to homogenize the empire in religious or linguistic terms (Grillo 1998) but rather preserved and managed its heterogeneous communities (Barkey 2008), as opposed to the French kings, who eradicated religious diversity by revoking the Edict of Nantes and who elevated their own dialect to a national language (Lodge 1993). The Ottoman Empire, by contrast, had institutionalized religious and, to a certain degree therefore also, linguistic differences through the *millet* system that granted legal autonomy in matters of family law and a certain degree of self-rule to religious minorities.

the Ottoman Empire because the Enlightenment movement had created strong networks of civil society organizations that transcended class and regional boundaries (as argued in the classic oeuvre of Habermas [1989]; see also Melton 2001), in contrast to the Ottoman Empire, where such organizations were confined to a much smaller elite of literati in the major cities and where horizontal links between various communities were sparse (Barkey 2008).[35] Thus, the ethnoculturally differentiated weak scenario (the right graph in fig. 3) corresponds best to the empirical reality of the Ottoman Empire, whereas the French case resembles the strong civil society scenario in which cultural differences hardly mattered for the formation of political alliances (the left graph in fig. 3).

We can now investigate what the model retrodicts for the specific resource distributions that our historical research has identified for the various points in time (leaving out the premodern imperial scenarios discussed in online app. B). The French case is more straightforward. Our model retrodicts nation building for the period immediately preceding the French Revolution (see the number 1 in fig. 3). In historical reality, the democratic, republican nationalism first developed by Girondists and Jacobins (Sewell 1996) competed over almost a century with other forms of political alliances and identities, until nation building was completed under the Third Republic. Before this new "equilibrium" state was reached permanently, various developments on and off the equilibrium path can be noted and their potential meaning explored with the help of the model.

The revolutionary process and the domestic and international wars that it entailed led to the unprecedented military mobilization of the population under Napoleon's leadership. Conforming to our analysis of the conditions under which populism emerges, the strong militarized leadership of Napoleon depended on mass military support and loyalty, and he therefore excluded competing political elites—both the old nobility and the new republican forces—from his political coalition. The result has been described in Karl Marx's *Eighteenth Brumaire* as "Bonapartism," which corresponds to populism ({cE, cM, pM}{pE}) in our terminology.

Subsequent political developments then lead further away from what our model would identify as the equilibrium path: the collapse of Napoleon's empire and the Congress of Vienna in 1815 brought the Bourbon

[35] In France, a government study of historical rates of literacy published in 1880 showed that for the 1686–90 period, 25% of the overall population (and 36% of men) could sign their name, and 90% of the urban bourgeoisie was literate (Cipolla 1969). By contrast, the literacy rate among the general public in the Ottoman Empire was about 2%–3% until the early 19th century and about 7% on average in the middle of the 19th century. In the Turkish heartland of the empire, literacy rates had reached only 10.5% in 1924, when the Republic was founded (for sources of these estimates, see the online appendix for Wimmer and Feinstein [2010]).

and later the Orléanist kings back to power. They did not undo the principle of legal equality but offered only limited political inclusion to the bourgeoisies of the country's center, a configuration that can be represented as {cEpEcM}{pM} and that we termed enlarged estate order—indeed a partial return to prerevolutionary forms of political alliance and identity. Our model does not foresee these developments toward a British-style constitutional monarchy. But the failure of this system to become permanently institutionalized might be explained by the fact that state centralization had already proceeded far enough to make the demands for popular political participation and effective public goods delivery both legitimate and politically appealing, as the 1830 and 1848 revolutions illustrate.

The subsequent Bonapartist regime of the Second Empire (1852–70) under Louis Napoleon II brings back a populist mode of alliance and identification. With the Third Republic comes a massive further strengthening of the central state, especially in the domain of public goods provision, as the torrent of reforms regarding schools, hospitals, welfare for the poor, and public infrastructure indicate (see online app. A for details). As a consequence, provincial elites no longer provided such services but became dependent on them and no longer effectively competed with the Parisian political elite, as they still had at the time of the 1789 revolution, aptly illustrated by the Vendée revolt in its aftermath, which was led by the provincial clergy and nobility. The central elites thus no longer had to fear the political competition with the provincial elites and integrated them into a more tightly organized and integrated state administration.

As our model foresees (see number 2 in fig. 3), this provides the background for the development of a truly encompassing nationalist ideology by the central elites of the Third Republic, greatly helped by the defeat at the hands of Prussia in the 1870 war, the effects of which again escape our model. Nationalism was now embraced by the peripheral provincial elites as well and gradually diffused not only among the masses of the central areas of the country but among the peripheral regions as well (Weber 1979), where the public service provided by schools, hospitals, and the gendarmerie made it more and more attractive for the common men and women to embrace the nationalist ideology rather than to enter into an alliance and identify with provincial elites, which no longer had much to offer them.

As this brief discussion shows, the model is not able to predict or to make sense of the back-and-forth between various forms of alliance and identification. But it explains which of these forms became permanently institutionalized and stabilized: those that correspond to the equilibrium outcomes generated by the model. Rather than delivering a stylized version of history, then, the model helps to understand the overall direction

of historical developments, leading from the estate model of society under the *ancien régime*, through populism, to fully inclusive nation building. It cannot and is not meant to grasp other aspects—the international dimension, the balance of power between various contending political factions—or the appearance and disappearance of Robespierres and Napoleons and thus is not a model of history but a theoretical specification of the equilibrium states that once reached—through whatever historical circumstance and concatenation of events—will be stabilized and institutionally "locked in."

The Ottoman case is less straightforward and understandably so, given that the French Revolution had already created a new template of political legitimacy to emulate and adopt. Furthermore, nondomestic actors played an important role in instigating and promoting various minority nationalisms. Neither diffusion effects nor the power struggle between competing empires and states is accounted for in our model, however.

Still, the model's retrodictions for the early 19th-century Ottoman Empire are roughly in line with historical developments. Using data derived from interpolating between the 16th century, for which we collected data, and the late 19th-century Hamidian period, the model would retrodict ethnic closure for the late 18th and early 19th centuries. Graphically, this period corresponds to the scenario just above the weak scenario (see the number 3 inserted into the right graph of fig. 3). And indeed, from the 19th century onward, ethnoreligious communities (the millets) became institutionally reinforced, politically empowered, and the focus of identity for the minority population. With the help of Western imperialists and missionaries, the Christian millets—and later also Kurds and Arabs—were soon politicized and turned into aspiring nations of their own, to paraphrase Kemal Karpat's (1973) subtitle "from Millet to Nation." The Greek, Serbian, and Romanian ethnonationalisms of the early 19th century and their eventual independence are the result of that process.[36]

For the late 19th century, the model would retrodict populism (see number 4 in fig. 3), now in an empire that had lost almost all of its European domains. Indeed, with the 1876 constitution, the estate order

[36] The marked ethnic diversity of the Ottoman Empire—compared to France—might also play a role in explaining why Ottoman nation building did not succeed. We analyzed a variant of the model that involves three peripheral elites and three peripheral masses. Ethnic closure becomes more frequent and nation building much less frequent—even at highest levels of state centralization—in the model with eight actors as compared to the one with four. The main reason is that competition between the masses increases with their number because they all demand the same resources. Thus, forming an alliance with the peripheral elites only (ethnic closure) becomes more attractive to each mass as it allows limiting this competition. For quantitative evidence that diversity hampers nation building, see Wimmer (2012).

was definitively abandoned and the principle of equality—irrespective of religion—of all citizens was supposed to foster a shared identity and the "fusion" of all Ottoman subjects into a single peoplehood, a goal that Tanzimat reformers and Young Ottomans had long advocated (Davison 1954, 1963, chap. 10). Conforming to the populist model, the Christian, Arab, and Kurdish elites of the provinces were to be disempowered by continued centralization and the democratization of the millets. This stance against Christian elites that "misgoverned" their population and were manipulated by Western imperialists increased further under Abdulhamid (i.e., in the period to which the last data point refers), who gave this populist conception of society a distinctively Islamist touch, without, however, abandoning the principle of equality and inclusion for Christian citizens (Karpat 2002).

While it is clear that the Muslim masses were supportive of this reconfigured empire and its populist-Islamist ideology (Karpat 2002; but see Davison [1954] for Muslim resentment against equality), most historians argue that the non-Muslim population did not embrace this vision of society but increasingly identified with a transclass minority nationalism (or ethnic closure; see Karpat [2002]). However, it remains unclear how much popular support minority nationalisms had after 1878 and before 1908, and there are some signs that the Christian Orthodox and Jewish rank and file welcomed and supported the new order, as shown by the enthusiastic reception of the 1878 constitution among some Christian communities (Davison 1963, p. 383). The counterfactual thus holds that without further outside encouragement for and instigation of Christian nationalisms, lost wars, and the immigration of millions of Muslim refugees from Rumelia, Ottoman patriotism might have become the dominant and widely accepted ("equilibrium") mode of political organization and identity.

SUMMARY AND CONCLUSIONS

This article contributes to the comparative literature on state formation, nationalism, and ethnic politics by introducing a formal model of political closure that offers precise, actor-based mechanisms to elucidate how the boundaries of belonging are realigned during processes of political modernization. We find that ethnic closure emerges in the context of weakly centralized states. In such states, the system of indirect rule has eroded without being replaced by a strong center with full control over political decision making, public goods provision, and taxation. The resulting uncertainty leads to competition among the elites for military support by the masses. Since the latter likewise compete in their demand for state

resources, actors end up negotiating separate alliance blocks based on ethnic commonality.

Populism becomes more likely when state centralization is stronger but still of medium strength. More centralization implies an increased attractiveness of the central elites as an exchange partner, which gives them the power to exclude the peripheral elites. Contrary to our expectations, however, we also find that populism is more prevalent and encompassing nation building less likely when the entire male population has become militarily active. This is also at odds with the reasoning of historical sociologists who have emphasized the role of the military mobilization of the population for understanding the rise of nationalism. Going beyond the insights that can be drawn from our model architecture and data, one could speculate whether this could help to explain the recurrence of Napoleonic figures—populist military leaders—in the long 19th century of European mass armies as well as of the *caudillos* who dominated Latin American political arenas after the independence wars.

The situation is different when state centralization proceeds further and the central elite gains enough exchange power to make an inclusion of all three other actors profitable. The peripheral elite is now integrated into this encompassing alliance system since it no longer can effectively compete for the military support of the masses and has itself become a demander for the public goods that the state elite now controls. Strong state centralization therefore leads to nation building, a system of alliance and identity that is all the more likely when civil society organizations are well developed.

In the absence of such civil society organizations, actors prefer alliance partners that are culturally similar since cultural commonality offers a way to support and stabilize an alliance. This works against nation building because this alliance and identity system involves relatively dissimilar groups, irrespective of whether cultural traits are aligned with class or ethnic divisions. Populism and ethnic closure become more likely where civil society is weak and actors therefore care about cultural commonality.

While future work should endogenize the strength of civil society organizations and collect corresponding historical data, our analysis already produced some interesting insights on which to build in the future. Most important, even when cultural traits are aligned with class rather than with ethnic divisions, weak civil society organizations produce ethnic or populist forms of exchange and identification. This might help to understand one of the most striking features of the modern world: In contrast to Karl Marx's prediction that the 20th century would be the age of revolutionary class struggles eventually leading to the dissipation of the bourgeois state and of nations as its ideological corollary, it has turned out to be the age of nationalist, ethnic, and populist politics.

We used historical data from France (1300–1900) and the Ottoman Empire (1500–1900) to calibrate the parameters of the model and showed that the results of our analysis can be meaningfully related to political developments in these two states. The primary aim of this article, however, is to provide a mechanism-based explanation of how political modernization leads to the formation of nations, politicized ethnic groups, or populism. We suggest two strategies for future empirical work to explore the implications of the theory of nation building and ethnic politics that we have proposed here. First, cross-national historical data sets could be compiled to evaluate its major empirical propositions: that nation building results from strong state centralization and well-established civil societies, whereas ethnic closure emerges in weakly centralized states with weak civil societies, and populist forms of nationalism are supported by the combination of medium state centralization and weak civil societies (for a first attempt at such an empirical evaluation with a global data set, see Wimmer [2012]).

Second, narrative forms of historical inquiry could provide more detailed assessments of how the mechanisms identified in this article led to new forms of popular identity and the new relationships between states and citizens typical of the modern age. For example, one could trace whether the central elites began to embark on a project of nation building as soon as peripheral elites demanded public services and to integrate themselves into the state apparatus (instead of perceiving of centralization as a threat to their own social position). Similarly, it would be interesting to determine what role the provision of public goods by state elites plays in the development of popular identifications with a nationalizing state. The dialogue between our model and these two other forms of historical inquiry could of course go both ways. While historical research can further test derivations from and implications of the model proposed here, our analysis may in turn inspire historical research to develop mechanism-based and theory-guided explanations of particular historical trajectories.

Future work could also extend the temporal and geographical reach of the analysis offered here. Most important, one should incorporate the international dimension and study how it interacts with the exchange relationships between rulers and ruled that we put at the center of this study. Once nationalism was propelled onto the world stage by the French and American revolutions, it was adopted and "pirated," to use Benedict Anderson's felicitous term, by political movements and state elites across the world. Such diffusion processes might become important in later episodes of nation-state formation: from the establishment of the Turkish republic under Atatürk to the recent foundation of East Timor as an independent state.

Finally, our modeling framework can be adapted to study more con-

temporary issues. One could explore, for example, what happens when state capacity decreases after the nation has already been established as the dominant, generally accepted mode of classification (and thus become "banal" in Michael Billig's [1995] terms) and has created a corresponding trait distribution through processes of assimilation and boundary blurring. This was the situation of Latin American states in the era of neoliberal policy reform as described by Yashar (2005). According to her analysis, these states were no longer able to provide the public goods to uphold the clientelist, populist nationalism of the postwar era. Indigenous movements resulted from this shift in the exchange equilibrium. It would be fascinating to see whether this analysis holds up when tested with a properly specified and empirically calibrated version of the model introduced here.

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Appendix A from Kroneberg and Wimmer, "Struggling over the Boundaries of Belonging: A Formal Model of Nation Building, Ethnic Closure, and Populism"

(AJS, vol. 118, no. 1, p. 176)

Historical Data on Resource Distributions in France and the Ottoman Empire

For the purpose of calibrating the model developed in the article, we need to have approximate values for the control over taxation, political decision-making power, public service provision, and military support. We were able to come up with reasonable estimates for three of the four resources. There were insurmountable difficulties, however, when trying to estimate the shares of control over political decision-making power; an overview of the entire political edifice and the amount of power vested in the different offices and positions would be necessary to arrive at a reasonably accurate estimation. Our estimations for the other three resources are explained and justified in this appendix.

The first step is to determine which periods correspond to a premodern, weakly centralized state and which ones to a centralized modern territorial state. For France, we propose to look at three points in time. The "premodern" situation corresponds to France in the 14th century, that is, after under Charles V a state with the capacity for direct taxation and with a standing army had emerged. The modern, territorial state in France arises with absolutism; that is, after the tax rebellions of the mid-17th century (the so-called "Fronde," 1648–53) had been subdued, the collection of taxes had been centralized (see Kiser and Linton 2002), and after in the mid-16th century a military revolution had institutionalized and strengthened a standing army under the command of the king. The 17th-century absolutist state, however, was still based on tax farming, and most offices (including the army) were up for purchase. We thus take a third snapshot of the resource distribution in the late 19th century, that is, after the Franco-Prussian War. Now tax farming had been abolished and universal conscription introduced.

For the Ottoman Empire, any data point after the establishment of the standing army in 1360 and before the beginning of the Tanzimat reforms in the early 19th century is adequate for the premodern situation, whereas the late 19th century under Abulhamid serves as an example of the modern territorial state (including an army based on universal conscription, central taxation that does not rely on tax farmers, etc.).

Distribution of Control over Taxes (Postexchange Equilibrium)

In contrast to the distribution of control over military support and public welfare/infrastructure, we decided to empirically calibrate the postexchange distribution for taxes rather than the preexchange distribution of control. The main reason is that it is impossible to estimate the contributions by various actors to the overall tax income of the state and its various levels, whereas it is much easier to determine who receives how much of the overall tax revenues once it is collected and reappropriated.

France

Estimating the distribution of tax income for early modern France represents a steep challenge because of the complex set of seigniorial dues, local taxes, indirect taxes, and the even more complex system of exemptions, prerogatives, and tax-sharing agreements, all of which varied from locality to locality depending on the balance of power between the king, the nobles, and the cities and peasant communities.

14th/15th-Century France

For assessing the premodern situation, we are looking at the tax regime between 1360 and 1450 or, more precisely, before the reforms of Charles VII (reigned 1422–66), who abolished *tallages* (the seigniorial dues to feudal elites) and monopolized direct taxation for the king,[37] and after the reforms of King John (1360), who introduced indirect taxes (sales tax, wine tax, known together as *aides*, and a salt tax called *gabelles*, first established in 1341), and Charles V (reigned 1364–80), who established permanent taxes to the king, generalized the previous system that individuals would

[37] On the evolution of the French tax system, see Collins (1988); Wolfe (1972) describes the late medieval system as well. Henneman (1971) writes about the tax system before Charles V.

pay a cash sum instead of fulfilling their military obligations to the king, and levied a hearth tax (*fouage*, later called *tailles*, from which nobles were exempted) from 1363 onward on the inhabitants of Crown lands. There existed municipal taxes as well (*socquet* and *barrage*, sometimes *tailles*) used for financing public infrastructure projects, most important, fortification. On top of these regular taxes, the king from time to time imposed special taxes on his subjects (the *tailles générales*, e.g., to finance the marriage of the king's daughter or a crusade or a defensive war) or the clergy (the *décimes*). For the purpose of this analysis, however, we do not include one-time, special taxes such as the *tailles générales* and the *décimes*.

Besides these revenues that resemble taxes in the modern sense of the term, there were many seigniorial prerogatives, dues, tributes, and duties, both for the domains of the king himself (considered his own seigniorial property) and for those of other nobles. The most important of these seigniorial dues were the *cens* (an annual tax of vassals on leased land) and the *champart* (on average, one-eighth of the cereal harvest paid to the owner of the land), as well as the *banalités* for using the lord's mills, wine press, and so forth.

We consider the incomes derived both from seigniorial domains and from the aides as taxes. In order to calculate the share of the peripheral elite, we use information on the revenues that the royal domains produced and then assume that the other seigniorial domains outside of the control of the king produce revenues of a similar order. We know from Rey (1965, p. 45) that the royal domains contained roughly 33% of the territory of the kingdom during the reign of Charles VI (1388–1413).

To calculate royal domain income, we can again rely on Rey (1965, p. 96), who lists the income and expenses of five years from the royal treasury (based on the same source as Fawtier [1930]). The average annual income is 816,000 livres, of which on average (calculated on the basis of Rey [1965, p. 99]) 52% was income from the royal domains and an additional 9% was mostly domain income owed from previous years (under the title of *recepte communes*).[38] The average income from royal domains was therefore 500,000. We can thus assume that the feudal nobility received, on the two-thirds of the kingdom's lands that were not part of the royal lands, a total of 1 million (i.e., double the income of the king).

Rey (1965, p. 260) estimates the total income from the indirect taxes (the aides, a sales tax on all products, as well as the salt tax *gabelle*) to be 2 million francs. This includes more than one-third, or 700,000 francs, that went to nobles, magistrates, and cities that were allowed to appropriate parts or all of these taxes. These 700,000 were not entering the royal accounts. We suggest splitting them between peripheral elites (350,000) and the masses (125,000 each).

The remaining 1.3 million francs were used to subsidize the royal treasury, to pay off the salaries of staff, to maintain the royal and princely households, for pensions and gifts to noblemen, and to finance wars. Two expense accounts of how the income of aides was used (one from 1398 and one from 1411; see Rey 1965, p. 266) allow us to estimate the share of central and peripheral elites: Averaging over these two years and not taking "royal savings" into account, the king and his family received 271,000 livres while the nobility got 220,000. The treasurer of war received 365,000 on average, a sum that we attribute to the king since it helped to finance the war efforts that he commanded.

The municipalities were allowed to raise their own taxes, mostly in order to rebuild city walls and fortifications. It is difficult to know how much other taxes they were raising locally, but according to Rigaudière (1993, chap. 10), the fortifications were the major project for which the king allowed the towns to raise their own taxes. Using the estimates for fortification expenses that we derive below (see "public goods and infrastructure"), we attribute an additional 160,000 livres to central and peripheral masses.

Summary.—Central elite: 816,000 from royal domain, 636,000 from the aides; total of 1,452,000 (42%). Peripheral elite: 1,000,000 from feudal domains, 570,000 from aides; total of 1,570,000 (46%). Central mass: 125,000 from aides, 80,000 from special taxes; total of 205,000 (6%). Peripheral mass: 125,000 from aides, 80,000 from special taxes; total of 205,000 (6%). Total: 3,427,000.

Late 18th-Century France

By the late 18th century, the French state was collecting a wide variety of taxes, both direct and indirect. Among the former type were property taxes (*vingtième*), income taxes (*taille*), and a general per-person tax on all subjects ("poll tax"). The indirect taxes were basically sales taxes levied on a wide variety of goods. Some of these indirect taxes were collected directly by the state, while others were handled through tax farming (Matthews 1958, pp. 3–33). Goldsmith (1832, p. 85) provides a detailed budget from 1785. The central state's tax revenues totaled 535.9 million francs.

In order to determine the peripheral elite's share of tax revenues, it is necessary to take into account that there were

[38] Four percent was from coinage rights; 5% from *chancellerie* or in Latin *emulumentum* and *emende* (apparently a tax on royal seals on documents; Rey 1965, p. 155); 10% from *compositions et amendes* (*financie et composiciones*), which were mostly pawns and penalties from litigated contributions from domain administrators (but included the *fouage* of certain localities and, until the end of the century, 6,000 livres paid by the Jewish community as a tax on usury); and finally 18% for the various "subsidies" paid to the king by his vassals but also transfers of income from the general sales tax to the royal treasury (see below).

two types of provinces under the Old Regime and that these two types were subject to distinct systems of tax regulation. The *pays d'election* had no power to tax, while the *pays d'etat* did have this power (Matthews 1958, pp. 23–24; Kwass 2000, p. 95). The *pays d'election*, however, did receive a share of the taxes collected in the provinces. As explained by Matthews (1958, p. 29), this amount appears as "charges" on the "general receipts" from the *pays d'election*. Because these monies do not go into the central treasury, they are not counted as receipts. Thus, they are not figured into the budget provided by Goldsmith (1832). However, Necker's (1781) analysis of the 1780 budget fortunately provides this information. These "charges assigned on these taxes" were 19.6% of the taxes collected in the *pays d'election* (calculated on the basis of Necker [1781, p. 107]). We make the assumption that this was also true in 1785. However, in order to apply this assumption, it is first necessary to discern the amount of direct taxes paid by the *pays d'election* in 1785. Goldsmith (1832) does not provide this figure, but Necker (1781, p. 123) does. In 1780, 94.8% of direct taxes were paid by the *pays d'election*. Assuming this was also true in 1785, 198.13 million of the 209 million in direct taxes collected came from the *pays d'election*. Because 198.13 million is 80.4% of 246.43 million, we surmise that the peripheral elites in the *pays d'election* controlled 48.30 million francs of tax revenue.

Data availability renders it more difficult to determine the tax revenue controlled by the peripheral elites in the *pays d'etat*. We make use of data from two of these provinces, Burgundy and Languedoc, circa 1700. Swann (2003, pp. 179–84) provides information on Burgundy for 1689–91 and 1706–8. An average of 53.5% of expenditures went to the king, while 61% of the revenues used for expenditures came from taxes. Combining these figures, Burgundy retained 12.5% (i.e., [61 − 53.5]/61) of its tax revenues. Beik (1985, pp. 262–63) provides information on the 1677 distribution of taxes in Languedoc. Seventy-five percent of the taxes collected went to the Crown, meaning that 25% was retained by the peripheral elite. Averaging these figures from Burgundy and Languedoc, we estimate that peripheral elites in the *pays d'etat* retained 18.7% of collected tax revenues. Assuming that this share was constant across the 18th century makes it possible to apply this figure to the 1785 budget found in Goldsmith (1832, p. 85). On the basis of our earlier calculation, 10.87 million of the direct taxes came from the *pays d'etat*, which is 81.3% of 13.37 million. Thus, we estimate that peripheral elites in the *pays d'etat* retained 2.5 million in tax revenues. Combining this with the estimate from the *pays d'election* yields an overall share of the peripheral elite of 50.8 million francs.

As for the masses, an array of indirect taxes (mainly sales taxes and tariffs) collectively known as the *octroi* were the primary source of financing for municipal governments. Under a 1647 royal decree that remained in effect until the Revolution, municipalities were required to give one-half of the *octroi* revenues to the central state (Matthews 1958, p. 166). According to Goldsmith (1832), 27 million francs of the central state's revenue in 1785 derived from the *octroi*. Thus, we estimate that the masses controlled 27 million francs in tax revenue.

Summary.—Central elites: 535.9 million (87.3%). Peripheral elites: 50.8 million (8.3%). Masses: 27 million (4.4%). Total: 613.7 million.

Late 19th-Century France

To determine control over taxation in the late 19th century, we generally associate three scalar levels of government with the four actors: central state (central elite), departments (peripheral elites), and communes (central and peripheral masses). We do make one exception: We associate the central elite not only with the central state but also with the commune of Paris and the department (Seine) in which the capital city was located at this time.

The central state exercised considerable control over the late 19th-century taxation system.[39] The central state dictated the amount of taxes that each department owed. Each department in turn assigned its burden to its various communes. However, all of the monies collected were not destined for the central state. In addition to the money owed to the central state, an additional percentage (*centimes additionnels*)—which also was determined by the central state—was collected for the purpose of financing the departments and communes (Le Comte de Franqueville 1875, p. 299; Leacock 1906, p. 326). These centimes were the only source of tax financing for the departments (Scott 1871, p. 311). However, in addition to these direct taxes, communes were also allowed to collect a number of indirect taxes, such as tolls on roads and highways, as well as the *octroi*, a tax levied on various goods brought into the towns (Scott 1871, p. 311; Leacock 1906, p. 323). The central state also collected indirect taxes, indeed, a much wider range than the communes.

The central state budgets published in the Ministry of Public Instruction (1889) provide data on the apportionment of direct taxes to all actors as well as the indirect taxes collected by the central state, while Le Comte de Franqueville (1875) supplies data on the indirect taxes collected by the communes. Because the latter data are for 1871, that is the year adopted for all relevant data.

[39] The central state levied four direct types of taxes: *la contribution foncière* (a real estate tax), *la contribution des portes et fênetres* (the "door and window tax"), *la contribution personnelle-mobiliere* (personal tax), and *la contribution des patentes* (Scott 1871, p. 311; Le Comte de Franqueville 1875, p. 289; Ministry of Public Instruction 1889, pp. 6–7; Leacock 1906, p. 324). The fourth tax is variously described as a "tax on business" (Leacock 1906, p. 324) and as "a tax levied on all trades and professions" (Scott 1871, p. 311).

In 1871, the direct tax (i.e., centimes) share of departments and communes, respectively, was 193.9 million and 120.0 million (Ministry of Public Instruction 1889, p. 50). Given our adoption of the core-periphery model for identifying the different actors, it is necessary to deduce the 26.7%[40] share of these numbers that went to the commune of Paris and the department of Seine. This leaves us with 88 million. To this figure must be added all the *indirect taxes* collected by the communes. As mentioned, figures for 1871 are available from Le Comte de Franqueville (1875, pp. 306–7). The *octroi* is the most important of these (Scott 1871; Leacock 1906) and totaled 86.4 million. Adding tolls and duties (26.3 million) and the "dog tax" (4.7 million) yields 117.4 million. For the communes, which we associate with the masses, direct and indirect taxes together total 205.4 million.

A similar adjustment for the departmental centimes is necessary. At this time, Paris was located in the department of Seine. We make the same assumption as for the communes, that is, that this department enjoyed a 26.7% share of all departmental centimes. This means a reduction of 51.8 million, leaving 142.1 million for the peripheral elite. As mentioned, departments were not allowed to collect indirect taxes.

This total subtracted—for the commune of Paris and the department of Seine—goes to the central elite: 83.8 million. To this figure must be added the central state's share of direct taxes, 323.2 million, yielding 407.0 million in direct taxes for the central elite in 1871. Indirect taxes constituted a far greater share of what the central elite controlled. Most receipts of the central state derived from indirect taxes (Ministry of Public Instruction 1889, pp. 8–19, 22–30). These totaled 2,776,900,000 francs. Adding these to the direct taxes previously calculated yields 3,183,900,000 francs in taxes controlled by the central elite.

There is one more indirect tax that must be attributed to the central elite. As mentioned, the sum of indirect taxes collected by communes was 117.4 million in 1871. Consistent with the discussion above, we estimate that Paris's share of these taxes was 26.7% of the grand total for communes. However, this figure of 117.4 million is not the grand total because Le Comte de Franqueville (1875, p. 307) excluded communal data from Seine. Because 117.4 million is 73.3% of 160,163,711, the difference (160,163,711 − 117,400,000)—that is, 42,763,711—is the estimated share of Parisian indirect taxes, which must be added to the grand running total of taxes controlled by the central elite. Doing so brings the total to 3,226,663,711 francs.[41]

Summary.—Central elites: 3,226,663,711 (90.3%). Peripheral elites: 142,100,000 (4.0%). Masses: 205,400,000 (5.7%), or 2.85%/2.85%. Total: 3,574,163,711.

Ottoman Empire

16th-Century Ottoman Empire

The Ottoman Empire represents an easier case since it never developed a feudal system comparable to that in Western Europe. The power of taxation was more centralized and uniform, though very important regional variations existed as well (and many parts of the empire remained outside the effective taxing capacity of the Sublime Porte). Cosgel and Miceli (2005, p. 815) present a list that details, for the 16th century, the distribution of tax revenues between central government, provincial and district governments, fief holders, and others. They list this distribution for five different regions of the empire and for one to three different years between 1521 and 1596. The share of the central government ranges from 0.26 to 0.5, with an average of 36%; that of provincial and district governments from 0.04 to 0.29, averaging 13%; fief holders got 29%; and "others" (private landholders, pious foundations, and tribal chiefs) got between 0.09% and 39% of the overall taxes (21% on average). Translated into our scheme of actors, this means that central elites received 36% and peripheral elites 63%. We assume that tribal chiefs are part of the subordinate elite but that private landholders and pious foundations might be controlled by nonelite, if affluent, persons. We thus divide the 21% share of "others" into one-third for tribal leaders (thus adding 7% to the peripheral elite) and 14% to the masses.

Summary.—Central elites: 36%. Peripheral elites: 48%. Masses: 14%.

Late 19th-Century Ottoman Empire

How did this distribution of tax income change after the Tanzimat reforms were successfully completed? According to

[40] Thanks to Le Comte de Franqueville (1875, p. 307), we know the ratio of Paris expenditures to the expenditures of all other communes in 1871. Paris expenditures were about 200 million at this time, while all other communal expenditures were about 520 million. Thus, Paris expenditures were 26.7% of all communal expenditures. If we assume that Paris had a similar share of all communal centimes, then the communal figure identified above (i.e., 120 million) should be reduced by 26.7%, or 32.0 million, leaving 88.0 million.

[41] To be sure, Paris was not the only commune in the Seine in the late 19th century. However, this city did account for practically the entire population: 2,226,023 out of a departmental population of 2,799,329 in the early 1880s (Ministry of Commerce and Industry [1886] 1968, pp. 31, 624, 627). While it would be possible, on the basis of this difference in population, to adjust further the share of indirect taxes controlled by the communes of the Seine, doing so would assume that the dramatically disproportionate share of expenditures dispensed by Paris was representative of the remaining communes in the Seine—an assumption that we do not make.

Stanford Shaw, all taxes and fees were collected directly by the central state treasury or specialized agencies by 1870, and tax farming had been entirely abolished by then (Shaw 1975). The only local revenues that were introduced are a small percentage of the taxes raised on property: "the municipalities which, as they finally were organized, were allowed to keep small shares for themselves" (p. 427). Thus, at the end of the Tanzimat reforms, the center controlled almost all of the tax revenues. We estimate that the "small shares" controlled by municipalities amount to 5% for each of the masses and that the rest (90%) was entirely controlled by the central state elites.

Summary.—Central elites: 90%. Peripheral elites: 0%. Masses: 10%.

Control over Military Support

In contrast to the tax distribution, we focus on the initial control of the four actors over military support rather than the postexchange distribution because, obviously, all control over the army in times of war was exercised by the central elites (except in case of mutiny). We can, however, look at the background of the fighting troops to determine which of the four actors provided how many troops to the overall military machine. We thus assume that "control" does not refer to the line of commands on the battlefield but rather to the process of providing armed men to the various fighting and defense units of a territory. Correspondingly, we also include militias and other fighting units not integrated into the military command structure but exclude police forces as well as soldiers that were recruited for particular campaigns or during general mobilization from the picture. Not surprisingly, this is the domain where data are most readily available.

France

The French military developed gradually. We suggest taking three points in time to calculate the share of armed men who were provided/controlled by the four actors. We focus on (*a*) the pre–centralized army of the High Middle Ages (under Philippe Auguste and his successors, before the 100 Years War), that is, after the establishment of a group of permanent warriors in the service of the king, but while the army was still recruited mostly on the principle of feudal loyalty; (*b*) the army under the absolutist king Louis XIV; and, finally, (*c*) the modern army as it had been reorganized after the Franco-Prussian War.

12th- and 13th-Century France

The fully mobilized army, such as engaged in the battles of 1285, 1327, 1329, and 1330, contained an average of 20,000 men. According to information found in Contamine (1992*b*), it was composed of the following parts:

a. Directly provided by the king:
- The "house of the king," a small private army composed of the highest-ranking nobles most closely related to the king through family ties, the *chevaliers de l'hotel*, who are moving around with the king and formed a sort of royal guard. No figures for absolute size are available; we assume the same size as in the 15th century (see below): 200.
- Professional garrison soldiers, paid by the king: 1,250–1,450; average 1,350.
- *Arbatalières* (armbrusters), permanently employed: 70–150; average 110.
- Militias of those cities that belonged to the royal domain: 2,040.

Total: 3,700.

b. Controlled by the nobility:
- The feudal army, levied in times of war and based on the principle that fiefdom holders owed the king support in times of war. The term used to describe this army is *l'arrière-ban*. It comprised (1) high nobility chevaliers, mobilized through the principle of feudal loyalty: total of 550 (but usually not all were called to duty); (2) the noble warriors mobilized by the chevaliers (on average each commanding his own troop of 50): 27,500. Total: 28,050 (of which 13,600 were effectively mobilized).

c. Controlled by "the masses":
- *Roturiers*, that is, peasant militias, nonarmored and nondisciplined: 300.
- *Sergeants a cheval*, mounted and fully armored warriors of lower noble or commoner origin: 2,400.

Total: 2,700

We assume that the difference between the theoretical strength of the army of 34,450 men, calculated on the basis of this information, and the average effective fighting strength in the various battles (20,000 men) arises because not all of *l'arrière-ban* was actually mobilized for war, but only 13,600 (instead of the theoretical figure of 28,050). If we take effective war figures as a basis of calculation, we arrive at an 18.5% share of the central elites, 68% of the peripheral elites, and 13.5% for the two masses.

Summary.—Central elite: 18.5%. Peripheral elite: 68%. Masses: 13.5%.

17th-Century France

According to Contamine (1992*a*, p. 435; based on Belhomme), the regular and irregular troops in 1690 (under Louis XIV) consisted of the following:

a. 342,000 regular troups, of which
- 277,000 infantry, including abount 37,000 officers.[42]
- 65,000 mounted troops (including 10,000 members of the *maison militaire du roi*, which is now an elite troop, composed of high nobility and the royal families, but also around 3,000 Swiss guards and 4,000 nonnoble *gardes francaises*, as shown by Rowlands [1999]), including 7,333 officers.
- Of these 342,000 regular troops, 74,000 were mercenaries[43] (including some Frenchmen from Alsace and Roussillon) and 270,000 *régnicoles* (subjects of the king born in France).

b. 92,000 *miliciens* (of which 25,000 were royal militiamen, the rest local militias).

c. *Arrière-ban*, though the feudal army was abolished in 1694 and seems not to have been used anymore.

d. 3,500–4,000 *archers de la maréchausséee* (a military police force under the command of the army marshals; the positions were sold to local citizens under Louis XIV).

e. 70,000 members of the navy, since Colbert based on obligatory conscription (the first in military history, according to Contamine [1992*a*, pp. 504–5]) and under direct command of royal navy officers at the time of Louis XIV, approximately 9,333 officers).

f. 100,000 coastal guards, who were paid from the fifth day of duty onward by the king (see Hippeau 1863, p. 148).

Including these militias, the total of armed men was 678,000. The problem is to determine the percentage of the regular army that was controlled by the feudal elite. Following Blaufarb (2002), we can assume that the entire officer corps of the army and navy was composed of nobles (with the exception of roughly 200 nonnoble families who were ennobled through military service from 1750 onward). We exclude, however, the *arrière ban*. The nobility made up 53,666 officers, thus 8% of the total of armed men.

We can assume that the mercenaries as well as the royal guard (*la maison*) continued to be directly controlled by the king, with the exception of the 4,000 regiments of the *gardes francaises*, which were an elite infantry unit composed of commoners. The 74,000 mercenaries made up 11% of the total of armed men; the 3,000 members of the royal guard that were neither mercenaries (the Swiss) nor *gardes francaises* represent another 0.5%. Thus, the royal elite controlled 11.5% of the armed men. The remaining 80% can be attributed to the masses.

Summary.—Central elite: 11.5%. Peripheral elite: 8.5%. Masses: 80%.

Late 19th-Century France

In 1870, the French army consisted of a total of 367,850 men, and 16,869 of them were officers (Adriance 1987, p. 23). Thus, officers represented 4.6% of all men in uniform. Officers belonged to either the central or peripheral elite. Serman (1979) provides the geographical origin of officers around this time. Among all officers, 8.6% were from the department of Seine. Thus, we associate 0.4% of the military with the central elite and 4.2% with the peripheral elite. The remainder (95.4%) were split equally among the central and peripheral masses.

Summary.—Central elites: 0.4%. Peripheral elites: 4.2%. Masses: 95.4%.

Ottoman Empire

16th-Century Ottoman Empire

We again look at the 16th century as the premodern period according to our definitions. Following Inalcik (1994, p. 88; based on Barkan), the army consisted, in 1528, of the following groups.

a. Regular troops under direct control of the sultan, that is, the salaried soldiers such as the Janissaries (legally "slaves" of the sultan, recruited mostly among Christians and other minorities of the empire), the fortress guards in the provinces, the cavalry (*sipahis*), the inner palace servants, and the navy: 50,000 men.

b. Beneficiaries of *hass, ziamet*, and *timar* grants in the provinces (these were given the right to tax the local population against military support): 37,741 men.

c. Auxiliary troops such as the *müsellems, canbaz, bazdars, yorüks*, and, most important, the *yayas*, who were groups of peasants who provided a number of fighters, rotating the duty to serve among family members; originally, the

[42] The proportion of officers (*sergeants, capitains, lieutnants, sous-lieutnants*) per *compagnie* (of 50 soldiers) was five. Since five *compagnies* made a regiment, which had eight officers, the number of soldiers per officer was roughly 7.5.

[43] Lynn (1997) estimates the percentage of foreign mercenaries to be 15%–25% during the reign of Louis XIV.

yaya were Turkoman tribal nomads fighting with the sultan and given lands in Central Anatolia after conquest. In political terms, these tribes and groups saw themselves and were perceived as part of the elite of the empire, having helped its foundation and defense. We thus count these among the peripheral elites. These auxiliary troops were abolished in 1582: 15,180.

d. Christian soldiers who were recruited into a paid militia: 3,000.

e. *Akincis*, that is, frontier raiders who received a salary if registered and who were recruited among the population around a garrison: 12,000.

In 1473, the army consisted of

f. Regular troops (Janissaries and cavalry of the Porte, *sipahis*): 19,500.

g. Beneficiaries of *timar* grants: 64,000.

h. *Azebs*, that is, general army levied among the entire population (roughly half of them recruited in Rumelia [Inalcik 1994, p. 93], thus Christians): 20,000.[44]

We leave out *azebs* because these were recruited for specific campaigns and thus had no existence after the end of a war. Divided up by the four actors in our scheme, we arrive at the following figures.

Summary.—

	1528	%	1473	%	Average
Central elite (a; f)	50,000	42	19,500	23	32.5
Peripheral elite (b; c)	52,921	45	64,000	77	61
Central mass (e)	12,000	10	0	0	5
Peripheral mass (d)	3,000	3	0	0	1.5
Total	117,920		83,500		

Late 19th-Century Ottoman Empire

The army under the last sultan of the empire, Abdulhamid, looked quite different. Universal conscription was now realized (including *de iure* for Christian subjects), but actual service was decided by lot (as previously) and exemption through payment (obligatory for Christians before the reforms, now extended to everybody) was still possible, while substitution through another person had been abolished. The feudal elements of the army had been abolished as well, and a new professional officer corps was trained in the military academies founded during Abdulhamid's reign (Akmese 2005, p. 23).

Zürcher (1998) describes the army composition after the reforms of 1843 and 1869, which introduced a Prussian-style system based on universal conscription: 210,000 regular troops (of which 60,000 were active reserves), 190,000 reserve troops called *redif* (the Turkish version of the *Landwehr*), as well as a 300,000 noncombat reserves (the Ottoman *Landsturm*). This puts the number of fighting troops at 400,000. The only armed group of men that were not based on this system of mass recruitment was the tribal regiments that Abdulhamid institutionalized in 1892 (inspired by the Cossack militias of imperial Russia). By the end of the century, these tribal militias under the command of Kurdish *aghas* numbered between 27,500 and 63,250 men (van Bruinessen 1999). Thus, the share of armed men under control of the peripheral elites (the tribal leaders) was somewhere between 6% and 14%, averaged to 10%, while the rest were under control of a professionally trained army based on mass conscription.

How many of the army officers and soldiers were members of the various elite branches? While no sources could be found to answer this question precisely, it is clear that all the rank and file seem to have been of Muslim peasant origin (Zürcher 1998). It is also clear that the new elementary and secondary schools established by and for the military in all the provinces of the empire provided a formidable machinery of upward mobility for provincial families that did not belong to the bureaucratic-military elites (Hale 1994, p. 24). On the basis of a detailed study of the career paths of the students of one of these elite schools (though not a military one),[45] we can guess that of the 4% officers of the army in

[44] Unfortunately, no figures for the recruits (*azebs*) are given for 1528. In 1389, 40,000 of them fought in Kosova against the Serbs. In 1473, there were 18,000 in the army. In 1492, 9,000 were recruited in Rumeli, and under Suleiman I, 20,000 were recruited in Rumeli, most likely for a specific campaign.

[45] The school in question (Mulkiye) was reformed by Abdulhamid to train civil servants. Szyliowicz (1971) has studied a sample of 475 students who went through the school. For comparative purposes, we are interested only in those students whom he classifies as "successful," i.e., who later in their career reached the level of general director or higher (i.e., undersecretary, assistant undersecretary, ambassador, governor, etc.), which was the case for 26% of all students. Of those 109 successful students, 13 had an "elite" background, i.e., were sons of fathers who bore the title pasha, effendi, or bey and had a high-level position (p. 396). Elite students made up 9% of students; 63% of the students had an "official" background, i.e., belonged to the military-admimistrative caste; and 22% were not members of that group (p. 393). If we assume the same proportion for the "successful" non–central elite students, we can calculate that 67 successful students were members of the peripheral elite and 29 belonged to the central and peripheral masses. In percentage, thus, 12% of the successful students had a central elite background, 61% a peripheral elite background, and 27% a nonelite background.

peacetime (Erickson 2000, p. 7), around 1,920 (or 0.5% of the total number of fighters) were of central elite background and 9,600 (2.5%) came from families we could classify as members of the peripheral elite.

Summary.—Central elite: 0.5%. Peripheral elite: 12%. Masses: 87.5%.

Control over Public Goods

We define public goods as comprising welfare expenditures (including for soldiers and their families) such as pensions, unemployment benefits, and so forth that are not provided by families, the provision of public security (excluding defense, but including infrastructure such as city walls), non–religious education in generic skills such as writing and math, and the maintenance of public infrastructure (such as city walls, public roads, fountains, etc.). The question therefore is how many of these public services were provided by the central government elites, by peripheral elites who might be in charge of regional, substate entities, and how many of these services are under the control of municipalities, guilds, and so forth (the masses). To clarify what we mean by "control," we assume that the highest institutional level through which money circulates used for public service provision "controls" these resources. For example, if taxes are collected by the central state and then handed down to municipal organizations or religious fraternities to take care of the poor, we assume that the central state is in control of these resources. We also assume that if a higher level of government mandates spending in certain areas and exercises appointive power in those areas, then that higher level of government controls the resources. Perhaps not surprisingly, estimating the division of control over public service provision was even more difficult than for taxes and military support. Extensive historical research was necessary to come up with meaningful and defensible estimates.

France

14th-Century France

In order to estimate the central elite's contribution to public service expenditures in the first half of the 14th century, we make use of the royal accounts for 1322–25 and 1349 that are reprinted by Fawtier (1930, pp. LIX–LI, LXIV). These accounts do not represent budgets of income or expenses because both the costs of local administration and the costs of running the royal estates are not included. However, these accounts do provide a picture of what the king had at his disposal in terms of cash, as well as the uses to which he put this money.

There are two relevant line items, *opera*, which pertain to public works such as roads and bridges, and *elemosine*, which indicates the money dedicated to housing, feeding, and clothing the poor. On the basis of the five accounts examined, the king's average annual expenditures on these concerns was 14,930 livres. This figure was out of total annual average expenditures of about 512,000 livres (a little less than 3%).

The best data available for the peripheral elites (and masses) come from the city of Avignon in the first half of the 14th century. We exploit these data and then generalize to all of France. Since at this time Avignon was the seat of the counter-pope, an extraordinary system of services for the poor developed, which we do not consider here because it was quite exceptional. We do consider, however, expenditures on other items. The papacy dispensed funds for various public construction projects such as bridges, granaries, and city gates (*opera*). Jean XXII's total expenditures were about 4.2 million florins, of which 2.9% (121,800 florins) went to such projects. Benoît XII allocated 18% of 730,000 florins expended for these purposes (thus, 131,400 florins). And 12.2% (207,400 florins) of Clément VI's 1.7 million florins of expenditure went to these projects (Le Blévec 2000, pp. 575, 579). This yields a total of 460,600 florins for these 38 years, or about 12,100 florins per year. We also consider the services provided by four crusaders' orders in Avignon during the first half of the 14th century. One of these spent 38 livres on feeding the poor, housing pilgrims, and so on (Le Blévec 2000, p. 109). Assuming other crusaders' orders made comparable expenditures, this yields 152 livres total, or 150 for purposes of estimation. Second, as explained below in more detail, the peripheral elite controlled 330 florins per year in hospital funds. Adding together all these figures yields a total peripheral elite expenditure of 12,580 livres. This figure can be generalized to France as a whole using Chevalier's (1982, p. 207) figure on the number of towns in 14th-century France, that is, 226. Multiplying by this figure yields 2.73 million.

To estimate the expenditures on public services provided by the masses, we use data concerning expenditures on hospitals, policing, and fortifications. Hospitals were a central institution of French society across the time periods we analyze. French hospitals had broader functions than usually associated with them in the current era. Hospitals cared for a broad range of those most unfortunate: not only the infirm (both physically and mentally) but also orphans and the poor. In some cases (especially the 18th century) "caring" for the poor amounted to confining them (McCloy 1946; Fairchilds 1976; Jones 1982; McHugh 2007). Hospitals were important enough that the Crown sought for three centuries (16th–

18th) to centralize control over them (Hickey 1997), and, following the Revolution, the revolutionary convention alienated all hospital endowments (although the directory later reversed course; Ramsey 1988, p. 91).

To estimate the towns' contributions to hospital expenditures, we again make use of data from Avignon in the first half of the 14th century (Le Blévec 2000). By 1350 there were 22 hospitals in Avignon (p. 603). At this time, 20 florins were legally necessary to run a hospital (p. 683). Assuming that the average one had 30 florins in annual expenses, 660 florins per year went to hospitals in Avignon. Of all the hospitals for which there are records, 48% were run by aristocrats or clergy; 52% were under the charge of municipalities or lay brotherhoods, or commoners had founded them. Thus, one-half of this money, or 330 florins, was controlled by the masses. Following the estimation method described above, we multiply this figure by the number of towns in 14th-century France (i.e., 226), yielding 74,580 florins.

To estimate the contributions that towns, which started to emancipate themselves from seigniorial rule during that time, made to the provision of public safety and security, we take into account the *sergents*, which became part of the municipal government. The entire government structure became more differentiated as a result of the efforts to rebuild city walls for protection against enemies, which was a major effort consuming large shares of municipal resources from the 1340s onward (i.e., until the city walls lost their military function sometimes in the 15th or 16th century). The collection of local taxes, administration of municipal bonds, and oversight of these works were the main tasks of the new administration. The *sergents* were, among other things, also charged with policing the city at night, bringing criminals to court or prison, and so forth. We therefore consider their salaries to be an investment by local communities in public safety. The best estimates come from Bernard Chevalier's (1982) book. He mentions that in small cities such as Tours, four *sergents* were employed, while there were 24 in Bordeaux (p. 207). They represented roughly 50% of all administrative personnel of the cities. The city of Privins, a small town, spent 8% of its 545 livres budget in 1451 on salaries for its officers (p. 213). We can thus assume that half of this, or 22 livres, was necessary to support its *sergents*.

How do we get at a national figure from these estimates? We know from the same source (Chevalier 1982, p. 41) that there were 226 towns in 1330. Of these, 21 were of comparable size to Bordeaux (i.e., having four convents of the mendicant orders), while 13 were of medium and 192 of small size (one or two convents). If we assume that Provins is representative of these small towns, we can also assume that they each spent 22 livres on *sergents* (or 4,224 in total), while the big towns spent six times more, that is, 132 livres each (or 2,727 in total). The medium-sized towns spent 77 each (or 1,001 in total). We thus arrive at 7,952 livres.

Rigaudière (1993, pp. 488–96) provides detailed municipal budgets and lists how much the municipalities spent on fortifications. The most relevant research is that which samples a series of municipal budgets from this period (instead of just listing the ones with high expenditures on fortifications). For Marseille, 15 budgets between 1361 and 1411 show an average expenditure for fortifications of about 728 livres. For Saint-Flour, a small city in the Loire Valley, 43 budgets between 1378 and 1467 produce an average of 280 livres per year, while the 25 budgets between 1355 and 1380 of Dijon list 880 livres on average. Averaging the information on Lisieux (11 budgets are listed in Rigaudière [1993]) gives us an estimate of 945. These figures are surprisingly consistent. Since it seems that small cities could invest as much in their city walls and towers as large ones, it is perhaps best to simply average over all these figures, thus arriving at 708 on average and thus 160,000 for all cities of 14th-century France. Summing expenditures for poor relief, public safety, and fortifications results in a total estimate of roughly 242,530 florins.

Summary.—Central elite: 14,930 (0.5%). Peripheral elite: 2,730,000 (91.4%). Masses: 242,530 (8.1%).

18th-Century France

Goldsmith (1832, p. 85) provides a detailed central budget for 1785, which gives us insight into how much the central elite invested in public service provision during the 18th century. Among such expenditures were funds for police, postal services, construction and repair projects, and education. These expenditures totaled 90.3 million livres.

Included among these central state expenditures were 26 million livres for hospitals (Goldsmith 1832). The implication is that the dominance of peripheral elites and masses in this area of public service provision had diminished significantly by the late 18th century. A government report in 1791 estimated total hospital receipts on the eve of the Revolution as totaling 29 million livres (McCloy 1946, p. 189). Thus, only 3 million of these funds are attributable to the peripheral elites and the masses. Carrying over the premodern estimate of proportional share, we thus estimate that the peripheral elites and the masses each controlled 1.5 million of these funds.

In order to estimate additional peripheral elite control over public service expenditures, we make use of the budgetary data from two provinces in the late 17th century: Burgundy (Swann 2003) and Languedoc (Beik 1985). At this time, Burgundy spent 2.8% of its budget on public welfare (Swann 2003, pp. 179–80), while Languedoc spent 1.4% (Beik 1985, pp. 262–63), yielding an average of 2.1%. We generalize this to all provinces that were *pays d'etat* (the *pays d'election* are inappropriate for generalization because they had no independent financing powers and, thus, received all funds for public service expenditures from the central state) by making an empirically based assumption about the

relationship between the Crown's income from these provinces and total expenditures. The late 17th-century Burgundy budgets indicate that an average of 58.5% of all expenditures were monies sent to the Crown. Assuming this was true in the 18th century, one can derive total provincial expenditures. According to earlier calculations (see "taxation") based on Necker (1781) and Goldsmith (1832), the *pays d'etat* in 1785 sent 10.87 million livres to the Crown, which is 58.5% of 18.6 million livres—which is therefore our estimate for total provincial expenditures in the *pays d'etat* in 1785. On the basis of this information and the assumption that these provinces spent 2.1% of all expenditures on public welfare, we estimate that the peripheral elite controlled about 400,000 of the livres that were devoted to government-provided public services. Combining this figure with the hospital funds yields a total of 1.9 million livres attributable to the peripheral elites.

In order to calculate additional mass control of public service expenditure, we use communal budget data. Pouchenot (1910, pp. 55–93) provides detailed budgets from 1690, 1705, and 1710 for the commune of Besançon. This village of 11,500 (in 1708) spent money on road maintenance, water provision, aid to the poor, and other public services. On average, this spending accounted for 6.7% of total outlays, which is comparable to the village of Angers in the middle two quarters of the 18th century.[46] As an average of the three budgets, Besançon spent 6,867 livres per year for its 11,500 inhabitants. This amounts to a little less than 0.6 livres per person.[47] In order to generalize this figure across France, we make the assumption that such public service provision generally was not available to the masses of people who lived in rural areas. At the beginning of the 18th century, only 20% of France's population lived in towns of 2,000 or more.[48] Thus, we apply this per-person expenditure of 0.6 livres to one-fifth of France's 1700 population of 19.3 million (Babuscio and Minta Dunn 1984, p. 335), that is, 3.86 million people, which yields a total public service expenditure of 2.316 million livres. However, this is an estimate for circa 1700, whereas other data cover the latter portion of the 18th century. Thus, an adjustment to this figure is appropriate. We assume proportionality between the growth in central state receipts and the growth in communal public service expenditures. When 1695 is compared to 1785, central state receipts were about 4.6 times more in the later year.[49] Applying this factor to communal public service expenditures, we estimate that communes spent about 10.7 million livres on public service expenditures in the latter portion of the 18th century. Combining this with the estimate for hospital funding yields 12.2 million livres.

Summary.—Central elite: 90.3 million (86.5%). Peripheral elite: 1.9 million (1.8%). Masses: 12.2 million (11.7%). Total: 104.4 million.

Late 19th-Century France

To determine the distribution of control over public service expenditures, we follow the same principle of identifying actors as in the "control over taxation" section for late 19th-century France, generally associating the major actors with different levels of government (central = central elite; departmental = peripheral elite; communal = central and peripheral masses). As with control of taxation, we associate the commune of Paris and department of Seine in which it was located at this time with the central elite. While most data are from the early 1870s, this is purely due to the fact that these are the years for which details on central, provincial, and communal spending are available. We use these data but apply the "rules of the game" (concerning spending mandates, appointive power, etc.) for the 1890s.

Le Comte de Franqueville (1875, pp. 298, 307) provides comprehensive data on the public service expenditures of nearly all communes (those in the department of Seine are not included) in 1871 and all departments in 1869. Such expenditures in the communes included outlays for police, public worship, elementary education, streets and highways, and poor relief. These expenditures totaled 225.685 million francs. However, in line with our definition of control, most of these monies cannot be attributed to the masses. First, a significant share of these expenditures first passed through the central state and then were redistributed. In 1871, centimes (see above) constituted 119.99 million francs of the financing available in the communes (Ministry of Public Instruction 1889, p. 50). Because we treat communes in the department of Seine differently, it is necessary to remove their estimated share of 26.7% (see discussion above) from this figure, which leaves 87.95 million francs. Communal expenditures (excluding the department of Seine) totaled 520.5 million francs in 1871, but because 123.81 million came directly from the central state for war expenses, the more appropriate figure for total expenditures is 401.38 million (Le Comte de Franqueville 1875, p. 307). As the proportion of centimes (87.95 million) to total expenditures (396.69 million) is 22.2%, it is appropriate to subtract this proportion (a total of 50.768 million) from the total communal expenditures on public services, which leaves 174.917 million francs. It is also necessary to attribute this subtracted figure to the central state, which is the ultimate source of this funding. Thus, some

[46] In 1720, 1760, and 1780, respectively, public service expenditures accounted for 5.5%, 2.5%, and 9.2% (average of 5.7%) of all spending in Angers (Maillard 2000, p. 175). Such variation was also evident in the Besançon budgets (9.5% in 1690, 3.4% in 1705, and 5.9% in 1710).

[47] It should be noted that the 1690 budget entries are in *francs* rather than *livres* (Pouchenot 1910, pp. 55–78). However, it is quite likely that these were actually livres, for, while francs went out of circulation in the 17th century, the term itself was typically a synonym for livres. See http://www.britannica.com/EBchecked/topic/215751/franc.

[48] This figure is available at http://chnm.gmu.edu/revolution/chap1a.html. A book version of the website's contents is available through Penn State University Press.

[49] The 1785 receipts are available in Goldsmith (1832). The 1695 central state income comes from European State Finance Database (n.d.).

of the communal spending was under the control of the central elite because the expended monies first passed through the central level of the state.

In terms of our definition of control, other communal expenditures were under control of the central elite because the central state mandated these expenditures and exercised appointive powers in these areas. This is true for the following areas: police, highways, education, and hospitals/poor relief (Le Comte de Franqueville 1875, p. 305; Chapman 1955, p. 46; Imbert et al. 1982, pp. 301, 313). These expenditures totaled 162.38 million francs (after applying the 22.2% adjustment explained previously), which must be subtracted from the above total and applied to the central elite. This leaves 12.537 million francs under the control of the masses.

As for the departments, public service expenditures were directed at roads and highways, the relief of the poor and lunatics, public worship, public education, and railways of local interest. These expenditures totaled 96.207 million francs. However, departments by this time had no independent powers of taxation. Thus, all of these monies came from the central state and are attributable to the central elite.

To determine the central elite's public service expenditure, it is first useful to tally what has already been attributed to them, that is, 50.768 million in centimes to the communes, 162.380 million on mandated services in the communes where the central state had appointive powers in the agencies responsible for delivering these services, and all spending (96.207 million) on public services in the departments, for a total of 309.355 million. Next, we need to estimate public service expenditures in the commune of Paris, as these were not included in Le Comte de Franqueville (1875). We continue to follow our empirically derived assumption (see above) that Paris accounts for 26.7% of all departmental monies in various areas, including public service expenditures. Given that 225.685 million (the total communal public service expenditures) is 73.3% of 307.893 million, we know that the difference between these two figures—that is, 82.208 million—is the 26.7% of all communal public service expenditures attributable to the commune of Paris and, thus, the central elite.[50]

Finally, a very large portion of public service expenditures was controlled by the central elite by virtue of direct management by the central state. To maintain consistency with the data for the departments and communes, we make use of the central state budget data from 1870 that are available from the Ministry of Public Instruction (1889, pp. 32–52). The central state expended large sums of money on a variety of public services including pensions for civil and military employees, post and telegraph service, public worship, education, police, poor and emergency relief, roads and bridges, and subsidies to Paris. These expenditures totaled 301 million francs in 1870.

Summary.—Central elite: 50.768 + 162.380 + 96.207 + 82.208 + 301 = 692.563 million (98.2%). Peripheral elite: 0 (0%). Central and peripheral masses: 12.537 million francs (1.8%). Total: 705.10 million.

Ottoman Empire

17th-Century Ottoman Empire

Faroqhi (1997, p. 541) provides detailed information on the 1669–70 central government budget.[51] He writes that the sultan spent 189.2 million akçe on the upkeep of his palace, which was 29.5% of overall expenditures. From this we can infer that total expenditures were 641,355,932 akçe. Besides the roughly 30% that went to the palace, nearly two-thirds of the expenditures went to military activities, leaving very little for other endeavors. Construction projects were 2% of expenditures, while another 0.5% went to the *hajj* and the inhabitants of medina. Thus, public service expenditures were 2.5% of all expenditures, for a total of 16,033,898 akçe. To this figure one must add (as explained below) the central elites' share of *waqf* public service expenditures—4,629 akçe—for a total of 16 million.

Sufficiently detailed provincial government data are generally nonexistent for this time period, which makes an estimation of the contributions of the peripheral elite rather difficult. However, thanks to the herculean work of Stanford Shaw (1958), we have specific information on expenditures in Egypt, which was under Ottoman control at the time. The Ottoman financial year of 1080 is the focus because it ran from September 1669 to September 1670, allowing an almost perfect match with the central budget data (Shaw 1958, p. xxviii). Because Shaw provides both total expenditures (p. 399) and public service expenditures (pp. 225–68) for decades before and after 1669–70, this allows us to average these figures in order to increase the reliability of the measure of this province's contribution to public service provision. Specifically, we derived an average based on the 40 years that straddle 1669–70.[52] For most public service expenditures,

[50] It is important to offer a caveat similar to one made in the context of estimating Paris's share of communal indirect taxes: To be sure, Paris was not the only commune in the Seine in the late 19th century. However, this city did account for practically the entire population: 2,226,023 out of a departmental population of 2,799,329 in the early 1880s (Ministry of Commerce and Industry [1886] 1968, pp. 31, 624, 627). While it would be possible, on the basis of this difference in population, to adjust further the share of public service expenditures controlled by the communes of the Seine, doing so would assume that the dramatically disproportionate share of expenditures dispensed by Paris was representative of the remaining communes in the Seine—an assumption that we do not make.

[51] Because of the accounting methods used by the Ottoman central government during this period, the only central budgets that contain unambiguous information on income and expenditures are those for 1527–28, 1660–61, and 1669–70. However, none of these three budgets includes *timars* (Sahillioğlu 1999, p. 67n3).

[52] Most of Shaw's (1958) tables report many more years before and after 1669–70 (Ottoman year 1080) and without distinguishing the time period we examine. For

the annual data are available for all 40 years. The average total expenditures—72,200,000 paras—are based on the three years for which data are available during this 40-year period.[53] The average annual expenditures related to public service provision (e.g., food and clothing for the poor, canal and mosque maintenance, water storage, pilgrimage, maintenance of holy cities) were 9,971,340 paras, or 13.8% of the total expenditures.[54]

Assuming that Egypt was representative of Ottoman provinces at the time, we can calculate public service provision expenditures controlled by the peripheral elite using the total expenditures for all provinces. Because this total expenditure figure is not available, it must be estimated. We do so by exploiting information on the relationship between provincial expenditures and total central income in 1527–28. Provincial expenditures were about 75% of central state income at that time (403.37 million out of 537.90 million; Inalcik 1994, pp. 82–83). Assuming that the same was true in 1669–70, when central state income was 596,655,932 akçe, then total provincial expenditures in that year were 447,491,949 akçe.[55] Generalizing the Egyptian figure of 13.8% dedicated to public service provision, the peripheral elite across the Ottoman Empire in the late 17th century contributed 61,753,889 akçe to public service provision.

The peripheral elite's control over public service expenditures was not confined to the institutions and resources of provincial governments. Peripheral elites also exercised substantial control over *waqfs*, which for centuries have been important charitable institutions in Islamic society. Founders of *waqfs* set aside some revenue-producing resources (usually buildings or land) for specific purposes, which quite frequently were and are religious or charitable in character. Once a *waqf* is formed, it exists in perpetuity (it cannot be sold or alienated in any fashion), and its net revenues are distributed to "the object of endowment" (Barnes 1987, p. 1), for example, the charitable purpose. At the same time, the founder "determined its purpose, conditions and forms of management, and appointed its ... chief trustee" (Inalcik 1973, p. 142). Over the centuries, *waqfs* have funded a variety of public services, including aid to the poor, public infrastructure projects, hospitals, and education (Barnes 1987; Hoexter 1998; Yüksel 1998; Leeuwen 1999).

Studies of more than 300 *waqfs* in the 17th century (Yüksel 1998, p. 220) and 6,000 in the 18th century (Yedıyıldiz 1975; cited in Barnes 1987, p. 43) confirm that actors we associate with the peripheral elite (e.g., the military class, state officials in the provinces, the religious class of *ulema*) controlled the vast majority of these endowments (Yüksel estimates 89% and Yedıyıldiz 90%), while Gerber (1983, p. 29) estimates that 2% of *waqfs* were set up by the sultan and his family. On the basis of these sources, *waqf* public service expenditures can be distributed in the following fashion: central elite, 2%; peripheral elite, 89.5%; and masses, 8.5%.[56]

To determine the portion of *waqf* public service expenditure money for the premodern period, we use Yüksel's (1998) major study of *waqf* expenditures between 1585 and 1683 (993–1095 on the Muslim calendar). Across this century-long period, total *waqf* expenditures were 18,936,073 akçe, or about 186,000 per year (p. 266). However, these figures come from the geographic expanse of modern-day Turkey, whereas the Ottoman Empire was much larger. According to population figures for the year 1867 provided by Karpat (1985, p. 25), the region that is now Turkey contained about one-half of the empire's population. Assuming equal expenditures per person inside and outside geographic Turkey, we therefore double the per-year expenditure to 372,000 akçe. A substantial portion of total expenditures, 63.5%, went to the provision of public services such as education, feeding and housing the poor, and maintaining an infrastructure for religious services (Yüksel 1998, p. 266). Thus, we estimate that in 1670, *waqf* expenditures devoted to public services totaled about 231,496 akçe. Adding the peripheral elite's share of this—207,189—to the figure calculated above yields a total of 61.961 million.

The masses' share of *waqf* public service expenditures totaled 19,677 akçe. Police protection was another public service controlled by the masses (fortification, however, never reached the importance of late medieval Europe, and we thus do not include such expenses in our calculations for the Ottoman Empire). Emecen (1989, p. 339) provides detailed data on expenditures for guards and night watchmen for the city of Manisa in 1572–73, which was an average-sized city at this time (Erder and Faroqhi 1980, p. 273; Emecen 1989, p. 54n270). Each guard was responsible for collecting his salary directly from town citizens. As of 1575, the city had a population of 8,245 (Emecen 1989, p. 55). The guards collected 55,608 akçe in salaries from the local citizens, yielding an average of 6.74 akçe per resident. How can this be generalized to the empire as a whole? The population of the Ottoman Empire was about 15 million in the late 16th century (Kinross 1977, p. 206). However, we assume that this service was specific to the urban population of the

example, many tables contain entries for 1020–82 (i.e., 1611–71; see pp. xxvii–xxviii). However, because annual expenditures are constant across these time periods, it is possible to determine the average for the 20-year period with which we are concerned. That these entries relate to annual expenditures is not manifestly evident from examining the table, but Shaw indicates as much in a number of discussions in the text (pp. 90–91).

[53] During this time, 1 para = 1.2 akçe (Inalcik 1994, p. 87), on average. However, this conversion is unnecessary, as we make use of the percentage of expenditures devoted to public service provision and generalize this to the empire as a whole.

[54] These were the input figures. All come from pp. 225–38, save for the last, which relates to spending on the pilgrimage and holy cities and comes from p. 268: 22,800 + 45,600 + 57,000 + 11,300 + 9,000 + 4,200 + 840,000 + 16,400 + 6,200 + 1,230 + 21,000 + 1,040 + 35,320 + 250 + 8,900,000 = 9,971,340.

[55] The central state income figure comes from subtracting the 44.7 million akçe in deficit expenditures noted by Faroqui (1997, p. 541) from the central state expenditure figure.

[56] This estimation of the masses' share is obviously residual, but it is also consistent with Yedıyıldiz (1975) (10% founded by the *reaya*, i.e., peasantry, artisan, and merchant classes). Yüksel (1998) attributes only 1% to the *reaya*, but 10% of his sample are classified as "unknown."

Ottoman Empire. According to Quaetaert (2001, p. 94), "from its inception until its demise [the Ottoman Empire] was an agrarian empire and economy [in which] three quarters of the inhabitants lived in the countryside and drew their livings from the soil and agriculturally related activities." Thus, we estimate the late 16th-century urban population at 3.75 million. By assuming uniformity in payment per person for city and town protection, we estimate that the masses spent 27,275,000 akçe. Combining this figure with the *waqf* estimate yields 27.295 million.

Summary.—Central elites: 16.039 million akçe (15.2%). Peripheral elites: 61.961 million akçe (58.8%). Masses: 27.295 million akçe (26%). Total: 105.295 million akçe.

19th-Century Ottoman Empire

We determined the central elite contribution to public service expenditures by averaging from the central state budget expenditures between 1874 and 1898 published by Shaw (1978). Compared to its premodern counterpart, the modern state during this time had vastly wider concerns in the area of public service provision. The central state was involved in public works, education, the administration of justice in both Muslim and non-Muslim areas (respectively, the Ilmiye Office and Ministry of Justice and Sects), policing, pensions for former government workers, postal and telegraph services, and funding of the holy cities and pilgrimages. Reported below is an average expenditure figure for each of these public service provisions (all figures are in *kurus*, rounded to the nearer hundred thousand):

- Holy cities and pilgrimage:[57] 36.5 million
- Pensions:[58] 61.7 million
- Post Office and Telegraph Service:[59] 39.1 million
- Ministry of Police and Gendarmerie:[60] 120.2 million
- Ministry of Justice and Sects:[61] 40.1 million
- Ilmiye Office:[62] 21.4 million
- Education:[63] 13.2 million
- Public Works:[64] 6.4 million

Total public service expenditures controlled by the central elite in an average year between 1874 and 1898 thus amounted to 338.6 million kurus. Adding to this figure the central elite's share of *waqf* public service expenditures—659,220 kurus—yields 339.259 million kurus.

Given our conception of control, it is necessary also to incorporate spending at the provincial level: By virtue of the 19th-century Tanzimat reforms, all tax money was collected in the name of the central state, went to the State Treasury, and returned to the local level on the basis of budgets approved by the central state (O'Meara 1894, p. 291; Shaw 1975). In order to determine how much of this spending at the local level could be attributed to the central state, we were able to obtain provincial expenditures from five provincial budgets between 1874 and 1898. The following is a list of these provinces followed by the year of the budget: Sivas (1898), Hüdavendigar (1895), Ankara (1882), Syria (1878), and Halep (1874). Budgets for the first three provinces are from Kilia (2000), while the Halep provincial budget is from Akkuş (2008) and Syria is from Saliba (1978, p. 311). According to these budgets, provincial governments provided hospitals, police, education, courts, mail service, and infrastructure projects. These expenditures totaled 28.8 million kurus. According to Karpat (1985, pp. 160–61), these provinces together accounted for 25% of the empire's population in 1897. Assuming equal per-person spending across the empire (i.e., multiplying by 4), provincial government public service expenditure totaled 115.2 million kurus on an average year between 1874 and 1898. Because the central state provided this money, we attribute this to the central elite.

Most of the *waqf* money, on the other hand, can be attributed to the peripheral elites. Demirel (2000) provides total *waqf* expenditures for the province of Sivas in 1835. The portion going to such public services as education, libraries, mosque maintenance, and public fountains is 480,000 kurus. According to Karpat (1985, pp. 160–61), Sivas accounted for about 5% of the empire's total population in the 19th century. Assuming equal expenditure per person across the empire (multiplying by 20), *waqf* public service expenditures totaled 9.6 million kurus.

A second data source allows us to mitigate the hazards of generalizing to the empire from a single province in the 1830s. Öztürk (1995, pp. 49–56) provides data on 60 *waqfs* across the 19th century (more precisely, 1802–1911), 38 of

[57] Starting in 1868, this item was moved to the Treasury of the sultan. Thus, the 1874–98 figure is based on an average of the years during which it appeared separately: 1860–67.

[58] Because this item was moved into the Ministry of Finance after 1881 and became indistinguishable, the figure reported is an average of 1874–81.

[59] This average is based on the following available years: 1874–75, 1877–78, and 1887–98.

[60] This average is based on 1887–98, as prior to this time most of the police funds were indistinguishable from the Ministry of Interior budget.

[61] This average is based on 1874–75, 1877–81, and 1887–98.

[62] This averaged is based on 1887–98.

[63] This ceased to be a separate item after 1878 when it was moved into the Ministry of Interior. Thus, this average is based on two years, 1874–75 and 1877–78.

[64] This ceased to be a separate item after 1878 when it was moved into the Ministry of Interior. This average is based on the available data from 1868–78.

these from 1868 or later (p. 49). All of these *waqfs* were located in Anatolia. Average spending on the range of relevant services (religious, educational, and social, the latter of which included municipal services and welfare) totaled 8,046 kurus per month for all 60 *vakifs*, or 96,552 kurus per year. This yields 1,609.2 kurus per *vakif* per year. This can be generalized to the empire because Öztürk (p. 56) provides the total number of *waqfs* in the empire: 35,000. Assuming all 35,000 *vakifs* had average annual public service expenditures consistent with the 60 *vakifs* in Öztürk's sample, *vakif* expenditures on public services during a typical year in the 19th century totaled 56,322,000 kurus. Given that the two different data sources and estimation methods yield different estimates, we average the two, which produces about 32.961 million kurus. Assigning 89.5% of this to the peripheral elite—29,500,092—pushes the peripheral elite total to 144.7 million kurus. The masses controlled 8.5% of total *waqf* expenditures, that is, 2.802 million kurus.

Summary.—Central elite: 454.459 million (93.4%). Peripheral elite: 29.5 million (6.0%). Masses: 2.802 million (0.6%). Total: 486.761 million. Table A1 gives an overview over the results of these various estimations.

Table A1. Summary of Empirically Measured Shares of Control

	Taxes (Postexchange)					Military Support (Preexchange)					Public Service Provision (Preexchange)				
	France, 1360–80	Ottoman Empire, 1521–96	France, 1780s	Ottoman Empire, 1870–1908	France, 1870–1900	France, 1180–1330	Ottoman Empire, 1470–1530	France, 1690	Ottoman Empire, 1870–1908	France, 1870–1900	France, 1322–50	Ottoman Empire 1669/70	France, 18th	Ottoman Empire, 1870–1908	France, 1870–1900
cE	42	36	87.3	90	90	18.5	32.5	12	.5	.4	.5	15.2	86.5	93.4	98.2
pE	46	49	8.3	0	4	68	61	8	12	4.2	91.5	58.8	1.8	6.0	0
cM	6	7	2.2	5	3	6.5	5	40	44	47.7	4	13	5.85	.3	.9
pM	6	7	2.2	5	3	6.5	1.5	40	43.5	47.7	4	13	5.85	.3	.9

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Appendix B from Kroneberg and Wimmer, "Struggling over the Boundaries of Belonging: A Formal Model of Nation Building, Ethnic Closure, and Populism"

(AJS, vol. 118, no. 1, p. 176)

Alliances and Exchanges in Empires

Understanding why social boundaries follow the estate order in imperial society provides the necessary background to our analysis of various paths of political modernization. Table B1 summarizes our model assumptions and lists again the empirical data on the resource distribution in empires, based on the historical research documented in appendix A. As can be seen, we model the "empire scenario" closer to the French data since the Ottoman Empire in the 17th century was more advanced in terms of the center's taxing capabilities as well as its relative military power (Barkey 1991, p. 704).

The historical data show, consistent with the historical sociology of empires (Eisenstadt 1963; Hechter 2000; Howe 2002; Barkey 2008), that the central elites of both societies relied on a system of indirect rule and taxation. They were able to raise only 10% of the taxes directly, while more than three-quarters of the overall tax volume (including income from seigniorial domains in France) was controlled by peripheral elites. The majority of public goods were also provided by peripheral elites (initial control of 0.85), such as through the hospitals founded and funded by the nobility or crusading orders in France or the religious foundations in the Ottoman Empire or the expenditures of Ottoman provincial governors to feed and clothe the poor, maintain canals and roads, public fountains, and the like. The remaining shares were controlled by the central elites on the one hand, who provided alimonies for the poor (in France), infrastructure and food for the pilgrims in Mecca (the Ottoman Empire), and funded maintenance/construction of major roads. On the other hand, the masses offered public goods through the hospitals and religious foundations founded by townspeople, the police patrols paid for by local communities, or the town fortifications, in which massive investments were made in Renaissance France.

Since in both empires the masses were excluded from supralocal political processes, they had no control over political decision making. Most of the control over this resource lay with the central elites at the political center (0.6). However, being relatively autonomous at the local or regional level, the peripheral elites also held significant shares of control (0.4) (on the political sociology of empires, see again Eisenstadt [1963]; Hechter [2000]; Howe [2002]; Barkey [2008]).

Military support was controlled predominantly by the peripheral elites (0.70), on whose troops the center depended to conduct large-scale war. In France, the king's army (the *arrière ban*) was mobilized through the principle of feudal fealty, while in the Ottoman Empire the beneficiaries of the right to tax the local population owed the sultan military support. The center's own army was still very small in Renaissance France (consisting of the royal family and the chevaliers of the high nobility, professional garrison soldiers, and royal militias), just enough to guarantee the king's security (0.20). It was considerably larger in the case of the Ottoman Empire, where the famous *sipahi* cavalry and the palace guards formed a formidable fighting force. Before the advent of universal conscription, the masses played a lesser role and provided only small, undisciplined militias or small contingents of mounted warriors in France or the frontier raiders around garrison towns in the Ottoman Empire (0.05 each).

We now turn to the interest distribution, for which we depend on plausibility arguments, as discussed in the main text of the article, because it is not possible to estimate them on the basis of quantitative empirical data. Since the masses were not organized to a degree that would have enabled them to formulate political demands relevant for the entire polity (cf. the "lateral insulation" in Gellner [1983, pp. 9–11]; Mann [1993, chap. 4]), they were not interested in political decision making at this level. Given that warfare at this point in history was still very much an elite (and mercenary) affair that did not mobilize or involve or concern the masses (Rogers 1995; more specifically regarding France, see Lynn [1997]), they were also not interested in exercising control over military support. Rather, their main interest was in control over taxation (0.85), that is, to retain as much of their economic revenue as possible to maintain what is considered an acceptable and morally justified subsistence-level existence (Scott 1976), as is evidenced by the prevalence of tax rebellions in premodern and early modern polities (Mousnier 1970; Kiser and Linton 2002). Moreover, it is reasonable to assume that they were interested in public service provision, but to a much lower degree (0.15), since they relied on family, guild, village, or the local lord to provide for basic forms of social security, policing, and education (on rural life in medieval Europe, see Duby [(1961) 1998]; on guilds in the Arab world, see Lewis [1937]).

In systems of indirect rule, by far the greatest concern of the central elite was to acquire control over taxation (0.59) in

order to finance their war enterprises, as a long line of research in comparative historical sociology has shown (from Tilly [1975] to Kiser and Linton [2001]). Besides this, we assume that they were interested in control over political decision making and military support (0.20 each) as two important sources for expanding their domain and power. Since the center fought larger wars than did the peripheral elite, it was more interested than the peripheral elite (0.15) in military support by allies. We assume that the latter was mostly interested in their control over taxation (0.30) and access to political decision making (0.45). This is again plausible in view of the constant political rivalries and wars between the French king and various factions of nobles from the provinces over taxation rights and access to political offices (Lachmann 1989), as well as the intense tug-of-war between the sultan and regional governors and military entrepreneurs (Inalcik 1980) or between the Ottoman center and various victims of its centralization policies that gathered under the mantle of Sufi orders and the call for religious renewal (Barkey 2008, chap. 5). Exercising control over public service provision was also of some interest to the peripheral elites (0.10) since the legitimacy of their rule in the eyes of the masses largely depended on their "good deeds" and the maintenance of functioning patron-client relations with their dependents (in general, for peasant societies, see Scott [1976]; for France, see the case study by Le Blévec [2000]; on the *waqfs* in the Ottoman world, see Barnes [1987]).

Given this specification of interests and control and assuming at this moment that actors do not care about cultural traits or markers when forming alliances, the estate order constitutes the equilibrium outcome. To make this result understandable, we describe why actors either have no incentive or are not able to unilaterally deviate from the equilibrium. In particular, we consider why the central and the peripheral elites do not also exchange with the masses. First note that the peripheral elite would do best if the exchange took place among all actors. The reason is that their control over taxation (a consequence of indirect rule) is highly demanded by all other actors. If classified together with the peripheral elites, the masses would want them to rescind some of their coercive control over taxation. The central elite likewise demands control over taxation from the peripheral elite.

For this reason, the central elites do much better if they do not have to compete with the masses in their demand for control over taxation. The central elite therefore use their first-mover advantage to propose the estate order. The peripheral elite accept this proposal (rather than trying to align with the masses) because they depend on the exchange with the central elite. It is only through this exchange that they can gain further control over political decision making and thus maintain their political autonomy. More concretely, the central elite transfer certain positions and rights to the peripheral elite and in return receive military support and taxation from the peripheral elite. Faced with the proposal of the central elite to form a group without the masses, the peripheral elite cannot but agree to this proposal if they want to end up in an alliance system with them. Given this situation and their interest in an exchange among elites, the peripheral elite do not formulate a counterproposal, and the estate order emerges as a stable status quo.

Again, the uncertainty behind our model assumptions makes it necessary to investigate the robustness of this result. Similar to figure 3 in the main text, figure B1 depicts the equilibria of various "empire scenarios" that result under different assumptions regarding state centralization, mass mobilization, and cultural differentiation across different actors. The equilibrium of the empire scenario as described above is depicted in the middle of the left-hand-side graph.

The graphs were constructed by starting from an extreme version of the empire scenario in the lower-left corner and incrementing indicators of state centralization (y-axis) and mass mobilization (x-axis) from there on. On the x-axis, control over military support by the masses varies from 0.02 to 0.08. The second indicator of mass mobilization—their interest in political participation—is held constant since it takes on a value of zero in the empire scenario. On the y-axis, the asymmetry in control between the central and peripheral elite varies starting from the scenario of an extremely weak center in the lower-left corner. In this extreme empire scenario, the peripheral elite's control over political decision making equals 0.53, over public goods provision 0.88, over military support 0.83, and over taxation 0.86. Moreover, the peripheral elite are less interested in control over public goods provision (0.07), as are the masses (0.12). With increasing state centralization, the central elite's control relative to that of the peripheral elite increases, as does the other actors' interest in control over public good provision.

The left-hand-side graph shows the equilibrium alliance systems that result if there is no cultural differentiation (or if it is of no interest to the actors). The middle graph represents the outcome when cultural differentiation proceeds along status lines. The right-hand-side graph depicts the equilibria for an ethnic trait distribution. As can be seen, the estate order always constitutes an equilibrium, independent of the landscape of cultural difference. When it is backed by a class-cultural differentiation, it constitutes the only equilibrium under all 25 model runs. Under an ethnocultural differentiation, six of the model runs lead to an enlarged estate order as an additional second equilibrium. Rather than representing an entirely different kind of outcome, this alliance system can be regarded as a variant of the estate order where preferential treatment allows one of the masses to enter into an exchange relationship with the elites (think of the constitutional monarchy in Great Britain in the early modern period or of France under Louis Philippe, when the royal house and the aristocratic elites granted limited voting rights to the bourgeois middle classes).

If cultural difference is irrelevant, three of these will feature nationhood as a third equilibrium. Note, however, that

these nationalist equilibria are relatively far removed from the middle of the graph that corresponds to our actual (and empirically calibrated) assumptions for the empire scenario. In any case, the empirical data that we have collected for Renaissance France and the Ottoman Empire of the Classical Age put these two societies very squarely at the center of zones for which our model predicts the estate order as the outcome. For historically plausible reasons, discussed in the main text, we assume that a class-cultural differentiation was prevalent in Renaissance France, while the Ottoman "empire of difference" (Barkey 2008) was marked by institutionally supported cultural differences between ethnoreligious communities. Figure B1 suggests that in these two societies, the elite coalition and the exclusion of the masses were a rather stable outcome that would survive considerable variation in the degree of state centralization (such as that brought about by external wars) or the military mobilization of the population.

Table B1. Control and Interest in an Empire: Model Assumptions and Empirical Data

	Control Over					Interest in			
	Political Decision Making	Public Goods Provision	Military Support	Taxation		cE	pE	cM	pM
	Model Assumptions								
cE	.6	.05	.20	.1	Political decision making	.20	.45	0	0
pE	.4	.85	.70	.8	Public goods provision	.01	.10	.15	.15
cM	0	.05	.05	.05	Military support	.20	.15	0	0
pM	0	.05	.05	.05	Taxation	.59	.30	.85	.85
	Empirical Data								
France 1280–1350:									
cE	NA	.005	.185	.42					
pE	NA	.915	.68	.46					
cM	NA	.04	.065	.06					
pM	NA	.04	.065	.06					
Ottoman Empire 1470–1670:									
cE	NA	.152	.325	.36					
pE	NA	.588	.61	.49					
cM	NA	.13	.05	.07					
pM	NA	.13	.015	.07					

Note.—The control matrix gives the preexchange distribution of control for each resource (i.e., the relative shares of control exercised by the actors). The interest matrix gives the distributions of interest for each actor (i.e., her relative interest in the resources). Empirical data on control over taxation, however, represent postexchange values because preexchange controls cannot be measured empirically. The comparable postexchange values generated by our model in equilibrium are (.42, .48, .05, .05).

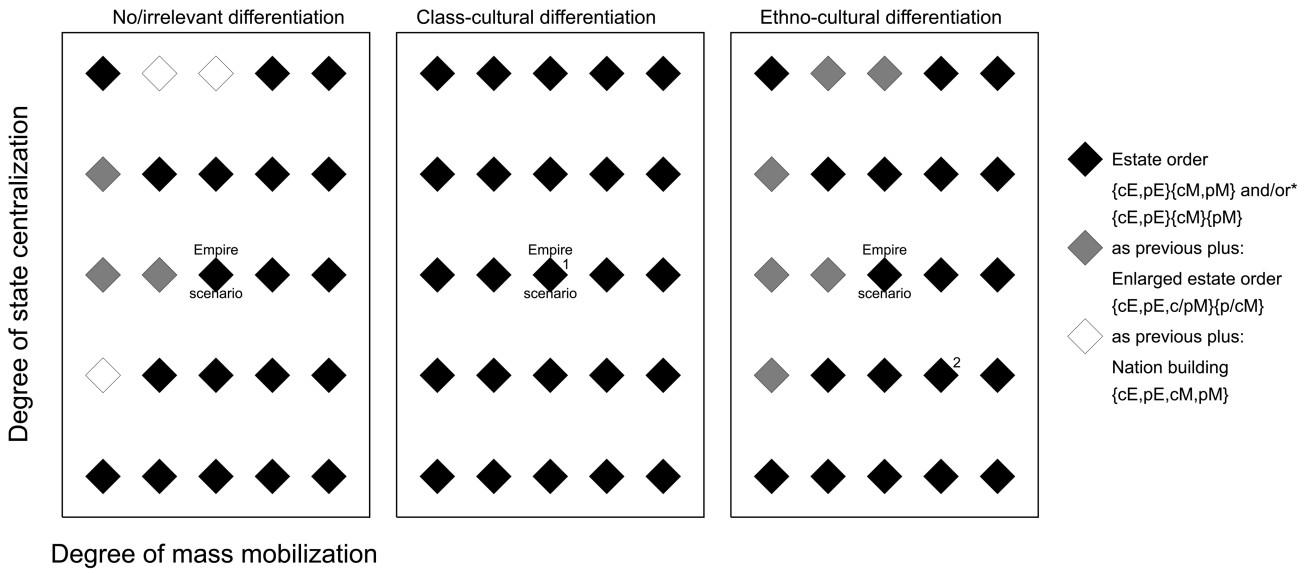

FIG. B1.—Equilibria in the "empire scenario" under no differentiation, a class-cultural, and an ethnocultural differentiation. cE = central elites, pE = peripheral elites, cM = central masses, and pM = peripheral masses. Numbers indicate simulations that correspond most closely to empirical measures: 1 = France 1180–1380, 2 = Ottoman Empire 1470–1670. *Both under irrelevant differentiation, only {cE, pE}{cM, pM} under class-cultural differentiation, only {cE, pE}{cM}{pM} under ethnocultural differentiation

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Appendix C from Kroneberg and Wimmer, "Struggling over the Boundaries of Belonging: A Formal Model of Nation Building, Ethnic Closure, and Populism"

(AJS, vol. 118, no. 1, p. 176)

Sensitivity Analysis

In this appendix, we describe the setup and results of a sensitivity analysis that ensures that our inferences do not depend on fragile assumptions (Saltelli et al. 2008, p. 34). We concentrate on our main result, namely, that a greater level of state centralization leads to the emergence of nationhood, while acting against ethnic closure and populism. This result was derived under specific assumptions regarding the distributions of interests and control. Where available, we used historical sources of quantitative data to empirically ground our assumptions about resource distributions (see app. A). However, these estimations necessarily entail some degree of uncertainty. This also holds true with regard to actors' interests, since our assumptions are based on historical plausibility assumptions alone.

The sensitivity analysis randomly varies the exact specification of the control and interest matrices that define the transition from weak to strong state centralization (as represented by the *y*-axes of fig. 3 in the main text). We then record whether the corresponding shift in alliance systems is in line with our main conclusion or contradicts it.[65] A contradiction occurs whenever greater state centralization leads away from nation building or toward ethnic closure or populism. These changes constitute the dependent variable of the sensitivity analysis. Throughout the analysis, we assume a strong civil society ($U^{\text{meaning}} = 0$) since the impact of this one-dimensional factor is already well understood. We also assume mass mobilization to be medium or strong (varying the exact values randomly). On the basis of the results reported in the main text, we expect that this factor influences the equilibria only at the margin.

The independent variables of the sensitivity analysis are the parameters that define weak and strong state centralization. For each of these parameters in the control and interest matrices, we define an *interval* Δ of reasonable values (which includes our empirically estimated or assumed values). These intervals span a multidimensional distribution of input parameters. Since the number of parameters is high, it is impossible to derive the complete multidimensional "response surface," that is, how the dependent variable changes as a function of the input parameters (Oliver 1993; Oliver and Myers 2002). The most widely used strategies are therefore local derivates or simple one-factor-at-a-time approaches (Saltelli et al. 2006). However, such approaches are clearly insufficient as they cannot account for nonlinear effects and interactions (Oliver 1993; Oliver and Myers 2002). For our purposes, we need a method that can not only deal with such effects and interactions but also handle a large number of input factors and is computationally efficient by requiring a relatively small number of model evaluations. We use the elementary effect test developed by Morris (1991) and extended by Campolongo, Cariboni, and Saltelli (2007), which is best suited to deal with this kind of situation (Saltelli et al. 2008).

In the elementary effect method, each of k independent input factors X_i ($i = 1, \ldots, k$) is allowed to vary across p selected levels. For a given vector $\mathbf{X} = (X_1, X_2, \ldots, X_k)$, the elementary effect of the ith input factor is defined as

$$EE_i(\mathbf{X}) = \frac{[Y(X_1, X_2, \ldots, X_{i-1}, X_i + \Delta, \ldots, X_k) - Y(\mathbf{X})]}{\Delta},$$

where Δ is the size of the sampling step in the scale [0, 1] after the range of each factor has been rescaled on this interval (Saltelli et al. 2008, pp. 110, 120).[66] Although this method also varies one factor at a time, it computes several elementary effects for each variable at different points of the input space. Averaging over these elementary effects allows one to arrive at a sensitivity measure that is increasingly independent of the specific points at which the elementary effects are computed (Saltelli et al. 2004, pp. 92–93). It is thus a global method in the sense of exploring several regions of the input space. This also ensures that possible interactions among input factors can be detected.

Since it is impossible to compute all elementary effects, special techniques have been developed that lead to an

[65] Note that our focus remains on how shifts in the configurations of interests and control have an impact on the resulting alliance system (instead of looking at sensitivity of point predictions, e.g.). This follows from the purpose of the sensitivity analysis being to test the robustness of our main substantial inference. The overriding importance of clearly defining the underlying purpose of a sensitivity analysis and to focus on a model's key implications of interest is stressed by Saltelli et al. (2008, p. 41).

[66] More precisely, Δ is a value in $\{1/(p-1), \ldots, 1 - 1/(p-1)\}$, since the sampling steps occur on the p-level grid Ω into which the input space has been discretized. Also, the point that one arrives at when incrementing or decrementing a factor in $(X_1, X_2, \ldots, X_k)$ by Δ has to lie still in Ω (Saltelli et al. 2008, pp. 110, 120).

efficient sample of elementary effects (Morris 1991; Campolongo et al. 2007). Denoting the number of input factors by *k*, the idea is to build "r trajectories of (k + 1) points in the input space, each providing k elementary effects, one per input factor, for a total of r(k + 1) sample points" (Saltelli et al. 2008, p. 113). Thus, a trajectory constitutes a particular path through the multidimensional input space that varies one factor at a time. Following the sampling strategy developed by Campolongo et al. (2007), we select the *r* trajectories in a way that maximizes their spread in the input space (Saltelli et al. 2008, pp. 110, 120). Following recommendations in the literature, we select a set of 10 (out of 500 randomly generated) trajectories that satisfies this criterion.

In applying the elementary effect method to corroborate our main conclusion, a number of special features have to be taken into account. Most important, we rely on the method's capability to vary groups of input parameters since several dependencies exist among input parameters. In total, the control and interest matrices (each of size 4 × 4) for the weak and strong state centralization amount to 64 input parameters. The effective number is smaller since parameters that do not vary with state centralization are held constant. Assumed to be identical for weak and strong centralization are the central elite's interests, the peripheral elite's interest in taxation, the masses' interest in military support, and the masses' control over political decision making and over provision of public goods. This means that we retain our theoretical assumption that these parameters are not related to state centralization. Subject to the sensitivity analysis are the specific values at which these parameters are held constant. We also retain our simplifying assumption that both masses have identical shares of control and relative interest.

Besides these equality restrictions that represent substantial assumptions of our application, the general properties of Coleman's exchange model imply that relative interests of each actor sum up to 1, as do relative shares of control over each resource. Both kinds of restrictions mean that one cannot vary each parameter independently. Rather, parameters are varied within groups so that all restrictions are met when randomly drawing parameter values.

The restrictions just described yield eight groups of parameters: control over political decision making, control over public goods provision, control over military support, control over taxation for weak state centralization, control over taxation for strong state centralization, interests of the central elites, interests of the peripheral elites, and interests of the masses. Table C1 gives the intervals of the input parameters used in the sensitivity analysis. The intervals are generally of size 0.10 and are centered at the empirically measured or assumed value reported in the main text. The random draws can select one of three levels: the mean value or the lower or upper bound of the intervals. Whenever a group moves within a trajectory, a set of parameter values that satisfies its internal restrictions is drawn randomly. Together, this implies that individual parameters shift either by .05, .10, or not at all. We modified these rules for parameter values already close to the extremes. For example, where relative interest is assumed to be practically zero, it seems sufficient to vary it by .05.

Since there are eight groups of parameters, a trajectory in which each group moves once encompasses nine different parameter lists. Each parameter list corresponds to a different specification of weak and strong state centralization (within the intervals given in table C1). As in the main text (cf. fig. 3), six model evaluations are used to analyze the shift from one to the other scenario. Thus, in total, our sensitivity analysis is based on 90 parameter lists (10 maximally spreading trajectories, each comprising nine parameter lists) and 540 model evaluations.

None of them resulted in a pattern of alliance systems that contradicted our conclusion that greater state centralization leads to the emergence of nationhood, while acting against ethnic closure and populism. Our sensitivity analysis therefore establishes the robustness of this result, at least within the intervals as presented in table C1.

Trivially, if we increased the intervals on which the sensitivity analysis was performed, we would ultimately run into shifts of alliance systems that contradicted our result.[67] However, we deem it sufficient that our main conclusion holds in intervals of size .10 around the empirically measured or substantially plausible values specified in the main text. Differences of .10 are substantial, given that parameters range from 0 to 1 and constitute relative interests or shares of control (so that a shift by .10 implies an equally sized counteracting shift with respect to the remaining interest or control parameters).

[67] Note that we refrain from doing so since we employ the elementary effect method in order to check the robustness of our main conclusion within a range of reasonable values. Such an "uncertainty analysis" is different in purpose from a sensitivity analysis that is substantially interested in different sources of uncertainty in model output (Saltelli et al. 2008, p. 1).

Table C1. Parameter Intervals on Which the Sensitivity Analysis Was Conducted and for Which the Impact of State Centralization Was Confirmed

	Political Decision Making				Public Goods Provision			
	cE	pE	cM	pM	cE	pE	cM	pM
C_{weak}	[.7 .8] (.75)	[.2 .3] (.25)	[0 .05] (0)	As cM	[.5 .6] (.56)	[.35 .45] (.38)	[0 .05] (.03)	As cM
C_{strong}	[.85 .95] (.90)	[.05 .15] (.10)	As C_{weak}	As cM	[.85 .95] (.91)	[0 .1] (.03)	As C_{weak}	As cM
	Military Support*				Taxation			
	cE	pE	cM	pM	cE	pE	cM	pM
C_{weak}	[.05 .15] (.13)	[.05 .15] (.38)	[.35 .45] (.25)	As cM	[.15 .25] (.20)	[.15 .25] (.20)	[.25 .35] (.30)	As cM
C_{strong}	(.05)	Held constant (.05)	(.45)	As cM	[.45 .55] (.50)	[.05 .15] (.10)	[.15 .25] (.20)	As cM
	cE				pE			
	Decision	Public	Military	Taxes	Decision	Public	Military	Taxes
X_{weak}	[.15 .25] (.20)	[0 .05] (.01)	[.15 .25] (.20)	[.55 .65] (.59)	[.05 .15] (.10)	[.1 .2][a] (.15)	[.4 .5] (.50)	[.2 .3] (.25)
X_{strong}		As X_{weak}			[.25 .35] (.30)	[.15 .25][a] (.20)	[.2 .3] (.25)	As C_{weak} (.25)
	cM				pM			
	Decision*	Public	Military	Taxes	Decision*	Public	Military	Taxes
X_{weak}	[.45 .55] (.20)	[.15 .25] (.20)	[0[b] .05] (0)	[.15 .4][c] (.60)		As cM		
X_{strong}	Held constant (.50)	[.35 .45] (.40)	As C_{weak}	[0 .2][c] (.10)		As cM		

Note.—Parameter values used in the main text are given in parentheses below the intervals used in the sensitivity analysis.

*Indicators of mass mobilization are varied together and held constant within each trajectory.

[a]Restriction: Peripheral elite's interest in public goods provision under strong state centralization is at least as high as under weak state centralization.

[b]In the sensitivity analyses, we use a value of .001 instead of 0 for the masses' interest in military support. The reason is that a relative interest of exactly 0 leads actors to give away their control over the resource for free. In our context, this is an unrealistic scenario and produces a few instances of sensitivities. All the results reported in the main text are robust with regard to this technical decision.

[c]Masses' relative interest in taxation is set equal to the remaining share after the other three interest parameters have been drawn.

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