The Geography of the Nazi Vote: Context, Confession, and Class in the Reichstag Election of 1930

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The *Nationalsozialistische Deutsche Arbeiterpartei* (NSDAP or Nazis), under the leadership of Adolf Hitler, began its political life in Germany with limited popular appeal (3 percent of the vote in 1924). The breakthrough for the Nazis came in the Reichstag (parliament) election of 1930 when they won 18.3 percent of the vote, up from 2.6 percent in 1928. Hitler assumed the chancellorship in 1933 after the party won 32 percent of the vote in the 1932 elections. Not surprisingly, the electoral behavior of voters in Weimar Germany has been a focus of the research on Hitler's rise to power. Who voted for the NSDAP? What social, economic, and political concerns of individuals shaped their voting decisions? These questions on the composition of the NSDAP electorate endure, in part, because of deep disagreements among various theoretical perspectives on the composition of the Nazi electorate. An examination of voting behavior in Weimar Germany that allows ample scope for local and regional contexts offers, we believe, a more satisfactory explanation of how a party, in hindsight so abominable, gained such widespread support.

In many studies of the NSDAP vote, space and context are implicit, particularly in those that acknowledge regional variations in German voting. At a national scale, Pollock (1944) demonstrates the spatial variation in NSDAP support across the 35 electoral districts in Germany. Passchier (1980) points out the regional deviations from the national average of the NSDAP vote. Meanwhile, regional case studies (Tracey 1975 for Thuringia; Faris 1975 and Grill 1983 for Baden; Heberle 1943 and Brustein 1990 for Schleswig-Holstein; Noakes 1971 for Lower Saxony; and Pridham 1973 for Bavaria) examine local patterns in the growth of the NSDAP and its electoral support and thus implicitly recognize the heterogenous nature of Germany. This paper addresses spatial heterogeneity and dependence in a multivariate analysis of national elections. We attempt to bridge the differences between national and regional interpretations by integrating spatial and contextual approaches with the usual socio-economic predictors.

The neglect of space and place in Weimar voting research parallels wider trends in the social sciences. Agnew (1989) has recently noted the devaluation of place as an analytical concept in the social sciences. Concepts such as class and ethnicity predominate, and expressions of place receive modest attention. Meanwhile, geographers are shifting their attention to a middle ground, where regions are viewed as the products of mediation between local responses and general processes. Domain-specific models are preferable because "general propositions or 'laws' will miss important processes and relationships that occur in various sub-systems, sub-groups or, more limited, context-specific sets of actors or patterns of interaction" (Most and Starr 1989:18). From this point of view, the electoral mosaic of the Weimar Republic was the result of a long history of aggregate social-cultural, economic, and political processes that took on different forms in different places.

In electoral geography, context has been

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defined as comprising three elements: 1) locale, the setting for routine social interaction; 2) location, the role of the place in the world-economy; and 3) sense of place, the socialization that comes with living in a place (Agnew 1987:5). Electoral geographers (Johnston 1991) take these contexts seriously. By and large, they hold that the conventional socio-economic variables used to explain the levels of party support in localities are frequently inadequate, and that place-specific structures affect these variables in an additive manner. Expressions of local "collective memory" (Johnston 1991:50) can be seen, for example, in studies of contextual effects in Italy (Agnew 1987), Scotland (Mercer and Agnew 1988), and the southern United States (Johnston 1991). These contextual effects are a mixed bag. They may turn on the differential impact of party organization, extended family and social networks, the appeal and vigor of candidates beyond the party attraction, local campaign effects, party competition, and local political culture. Since these effects operate severally and together, it is difficult to isolate the role of one of them from their recursive circumstances. The geographers' concept of context is not uncontested, however. McAllister (1987:45) has attacked geographers for cherishing "the idea that where a person is, rather than what they are, has an influence on behavior." Contextual effects are, in his view, "vastly overestimated" and methodologically dubious, the result of insufficient controls on individual characteristics or the failure to measure them in a correct manner.

McAllister's critiques notwithstanding, regional and local contexts produced by the historical-spatial development of Germany seem especially important in electoral studies of the Weimar period. The central role of locally based interest groups in modern German history should not be ignored. Tilly et al.'s (1975) structural view of German modernization about 1900 sets the stage for local politics. They describe a Germany that was in the throes of an industrial-political transformation and the commodification of social relations of production, and in which the centralization of administrative power, specialization of industrial functions, and market relations displaced their opposite numbers. Politically, this transformation involved the construction of national representation through the vehicles of parties and trade unions. The historical form of German politics—collective violence based on local interest-group representation—was giving way to "an authoritarian, paternalistic government. The Weimar political scene represented an unsteady alliance of these two systems" (Fritz 1984:251). The traditional importance of local interest groups in German politics and the precarious credibility of the state and parliamentary democracy opened a window on the Nazi party's ability to adjust its appeal to fit local needs within a broad *völkisch* (national-populist) appeal (Stachura 1980). The regional heterogeneity of politics thus provided a legacy on which national politics developed. In this interpretative context, it is hard to imagine studies of Weimar elections that are unsympathetic to these spatial differences.

The student of the Nazi party electorate is handicapped by the lack of survey data on individuals and must rely on aggregate voting and census data. The coverage of the aggregate voting data is excellent (every election) and the units of data collection are exceedingly fine—more than 6,000 spatial units of analysis (Falter 1990). These data lend themselves to incorporation into a geographic information system (GIS) and to analyses of spatial characteristics (contiguity and geographic distance, among others) in multivariate models. Thanks to the recent development of analytical tools that combine GIS, exploratory spatial data analysis, and spatial econometrics (Goodchild, Haining, and Wise 1992; Anselin and Getis 1992; Anselin, Dodson, and Hudak 1993; Anselin 1994), we may at last tackle a longstanding problem in social science, a problem that demands mixed geographical/social theories of electoral behavior. With a data set of this size (n=921), the spatial econometric methods could not have been implemented without the use of a GIS to create accurate weights (both distance and binary contiguity) matrices. The exploratory spatial statistical maps generated insights into the regional effects and guided the second (modelling) part of the analysis.

In this paper, we look again at Weimar Germany focusing our geographic lens on one of history's portentous elections—1930. That lens enables us to see the regional divisions of Weimar Germany and to envision the NSDAP vote as a mixed socio-economic and spatial process; the usual factors accounting for NSDAP support are evaluated in local contexts and the

explanatory contributions of regional spatial heterogeneity and locational spatial dependence are weighed and assessed.

Explaining the NSDAP's Electoral Support: Competing Theories

Interpretations of the NSDAP's electoral support have been informed by five theoretical frameworks. These interpretations have tended to move over time from univariate explanations to an understanding of the Nazi electorate as multivariate and diverse. Regional and local contexts tend to be discounted as aberrations from national trends. Recent research, deploying aggregate data and modern statistical tools—including the controversial ecological regression—has yielded some convergence of opinion around Jürgen Falter's (1990; 1991) position that the NSDAP constituted a "catch-all" party with cross-class and, to a lesser extent, cross-religious appeal.

Interpretations of the rise of the NSDAP may be divided into five schools of thought. The earliest, class theory (Sweezy 1942; Neumann 1942; Lipset 1960), maintains that each social stratum formulates its own democratic and extremist forms of political expression. More specifically, class theory posits that the middle classes of Weimar Germany deserted bourgeois-liberal parties due to the processes of economic concentration and centralization, as small family-owned shops, for example, became uncompetitive with the appearance of large department stores. If this theory is correct, it must be shown that lower middle-class defectors from centrist parties constituted the majority of those who voted for the NSDAP. Although evidence of the desertion of bourgeois-liberal parties by the self-employed middle class is lacking, the key independent variables of class theory—self-employment and certain sub-groups of the middle class—should be acknowledged in multivariate modelling of the NSDAP vote.

The second school of thought focuses on a theory of mass society (Loomis and Beegle 1946; Bendix 1952; Arendt 1958; Kornhauser 1959). This theory relies heavily on the concept of "anomie," the alienation of individuals from society with the breakdown of traditional political and social ties in the transition from traditional to modern society. Social upheaval and the ensuing recruitment of individuals by extremist organizations on the left and right are manifestations of the transition. In this theory, the strength of traditional institutions is critical. Strong institutional networks based on trade unions and the churches offer some immunization to extremist recruitment. According to proponents of this theory, the key variables for explaining the NSDAP vote are the proportions of young voters, previous non-voters, and the unemployed, along with the size of settlement (the larger the settlement, the more alienating) (Arendt 1958). The difference in turnout between elections incorporates both demographic (newly-eligible voters reaching voting age) and political effects (the mobilization of supporters to the parties). The notion that the NSDAP benefitted strongly from previous non-voters in the 1930 election has been questioned by Falter (1986a). There is no evidence that the demographic effects were important between successive elections. To date, consistent support for these variables has not been found.

The third school of thought on NSDAP support emerges from critiques of the theories of class and mass society. This theory of "political confessionalism" focuses on the roles of institutions and traditional voting loyalties (Burnham 1972). The theory explains the NSDAP's inability to capture large shares of the votes of the industrial proletariat and of Catholics by pointing to the existence of alternative institutions that provided their members with a lifelong socializing environment. These institutions and their socializing effects translated into strong attachments to existing parties—the Zentrum (Center) party for Catholic voters or the KPD (*Kommunistische Partei Deutschland*) for Communist voters—attachments that the NSDAP was unable to break. The NSDAP offered a counter-confessional appeal; supporters were promised the tangible benefits of jobs plus the spirit of membership in a *völkisch* movement. Although many studies support this theory (Heberle 1943; Falter 1990), the political identification of the Catholic and industrial proletariat sections of the German population was rarely complete (Brown 1982; Childers 1983). The key variables of this "confessional" school are religion (Catholic versus Protestant) and manual workers in industry.

A fourth school of thought on the NSDAP,

developing also from critiques of the earliest works, is termed the "catch-all protest party." Sometimes called a "*Volkspartei*" (Falter 1990), this bloc attracts votes from a wide band of the social-class spectrum. Childers (1983) regards the electoral support of the NSDAP as "sociologically fluid"; other analysts reach similar conclusions (Kele 1972; Hamilton 1982; Falter 1990; Paul 1990; Zitelmann 1989) while emphasizing the inadequacy of the class and mass theories. Although the "catch-all" perspective seems to have the most adherents, it offers little in the way of an explicit alternative theory. NSDAP party membership data tend to support the "catch-all" hypothesis (Kater 1983; Brustein 1993), which by definition, requires no key variables for its explanation.

The fifth and final school of thought on NSDAP support is based on "economic self-interest." Brustein (1990; 1993) regards NSDAP supporters as "rational fascists" who assess their material situation against perceived benefits obtained by voting for and joining the NSDAP. His explanation is not purely materialist since he also considers the role of community networks and organizations within regions. Material experiences are related to the mode of production within which people work and its profitability within the world-economy. Similarly, Abraham's (1986) discussion of industry and agriculture within Weimar Germany, and the relative profitability and economic strength of different economic sectors, promotes a rational actor account of NSDAP voters, especially since Hitler's party specifically addressed these industrial and agricultural concerns in party manifestoes. From the vantage point of voting as self-interested, the key variables are not class-based but consist of indicators of stress on the local economic base, namely debt, unemployment, farm size, agricultural specialty (livestock and dairy or grain), heavy industry, and export industries.

Research on the NSDAP in Weimar Germany also provides rich insights into the explanatory roles of class and religion, especially the dichotomy between Catholics and Protestants. These variables are regionally based. In a country with such a short history of democratic elections and national citizenship, Weimar Germany's traditional regional loyalties and attachments were severely tested. But while class and religion correspond roughly with regional lines, these variables do not fully account for regional electoral variations. Regional "collective memories," social formations and cultures (promoted by national institutions like the Army, which was still organized on a regional basis), and a decentralized political system, that included elections to Land parliaments, all contributed to regional and local identities. These identities were frequently more important than class loyalties. This is suggested when a "local attachment" variable, measured by previous votes for the Nazi party, is included in a regression of the 1930 election, the value of the R^2 increases from 0.28 to 0.45 (Falter 1991). The NSDAP took advantage of this regional-national tension by centralizing their propaganda activities while remaining sensitive to local and regional diversity produced by centuries of cultural-historical legacies, for example, in Lower Saxony (Noakes 1971) and in the city of Marburg (Koshar 1986). In regions with a history of anti-Semitism, like Middle Franconia, and parts of Hesse and Westphalia-Rhineland, the NSDAP emphasized the myth of the Jewish threat to German economic sovereignty, while in urban areas like Berlin and Hamburg they stressed an anti-capitalist message (Kershaw 1983; Stachura 1980).

If the twin ideologies of the German *Volk* and local loyalty provided the foundations for place-based, cross-class support for the NSDAP, economic restructuring provided the building blocks. Restructuring breeds competition among classes but it also breeds competition among places. Firms need to maintain capital flows while the local state and its population need to defend their investments and roles in the national community (Cox and Mair 1988). Within localities, cross-class support is generated to forge social relations of production which allow for the continued profitability of local businesses. In this fashion, the material base of a place intersects with politics that emphasize the material needs of the place and the subsequent benefits to all classes of its residents.

A detailed review of local and regional studies of national socialist support in Germany finds that it varied widely because of regional appeals and local idiosyncracies (Grill 1986) (Figure 1). The numerous examples of local and regional attachments, manufactured by

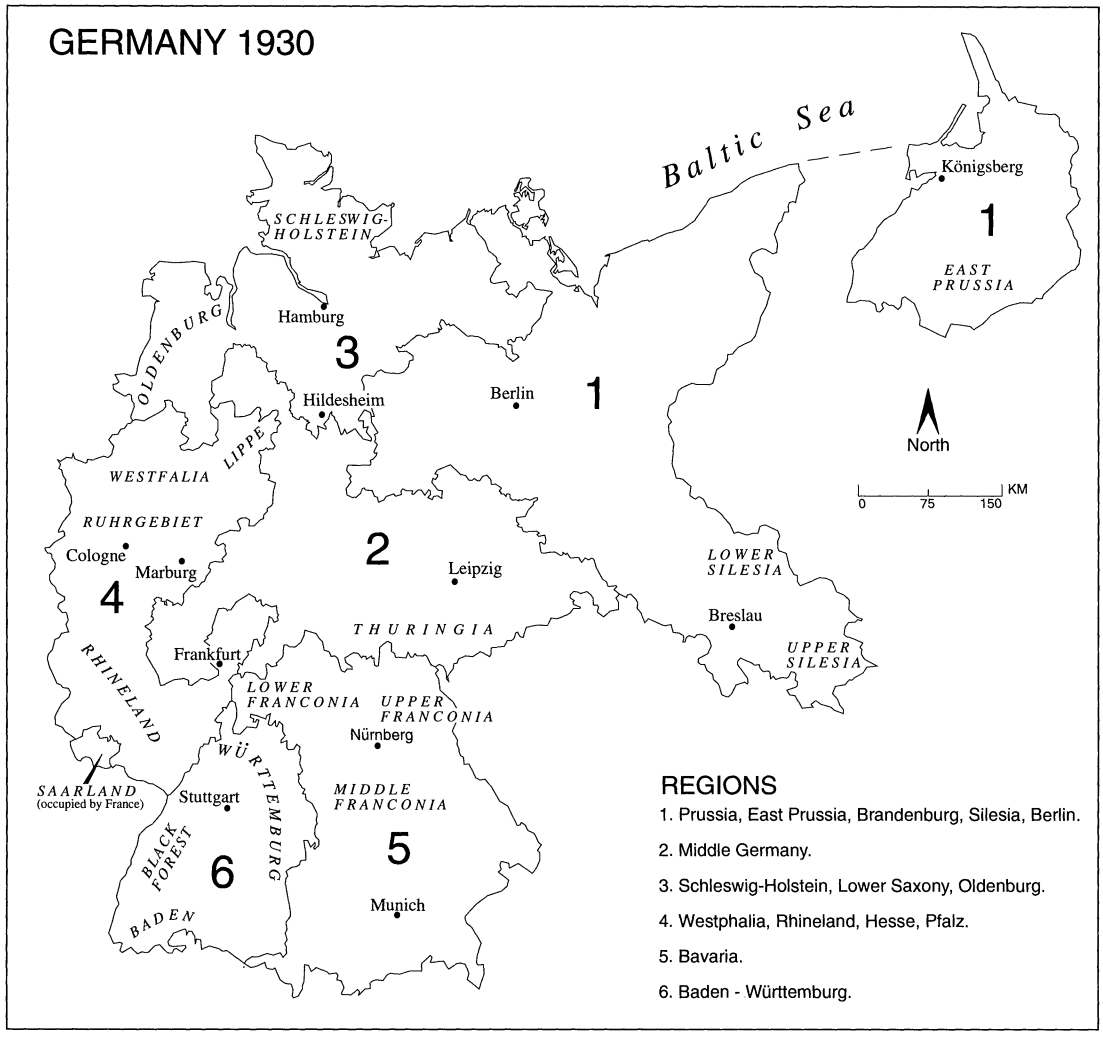


Figure 1. German regions and places mentioned in the text.

centuries of place-specific social practices and collective memories, defy any notions of a national electorate in Weimar Germany. In the adjoining localities of Hildesheim and Lippe of Central Germany, for example, the NSDAP picked up support from different parties; in Hildesheim, the support came from the DVP (German People's Party) while in Lippe, voters shifted from the DNVP (German National People's Party). In Southwest Germany, Baden was predominantly Catholic and had a SPD (socialist)/Zentrum (Center Party supported by Catholics) state government until 1932. On the other hand, the adjoining state of Württemburg, a strongly Protestant area, had a government coalition that had excluded the socialists since 1923. The location of Baden on the French border and the loss of its former trade with Alsace (across the Rhine and made part of France by the Treaty of Versailles) had

greater economic and psychological effects than in areas further removed from the border. Fear of Marxists in power was not an electoral factor in Württemburg. These conditions combined to produce much stronger support for the NSDAP in Baden (Grill 1986). Even at a more local level in Baden, adjoining villages exhibited different levels of support for the NSDAP. In the southern Black Forest, villages with an economic base consisting of trade and industry as well as rural peasants turned to the NSDAP after the collapse of a local protest movement (*Badische Landbund*) in the late 1920s.

There are instances when confessionalism and economic self-interest intersected and reinforced support for the NSDAP. In Franconia, Catholic Lower Franconia never gave more than 25 percent of the vote to the NSDAP before 1933, while in Protestant Upper and Middle Franconia, the NSDAP exceeded the 25 percent level by 1924 and received almost half of the total vote in July 1932. An economic self-interest explanation has been mixed with confessional differences in Franconia and elsewhere. In Westphalia, Stone (1982) attributed the geographical differences in NSDAP support to the incurring of debt, and ensuing high interest charges, by Protestants, making them vulnerable to the NSDAP appeal. They were also aware that their Catholic neighbors were free of debt which seemed to highlight confessional lines and the perceived injustice of the Protestant predicament. In many parts of southern Germany, Catholic farmers practiced partible inheritance (dividing land among heirs) and this tradition was protected by regional laws. The NSDAP wanted to eliminate partibility and resettle disinherited farmers' sons to the East. The Nazi proposals on inheritance appealed to Protestant farmers in Schleswig-Holstein and Lower Saxony, especially (Brustein 1993).

Attachment to place was not restricted to material or confessional concerns. In Weimar Germany, the elites promoted the tradition of *Heimat,* the strong feeling of belonging and attachment to a locality, in order to amplify identity with local customs and communities (Fahlbusch et al. 1989:354). This ideology dampened class conflict through its appeal to cross-class unity within places (Koshar 1986). To put this more precisely, analysis of the NSDAP vote must achieve a balance that accommodates the complex loyalties of individual voters within specific milieux and national-level relationships.

The Historical Context of the 1930 Election

To understand the rise of the NSDAP, it is necessary to revisit the Weimar Republic's birthpangs and its ensuing social conflicts and economic problems. Germany's defeat in World War I, combined with a sense of betrayal by leftists at home, provided a fertile ground for the growth of extremist nationalism. Nationalism was further fueled by the French invasion of the Ruhr industrial area in 1923 and by the Dawes and Young war reparation programs instituted by the United States in the 1920s. Capital exports from the United States to Germany in the late 1920s produced the economic decline in Germany which later spread to other European countries. The depression was generated by a loss of business confidence and investment (Temin 1971). When Germany was confronted by the beginnings of the Great Depression in 1929, the Nazis presented themselves as the party that could provide economic solutions and one that was untainted by participation in earlier Weimar governments. In late 1929, the economy entered a downward spiral as industrial production began to decline, dropping by 31 percent from June 1928 to May 1930, and unemployment rose by over 3 million, an increase of more than 200 percent, between 1928 and the beginning of 1930 (Childers 1983:131).

The wider international context of Germany in the world-economy also played a role in the success of the Nazi party. With the hegemonic decline of Britain and the subsequent competition between the great powers, Germany felt pressured by growing U.S. influence in the West and the Bolshevik threat from the revolutionary Soviet state in the East. The bitter humiliation of the Treaty of Versailles (1919) and the weight of the reparations were both fiscal and emotional, and tapped deep sources of nationalist discontent. Changes in the global market, though providing challenges and opportunities for German interests, were more generally regarded as threats to traditional agricultural and heavy industrial sectors but pro-

vided market chances for the new export-oriented industries (Abraham 1986). The expression of these threats had its own geography within Germany. The dynamic and stagnant sectors were spatially clustered so that the economic effects of changes in the world-economy were manifested regionally and locally. Given these disparate regional and economic interests, the Weimar governments could not create stable coalitions on issues such as free trade and protectionism. Governmental instability led, in turn, to disillusionment with liberal democracy and with the bourgeois parties.

In the elections of the 1920s, right-wing parties gained support, left-wing parties retained their support, and the center eroded. Since 1924, the Nazi party had been laying the political groundwork to take advantage of Weimar instability, and after Hitler's release from prison in Landsberg, he reorganized the party by centralizing and coordinating its organization in a hierarchical manner in accordance with the electoral districts of Germany. In 1927, after the failure of the NSDAP's urban program—an attempt to seize power through a mass movement of the industrial proletariat—the Nazis changed their strategy and sought to gain power through the electoral process and by targeting the lower middle class. The location of Hitler's speeches changed from the Ruhrgebiet to Bavaria, recognizing the unshakable attachment of the urban proletariat to the parties of the Left (Orlow 1969). The first test of the new strategy was the 1928 Reichstag election in which the NSDAP polled 100,000 votes less than in 1924. They did well, however, in Oldenburg, in the Protestant parts of Franconia and in Schleswig-Holstein, regions in which they had not campaigned heavily. This regional breakthrough led to the development of a rural-nationalist plan and the last vestiges of an urban and socialist appeal were abandoned. The spatial electoral strategy focused on small town and rural voters where the NSDAP tapped into the discontent with the Weimar republic and the widespread fear of Bolshevism. The 1930 election for the Reichstag gave the NSDAP the opportunity to apply that rural-nationalist strategy and, in addition, measured the success of the party in attracting the "disengaged, ostensibly apolitical voter in Germany" (Orlow 1969:182).

On the eve of the 1930 election, the recession of 1929 had resulted in an increase in Germany's budget deficit as tax revenues fell and unemployment rose. Given the weight of the deficit, the ruling "grand coalition" collapsed in March 1930 over the issue of the level of unemployment contributions. Reich President Paul von Hindenburg called upon the political leader of the Zentrum party, Heinrich Brüning, to form a new government "above the parties." Brüning attempted to impose austerity measures by decree, but he faced strong opposition in the Reichstag. The Reichstag was dissolved and an election was called for September of 1930. The results were stunning. The NSDAP achieved a surge of support from 800,000 voters in 1928 to over 6 million. In a stroke, they became the second largest party in the Weimar Republic (with 18.3 percent of the vote) behind the Social Democrats.

Data and Methodology

As noted earlier, electoral studies of Weimar Germany must rely on aggregate data. Pre-war German census coverage is remarkably complete for local and electoral data. Scholars have combined these sources into archival files, and of these we used three. The first file includes census and election data from "Wahl- und Sozialdaten der Kreise und Gemeinden des Deutschen Reiches, 1920–1933" at the Central Archive of the University of Cologne. The Cologne file, parenthetically, is described by Hänisch (1989) and it contains over 6,000 geographic units. In order to match census and election spatial units, these 6,000 plus units are aggregated into 921 counties and towns, hereafter called Kreisunits. The second file on debt and industrial plants was kindly provided by Jürgen Falter. Our third file consists of county areal boundaries obtained from OSS (Office of Strategic Services) map no. 6289 (1944) and from other historical maps. These data have been previously aggregated at the scale of the *Kreis,* because at this scale, census units match electoral units (Falter and Gruner 1981). We matched the areal boundaries to the census and electoral file from Cologne and therefore a combined file incorporates any boundary changes. The average population of the Kreisunits at the 1928 Census was 93,904 and the range was from 526 to 1,079,126 in Hamburg. After digitizing this base map and entering it into an Arc/Info geographical information

system, we generated first-order contiguity matrices (based on a common boundary) and computed distance bands (radius of 56 kilometers) around Kreisunit centroids for the purpose of neighbor definition,[1] following procedures outlined in Anselin, Hudak, and Dodson (1993).

In specifying the regional lines (identifying spatial heterogeneity) in NSDAP support, we balanced statistical and cultural considerations. Despite the large number of cases (921) in our study, we needed to retain a large number in each regional sub-division for the statistical analysis. We chose to divide Germany into six regions for this reason. The actual regional boundaries (as shown in Figure 1) suggested themselves by cultural-historical characteristics. Before the 1870s, the early German party system was based on local-interest groups (Tilly et al. 1975) and these *Milieuparteien* reinforced regional and provincial attachments to generate a definite and distinctive political regionalism in the *Kaiserreich* (Rohe 1990). Centuries-old provincial lines were not subsumed into the united German state after 1870 and *Landtag* and other elections continued to reinforce regional identities. Four of our regions (Bavaria, Baden-Württemburg, and the Rhineland, as well as the region east of the Elbe) were well-recognized cultural-historical regions of Germany. The middle of the country separates an industrial south from a more rural north (Regions 2 and 3, respectively). We were not interested in producing regional divisions which maximized their contribution to the NSDAP vote. Instead, we followed an historical-theoretical path to regional delimitation.

Of the numerous national parliamentary and chancellor elections and national referenda in which the NSDAP participated, we chose the 1930 Reichstag election as the critical one because it marked the NSDAP's breakthrough from a fringe party to the nation's second largest. This surge provided the momentum that enabled the NSDAP to become the largest party and to ascend to power three years hence. Our analysis eschews class indices or combinations of census categories (Childers 1983) and uses instead the original census classifications. Predicating our decision on the complexity of previous explanations of the NSDAP support and their emphases on variances within occupational classes and industrial groups, we feared that aggregate categories might hide specific and important relationships. In consequence, our variable list eventually contained over thirty indicators with the key variables drawn from existing theories of the NSDAP vote. We selected the key variables from the Cologne archive and we used them in an exploratory data analysis.

Our preliminary re-examination of the 1930 NSDAP vote used a modelling procedure that drew upon the key variables of the five existing theories and, because of the multidimensionality of the individual voter's decision, a multivariate research design (Falter 1990; 1991). Voting decisions are complex because voters are simultaneously influenced by their religious, material, and social experiences. In this multidimensional context, voting is not simply a matter of the economic insecurity of the middle classes or of social and political alternatives to the NSDAP, for example, the Catholic church (which identified with the Zentrum party) or the KPD (the Communist Party). Voting behavior depends as much on the ideological structures of confession and class as on the political-economic structures that influence Brustein's (1990) "rational fascists."

The analyst must incorporate socializing influences without abandoning or "neutralizing" the role of context. It is precisely for these reasons that we reject a methodology of ecological regression and its "constancy assumption" (Freedman et al. 1991). That assumption states that the slope of a regression line for all units combined applies as well to the individual units. It is assumed, in other words, that blue-collar workers will vote in the same way across different *Kreise* and different regions of the Weimar Republic. To combat this problem, Falter and Zintl (1988:72) use urbanization and religious control variables "in order to neutralize possible contextual effects." Their research, though it attempts to avoid the ecological fallacy, effectively ignores contextual influences upon voting behavior.

Unlike previous research, our study acknowledges geography's role in the historical development of the German nation-state and its electoral sociology. Our geographic analysis of political behavior incorporates two elements: spatial dependence and spatial heterogeneity (Anselin and O'Loughlin 1990). The concept of dependence is tied closely to the processual notions of diffusion and contagion, while the concept of heterogeneity refers to

regionally specific circumstances that may influence structural relationships. These concepts often overlap in practice and thus we need some procedure for distinguishing dependency effects from regional contextual effects. Previous work has measured dependence with Moran's I, a coefficient of spatial autocorrelation (O'Loughlin 1981; O'Loughlin and Anselin 1991). We use Moran's I, but we also consider the G-statistics for spatial association (Getis and Ord 1992) which, recent studies suggest, captures the spatial heterogeneity in measures of dependence.

Spatial dependence is, of course, one of geography's key concepts. It posits that behavior in a place is related, in part, to conditions in neighboring places and that spatial diffusion occurs when these conditions are present. Rather than abstract places from their neighboring and regional contexts, the analyst must be careful to retain their intimate connections. In electoral geography, spatial dependence is often called the "friends and neighbors" effect and its presence or absence lies at the core of the McAllister critique of electoral geography's claims of contextual effects.

Heterogeneity, meanwhile, is conventionally treated as a dummy regional variable. In our approach, we suggest that this regional heterogeneity will generate different parameters in the various regions. Our preference is to model at the regional scale and examine the extent to which a national model holds for the six regions. In this way, different structural relationships can emerge in the different regions. From previous studies of the NSDAP vote (Grill 1986), it is evident that local and regional conditions enabled and constrained the voters' decisions. Our regional models allow these varying conditions to emerge. An analysis of the Weimar Germany elections that acknowledges the probability of spatial dependence and heterogeneity in the data thus has several advantages, not the least of which is a lower risk of biased estimators and misleading results.

Our discussion begins with exploratory spatial data analysis that is based on summary descriptive statistics and maps of the spatial distribution of the 1930 NSDAP vote. The analysis, which offers a strong indication of regional and local clustering, confirms our decision to give a geographical slant to our model of the Nazi party vote. Our regression analysis builds on the five theoretical accounts of NSDAP support. It places their key variables in geographic context, checks for the presence of spatial effects (spatial dependence and spatial heterogeneity), and, where needed, specifies mixed structural-spatial models (Anselin and O'Loughlin 1990). Our specification search incorporates socio-economic variables associated with the several theoretical frameworks as well as the spatial variables of neighbor (dependence) and regional (heterogeneity) effects.

Based on an extensive exploration of bivariate and multivariate patterns of association, we selected six socio-economic variables from the more than thirty candidates considered and these are listed by variable name, operational definition, and expected relationship with the Nazi vote: 1) DTURN,[2] change in number of voters 1928–30/Eligible voters 1928, +; 2) PROT, Protestant proportion of the total population, +; 3) MANIND, industrial workers' and their dependents' proportion of the total population, –; 4) BCTRADE, blue-collar workers in trade and transport and their dependents' proportion of the total population, +; 5) TOTSELF, self-employed and their dependents' proportion of the total population, +; and 6) UNEMP, unemployed and their dependents' proportion of the total population, +. We then estimated two models, one that contained all six variables (referred to below as the "unconstrained model") and another (or "best" model) that includes significant (at the .05 level) explanatory variables only (referred to below as the "constrained model").

Other variables associated with the five theories of Nazi voting behavior are statistically insignificant in our multiple regression approach.[3] For example, the key variables of the mass society theory—age, settlement size, and urbanization—are discarded. Similarly, class theory's key variables—civil service and white-collar workers (by industrial sector)—and self-interest theory's stress indicators—plant debt, plant value, dairy farm concentration and heavy industry—all failed to reach the threshold of statistical significance. Lastly, a fear factor—the local presence of a strong Communist vote—is not consistently useful in accounting for the size of the NSDAP ratio. Unlike Gibson (1994), whose study of African-American political freedom found a strong relationship to local white attitudes, we saw no evidence that the prominence of Communists—the most die-

hard political opponents of the NSDAP—in the local context created any measurable difference in the level of NSDAP support. The eclecticism of the six variables entering into the final model seemingly lend further support to the notion that no one theory can readily account for the support of the Nazi party.

Spatial Pattern of the NSDAP Vote 1930

The spatial pattern of the NSDAP vote in 1930 (proportion of total votes by Kreisunits) (Figure 2 a–d) indicates a general northeast-southwest trend. Kreisunits in the lowest quartile (below 12.2 percent) are concentrated in Catholic areas, mainly in the south and southwest and in the Rhineland (Figure 2a), while the Kreisunits in the highest quartile (above 24.6 percent) are located in Oldenburg, Schleswig-Holstein, East Prussia and dotted throughout the center of the country (Figure 2d). The distribution of the NSDAP vote indicates that the scale at which regional heterogeneity is clearest must be increased. For example, in Silesia on the Polish border, the northern part supported the NSDAP while the southern part did not. Similarly, in East Prussia the eastern part strongly supported the Nazis. In southern Germany, local concentrations are evident. In Baden in the southwest, some Kreisunits gave strong support to the NSDAP while in its eastern neighbor Württemburg, Kreisunits lie mostly within the lowest quartile of support. Even at a larger map scale, the map reveals neighboring Kreisunits with vastly different levels of NSDAP votes. Within Bavaria, for example, a few places in the highest quartile are completely surrounded by Kreisunits in the lowest quartile.

Regional differences in German support for the Nazi party are readily apparent in Figure 3, which displays box plots of the median Nazi vote in each of the six German regions. Median support is highest in regions 3 (21.9 percent), 1 (21.2), and 2 (19.6) and lowest in regions 6 (11.3) and 4 (14.9). Region 5 falls slightly below the national median (18.4) at 16.4 percent. All six regions exhibit, however, a large range in the NSDAP vote shares and outliers are commonplace, all of which offer a clear indication of spatial heterogeneity in measures of central tendency and which raise a question on the impact of spatial differences on the explanatory variables. Stated another way, it would be interesting to determine how much regional heterogeneity remains after controlling for spatial variations in the explanatory variables of class, religion, turnout, and economic stress.

Moran's I offers a global measure of spatial pattern. It measures the clustering of similar values of the NSDAP vote in space and assesses the significance of the cluster.[4] The values of Moran's I for NSDAP vote shares are reported in Table 1 for all of Germany as well as for each region. We compute the statistic for two different definitions of contiguity. The first defines contiguity as simple first-order contiguity between Kreisunits, that is, units having a common boundary; the second defines it on the basis of distance bands. According to this criterion, two Kreisunits are contiguous when their centroids fall within 56 kilometers of one another. (This critical distance is the smallest distance that avoided unconnected Kreisunits.) The spatial weights matrices are in row-standardized form. The strength and uniformity of positive spatial autocorrelation for the whole country is documented in Table 1 for Germany as a whole and for five of the six regions (excepting Central Germany, Region 2). All these indications underline the spatial clustering of similar values. But in contrast to the other parties, the NSDAP is the party with the lowest spatial autocorrelation,[5] which geographic expression tends to support the interpretation of the Nazis as a "catch-all party" (Childers 1983; Falter 1990). Conversely, the spatial dependence component of the Nazi vote is still positive and significant and this component should be considered along with the spatial heterogeneity among regions.

One weakness of Moran's I is its failure to specify the locations of spatial clustering, that is, which places are contributing to the size and direction of the index. To redress this problem, Getis and Ord (1992) have proposed a localized measure of spatial association. Their G_{i*} statistic measures the degree to which an individual observation (Kreisunit) is surrounded by similar observations.[6] Kreisunits with significant G_{i*} indices (at a one-tailed .05 level or higher) appear as triangles in Figure 4, based on the same distance cut-off as before (56 kilometers). Upward-pointing triangles (with the

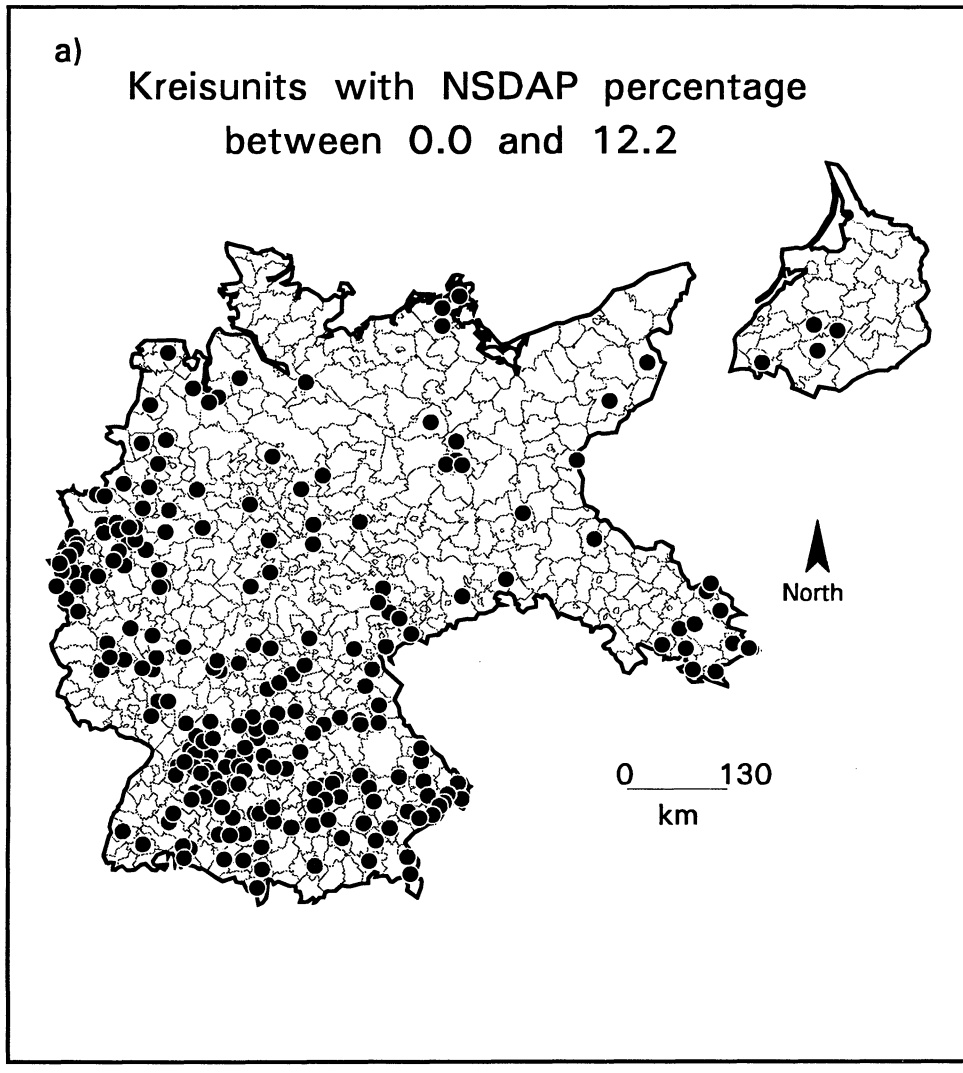
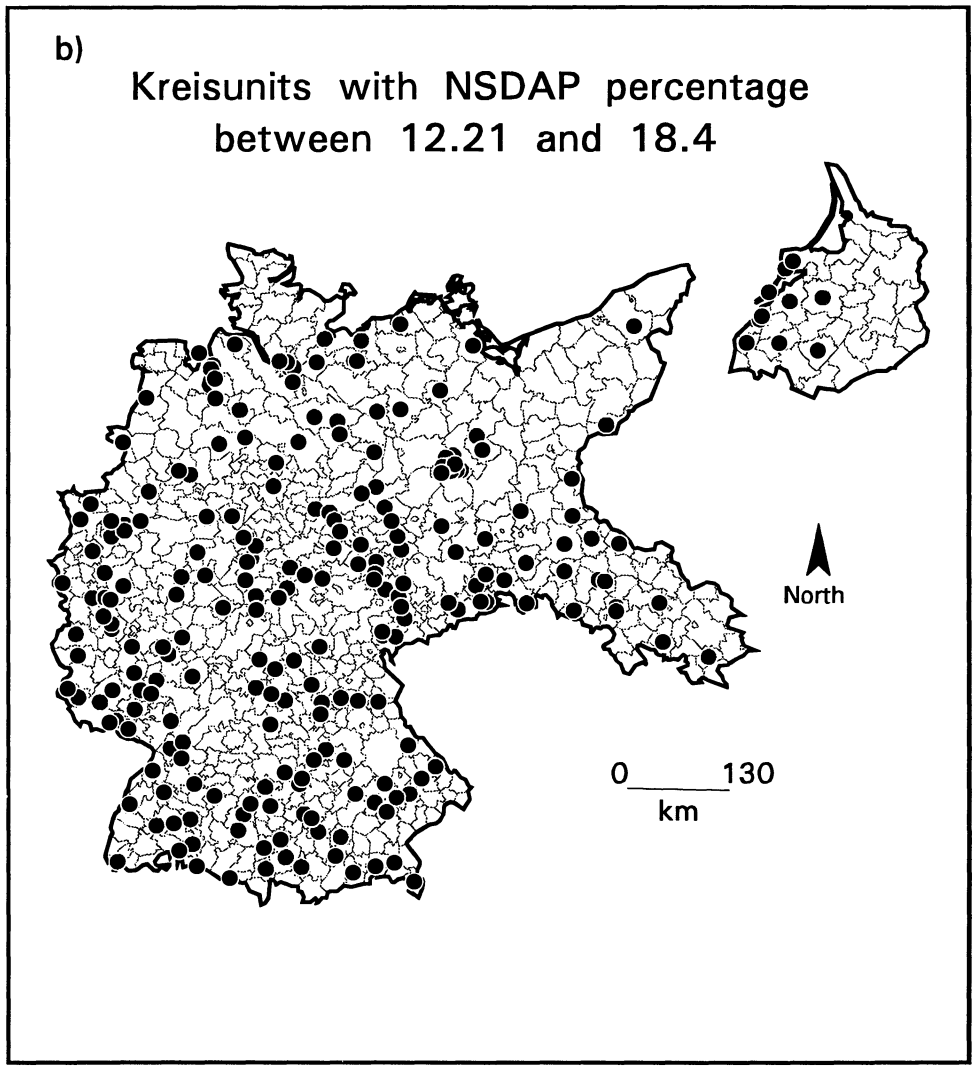


Figure 2 a–d. Distribution of the 1930 NSDAP vote in Germany. The vote is partitioned into quartiles and the results are presented in four separate maps.

three sizes corresponding to .05, .01, and .001 levels of significance, respectively) indicate local clustering of high NSDAP votes; downward-pointing triangles show clustering of low NSDAP support. Of the 921 Kreisunits, 162 displayed either a positive or negative G_{i*} statistic at the .001 significance level (295 at the .01 level and 424 at the .05 level).

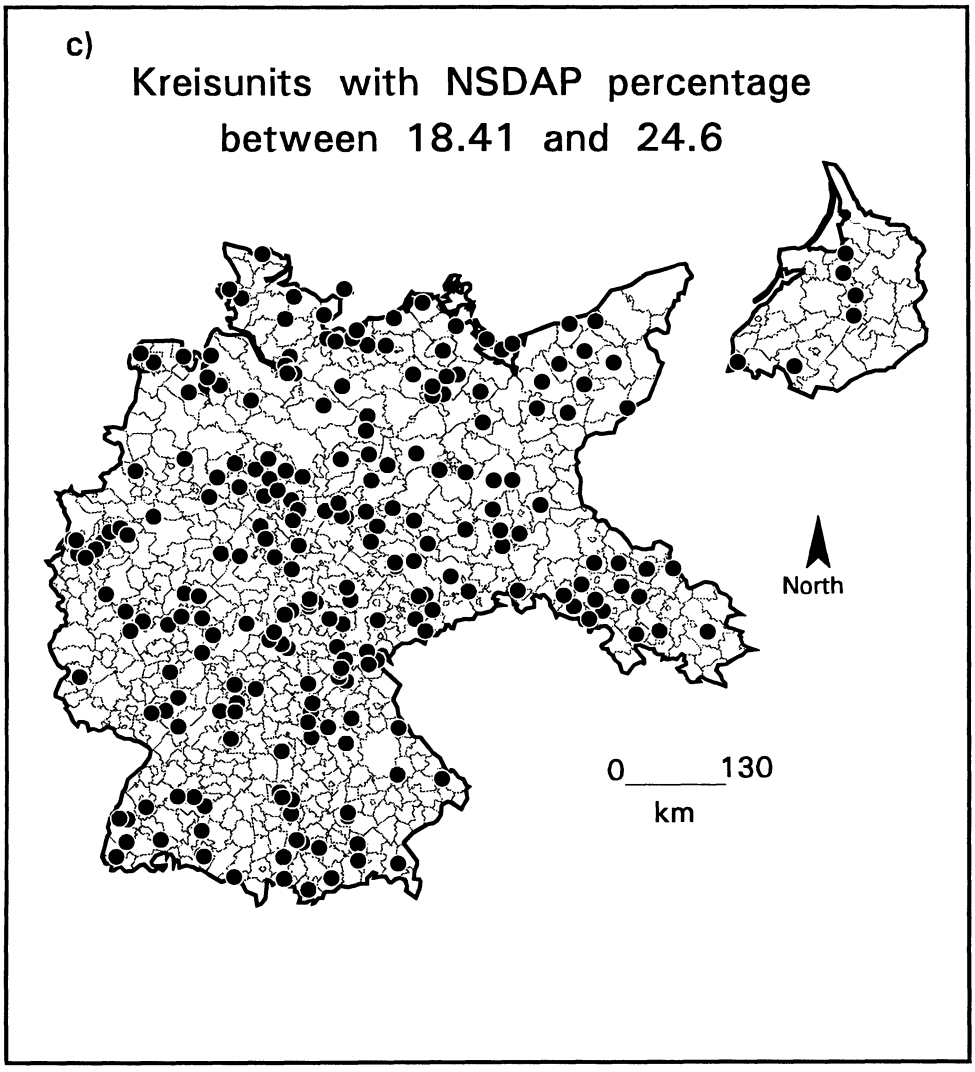
The distribution of negative significant G_{i*} values suggests that strong concentration of the industrial proletariat within the Rhine-Ruhr region resisted the NSDAP appeal. In similar clusters in the Catholic areas of the country, especially in Württemburg, the Rhineland, and southern Bavaria, the party did poorly. Clusters of strong support for the NSDAP include those concentrated in agricultural economies (Brustein 1993), such as Schleswig-Holstein and northwestern Lower Saxony (Oldenburg) where cattle/dairy farming and hog fattening



predominated. On East Prussia's borders with Poland and Lithuania, agricultural interests led to strong NSDAP support. In the rural area north and northeast of Berlin, the NSDAP gained a massive transfer of votes from the DNVP (German National People's Party) (Grill 1986:256–257). In Lower Silesia, the Nazis' appeal was greatest in a cluster of Kreisunits associated with Protestant rural and small town populations and least in a Catholic coal-mining area to the southeast (Upper Silesia). The Protestant region of Upper Franconia is also identifiable as an area of NSDAP support in Figure 4, as is the Lippe-Hildesheim region. To sum up, it seems that areas having an uncompetitive economic base in the recessionary world of 1930 favored the protectionist policies of the NSDAP, albeit within a context of religious practice and associated party competition.

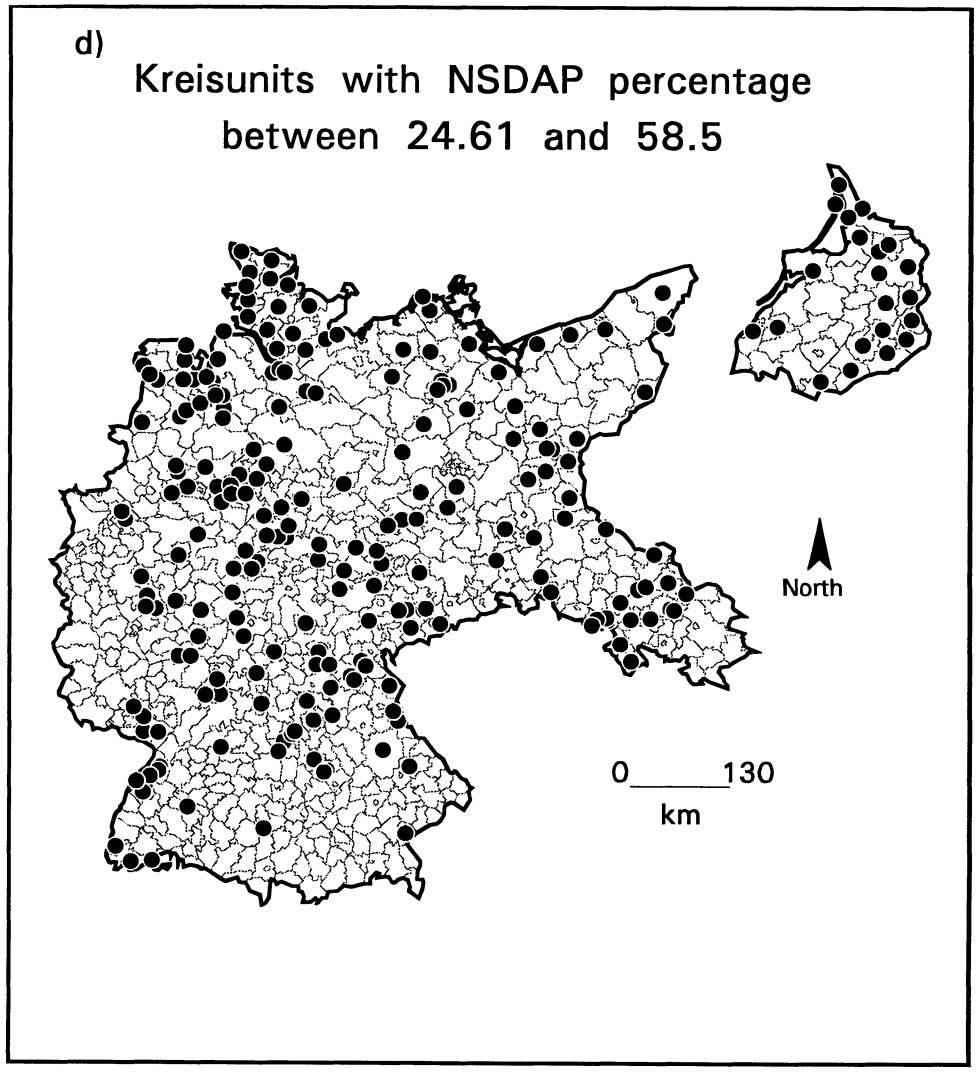
Modelling the NSDAP Vote in 1930

Given the special nature of German society in 1930, explanations of the NSDAP vote cannot afford to ignore regional and neighbor-



hood effects. If spatial elements are indeed significant, as Table 1 and Figures 2, 3, and 4 suggest, conventional models using the usual socio-economic explanatory variables should be amended to include regional (spatial heterogeneity) and neighboring (spatial dependence) effects in a mixed structural-spatial regression model. In order to assess the importance of spatial effects and to estimate and specify mixed structural-spatial models, we use the methodology of spatial econometrics (Anselin 1988a), implemented by means of *SpaceStat* software for spatial analysis (Anselin 1992). This methodology permits a multivariate approach that combines all of the key variables of the five theories (the structural model) with a spatial analysis in one modelling procedure.[7]

Before presenting the results of the regression analysis of voting patterns, a short detour to discuss the data and methods is appropriate. Regression analyses of voting patterns are complicated by the special nature of the dependent variable—in our case, the proportion of votes cast for the NSDAP in a Kreisunit. These proportions exhibit a binomial distribution, thus violating the assumptions of a normal distribution on which inference in the standard regression model is typically based. In large



sample situations, however, the parameters of a linear-proportions model may be consistently estimated by means of a least squares, which takes into account the intrinsic heteroskedasticity of the binomial distribution.[8] However, yet another complication arises because estimated voting proportions must fall between 0 and 1. Since a linear specification does not guarantee that result, predicted values (e.g., negative vote shares) may be nonsensical. The standard solution in this case is logit or probit analysis. We chose not to implement this procedure owing to clear indications of spatial dependence—a fact which invalidates standard logit and probit models.[9] Moreover, since none of our estimated specifications fell outside of the allowed range, our linear-proportions model seems to offer a reasonable choice.

Our spatial specification search begins by estimating a linear-proportions model that includes all six socio-economic variables, five regional dummies (Region 1 is the control region), 921 Kreisunits and two estimation methods: the robust Jacknife (which is the same as ordinary least squares, but with a different indication of significance) and weighted least squares (WLS). Our first step yields the uncon-

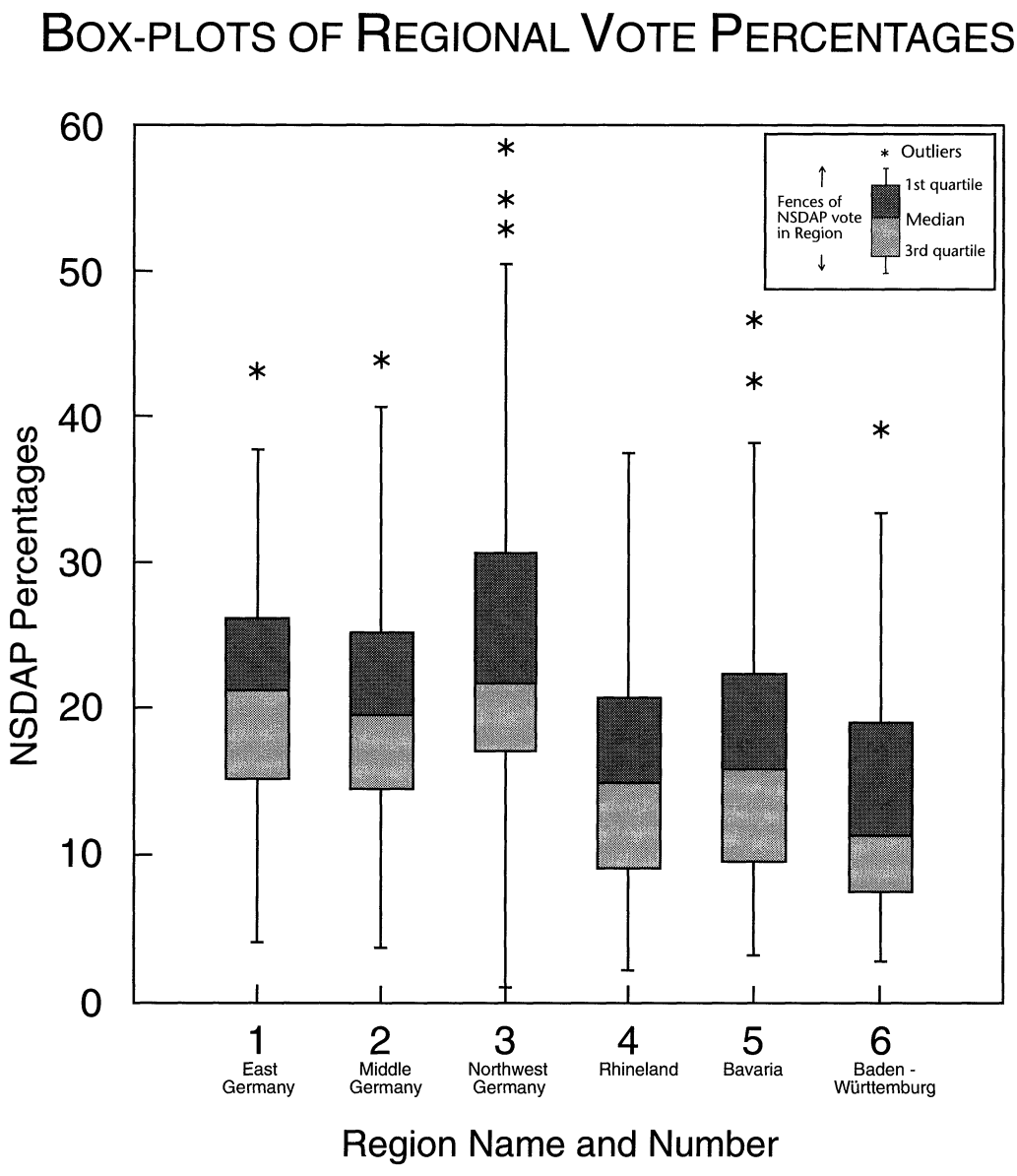


Figure 3. Box-plots of the regional distribution of the 1930 NSDAP vote showing regional means and variances. The distance between the bottom and top of each box is the inter-quartile range, defined as h. The lines extending from the box ("whiskers") show all observations that are within the fences, that is, within the first and third quartile less or plus 1.5 times the inter-quartile range, respectively (q1 - 1.5h: q3 + 1.5h). The asterisks report observations lying beyond the fences.

Table 1. Moran's I Test for Spatial Autocorrelation in NSDAP Vote 1930.[a]

		First-Order Contiguity		Distance-Based Contiguity	
Scale	N	I	z	I	z
Nation	921	0.302	11.68	0.232	19.31
East	208	0.351	6.67	0.273	8.02
Central	166	0.031	0.58[b]	0.009	0.57[b]
Northwest	122	0.178	2.29	0.036	1.22[b]
Rhineland	139	0.227	3.54	0.121	4.41
Bavaria	186	0.206	3.70	0.091	4.12
Baden-Württemburg	100	0.393	4.76	0.259	9.14

[a]z-value based on randomization assumption.
[b]not significant at $\alpha = .01$.

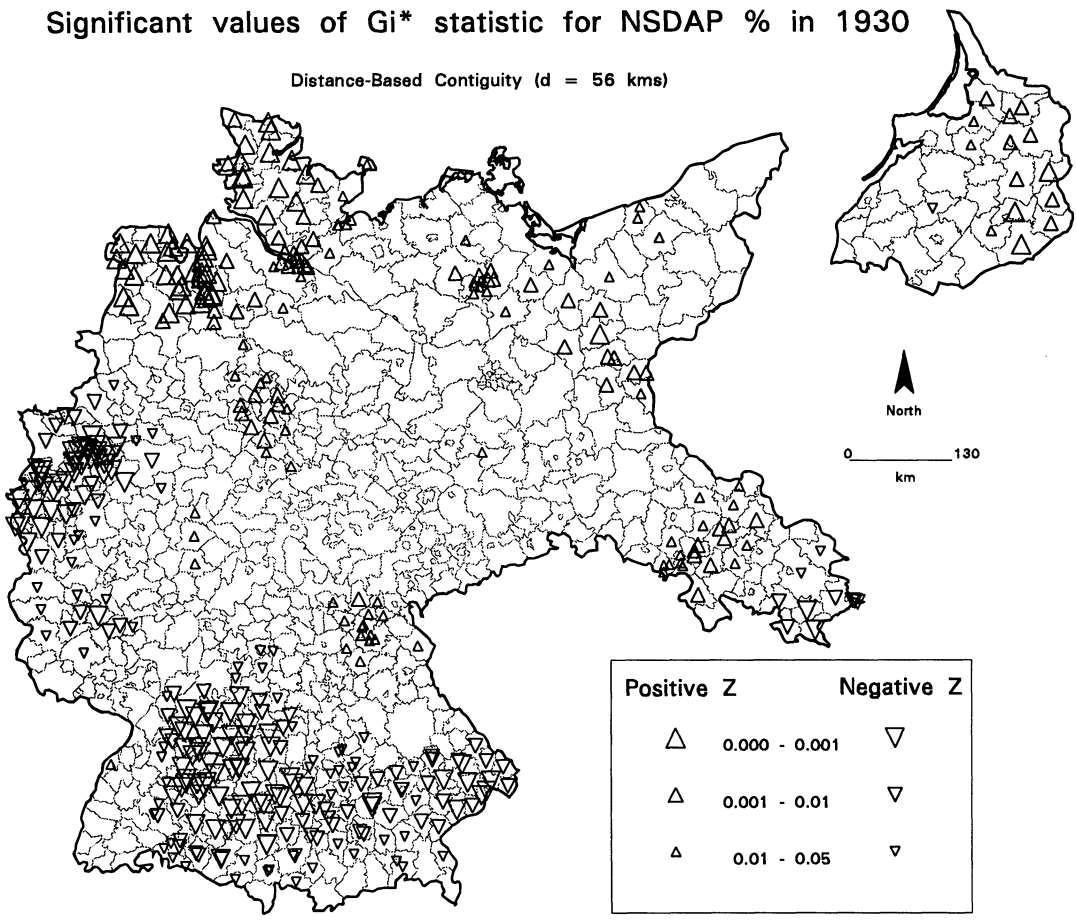


Figure 4. Distribution of the G_{i^*} statistics (distance-based contiguity weight) of the 1930 NSDAP vote in Germany. A positive value indicates significant spatial clustering of high values and a negative G_{i^*} value indicates significant spatial clustering of low NSDAP proportions.

strained model in Table 2. We next estimate a specification which contains only the significant variables, i.e., with the coefficients of the non-significant variables set to zero (the constrained model in Table 2). For each regression, we also compute an indicator for multicollinearity and conduct checks for non-normality of the residuals, heteroskedasticity, and spatial dependence.[10]

The results of the unconstrained model at the national scale are fairly encouraging. The model's six explanatory variables (PROT, MANIND, BCTRADE, DTURN, TOTSELF, and UNEMP) and the regional dummies yield an adjusted R^2 of .41, a higher value than is usual in aggregate analyses of the NSDAP vote with R^2's of .29 (Brown 1982); .28 increasing to .45 with the addition of a variable measuring previous Nazi voting (Falter 1991); and .28 (Lohmöller et al. 1985). The diagnostics show moderate multicollinearity (condition number: 25.2) for the unconstrained model, but none for the constrained model (condition number: 10.2). The residuals are clearly non-normal and heteroskedastic,[11] and they contain a high degree of spatial error autocorrelation.[12] Consequently, caution is advised in the interpretation of the significance of the coefficients, though the estimates themselves are consistent.[13]

Turning to the role of the six key variables as defined by theory and previous studies, our model discounts the roles of self-employment and unemployment at the national scale for the 1930 election. These are not significant in the unconstrained model. Contrary to the assertions of Frey and Weck (1981), unemployment does not figure prominently in the explanation of the Nazi party vote in 1930, though it seems clear that the ensuing rise in unemployment in the early 1930s had sizeable effects on the 1932 and 1933 elections (Falter 1986c). As far as self-employment is concerned, its significance in the model subverts arguments based on class theory (Brown 1982; Falter 1992). Although class theorists offer statistical evidence that the traditional middle class gave dispropor-

Table 2. Regression Results for the NSDAP Vote at the National Scale.

	Unconstrained Model		Constrained Model	
Variable	Robust LS	Weighted LS	Robust LS	Weighted LS
CONSTANT	0.061	0.077	0.086	0.096
	(*3.16*)	(*4.72*)	(*9.36*)	(*13.07*)
PROT	0.176	0.171	0.174	0.170
	(*19.74*)	(*25.70*)	(*20.32*)	(*26.14*)
MANIND	−0.100	−0.127	−0.122	−0.140
	(*−4.18*)	(*−6.87*)	(*−6.04*)	(*−9.15*)
BCTRADE	0.243	0.121	0.200	0.093
	(*3.61*)	(*2.38*)	(*3.06*)	(*1.97*)
DTURN	0.225	0.192	0.217	0.186
	(*4.01*)	(*5.51*)	(*3.91*)	(*5.40*)
TOTSELF	0.076	0.050	—	—
	(*1.66*)	(*1.40*)		
UNEMP	−0.019	0.009	—	—
	(*−0.47*)	(*0.20*)		
CENTRAL	0.002	0.012	0.006	0.015
	(*0.26*)	(*2.01*)	(*0.81*)	(*2.45*)
NORTHWEST	0.013	0.007	0.019	0.010
	(*1.42*)	(*0.88*)	(*2.07*)	(*1.35*)
RHINELAND	0.006	0.022	0.012	0.024
	(*0.77*)	(*3.44*)	(*1.53*)	(*4.03*)
BAVARIA	0.020	0.030	0.027	0.034
	(*2.02*)	(*3.47*)	(*3.14*)	(*4.27*)
BADEN-WÜRTTEMBURG	−0.028	−0.019	−0.021	−0.016
	(*−2.73*)	(*−2.43*)	(*−2.19*)	(*−2.17*)
Ra^2	0.408	0.406	0.408	0.404

Notes: Robust LS is ordinary least squares with z-value (asymptotic t-value) based on the Jacknife in parentheses; Weighted LS are iteratively weighted least squares with z-values (asymptotic t-value) in parentheses; Ra^2 for Weighted LS is the squared correlation between observed and predicted values. The constrained model omits TOTSELF and UNEMP because these two variables failed to meet the threshold of significance in the unconstrained model.

tionate support for the Nazi party (Brown 1982; Falter 1992), their studies fail to control for regional or other structural effects. Like unemployment, timing may be the most important element here. Falter (1992:390) noted that "[a]fter 1930, the old middle class switched heavily to the NSDAP"; our model confirms that they had not made the switch in large numbers by the critical election of 1930.

Four structural predictors of the NSDAP vote (Table 2) are significant in the hypothesized direction. Religion, undoubtedly the most consistent predictor of the NSDAP vote and certainly the least controversial, persists in our model. The Protestant vote (PROT) accounts for much of the variance in our model (the R^2 for the bivariate relationship is .10), underlining Burnham's (1972) point that the Catholic population was immune to the Nazi appeal for social-historical and material reasons. Nazi proposals to resettle younger heirs from Catholic regions to the East after abolishing partible inheritance increased Catholic attachment to the Zentrum as a confessional promoter of jobs and culture (Brustein 1993). Manual industrial workers (MANIND) also had an immunity to the Nazi appeal and they voted in large numbers for the Communist party. Moreover, their historical attachment to the KPD strengthened as the Depression deepened (Falter 1986c).

Turnout is one of the key variables in the mass society interpretation of the NSDAP vote, and the rise in turnout in the 1930 election and its positive association with the NSDAP vote is expected by that theory. Falter (1986b) notes, however, that the effects of new voters were positive, though marginal, in 1930 but thereafter, turnout increased substantially as non-voters jumped on the Nazi bandwagon. Our analysis puts a different slant on this. We see strong and consistent evidence for turnout effects in the 1930 election at the national scale (Table 2).

The role of blue-collar workers in trade and transport (BCTRADE) is also statistically significant. The Nazi program had a special appeal to workers in the trade and transport sectors. They were isolated from big business and big labor, both of whom were strongly committed to other parties, and they experienced a relative lack of identity with their own class (Stachura 1980). The trade and transportation sectors were relatively free of union representation which provided a social barrier to Nazi penetration. In combination, these factors meant that the workers in these two sectors, lacking the social or political organizations that would have provided security and identity, allowed the NSDAP to formulate a program that addressed their fears in a period of vast economic uncertainty.

Comparing the structural variables across the unconstrained and constrained models in Table 2 buoys confidence in their interpretation. There is no evidence of differences between the estimators that might affect the qualitative assessment of significance, save for the BCTRADE variable which is only marginally significant (at $p=.05$) for the constrained weighted least-squares formulation. By contrast, regional effects vary widely. Bavaria (Region 5) and Baden-Württemburg (Region 6) are always significant at $p=.05$, though with opposite directions (positive with the NSDAP for Region 5 and negative for Region 6). Other regions are more variable. Central Germany (Region 2) is significantly positive in only one case, namely the weighted least-squares estimates in the constrained model; Northwest Germany (Region 3) is significant (positive) only for the constrained model with the Jacknife estimates, and the Rhineland (Region 4) is significant (positive) for the weighted least-squares estimates, but not for the Jacknife. The strength of these differences in regional effects indicates a level of spatial heterogeneity in Germany beyond that produced by socio-economic compositional differences. Moreover, the cross-model flux in the values of the substantive coefficients suggests some fluidity in regional effects. The results in Table 2 underline Most and Starr's (1989) argument that a global model for an entire country obscures the possibility of a mixed data series. Because of the spatiality suggested by the regional dummy variables, the national results should be interpreted with caution. Following upon that line of argument, we calibrate "domain-specific" (regional) models that incorporate both general (socio-economic factors) and local effects.

Incorporating Spatial Effects in Structural Models of the NSDAP Support

The domain-specific (that is, regional) structural models are presented in Tables 3 and 4 in

Table 3. Regression Coefficients by Region, Unconstrained Model, Weighted Least-Squares Estimates (z-values in parentheses).

Variable	East	Central	Northwest	Rhineland	Bavaria	Baden-Württemburg
CONSTANT	0.017	−0.016	−0.020	0.067	0.101	0.109
	(*0.56*)	(*−0.43*)	(*−0.40*)	(*1.67*)	(*1.43*)	(*0.80*)
PROT	0.197	0.197	0.284	0.139	0.174	0.100
	(*10.89*)	(*14.34*)	(*10.86*)	(*12.19*)	(*6.78*)	(*4.58*)
MANIND	−0.191	−0.064	−0.042	−0.057	−0.053	−0.120
	(*−5.57*)	(*−1.76*)	(*−0.68*)	(*−1.42*)	(*−0.63*)	(*−0.93*)
BCTRADE	0.027	0.593	−0.373	0.172	0.622	0.305
	(*0.33*)	(*3.62*)	(*−3.39*)	(*1.40*)	(*3.07*)	(*0.85*)
DTURN	0.212	−0.005	0.523	0.329	0.081	0.496
	(*2.56*)	(*−0.04*)	(*5.42*)	(*4.77*)	(*0.68*)	(*3.30*)
TOTSELF	0.397	0.227	0.255	0.090	−0.141	−0.015
	(*4.67*)	(*3.15*)	(*2.58*)	(*1.15*)	(*−1.12*)	(*−0.06*)
UNEMP	0.030	−0.086	−0.101	−0.019	0.194	−0.276
	(*0.34*)	(*−0.97*)	(*−0.78*)	(*−0.17*)	(*1.95*)	(*−1.56*)
Pseudo R^2	0.45	0.36	0.44	0.45	0.63	0.32
X^2	229.9	195.4	121.0	177.5	78.9	135.1
$P(X^2)$	0.08	0.03	0.33	0.01	1.00	0.003

Notes: Pseudo R^2 is the squared correlation between the observed and predicted values for the dependent variable; it provides a measure of linear association with values between 0 and 1.0. Definitions and measurements of the variables are discussed in the text.

Table 4. Regression Coefficients by Region, Constrained Model, Weighted Least Squares (z-values in parentheses).

Variable	East	Central	Northwest	Rhineland	Bavaria	Baden-Württemburg
CONSTANT	0.023	−0.030	−0.052	0.051	0.042	0.058
	(*0.86*)	(*−0.95*)	(*−1.35*)	(*3.23*)	(*2.33*)	(*4.24*)
PROT	0.198	0.201	0.279	0.132	0.164	0.106
	(*11.15*)	(*14.12*)	(*11.2*)	(*11.88*)	(*8.08*)	(*5.54*)
MANIND	−0.192	−0.64	—	—	—	—
	(*−5.63*)	(*−1.93*)				
BCTRADE	—	0.579	−0.376	—	0.775	—
		(*3.77*)	(*−3.47*)		(*5.12*)	
DTURN	0.223	—	0.538	0.377	—	0.579
	(*2.75*)		(*5.71*)	(*5.73*)		(*4.23*)
TOTSELF	0.391	0.230	0.299	0.130	—	—
	(*4.73*)	(*3.32*)	(*3.47*)	(*2.42*)		
UNEMP	—	—	—	—	0.219	—
					(*2.27*)	
Pseudo R^2	0.45	0.35	0.45	0.45	0.64	0.28
X^2	229.9	196.8	122.0	182.6	79.8	143.0
$P(X^2)$	0.09	0.03	0.36	0.004	1.00	0.002

Notes: Pseudo R^2 is the squared correlation between the observed and predicted values for the dependent variable; it provides a measure of linear association with values between 0.0 and 1.0. Definitions and measurements of the variables are discussed in the text.

unconstrained and constrained versions.[14] These models indicate considerable variability in their explanatory power and their explanatory variables by region. The importance of the variables, their magnitudes, and even their signs change from one region to another. The models achieve their best fit in Bavaria (Region 5) and worst in Baden-Württemburg (Region 6). Pseudo-R^2's range from .32 to .63 in the unconstrained models and from .28 to .64 in the constrained models.[15] The Rhineland (Region 4) and Baden-Württemburg (Region 6) fail

the Pearson Chi-square tests of fit, and the East (Region 1) and Center (Region 2) are marginally significant, which indicates a poor fit. The fit is good, in other words, only in Bavaria and Northwest Germany.

These results were encouraging. The virtue of these domain-specific models is their implication that the different theories of NSDAP voting apply in different regions. These results undermine a global thesis with a consistent combination of individual characteristics and regional circumstances, as well as any notions of a national electorate for the Nazis: they usefully direct our attention to more conditionalized generalizations. In the East (Region 1), the variables PROT (Protestant voters), DTURN (change in turnout rate) and TOTSELF (self-employed workers) are significantly positive and MANIND (manual workers in industry) significantly negative—a finding that lends support to the thesis of the Nazis as the "catch-all" party. The Center (Region 2) offers further evidence for this thesis in the significantly positive values for PROT, BCTRADE, and TOTSELF. Northwest Germany (Region 3) resembles eastern and central Germany save for the negative sign for BCTRADE. In Bavaria, the region with the best fit (a pseudo-R^2 of .63 is exceptional for Nazi voting research), only three variables (PROT, BCTRADE—blue-collar workers in trade and transport—and UNEMP, unemployed) are positive and significant. The models for the Rhineland and Baden-Württemburg offer a still different combination of significant variables. Only the confessional variable (PROT) is consistently positive and significant across all regions ($p=.05$).

Domain-specific models may be refined by taking into account the model diagnostics. These revealed non-normal errors for the Catholic regions (the Rhineland, Bavaria and Baden-Württemburg) and weakly so for the East (Region 1), and strong heteroskedasticity for Central and Northwest Germany and Bavaria, for both unconstrained and constrained specifications.[16] Multicollinearity, though a problem in the unconstrained versions of the models, disappears once nonsignificant variables are eliminated from the specification.[17] Diagnostics for spatial dependence, computed separately for a simple contiguity matrix and for a distance-band contiguity matrix (using the identical radius of 56 kilometers as used in the descriptive statistics) rule out either error or lag autocorrelation in the models for the four regions of Central and Northwest Germany, the Rhineland and Bavaria.[18,19] However, the models for the East and Baden-Württemburg provide strong evidence for spatial dependence effects.[20] What this means is that the models for the regions of Central and Northwest Germany, the Rhineland, and Bavaria may be accepted as they stand. There is no need to impose further spatial structure. The introduction of the appropriate explanatory variables eliminates, in other words, most of the residual spatial dependence effects in the NSDAP vote shares that remain after univariate analysis (e.g., Moran's I statistics in Table 1). The converse applies, however, in the East and Baden-Württemburg; spatial autocorrelation effects persist and must be taken into account by a mixed structural-spatial specification. In the case of the East, using the rules of thumb from Anselin and Rey (1991) and the model diagnostics, the most appropriate spatial model should be either: 1) an error model with binary contiguity weights; or 2) a lag model with distance weights. In the case of Baden-Württemburg, the proper spatial model should include a lag specification for either contiguity or distance weights.

The results of the estimated spatial regression models (constrained models only) for the East and Baden-Württemburg are presented in Table 5. These models are estimated twice, first by means of maximum-likelihood methods which assume a normal distribution for the error terms, and second by means of robust bootstrap methods (using 1000 resamplings) which do not entail a normal distribution.[21] In the East, the spatial-lag model (distance contiguity) gives a slightly better fit than the spatial-error model (binary contiguity), as indicated by the former's higher log likelihood (309.2 versus 308.9); but both models are clearly superior to least-squares estimates (log likelihood of 304.5). The spatial autoregressive coefficient (0.278 for ML and 0.348 for the bootstrap) in the lag model is highly significant and positive, thus affirming the clustering of higher proportions of NSDAP voters and the imperative of explicit inclusion of spatial clustering in the model. That inclusion does not affect the significance of the coefficients but affects their magnitudes. For example, correcting for spatial dependence (by including the spatial-lag variable in the model specification) decreases

Table 5. Spatial Regression Models—Constrained Model (z-values in parentheses).

	East(Lag) Region			Baden-W(Lag) Region		
	First-Order Contiguity	Distance-Based Contiguity		First-Order Contiguity		Distance-Based Contiguity
Variable	ML	ML	Bootstrap	ML	Bootstrap	ML
W_NSDAP	—	0.278	0.348	0.378	0.463	0.684
		(*3.17*)	(*2.79*)	(*4.23*)	(*2.30*)	(*5.12*)
CONSTANT	0.055	−0.014	−0.025	−.0003	−0.008	−0.035
	(*1.75*)	(*−0.42*)	(*−0.68*)	(*−0.01*)	(*−0.25*)	(*−1.51*)
PROT	0.195	0.177	0.171	0.123	0.117	0.116
	(*9.40*)	(*8.83*)	(*7.95*)	(*5.43*)	(*5.02*)	(*5.19*)
MANIND	−0.172	−0.141	−0.137	—	—	—
	(*−4.59*)	(*−3.90*)	(*−3.82*)			
BCTRADE	—	—	—	—	—	—
DTURN	0.195	0.187	0.195	0.684	0.631	0.645
	(*2.15*)	(*2.25*)	(*2.33*)	(*4.58*)	(*4.18*)	(*4.38*)
TOTSELF	0.231	0.319	0.317	—	—	—
	(*2.57*)	(*3.66*)	(*3.59*)			
UNEMP						
Lambda	0.262	—	—	—	—	—
	(*3.19*)					
LIK	308.9	309.2	—	133.7	—	135.4

Notes: Lambda is the spatial autoregressive parameter. LIK is the likelihood coefficient.

slightly the coefficient for the Protestant voter proportion (PROT) (0.198 to 0.177 for ML and 0.171 for the bootstrap) and decreases substantially the coefficients for MANIND—manual industrial workers—(−0.192 to −0.141 in ML and −0.137 for bootstrap); DTURN—change in turnout—(0.222 to 0.187 and 0.195); TOTSELF—self-employed workers—(0.391 to 0.319 and 0.317). The small differences in the numerical values of the estimates for ML and bootstrap estimation notwithstanding, their substantive interpretation does not change nor does their call for a consideration of "neighboring" effects.[22]

In Baden-Württemburg, both spatial models offer superior fits as compared to the structural model (log likelihood of 133.7 and 135.4 versus 125.8 for OLS), with a slight edge to the distance-contiguity specification. While the numerical values of the estimates differ slightly between the ML estimation and the bootstrap, the substantive interpretation does not change and both estimates indicate the need to consider a "neighboring" effect.[23] Southwest Germany, with the poorest fit and least number of significant variables in the equations (more precisely, no socio-economic factors entered the model), appears most anomalous in our study. The inclusion of two different sub-regions, Baden and Württemburg, which differed sharply in their levels of NSDAP support, is responsible for some of the ambiguity. As Grill (1983; 1986) noted, these adjoining states differed greatly in their confessional composition, their differential impacts of economic and psychological effects of the new border with France as a consequence of the Treaty of Versailles, their attitudes to the Weimar republic, and their resulting NSDAP support. Not surprisingly, when Falter and Bömermann (1991) used a regional dummy to distinguish Baden from Württemburg, they detected a significant regional difference. In this region, traditional local party loyalties tend to confound expected socio-economic relationships to the NSDAP vote.

A discussion of the results by region illustrates the heterogeneity of the German electorate and the complexity of the theoretical interpretations. Evidence for the religious component of the political confessionalism approach (Burnham 1972) is seen in all six regions. In the East (Region 1), the political component of Burnham's theory—that the manual industrial workers remained loyal to the parties of the left—is supported by the negative and significant value of the MANIND (manual in-

dustrial workers) estimate. However, partial support for the mass-society theory *and* the class theory are also present—positive and significant estimates for DTURN (change in turnout) and TOTSELF (self-employed workers). In the East, therefore, partial evidence for the political confessionalism, mass society, and class theories can be found, but none of these theories are mutually exclusive. There is also a neighborhood effect in this region, based on distance contiguity, that is not found elsewhere.

Middle Germany (Region 2) also provides support for the religious and political components of the political confessionalism approach. No evidence for the mass society theory is evident, though the positive and significant value of TOTSELF supports the class theory. However, the positive and significant value of BCTRADE (blue-collar workers in trade and transport) indicates that social groups, other than those suggested by the class theory, supported the NSDAP. Northwest Germany (Region 3) shows evidence of both mass society and class theories—positive and significant estimates for DTURN and TOTSELF, respectively. In contrast to Middle Germany, the value of BCTRADE is negative and significant suggesting, perhaps, that the immunity of political confessionalism was experienced by a different sector of the working class. The results for the Rhineland (Region 4) support both the class and mass society theories—positive and significant values for TOTSELF and DTURN respectively—but, as in the East and in Northwest Germany, not in a mutually exclusive manner. In Bavaria, unemployment is positive and significant, the only region where this is the case, providing alternative support for the mass society thesis. BCTRADE (blue-collar workers in trade and transport) is the only significant class variable; it is positive and significant, as in Middle Germany. In Baden-Württemburg, clear support is given for the mass society and political confessionalism theories as DTURN (change in turnout) is the only significant (positive) variable other than the Protestant vote.

Our modelling of the NSDAP vote of 1930 at national and regional scales demonstrates that no general interpretation or theory of that vote is adequate by itself. Only the variable for the Protestant proportion (PROT) is consistently significant. Surprisingly, the variable for the change in turnout (DTURN) is next in line, achieving significance in the regions of East and Northwest Germany, the Rhineland, and Baden-Württemburg, followed by the socioeconomic variables of TOTSELF (self-employed workers), BCTRADE (blue-collar workers in trade and transport), and MANIND (manual industrial workers) which are significant in three or fewer regions. The general impression that the Nazi vote in 1930 benefitted from the surge in unemployment has little merit. Nor does the industrial working-class effect play much of a role when viewed at regional scales. Class voting among regions is markedly weaker than might appear from the national vote or from the literature's conventional wisdom of working-class loyalty to the Communist party. The "catch-all" party thesis is not supported by the regional results since, in only one region, Central Germany, does more than one class variable appear as significantly positive.

Conclusions

Analysis of the German electorate in 1930 indicates that support for the Nazis was place-specific when viewed from the meso-scale of the Kreisunit. Regional heterogeneity within Germany and local differences within German regions were pronounced, and these variations complicate national trends. Putting this another way, the contexts within which voters made their decisions were multidimensional, with multilayered composites of structural (socioeconomic) and spatial influences. Different regions experienced the political situation and the Nazis' national agenda in different ways; German local circumstances mediated voting behavior. Even though the specific contributions of various contextual factors (friends-and-neighbors, social and family networks, party organization, candidate appeal, political personality, etc.) cannot be disentangled from aggregate voting data, the evidence indicates unequivocally that these local circumstances, however obscure to the analyst, were important. Our main methodological conclusion after modelling the NSDAP vote in 1930 is straightforward: national models need to be refined so that generalizations are at once more "domain-specific" (i.e., conditionalized) and more sensitive to local ways of life. Our main substantive conclusions are similarly pointed: the Nazi

electorate was hardly homogenous across Germany, and studies that report NSDAP voting propensities of specific subgroups or dismiss as incidental voter residence (McAllister 1987) invite the geographer's misgivings. The significance of place does indeed vary with regional context.

This study also calms methodological fears over the use of aggregate data in the study of electoral behavior. These data do not preclude detailed analysis of elections in general or the NSDAP electorate in particular. Instead of manipulating data in ways that permit ecological inferences, we use the aggregate spatial data as a means of drawing conclusions based upon the spatiality of the data. Our study's inclusion of space in an analysis of the NSDAP vote substantially increased the explanatory value of our models as compared to previous studies of the national Weimar electorate.

Spatial analysis of the sort attempted here also offers an evaluation of the five theories of Nazi party support. Based upon our analysis, there are no clear-cut winners or losers. Though our analysis is confined to just one Reichstag election (the 1930 election), that election happened to be the most critical for the Nazis' ascent to power. It defined, as it were, the core of the Nazi electorate in the party's transition from a splinter group to a national party. Of the various schools of thought on the rise of the NSDAP, Burnham's (1972) theory of political confessionalism receives the strongest support in our analysis. It is worth noting that membership in the Catholic church offers greater immunity to the Nazi appeal than membership in the industrial proletariat. The theory of economic self-interest receives the weakest support. Unemployment, an indicator of economic stress, is significantly positive in only one region, Bavaria. As for theories of class and mass society, the simultaneous significance of the variables for self-employment (TOTSELF) and change in turnout (DTURN) in the East and Northwest Germany (Regions 1 and 3) suggest that these theories are not mutually exclusive.

The proponents of the "catch-all" party (*Volkspartei*) thesis, like Falter (1992), may interpret the simultaneity of significant variables as evidence for voter eclecticism. However, the mix of class, confessional, mass society and economic self-interest variables—that would support a catch-all party thesis—do not appear in any region. Perhaps the most surprising of our findings is the positive relationship between the change in turnout (DTURN) and the Nazi vote in four of the six German regions. The mobilization of non-voters, though seen in earlier studies as an important component of the Nazi electorate after 1930 (Falter 1986a), seems to have played a larger role in the 1930 election as well.

In this paper, we present evidence of the role of space and place as determinants of the vote for the Nazi party in 1930 Weimar Germany. Aspatial models of the NSDAP vote, we argue, are less than satisfactory because they ignore the regional and local contexts of the voting decision. Like other electoral geographers, we believe that insights into the complex voting decision are obtained by the union of spatial and socio-economic data in mixed spatial-structural regression models. Rather than eliminating contextual factors by statistical controls (as seems to be the preferred approach in Nazi party voting studies), we suggest that the locally and regionally specific conditions constitute integral variables in the analysis. Only in this way, we believe, will we forge new insights into the complexity of the aggregated blocks of voters for and against the Nazi party.

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Notes

1. Some small boundary changes occurred between the date of the election (1930) and the date of the construction of the OSS map. The effects of these adjustments are minimal on the topology of the spatial weights matrices. The boundary changes were the result of, among other things, the suburbanization of the population and the concomitant division of larger into smaller units. There was a continuity of local government boundaries in most of the German states (Falter and Gruner 1981). These sorts of changes have minimal effects on the topology of the map and the definitions of contiguity using the 56 kilometer distance band.
2. Turnout would be considered as a jointly dependent variable had we used the turnout rate for the 1930 election. By using the change in turnout between the 1928 and 1930 elections, our measure of turnout may be regarded as an independent variable.
3. Insignificant variables were white-collar and blue-collar employees and their dependents in various sectors of the economy, Catholic middle-class, civil servant ratio, women in the labor force, urban population ratio, agricultural workers ratio, plant debt, specific agricultural and industrial bases, and the ratio of the Communist party vote in neighboring Kreisunits in 1928. These results are available from the authors.
4. Moran's I can be formally expressed as

$$I = (N/S_0) \sum_i \sum_j w_{ij} x_i x_j / \sum_i x_i^2$$

where w_{ij} is an element of a spatial weights matrix W that shows whether or not i and j are contiguous; the spatial weights matrix is row-standardized such that its elements sum to one; x_i is an observation at location i (expressed as the deviations from the observation mean); and S_0 is a normalizing factor equal to the sum of all weights ($\sum_i \sum_j w_{ij}$). The significance of Moran's I is assessed by a standardized z-score that follows a normal distribution and is computed by subtracting the theoretical mean from I and by dividing the remainder by the standard deviation. Since the NSDAP vote shares in Kreisunits do not follow a normal distribution (only for Region 1 and Region 2 is the assumption of normality retained), we based the z-score on the randomization assumption (for technical details, see, among others, Cliff and Ord 1973; 1981; Upton and Fingleton 1985). All computations are carried out by means of the *SpaceStat* data analysis software (Anselin 1992).
5. The respective Moran's I values for the main parties in the 1930 election with a distance band of 56 kilometers were: NSDAP .239; KPD (Communists) .288; SPD (Social Democrats) .288; Zentrum (Catholic) . 410; DNVP (Conservative Protestant party) .626.
6. The G_{i*} statistic is computed for each location i as

$$G_{i*}(d) = \sum_i w_{ij}(d) y_j / \sum_j y_j$$

where $w_{ij}(d)$ is an element in a binary contiguity matrix (not row-standardized) corresponding to a cut-off distance of d; and y_j is an observation at location j. The G_{i*} statistic should be interpreted as a measure of the clustering of like values around a particular observation. An expected value and standard deviation can be computed for each observation, and the significance of the index can be assessed by comparing a standard z-score to a distribution (for technical details, see Getis and Ord 1992). A positive z-value for the G_{i*} statistic at a particular location implies spatial clustering of high values around that location. A negative value implies the converse. This contrasts with traditional interpretations of spatial association in which both cases would be considered to be positive association.
7. The use of aggregate data in electoral studies has been hampered by two problems; the ecological fallacy (Robinson 1950; Hanushek et al. 1974; King 1990; Freedman et al. 1991; and Grofman 1991; among others) and variable size of the data units, the modifiable areal unit problem or MAUP (Openshaw and Taylor 1979; 1981; Tobler 1990; Fotheringham and Wong 1991). In the case of Nazi Germany, inferring individual effects from aggregate data calls for heroic assumptions about the homogeneity of the electorate. But because the focus of our study is the effects of space and place, the choice of an aggregate spatial unit of observation such as the Kreisunit is legitimate since the ecological fallacy is not an issue. If on the other hand, our goal were to explain individual behavior, the data and model would have to satisfy a number of restrictive conditions before inferences based on spatial aggregates could be extrapolated. Without data on the voting behavior of individuals, it is impossible to assess the validity of such assumptions.
8. The main difference between binomial and normal distributions in regression analyses is that the former is intrinsically heteroskedastic. Indeed, the variance of a proportion p_i is equal to $p_i(1-p_i)/N_i$, where p_i is the Nazi party proportion in areal unit i, and N_i is the size of the unit (i.e., the number of votes cast). In other words, the dependent variable's variance is different for each observation and the magnitude of the variance depends on the value of p_i and on N_i. Unless N_i is the same for all observations (which is sometimes the case in controlled experiments) and p_i is constant, the usual assumption of homoskedasticity (constant variance) will be violated. As a result, estimation by means of ordinary least squares will be inefficient. In large sample sizes (i.e., for large N_i), the binomial distribution of a proportion approaches the normal distribution (e.g., this would be a legitimate assumption for Region 1 and 2 in our study, but not for the others). In large samples, such as ours, the normal distribution is assumed and is used in

the linear-proportions model, where the theoretical probabilities π_i are expressed as a linear function of a set of explanatory variables; $\pi_i = x_i\delta$, where x_i is a row vector of values of the explanatory variables, and δ is a corresponding vector of parameters. In practice, π_i is unobserved and replaced by the proportions p_i, such that $p_i = x_i\delta + \varepsilon_i$, where ε_i is a heteroskedastic error term.

The relationship between a percentage of the vote and values of the independent variables can be empirically non-linear. For very large values of some explanatory variables, predicted vote shares of greater than 1.0 and less than 0.0 may result. If these large values are unlikely to occur, then it is not necessary to impose non-linearity. A linear function may be a much better approximation to the relationship between dependent and explanatory variables when the only observations are in the middle of the spectrum. When no observations are present with 0 and 100 percent, there is no empirical support to suggest a logit or probit curve at the extremes, so that the nonlinear function may, in fact, be inferior.

A linear-proportions model may be consistently estimated by means of iteratively weighted least squares (also called the minimum chi-squared method) using the square root of $var(p_i)$ above as the weights. In practice, the weights are constructed from the predicted proportions in each earlier iteration (for technical details, see Maddala 1983; King 1989). Note that the linear-proportions model is only appropriate as a large sample approximation; otherwise it is internally inconsistent (a binomial dependent variable is modeled as a normal one).

An alternative to the weighted least-squares approach is robust regression based, for example, on the Jacknife. The Jacknife method yields results that are robust to non-normality and heteroskedasticity; the method is very suitable for linear-proportions specification, although it is not as efficient as incorporating the correct error distribution in the model specification. The method's estimates are the same as for ordinary least squares, but the variance for those estimates (on which statistical inference is based, e.g., a t-test) differ (see Anselin 1990 for details on its implementation in spatial-regression models). In the analysis which follows, we use both a Jacknife regression and a weighted least-squares (minimum chi-squared) estimation of the linear-proportions model.

9. Since logit and probit models are based on the assumption of independently distributed errors, the presence of spatial autocorrelation results in inconsistent estimates. Incorporating spatial dependence is analytically intractable in a logit model but it can be done in a probit model, albeit the models are complex and their implementation is beyond the scope of this paper (for examples and a technical discussion, see Case 1991; 1992; McMillen 1992).
10. The regression diagnostics for multicollinearity, non-normality, heteroskedasticity, and spatial dependence are provided in *SpaceStat*. For technical details on the first three, see Anselin (1992). Given our interest in spatial effects, we briefly outline the tests for the forms of spatial dependence in regression analysis. The first of these is substantive spatial dependence or autocorrelation resulting from a spatial lag, or Wy. This model is specified as

$$y = \rho Wy + X\delta + \varepsilon$$

where ρ is the spatial autoregressive coefficient and Wy is a spatially-lagged dependent variable. A Lagrange Multiplier test for spatial dependence (Anselin 1988b) is

$$LMlag = (e'Wy / s^2)^2 / (RSS2 / s^2 + t)$$

where e is a vector of a least-squares regression residuals; Wy is the spatial lag of y; $s^2 = e'e/N$ is the maximum likelihood estimate of the residual variance; RSS2 is the residual sum of squares in a regression of the spatially-lagged predicted values (WXb) on the explanatory variables (X); and t is the matrix trace of $(W'W + W^2)$, where W is the spatial weights matrix. This statistic is asymptotically distributed as chi-squared with one degree of freedom.

The second form of spatial dependence, spatial error, is confined to the error terms and is given by the standard regression specification $y = X\delta + \varepsilon$, (X is a matrix of independent variables) together with a spatial autoregressive process for the errors: $\varepsilon = \lambda W\varepsilon + \mu$, where λ is the spatial autoregressive coefficient, $W\varepsilon$ is the spatial lag of the error terms, and μ is an uncorrelated normal error term. A Lagrange Multiplier test for spatial error dependence is given by Anselin (1988b).

$$LMerr = (e'We / s^2)^2 / t$$

where e is a vector of least-squares residuals, We is a vector of their spatial lags, and the rest of the notation is as above. This statistic is also asymptotically distributed as chi-squared with one degree of freedom.

While there are other tests for spatial dependence, for example, Moran's I applied to residuals, we focus here only on the Lagrange Multiplier tests since they are the most reliable indicators of the forms of spatial model that should be implemented (see Anselin and Rey 1991 for technical details).

11. The Kiefer-Salmon tests for non-normality of the residuals (51.0 unconstrained model and 59.0 constrained model) are highly significant ($p < .00001$) for a chi-squared variate with two degrees of freedom. The robust (to non-normality) Koenker-Bassett test for heteroskedasticity is also significant ($p < .00001$). For technical details on these tests and their implementation in *SpaceStat*, see Anselin (1992).
12. The LMerr test in the unconstrained model is 44.7 for simple contiguity and 49.6 for distance contiguity and in the constrained model, 44.3 for simple contiguity and 50.6 for distance contiguity. All are highly significant ($p < .00001$). The LMlag statistics are also significant, but less so (29.3 for simple contiguity and 17.9 for distance contiguity in the unconstrained model and 28.7 and 18.2 in

the constrained model). Based on the rules of thumb in Anselin and Rey (1991), we conclude that the main form of spatial dependence is error autocorrelation, i.e., spatial autocorrelation of the "missing variables" (the error terms). While the diagnostics must be interpreted with caution given the high degree of heteroskedasticity and non-normality, they offer strong indications of spatial autocorrelation at the national level. We chose not to implement a mixed structural-spatial model at the national scale, however, because regional scale analyses indicate considerable variation of spatial dependence by region. Moreover, some of the spatial error autocorrelation in the national regressions may result from the inclusion of the identical set of variables for all Kreisunits, a dubious procedure given the extent of spatial heterogeneity in the regional models. The proper place to implement mixed structural-spatial models hence is at the regional level; the model at the national level is fraught with specification problems.

13. The Jacknife estimate for the coefficient variance (used to compute the asymptotic t-values in Table 2) is robust to heteroskedasticity and non-normality but not to spatial dependence. Spatial error autocorrelation leads to biased and inconsistent estimates of coefficient variance (and measures fit) but the estimates themselves are consistent (in contrast to what happens in the case of spatial lag dependence).
14. In contrast to the national results, the regional analyses report marginal differences in significance (besides small numerical differences in the estimates themselves) between the robust Jacknife results (not reported here) and the weighted least-squares results (Tables 3 and 4). For Northwest Germany and Baden-Württemburg, the qualitative interpretation (significance) is the same. For the East, the variable DTURN, which remains in the constrained model using weighted least-squares, is not significant at $p < .05$ for the Jacknife estimate ($p = .06$). Similarly, for Bavaria, the variable UNEMP which is included in the constrained model using weighted least-squares is not significant with the Jacknife ($p = .22$). In these two instances, the weighted least-squares results should be interpreted with caution, given the presence of other sources of misspecification to which the Jacknife estimate is more robust. The reverse is the case for Central Germany and the Rhineland. In Central Germany, the variable MANIND is not significant at $p < .05$ using weighted least-squares ($p = .08$) in the unconstrained model but we included it in the constrained specification since it is highly significant for the Jacknife estimates ($p = .002$). In the constrained model in Table 4, the weighted least-squares estimate is marginally significant ($p = .05$), while the Jacknife result (unreported) is much stronger ($p = .01$). For the Rhineland, the difference is somewhat more pronounced with respect to the variable TOTSELF. The unconstrained weighted least-squares estimates in Table 3 are not significant ($p = .25$), while the Jacknife estimates (unreported) are significant at $p = .01$. Therefore, this variable is included in the constrained model for the Rhineland in Table 4, where TOTSELF is now significant at $p = .02$ (the Jacknife estimate in the constrained model is significant at $p < .01$).
15. Since the traditional R^2 is an inappropriate measure of fit for weighted least squares, we use the squared correlation between observed and predicted values as a pseudo-R^2.
16. All diagnostics are based on ordinary least-squares residuals. These are available from the authors, and they are standard output from the *SpaceStat* software.
17. Multicollinearity is especially high for the unconstrained models in the Rhineland, Bavaria and Baden-Württemburg, with condition numbers of 28.4, 34.2, and 61.4, respectively. The constrained models report condition numbers of 9.4, 6.1, and 5.1, respectively. The highest condition number in the constrained model is 23.0 for Central Germany.
18. The contiguity matrices for each region are subsets of the matrices of the nation. Because they do not include neighboring Kreisunits located in different regions, some boundary effects are ignored; the impact of this effect is likely to be negligible given the location of spatial clusters within the nation (see also the G_i^* statistics in Figure 4).
19. In the constrained models, the LMerr statistics for Central Germany, Northwest Germany, the Rhineland, and Bavaria are 3.06, 0.18, 2.24, and 1.71, respectively, for simple contiguity, and 1.06, 0.46, 0.66, and 0.60, respectively, for distance contiguity, none of which are significant at $p < .05$ for a chi-squared variate with one degree of freedom. The corresponding LMlag statistics are 0.18, 0.01, 1.87, and 0.003 for simple contiguity, and 0.57, 0.95, 0.0002, and 2.52 for distance contiguity. Again, none are significant at $p < .05$.
20. For the constrained models in the East and Baden-Württemburg, the LMerr statistics are 8.74 ($p = .003$) and 10.97 ($p < .001$) for binary contiguity, and 10.66 ($p = .001$) and 27.97 ($p < .000001$) for distance contiguity. The corresponding values for LMlag are 8.74 ($p = .003$) and 15.07 ($p = .0001$) for binary contiguity, and 11.48 ($p < .001$) and 42.92 ($p < .000001$) for distance contiguity.
21. The maximum likelihood approach is the most often used method in this situation, though it may lead to misleading inferences when the assumption of normality (and heteroskedasticity) is violated. Its technical aspects are outlined in Cliff and Ord (1981), Upton and Fingleton (1985), and Anselin (1988a), among others. The bootstrap method is a resampling procedure that may be applied to a wide range of statistical models; implementation in spatial regression models is outlined in Anselin (1990). It is used here to assess the extent to which the lack of normality (indicated by the regression diagnostics for both the East and Baden-Württemburg) affects inferences. The bootstrap is based on estimation using instrumental variables. In this study, we use the first-order spatial lags of the structural explanatory variables in Table 5.
22. An additional indication of the correct specification of spatial dependence in the form of a spatial

lag for distance contiguity is the lack of spatial error autocorrelation in this model. The Lagrange Multiplier statistic for this type of autocorrelation (distributed as chi-squared with one degree of freedom) equals 0.33 ($p = .57$) (Anselin 1988b).

23. The results for the bootstrap estimation of the lag model with distance contiguity are not reported for Baden-Württemburg. The first step in this procedure, an instrumental variable estimation, yields an autoregressive coefficient of 1.084, which is outside the acceptable range (maximum value of 1). There are two possible reasons for this coefficient estimation. One is that the model is very poor to begin with (with the lowest fit of all six regions) and thus the spatial lags of the explanatory variables are poor instruments. Another is that distance contiguity is not the most appropriate measure for spatial interaction. A test for remaining autocorrelation in the ML estimation (LMerr of 3.1 with $p = .08$) shows a weak indication of remaining error dependence, which is not the case for the simple contiguity weights (LMerr of 0.70 with $p = .40$).

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O'Loughlin, John, Flint, Colin, and Anselin, Luc. 1994. The Geography of the Nazi Vote: Context, Confession, and Class in the Reichstag Election of 1930. *Annals of the Association of American Geographers* 84(3):351–380. *Abstract.*

Competing theories of why voters in Weimar Germany chose the NSDAP (Nazi party) have been only partially supported; the notion of a "catch-all" party, with voters in different classes and social groups, is gaining adherents. Previous research has treated the German electorate as a national unit. Regional and local elements of the voting surface have been generally ignored, even though strong historical and material conditions generated important deviations from the national trends. Using descriptive spatial statistics, this article documents the importance of spatial heterogeneity and dependence in the 1930 Nazi vote. A mixed structural-spatial model, in which

key variables from the several theoretical explanations of the NSDAP vote are included with geographic variables, demonstrates the importance of spatial and contextual effects. Regional variations from the average NSDAP vote (18.3 percent in 1930) persist even after religious and class effects are controlled. Accordingly, domain-specific models based on the regions of Weimar Germany are preferable to national models. The former indicate that specific combinations and relative significances of the explanatory factors vary from region to region. Domain-specific models sustain electoral geography's central tenet, namely, that places and contexts influence voting choices in addition to the social characteristics of the voter. Context introduces a new and important element in the interpretation of the Nazi rise to power. **Key Words:** context, mixed spatial-structural models, Nazi party, spatial heterogeneity and dependence, spatial models, spatial statistics, Weimar Germany.