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MASS DYNAMICS OF U.S. PRESIDENTIAL COMPETITIONS, 1928–1936

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This analysis investigates the mass dynamics of competitive electoral politics with respect to the presidential vote during the 1928–36 realigning period for the United States. A formal system of three interdependent differential equations is employed to characterize the dynamic processes of the aggregate voter shifts between the Republican, Democratic, and nonvoter populations. The modeling strategy is used to locate substantial variations in the mass dynamics between large subgroups in the electorate as well as to identify both national and socially interactive components to the patterns of voter movements. The results show that the overall realignment period was quite complex. Vote switching from the Republican party to the Democratic party was the dominant characteristic of the 1932 election, whereas additional Democratic gains in 1936 came mostly from new voters.

This study examines the roles played by new voters and former Republicans in the dramatic rise in Democratic presidential support between 1928 and 1936. The analysis focuses on the process of deinstitutionalization among voters in a setting of large-scale new voter participation. The term *institutionalization* refers to a constraining influence on electoral competitions and is linked substantively to work by Przeworski (1975) and, to some extent, Huntington (1968). The institutionalization of partisan behavior is identified by the existence of enduring partisan attachments and is viewed as a function of time and the frequency of repeated electoral experiences among voters (i.e., the development of a party "habit"). *Deinstitutionalization* refers to the process by which voters break these former partisan bonds.

There are two factors crucial to the process of deinstitutionalization as it is characterized here. First, the assumption is made that influences that disturb partisan ties affect voters differentially, depending upon the force of the political appeals on particular groups in the population and the strength of each group's previous ties (a central theme in work by Nie, Verba, and Petrocik 1979). Second, previous electoral experiences for certain groups can produce resistance to these appeals. This second factor addresses the concept of political immunization as it has been described by McPhee and Ferguson (1962). Major social and political disturbances of sufficient magnitude to cause large-scale changes in partisan attachments among many groups should affect more strongly those who are the least immunized to alternative partisan appeals.

Critical to the dynamics of the deinstitutionalizing process is the role played by new voters, a totally noninstitutionalized and nonimmunized sector of the electorate. A number of questions on the general impact of new voters on electoral

systems bear particular relevance to this analysis. When new voters enter the electorate in substantial numbers in response to a major social disturbance (such as the Depression), do they do so equally across all subgroups in the population? In terms of the timing of their entry into the electorate, do they begin to participate at moments when there are large partisan shifts as well? Alternatively, are they drawn into the electorate following a previous election in which there was significant excitement generated by large partisan shifts? Or, perhaps, do the new voters enter the electorate in massive waves due to exogenous social and political conditions, subsequently destabilizing the existing partisan alignment and precipitating a full-scale realignment? Answers to these questions are viewed here as central to an understanding of realigning processes and are addressed with regard to the 1928–36 realignment period in the United States.

In characterizing the dynamic processes involved during periods of volatile electoral change, this analysis distinguishes between two separate mechanisms by which such mass movements may occur. The first concerns the ability of nationally distributed political appeals to effectively channel the shifting partisan and new voter movements. The second addresses the ability of localized political forces to act as an intermediating factor in determining the magnitude and direction of the electoral changes. For example, in the case of the new voters, this asks the question of whether new voters are activated by national political forces as presented to them, say, by the national media or whether they are drawn into the participatory setting by other voters and localized partisan campaign forces. Here questions associated with the identification of the relative impacts of these two different political mechanisms of the mass dynamics focus on their independent effects on the new voter and shifting partisan populations.

This analysis begins with a consideration of the conversion-versus-new-voter hypotheses with regard to the 1928–36 electoral period in the United States. It presents a baseline description of the partisan strengths for the United States during the period from 1920 through 1936. It presents and investigates a formal model capturing the dynamics of the partisan competitions and new voter fluctuations and uses the model to identify contrasting patterns in roles played during the 1928–36 realigning period by certain groups in the U.S. population. Then, the magnitudes of the national as well as the more localized political influences are compared to determine the relative strengths of the underlying components of the mobilization and conversion processes.

The Conversion and New Voter Hypotheses

The literature focusing on the conversion-versus-new-voter hypotheses is quite divided. Sundquist (1983, 229–39) uses selective aggregate data to argue that Republican-to-Democratic conversion was the dominant type of electoral activity for the period. Further support for the conversion hypothesis comes from Erikson and Tedin (1981)—who use the *Literary Digest* "straw poll" data—as well as from Key (1964, 523–35), Burnham (1970), Ladd and Hadley (1978), and others. The most prominent proponent of the new voter hypothesis has been Kristi Andersen (1979b), with support for the hypthesis also coming from Converse (1975), Campbell and his colleagues (1960, 153–56), Petrocik (1981, 55–57), and others.

Arguments supporting the conversion hypothesis typically suggest that the steadily worsening national economic conditions of the time produced widespread discontent with the Republican

Table 1. U.S. Presidential Vote As a Proportion of Total Eligibles, 1920–36

Vote	1920	1924	1928	1932	1936
Democratic	.15	.13	.21	.30	.35
Republican	.26	.24	.30	.21	.21
La Follette		.08			
Total vote	.44	.45	.52	.53	.57
New voters		.004	.079	.006	.045

administration. Moreover, Roosevelt was able to mobilize many of these discontent former Republicans. Indeed, he developed a "natural" constituency among the working class, especially coming from the economically hard-hit industrial urban areas (Sundquist 1983, 214–23). The new voter proponents argue that partisan attachments were probably as firm (or nearly as firm) then as they have been found to be in later years (e.g., as reported by Campbell et al. 1960). Thus the new Democratic support probably came from a generation of new voters rather than disenchanted Republicans. Many of these new voters were young, and perhaps also immigrants or descendants of immigrants (see Andersen 1979a, 39–52; Petrocik 1981, 55).

Arguments concerning virtually all of the above hypotheses have relied on data around whose quality and completeness there are controversies. Andersen's use of the 1952–72 Survey Research Center/ Center for Political Studies data to reconstruct the partisan voting habits of the respondents in terms of how they voted in the 1920s and 1930s has been seriously challenged by Erikson and Tedin (1981), Sundquist (1983, 229–39), Niemi, Katz, and Newman (1980, 648), and Reiter (1980). Erikson and Tedin (1981) have tried to address this problem by using the only available survey data for the period. However, they acknowledge that the "straw poll" data collected by the *Literary Digest* is of a "tarnished sort" (Erikson and Tedin 1981, 952). Problems of sampling technique abound, and the authors disagree with Shively's characterization of the nature and direction of the various biases (see Erikson and Tedin 1981, 953 and Shively 1971–72, 62). To date, users of aggregate data have hardly fared better. Previous studies have typically limited their analyses to particular geographical areas. The widespread use of "heuristic" samplings of aggregate data to study realignments goes back to Key (1955). For example, Key uses data for various towns in five states, and Sundquist (1983, 236–37) uses selected county and town data from five states. Yet there is no guarantee that the selected areas are representative of the nation as a whole. In sum, there are no reliable survey data for the period under study, and until now there has never been available for analysis a single *complete* set of electoral and census data for all of the United States using (the relatively small) county-level aggregations.[1]

Table 1 presents the aggregate electoral strengths for the Democratic and the Republican parties in the presidential contests from 1920 through 1936. All of the results in Table 1 are written as proportions of the eligible electorate and thus can be understood as measures of mobilization. These measures differ from those commonly presented elsewhere. Typically, the electoral outcomes of the period are represented either as vote shares (i.e., as proportions of the total vote) or as partisan vote totals. For example, vote shares are used by Ladd and Hadley (1978, 43) and Key (1964, 523–40), while partisan raw totals (i.e., actual votes) are presented by Andersen (1979a, 29).

There are problems with the vote share and raw totals methods, however. Vote shares can produce a misleading interpretation of overtime aggregate change in situations in which the total vote is also changing. For example, it is possible for a party's share of the vote to decrease due to an expansion in the denominator (i.e., the total vote) while at the same time the party has not lost any of its previous support from the population. In a situation in which new voters are suspected of playing a pivotal role in determining the direction of a shifting partisan balance, a vote share measure can indicate partisan shift when there may have been only new voter movement. The use of actual votes, or raw totals, instead of vote shares encounters a related problem. Comparing raw partisan totals at different points in time makes most sense when the size of the electorate is stable. Such a longitudinal comparison can be misleading in situations in which the electorate (i.e., total eligibles) is expanding or contracting. Thus a party may receive 15 million votes in one election and 16 million votes eight years later, but if the eligible population has increased as well, the increased partisan total need not indicate increased partisan "power" relative to the other parties or the overall electorate. Indeed, the party's support relative to the size of the total electorate could have decreased. Both of the problems mentioned above regarding the vote share and the raw vote measures are unraveled by using the mobilization measure.

The data in Table 1 indicate that both the Democratic and the Republican parties increased the level of support they received from the pool of total eligibles from 1920 through 1928. However, from 1928 to 1932, the positions of the two parties relative to each other virtually reversed. While the Democratic party increased its share of the total electorate from 21% to 30%, the Republican party's support fell from 30% to 21%. Note also that the total vote relative to the electorate increased only slightly from 1928 to 1932. Between 1932 and 1936, however, the total vote did increase substantially (more than four times the 1928–32 increase); while at the same time Democratic strength continued to increase, and Republican strength remained approximately constant. While conclusions regarding partisan shifts can barely qualify as tentative with such large aggregate measures, on the surface at least these results seem to suggest that new voters may not have played as crucial a role in the 1932 election as compared with the election of 1936 and that there indeed may have been an actual realignment in 1932, defined in terms of partisan conversions. The analysis that follows pursues these points more directly.[2]

The Structure of the Party Competition

The model of partisan competition developed below is a time-dependent system of three interconnected differential equations, which, in combination, address expectations of change in aggregated partisan electoral totals. Such models have been successfully exploited in the social-scientific literature by Coleman (1964, 1981), Simon (1957), Przeworski and Soares (1971), Przeworski and Sprague (1986), Sprague (1981), Tuma and Hanna (1984), Luenberger (1979), and Huckfeldt, Kohfeld, and Likens (1982), as well as others and have been notably useful in modeling the dynamics of military spending in competitions between nations (see Gillespie et al. 1977; Ward 1984). This type of modeling is also similar to that employed to characterize time-dependent ecological systems of biological populations within fixed environments (see May 1974). The mathematical theory underlying the analytic and dynamic properties of all such systems,

both linear and nonlinear, is complete (Hirsch and Smale 1974; Kocak 1986; Luenberger 1979). Here we are interested in modeling the population fluctuations of three groups in the political environment: Democrats, Republicans, and nonvoters. We want a mathematical statement that corresponds to each group and describes change as a function of existing voter support for all other groups. Thus we desire three statements that when taken together describe the voter movements among parties as well as shifts between parties and nonvoters, all of which take place simultaneously at each point in time.

We begin by developing a model of the mass electoral dynamics for the Democratic party. In this analysis, we differentiate between two types of dynamic processes that could lead to growth or decay in the various partisan populations. The first type to be developed below is labeled the "uniform" component to aggregate partisan movements. In 1932 it is likely that many voters throughout the nation were energized through a national appeal to the electorate's broad social sensibilities. For example, widespread discontent with the Republican handling of the economy could have led to the development of a generalized sympathetic ear across the electorate for the Democratic message. Moreover, this increased attentiveness for the Democratic appeal could have affected many voters independently of their localized partisan environment (i.e., "uniformly" across the nation); that is, it may not have mattered whether or not there existed a strong Democratic presence within the voters' localized milieu. Rather, a certain number of Republicans, based only on the number of Republicans available within a given area, would have weighed their electoral options and decided to switch their support from the Republican party to the Democratic party.

If we use the proportion of the localized electorate that supports the Republican party as a measure of the size of the Republican population (theoretically available for conversion to the Democratic party), then we can express the change in support for the Democratic party as

$$dD/dt = fR. \tag{1}$$

Here, R is the proportion of the electorate supporting the Republican party, D is the proportion of the electorate supporting the Democratic party, and f is a parameter of the model that corresponds to the probability of the occurrence of a Republican-to-Democratic conversion within the population at an instant in time. Throughout this analysis, this type of dynamic process is referred to as the "uniform" component of the model, due to the sense of the voter calculations assumed and the independence of the above mathematical statement from the strength of the localized Democratic presence, which might have conditioned, through social interaction with the existing Democratic environment, the rate of conversion to the Democratic party.

Yet this suggests another way in which partisan conversions may take place. The rate at which the national Democratic appeal produces new Democratic converts could have a social (i.e., contextual) component as well; that is, voters may see how others in their local environment react to the Democratic message. In areas in which there exists at least a moderate Democratic presence, pro-Republican sentiments on the part of some voters might be more difficult to defend. The availability of accepted alternative partisan perspectives within politically heterogeneous neighborhoods, combined with the institutional strength of a locally stronger Democratic party's electoral apparatus, should be enough to loosen the grip of the Republican party on some voters and thus allow for a higher level of conversion to the Democratic ranks. Thus we wish to capture in our modeling efforts

the effects of interacting partisan populations in producing electoral change.

The above argument can be included in the model for change in the support for the Democratic party over time by rewriting equation 1 as

$$dD/dt = fR + bRD,$$

where b is a parameter in the model and expresses the probability of a Republican-to-Democratic conversion at an instant of time due to the conditional strengths of both partisan populations interacting simultaneously. This is the second type of dynamic process to be included in the model, and it is referenced below as the "social" component. It addresses the dynamics of locally interacting partisan populations, and its inclusion here reflects the lessons of some recent research indicating that the impact of such localized social forces on voter responses to electoral battles can be substantial in magnitude and crucial to the specification of the properties of aggregated partisan movements (Beck 1974; Brown 1987; Huckfeldt and Sprague 1987, 1988; MacKuen and Brown 1987).

All such interaction terms, as specified above, are symmetric in the sense that interactive growth for the Democrats is low when either there are (1) few Democrats interacting with few or many Republicans or (2) few Republicans interacting with few or many Democrats. Interactive growth is greatest when there are sizable Democratic and Republican populations, which is both an expected and desirable property of the above characterization of the partisan competitions. The above specification of such an interaction is well represented in an extensive social-scientific literature on communication, contagion, and diffusion modeling (Coleman 1964; Huckfeldt 1983; Huckfeldt, Kohfeld, and Likens 1982; McPhee 1963; Przeworski and Soares 1971; Rapoport 1963, 1983; Simon 1957; Sprague 1976). Such terms are also common in ecological models of interspecies interactions within contained biological ecosystems (Danby 1985; Haberman 1977; May 1974; Rosen 1970).

Democratic party electoral strengths can also improve due to an infusion of new voters to the party ranks. This addresses the hypothesis that the mobilization of new voters was a crucial factor in the changing Democratic fortunes between 1928 and 1936. It is possible for the new votes to be mobilized due to a national appeal to their potential partisan sensibilities, thus attracting new voters in correspondence to the size of the localized nonvoting population. Struck by the declining national economic fortunes and the possibility of change given by a new Democratic leadership, perhaps many former nonvoters made the decision to begin to participate in the partisan contests.

However, new voter movements need not have been limited to a response to a national appeal, the "uniform" component of the model. Previous nonvoters could also be motivated to vote due to interactions with partisans. Such interactions can be both direct and indirect. The effectiveness of an established partisan apparatus in mobilizing the vote by establishing direct contact with potential voters is a result that was reported long ago by Gosnell (1927) and evidenced repeatedly since. Partisan interactions with the nonvoting population leading to the mobilization of new voters can also be indirect, however. By themselves, nonvoters can witness the partisan characteristics of their communities. In some areas in which Republican norms are very strong or, perhaps, where overall voting activity in either partisan direction is very slight (i.e., turnout is traditionally low), it may be that nonvoters lack the relevant localized partisan cues that would cause them to initiate the internal processes of becoming politically involved. However,

in areas in which Democratic partisan activity is already established, some nonvoters may follow the lead of their local political environment (keeping up with the Joneses, so to speak) and begin their trek to the polling booths. This addresses the "social" component of the new voter mobilization for the Democratic party.

Both the uniform and the social components of the new voter mobilization dynamics for the Democratic party can be included in the above model as

$$dD/dt = fR + bRD + mN + aND, \quad (2)$$

where N is the proportion of the electorate which is nonvoting, and m and a are parameters of the model. The parameters m and a, respectively, reflect the probability of mobilizing a Democratic supporter at an instant in time from within the localized pool of nonvoters due to the nonvoters' consideration of the appeal of the national campaign independent of local partisan traditions, as well as to the interaction between the nonvoting population and the local Democratic partisan environment.

Finally, it is possible that none of the components of the model describing fluctuations in Democratic partisan populations will completely capture the aggregate movements between Republicans and Democrats as well as between nonvoters and Democrats. This addresses the realistic considerations involved in mapping any model to a body of data. Thus it is important to include a constant term in the above expression that allows for Democratic population change independent of the included components. Equation 2 can now be rewritten as

$$dD/dt = fR + bRD + mN + aND + k, \quad (3)$$

or, for economy,

$$dD/dt = R(f + bD) + N(m + aD) + k, \quad (4)$$

where k is the constant element of the derivative and a parameter of the model.

It is important to note that while the analysis here refers to the above components of the model in terms of voters moving from one group to another, the components are actually capturing the net movements between groups. Thus, the parameter b captures the net interactively determined change between the Democratic and Republican parties. This "net" is, of course, the difference between the total of Republican-to-Democratic conversions and the simultaneous Democratic-to-Republican conversions. This is a characteristic of all models, both statistical and formal, which rely on aggregate-level data. There is no way for independent estimates to be derived that capture the changes in both directions.

However, the question remains as to whether this potential crisscrossing movement would seriously bias one-way interpretations that one might like to draw from the analysis. This depends on the degree of crisscrossing that actually occurred. The data used in this analysis clearly suggest that any potential interpretive bias would be extremely small. Using U.S. county-level aggregations, only eight (.3%) of the approximately three thousand counties experienced a decrease in the Democratic vote in 1932 combined with an increase in the Republican vote. If there had been a significant degree of crisscrossing, surely this would have been more detectable on the national level, ecological considerations notwithstanding. The situation is similar regarding Democratic and nonvoter crisscrossings in 1932. Only 2.4% of the counties experienced a decrease in the Democratic vote combined with an increase in the nonvoter populations. In 1936 there were larger number of counties experiencing decreases in the Democratic vote combined with increases in the Republican and nonvoting populations (34% and 22% respectively). However, *all* of these

cases occurred in farm areas, which are accurately accounted for in the conditioning analysis presented below. Thus the one-way movements of the electorate clearly seem to dominate these data. Moreover, this closely corresponds to a historical reading of the politics of the times as it is presented in the vast related extant literature. Thus while a discussion in terms of net movements among parties and between parties and nonvoters more closely fits the technical realities of any model that utilizes aggregate-level data, interpretations that phrase these movements in one or another direction probably do no injustice to a historical analysis of the politics of these years.

The model describing longitudinal change in the Republican party population can be developed similarly to that for the Democratic party. Republican defections to the Democrats (or in some cases gains from the Democrats) will occur either uniformly across the nation, independently of the strength of the local Democratic presence, or through the process of local competition in which the strength of the Democratic traditions within each community will condition the rate of partisan change (again, the so-called uniform and social components of the model). Furthermore, gains or losses for the Republicans due to nonvoter volatility can be similarly directed. Given the weak economic conditions of 1932, some Republicans may have simply stopped voting, thus joining the ranks of the uninvolved. Yet some nonvoters with Republican tendencies may have felt that it was time to get involved when their favorite party was under attack. These potential gains and losses for the Republican party could have taken place uniformly throughout the United States, dependent only on the availability of nonvoters in a given community. Alternatively, the nonvoter-Republican shifts may have been dependent upon the interactive effects of the nonvoter and Republican populations. All such partisan and nonvoter trade-offs with regard to the Republican party can be captured with the statement

$$dR/dt = D(q - bR) + N(s + wR) + j, \quad (5)$$

where q, b, s, w, and j are parameters of the model. Here, the parameters q and s control the "uniform" inputs to changing Republican support, whereas the parameters b and w govern the "social" inputs. Note the negative coefficient for the parameter b. This results from its appearance in the statement for change in Democratic support over time (i.e., equation 4). The negative coefficient for the parameter b maintains the accounting compatibility of both models and has implications for the procedures used to estimate the parameters. The parameter j is the constant term of the derivative and is included to identify Republican partisan change that cannot be captured by the other components of the model.

Changes in the nonvoter population of the United States are due to new voter movements to or from the Democratic and Republican parties. New voters can be carried toward a particular party on a wave of national excitement, again, independently of existing local partisan strengths. However, new voters also can be drawn toward a party due to the influence of the local party apparatus or led by the partisan directional cues sensed from the surrounding environment. These two paths address the uniform and social components of the models and can be incorporated directly in a model describing longitudinal fluctuations in the nonvoter population. Thus we have

$$dN/dt = D(g - aN) + R(v - wN) + y, \quad (6)$$

where g, a, v, w, and y are parameters of the model and are identified with respect

to the "uniform" and "social" components of the model as are the corresponding components in equations 4 and 5. The parameters a and w have occurred elsewhere and are included again here to preserve the population compatibilities of the overall system. The parameter y is the constant element of the derivative and describes change in the nonvoting population that cannot be isolated by the partisan-directed components of the model.

Equations 4-6 constitute an interdependent system of three nonlinear differential equations that together describe the mass electoral dynamics between the Democratic and Republican parties as well as between both parties and the nonvoting population. Throughout, the system includes both the "uniform" and the "social" components of population tradeoffs between the three electoral groups (Democrats, Republicans, and nonvoters). The system has general properties and is entirely symmetric in tracing aggregate population shifts from any one group to all other groups. (Some characteristics of the above models written in reduced form are presented in Appendix A.)

While the system can be used to estimate the partisan and nonvoter trade-offs for the entire United States without modification, additional leverage can be gained by identifying different social conditions that could change the magnitude or direction of the partisan and nonvoter shifts. For example, we may be interested in how the system of electoral competition differed in urban areas as compared with rural areas. This can be done by conditioning the system with respect to a separate variable of interest—specifically, by writing each parameter as a linear function of this additional variable (referred to as the "conditioning" variable). Thus, using the parameter f as an example, we can rewrite the parameter using the form

$$f_0 + f_1X.$$

Writing all parameters in this fashion restructures the dynamic characteristics of the overall system with respect to the conditioning variable X (see also Jackson 1987).[3] The unconditioned parameters are recovered under the conditions where $X = 0$. The complete system is now

$$\begin{aligned} dD/dt &= R[(f_0 + f_1X) + (b_0 + b_1X)D] \\ &\quad + N[(m_0 + m_1X) + (a_0 + a_1X)D] \\ &\quad + (k_0 + k_1X) \\ dR/dt &= D[(q_0 + q_1X) - (b_0 + b_1X)R] \\ &\quad + N[(s_0 + s_1X) + (w_0 + w_1X)R] \\ &\quad + (j_0 + j_1X) \\ dN/dt &= D[(g_0 + g_1X) - (a_0 + a_1X)N] \\ &\quad + R[(v_0 + v_1X) - (w_0 + w_1X)N] \\ &\quad + (y_0 + y_1X). \end{aligned}$$

The Data and Estimation

Estimating the parameters in this system is a nontrivial problem. However, an extensive literature does exist that addresses such problems as well as an entire class of related issues. Standard approaches using regression techniques are of no utility here. It is not possible to solve for D, R, and N explicitly. Tuma and Hanna (1984), as well as Coleman (1981), offer linearizing techniques that are useful for analyzing simpler models. These techniques are pursued primarily to recover known statistical properties of the estimators but require algebraically approachable systems allowing the uncoupling of equations. Rather, the model must remain in derivative form and estimations must be obtained using numerical techniques to obtain longitudinal population trajectories for each group. In the social sciences, examples of the use of such techniques include estimations of systems of difference and differential equations addressing concepts of partisan competition (Brown 1987; Przeworski

and Sprague 1986), as well as systems of equations modeling arms race competitions (Ward 1984). The procedures are commonly described in the engineering literature and are often used to solve practical problems employing systems of interdependent differential equations. A lucid summary of such techniques, as well as an introduction to the broad literature on the subject, can be found in Hamming 1971 as well as Dennis and Schnabel 1983. A more complete description of the techniques as they are used in this analysis is contained in Appendix B.

The data used to estimate this system are the electoral returns for all counties in the United States from 1928 to 1936.[4] There are approximately three thousand counties in the United States. All population measures for each group (Democrats, Republicans, and nonvoters) are written as proportions of the eligible electorate (21 years and older). Census information for all counties has been merged with the electoral data to produce an unusually complete collection of U.S. data for that time period.[5]

Three conditioning variables are used in this analysis. They are (1) urbanization (the total urban population measured as a proportion of the total population), (2) the level of farm activity, measured in terms of total county acreage under farm cultivation, and (3) the average number of wage earners in manufacturing industries during 1929, measured as a proportion of the total population. These three conditioning variables are defined as in the 1930 U.S. census, and are included here because their significance to the politics of the period has been repeatedly addressed (not always with parallel interpretations) by the topical literature (Clubb 1978, 75–79; Ladd and Hadley 1978, 66; Lubell 1965, 57; Petrocik 1981, 57; Sundquist 1983, 217).

While other conditioning variables could be used (and others were in analyses not reported here), these three variables seem of particular heuristic value in identifying major differences in the nature of the partisan competitions along lines around which there are prior expectations. For example, contemporary Democratic support is located in large part in urban settings. However, previous to the 1930s, Republicans depended heavily on urban support. How that transfer from Republican to Democratic urban strength took place, and under which dynamic settings is a question of importance substantively. For example, it is of interest to inquire whether the onset of the depression sparked a realignment of existing urban voters in 1932 or rather, whether it caused an upsurge in new voters to swell the Democratic ranks in such areas. Similarly, farmers were among the first groups to be affected by the depression. An examination of the dynamic characteristics of the partisan competitions in farm areas will address questions of whether large sectors of the farm-related population saw the 1932 and 1936 elections as times to abandon the Republican ship, or as times to board the Democratic movement from the quiet land of the previously uninvolved. The working populations fill a similar role in this analysis. Comparing the nature of the partisan competitions in both working and farm areas allows for an examination of crucial differences between diverse populations both in the timing and the manner of their movement to the Democrats. While both the working and farm populations were heavily affected by the depression, it is of interest to know whether differences with the economic, social, and political conditions for each group encouraged dissimilar partisan dynamics.

All of the conditioning variables are standardized to a mean of zero and a standard deviation of one before being entered into the analysis. The transformation inspirits the intuitive interpretation of the conditioning variables as measures of the social milieu, recognizing that small

changes in a social environment (subjectively detectable as a shift in local ambience) can result in more dramatic electoral consequences (see also Blau 1977; Blum 1985; Simmel 1955).

The period from 1928 through 1936 is broken up into two separate time spans. Thus the model is evaluated based on its ability to explain longitudinal county-level population fluctuations for the Democrats, Republicans, and nonvoters for the period from 1928 through 1932 and then again from 1932 through 1936. We are, of course, anticipating that the model will detect and reveal underlying systemic patterns from within the data. However, the system evaluated here measures *change* between and among partisan and nonvoter populations. In situations in which little systemic change has occurred nationally, the model should perform poorly with regard to the measure of fit. In such a case, local noise would dominate. On the other hand, in those cases in which the model does discern a significant national trend in terms of the voter and nonvoter trade-offs, the measure of fit should reflect the system's success in characterizing the period's mass dynamics. Throughout all of the analysis, each case (i.e., county) is weighted by its eligible population.

This analysis examines the mass dynamics of the electoral movements during an unusual period of time in U.S. history. Since available survey data for this period are of questionable reliability, aggregate measures have been used extensively in the extant realignment literature in an attempt to unravel some of the electoral mysteries of those years. This analysis pursues an unusual treatment of the same type of data analyzed elsewhere. This analysis finds correspondence with results by Kramer and others that suggest that the analysis of dynamic aggregate data can be superior to cross-sectional survey data in determining individual-level behavior when the examined behavior involves a systematic longitudinal component (Kramer 1983; see also Barrilleaux 1986; Campbell 1986; Irwin and Lichtman 1976; Parent, Jillson, and Weber 1987; Powell 1986; Sprague 1976). The present analysis is formulated from the perspective of aggregate population trade-offs between groups. The expectations of the model rest with the direction of change in aggregate group memberships. Where aggregate relationships are strong, the corresponding expectations regarding individuals are buttressed from the perspective of the characterization of the mass dynamics.

Results

The results of the parameter estimations for the system are contained in Tables 2–5. The estimates are separated by time periods as well as by the conditioning variables used in the analysis. On the left sides of the tables are the estimates for the 1928–32 period. The estimates for 1932–36 are displayed on the right sides of the tables, next to the estimates for the earlier period. The fits of the models with regard to each group (Democrats, Republicans, and nonvoters) are also included in the tables. The chi-squared statistics test the statistical significance of each estimate in terms of its influence on the prediction surface generated by the overall system and are explained more thoroughly in Appendix B.

Substantive interpretations of the system's characterization of the mass dynamics of the period are difficult to obtain solely from an examination of Tables 2–5. However, while the parameter estimates are used to produce a graphical analysis of the overall system, an interpretation of a few of the estimates is useful heuristically as an introduction to how the graphs are produced. Note in Table 2 that the estimates for the parameter b between both periods (in the unconditioned case) change dramatically in magnitude. Recall

Table 2. Unconditioned Parameter Estimates

Parameters	1928–32 Estimates	1928–32 Chi-Squared ($df = 2$)	1932–36 Estimates	1932–36 Chi-Squared ($df = 2$)
F	.17663	552,344	.16550	261,216
B	.28495	210,164	.00220	15
M	.05874	202,611	.04801	78,357
A	.21841	218,718	.08603	44,440
G	.06158	39,570	-.07332	115,710
Q	-.04302	34,852	.05017	94,374
S	-.02308	32,020	-.00871	4,170
W	-.18302	154,735	.04190	4,571
V	-.11234	129,542	-.14990	200,499
K	-.00918	22,113	-.00349	2,369
J	-.01609	70,537	-.00461	6,737
Y	-.02275	79,659	-.00806	11,773

Note: 1928–32 models and fits: Republican, .72210; Democratic, .70980; nonvoter, .29513. 1932–36 models and fits: Republican, .10401; Democratic, .46233; nonvoter, .59062.

Table 3. Urban-conditioned Parameter Estimates

Parameters	1928–32 Estimates	1928–32 Chi-Squared ($df = 2$)	1932–36 Estimates	1932–36 Chi-Squared ($df = 2$)
F1	-.041184	73,638.4	.016983	6,436.4
B1	-.013620	1,035.9	.007756	447.3
M1	.006823	6,293.5	.017480	19,756.1
A1	.003570	154.7	.009544	1,354.1
G1	.012993	4,157.1	-.013117	9,240.0
Q1	.045386	89,041.7	-.018512	31,892.4
S1	-.014611	27,723.4	.007009	5,468.0
W1	.008769	949.4	.001171	10.6
V1	.009201	2,043.3	-.005351	638.6
K1	-.001442	1,323.4	.000179	13.5
J1	-.000850	445.5	-.000590	254.3
Y1	-.003496	4,321.9	-.001291	699.7

Note: 1928–32 models and fits: Republican, .75175; Democratic, .73101; nonvoter, .30703. 1932–36 models and fits: Republican, .16159; Democratic, .533219; nonvoter, .61885.

Table 4. Workers-conditioned Parameter Estimates

Parameters	1928–32 Estimates	1928–32 Chi-Squared ($df = 2$)	1932–36 Estimates	1932–36 Chi-Squared ($df = 2$)
F1	-.056730	50,843.8	.018393	2,814.2
B1	-.025263	1,153.9	.008776	197.6
M1	.004884	994.3	.025507	13,335.3
A1	-.003974	57.8	.011860	611.7
G1	-.007105	380.4	-.014155	3,175.2
Q1	.081014	82,174.5	-.030970	26,567.4
S1	-.018781	13,699.8	.010886	4,112.4
W1	-.034929	5,483.0	.002252	14.8
V1	.030527	8,471.5	-.007042	402.6
K1	-.002115	908.5	.000393	21.1
J1	-.001122	241.1	-.000650	98.1
Y1	-.003614	1,518.3	-.001862	460.6

Note: 1928–32 models and fits: Republican, .76030; Democratic, .74926; nonvoter, .32356. 1932–36 models and fits: Republican, .17262; Democratic, .52578; nonvoter, .61129.

Table 5. Farm Density-conditioned Parameter Estimates

Parameters	1928–32 Estimates	1928–32 Chi-Squared ($df = 2$)	1932–36 Estimates	1932–36 Chi-Squared ($df = 2$)
F1	.049522	5,045.8	-.055609	4,333.1
B1	.035395	256.4	-.022492	183.7
M1	-.003735	259.9	-.012324	1,572.3
A1	.012268	227.9	-.013577	392.4
G1	-.039536	3,149.1	.031656	4,860.7
Q1	-.074097	20,940.7	.032871	9,013.1
S1	.017093	5,855.5	-.019620	6,467.1
W1	-.032939	1,168.3	-.002274	3.6
V1	.038948	1,789.7	.018547	447.5
K1	.001887	215.5	-.003577	602.0
J1	-.000359	8.5	.001869	265.2
Y1	.003798	506.7	.001154	58.7

Note: 1928–32 models and fits: Republican, .78489; Democratic, .73126; nonvoter, .31185. 1932–36 models and fits: Republican, .15693; Democratic, .54827; nonvoter, .63657.

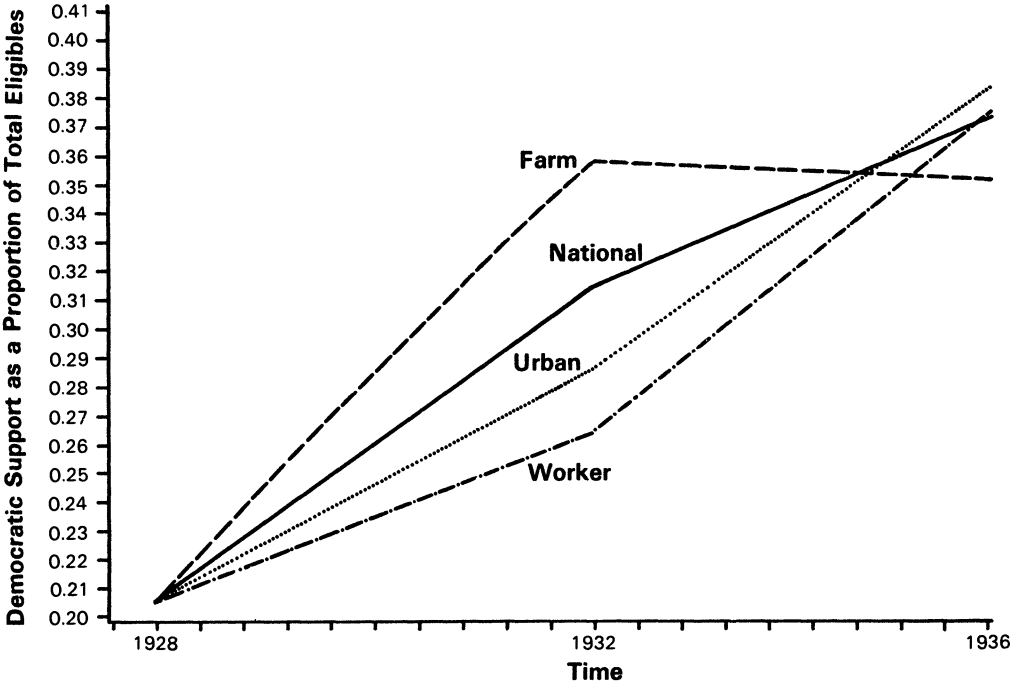
that the parameter b represents gains for the Democrats due to interactive losses (i.e., the "social" component of the model) from the Republicans. These results suggest that the Democrats gained heavily from the Republicans in this fashion during the 1928–32 period but not nearly so heavily during the later period. Similarly, the estimate for the parameter q changes substantially from the early to the later period. In this case, the magnitude remains approximately the same, but the sign changes. Again, the parameter q represents the "uniform" component of the model describing aggregate group change from the Democrats to the Republicans. These results suggest that Republican "uniform" losses did correspond with Democratic gains in 1932 but not in 1936. Indeed, this one parameter value (examined in isolation from the remainder of the system) seems to indicate that there were some uniform gains for the Republicans from the Democrats in 1936. (The graphic analysis below will show that some reverse movement did in fact occur in farm areas in 1936.)

An examination of the fits for the unconditioned cases similarly provides some useful initial interpretive guidelines with regard to the entire system. For the period from 1928 to 1932, note that the models account for a considerable amount of variance in the longitudinal population fluctuations for the Republican and Democratic parties. Note also that the model that characterizes change in the nonvoting population does less well during that time period. Compare these results with those obtained using the unconditioned system for the period from 1932 to 1936. While the model describing change for the Democratic party continues to account for a reduced but still substantial degree of variance in the aggregate Democratic outcomes, the model for Republican change now performs poorly. On the other hand, the model for change in the nonvoting population does very well. These initial results can only offer very tentative guidelines as to the interpretations of large-scale aggregate movements. However, they do suggest that during the 1928–32 period, the greatest aggregate movement on the county level was between Republicans and Democrats, as the model for nonvoter change encounters relatively less national trend and more local "noise" for that period. But in the 1932–36 period, the situation seems to have reversed. These results suggest that it is activity between the Democratic and nonvoter population groups that dominates the later period.

A more comprehensive description of the characteristics of the estimated system under the influence of the various conditioning variables can be obtained using a graphic analysis. The simplest form of such an analysis is a straightforward longitudinal plot of support for a particular party. Figure 1 presents such a plot for the Democratic party. There are four model-generated time paths presented in Figure 1. The path labeled "National" is the longitudinal trajectory for the Democratic party using the unconditioned estimates found in Table 2. This path is included in Figures 2 and 3 as well and serves as a base line from which to evaluate the other trajectories. The time paths labeled "Farm," "Urban," and "Worker" represent the system's predicted level of voter support for the Democratic party in areas that can be described as primarily farm-oriented, totally urban, and heavily working class in character.

Note that from 1928 through 1936, the Democratic party's strength continued to grow nationally (i.e., as seen using the trajectory labeled "National"). However, the greatest growth for the Democratic party between 1928 and 1932 was in the farm areas of the country and there seems to have been no additional growth in Democratic support from such areas after Roosevelt's initial election. However, Democratic support coming from heavily

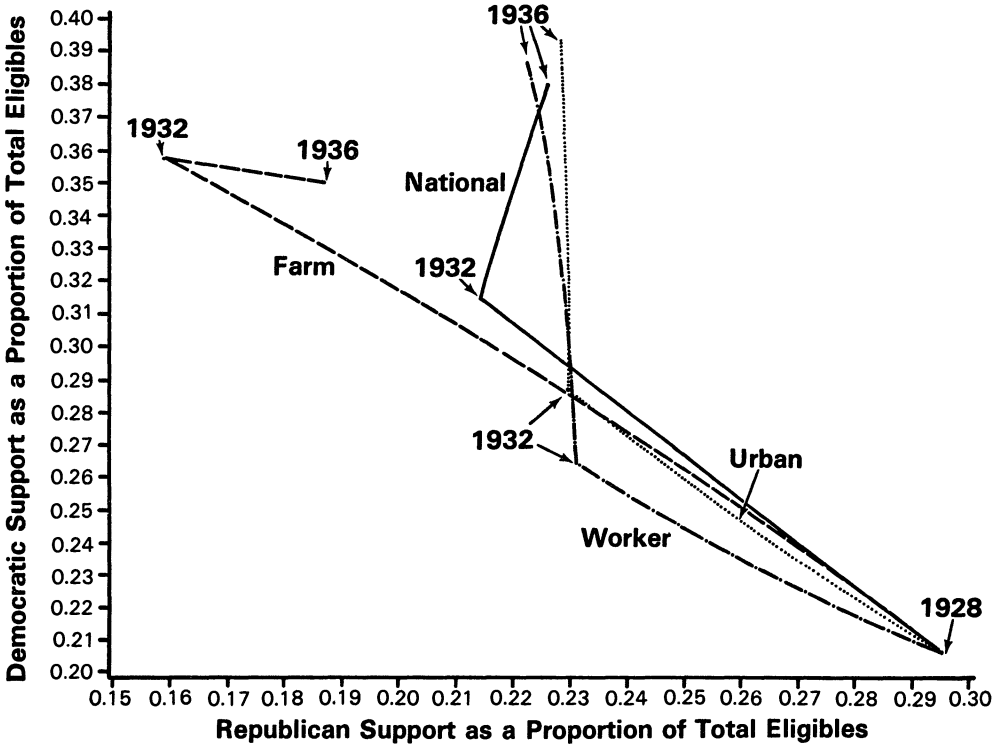
Figure 1. Democratic Support from 1928 to 1936



urban and "working class" areas exhibits an opposite pattern. Between 1928 and 1932, such areas contributed less to Roosevelt's first victory than did many of the other sections of the nation. Indeed, areas with high concentrations of workers produced the smallest growth in Democratic support in 1932. These results are of interest considering the focus of much of the realignment literature for the U.S. on the urban and working class basis of the Roosevelt coalition (see Degler 1971, 141; Petrocik 1981, 53). However, note that after the 1932 election, Democratic support from urban and working class areas increased dramatically, marginally surpassing the overall national strength of the party and completely eclipsing the now-stagnant growth from the farm areas. These results for 1936 seem to support arguments by Sundquist and some others (Sundquist 1983, 218–19; see also Lubell 1965, 57–63) that the urban and working class elements of the Roosevelt coalition did not emerge in their full form until after 1932. However, the trajectories in Figure 1 suggest surprising differences in the manner and timing in which various groups turned to the Democrats. In particular, the magnitude of the differences between the farm areas as compared with the urban and working class areas for 1932 is quite striking given the claims by some authors that the growth in Democratic support in 1932 was primarily affected by a broadly based sense of dissatisfaction (cutting across all groups) with the previous Republican leadership (Ladd and Hadley 1978, 87). Moreover, the dramatic reversal of these patterns after 1936 is noteworthy in terms of its magnitude and deserves further explanation.

A problem with Figure 1 is that it does

Figure 2. Democratic and Republican Trade-offs, 1928 to 1936



not allow for an examination of the relative trade-offs between groups; that is, it is not clear whether the growth in Democratic support coincides with an increase in new voter strengths or a decrease in local Republican fortunes. These trade-offs can be seen more clearly in an analysis of a type of graph called a "phase diagram." Figure 2 is a phase diagram representing change in Democratic and Republican support from 1928 through 1936. As with the other phase diagram described below, each curve on the plot represents simultaneous change in two separate populations. In Figure 2 the horizontal axis identifies Republican support from the pool of eligibles while the vertical axis represents Democratic support.

Note that each curve on the plot is labeled with respect to whether it is an unconditioned ("national") or a conditioned ("farm," "urban," or "worker") trajectory. Also note that each curve on the figure is labeled with regard to the three election years 1928, 1932, and 1936. As one visually follows any one of the curves (all beginning in 1928 and originating in the lower-right-hand corner of the figure) upwards and to the left, it is possible to examine the voter trade-offs between the two groups over time. For example, follow the curve labeled "National" diagonally up from its starting point in 1928 until its sharp bend upward in 1932. This part of the curve indicates that from 1928 to 1932 there was a large drop in national Republican support combined with an approximately equal gain in Democratic support, all computed using the entire estimated system (thus simul-

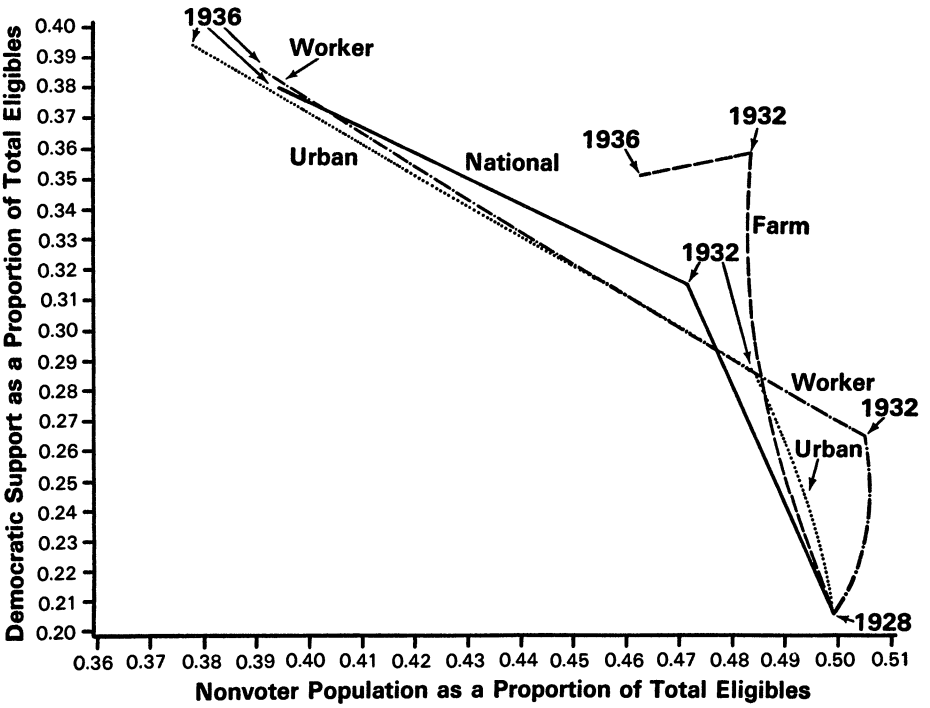
taneously controlling for all partisan-nonvoter shifts as well). Continuing up the curve from 1932 to 1936, there appears to be very little movement in Republican support (shown by the near vertical nature of the curve after 1932) and a substantial increase in national Democratic support. When a curve cuts a dramatic diagonal across the surface of a plot, this indicates a substantial simultaneous movement between the two populations represented on the figure's axes. When a curve is placed horizontally or vertically in the figure (or nearly so, relative to the other curves), this indicates little or no aggregate movement between the two populations (i.e., one population stayed constant while the other either increased or decreased).

While the curve for the national-level trade-offs is included in all phase diagrams for reference, the other curves tell the more intersting story. In Figure 2, note that the curve representing the system of competition as it occurred in predominantly farming areas marks a very dramatic diagonal sweep across the surface of the plot from 1928 to 1932. This suggests that a great deal of formerly Republican support coming from farm areas in the United States abandoned the Republican party and joined the ranks of the Democratic voters. Moreover, the magnitude of the Republican loss in farming areas, combined with that of the Democratic gain, surpasses those for urban or working class areas as well as for the national average. Such a strong movement away from the Republicans and toward the Democrats in farming areas probably had its origins in historical conditions reaching back more than 10 years. Recall that the La Follette movement in 1924 registered marked discontent with Republican farm policies (Sundquist 1983, 182–91) and that Calvin Coolidge did once say, "Well, farmers never have made money. I don't believe we can do much about it" (White 1965, 344). It seems that the onset of the Great Depression was the last straw for many farmers. While the Republicans may have maintained a substantial degree of farmer support throughout the 1930s, they do seem to have lost a good part of their earlier support in 1932. However, note that the Republicans did bounce back somewhat in the farm areas after 1932. This suggests that many of the switching farmland folks of 1932 stayed Democrats in 1936, but a few returned to their Republican moorings.

The pattern between the Democrats and the Republicans in farm areas differs remarkably from that in urban and working class areas. Figure 2 suggests that among urbanites there was a substantial Republican loss combined with a large Democratic gain primarily in 1932. However, in areas in which there were large numbers of workers, Republican support dropped between 1928 and 1932 with less than an equivalent Democratic gain. After 1932, Democrats seemed to have scored heavily from such areas without a concomitant Republican loss of comparable magnitude. This raises the question of what these working class voters did in 1932. While they seemed to have abandoned the Republican party in large numbers in 1932, they do not seem to have been as fundamental a component of the Democratic gains until after 1932.

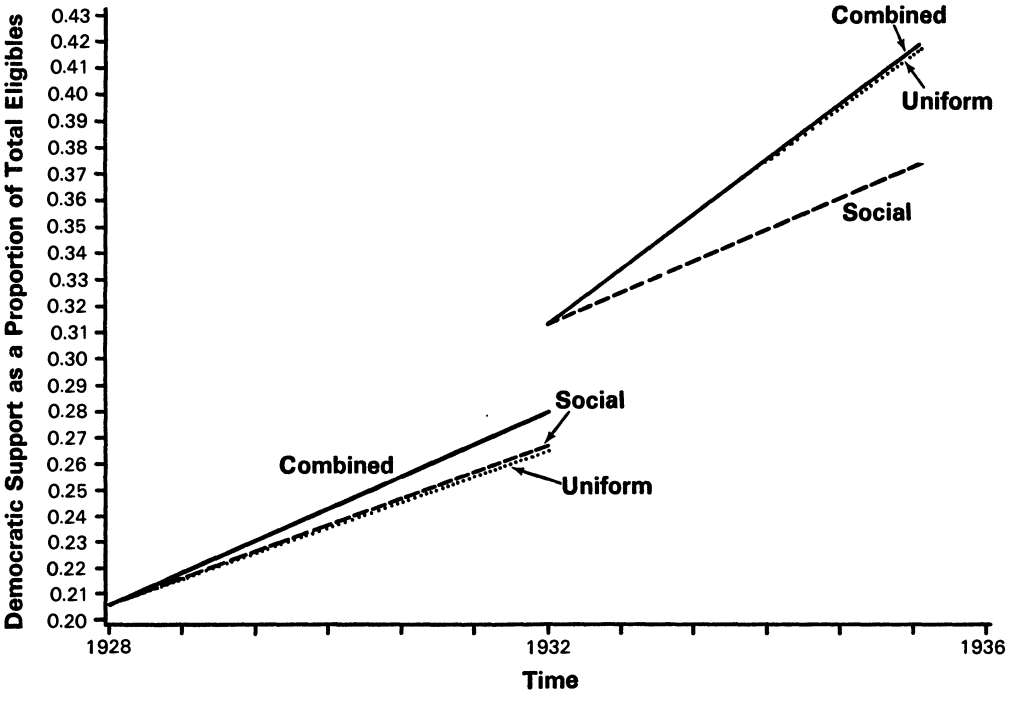
This puzzle regarding working class trade-offs between the Democrats and the Republicans is answered in large part with Figure 3. Figure 3 contains the longitudinal trade-off population trajectories for the two groups, Democrats and nonvoters. The horizontal axis represents the nonvoting population, measured as a proportion of the total electorate; whereas the vertical axis represents support for the Democrats (as in Figure 2). Note that the curve labeled "Worker" moves upwards and somewhat to the *right* after its beginning in 1928. From 1932 to 1936, the curve makes a marked change and moves diagonally upwards and to the left. These

Figure 3. Democratic and Nonvoter Trade-Offs, 1928 to 1936



results suggest that voters in heavily working class areas experienced no increase in mobilization in 1932 (and perhaps a degree of demobilization). This result, interesting in terms of the magnitude of the later shift, is not completely without interpretation guided by some of the extant realignment literature of the period. Recall that the 1932 election was not a radical departure from other elections in the 1920s with respect to Roosevelt's campaign rhetoric (Ladd and Hadley 1978, 38; Lubell 1965; Sundquist 1983, 208–10). Indeed, it was not until Roosevelt came to power that the shape of the future was so clearly directed in New Deal terms (Petrocik 1981, 53–54). While the depression made the Republicans an unpopular party in 1932, the Democrats were not clearly identified as a party of economic and social salvation (Key 1964, 523–24). The results of Figure 3 suggest that workers did not initially rise up and attempt to throw the Republicans out of the White House, regardless of whether or not they blamed that party for their own depression-related economic misfortunes. Rather, they remained inert, and some may have even stopped voting, withdrawing from political participation just as they had begun to withdraw from their participation in the national economy. This may have been tied to the dramatic decrease in the unionized work force at the time. They may have been struck by anger at their plight, but all were not motivated (or perhaps organized) to register their anger at the polling booths. One can only suspect that they did not really know where to turn for assistance

Figure 4. Simon Bounds for Democrats from Republicans (Urban-conditioned)



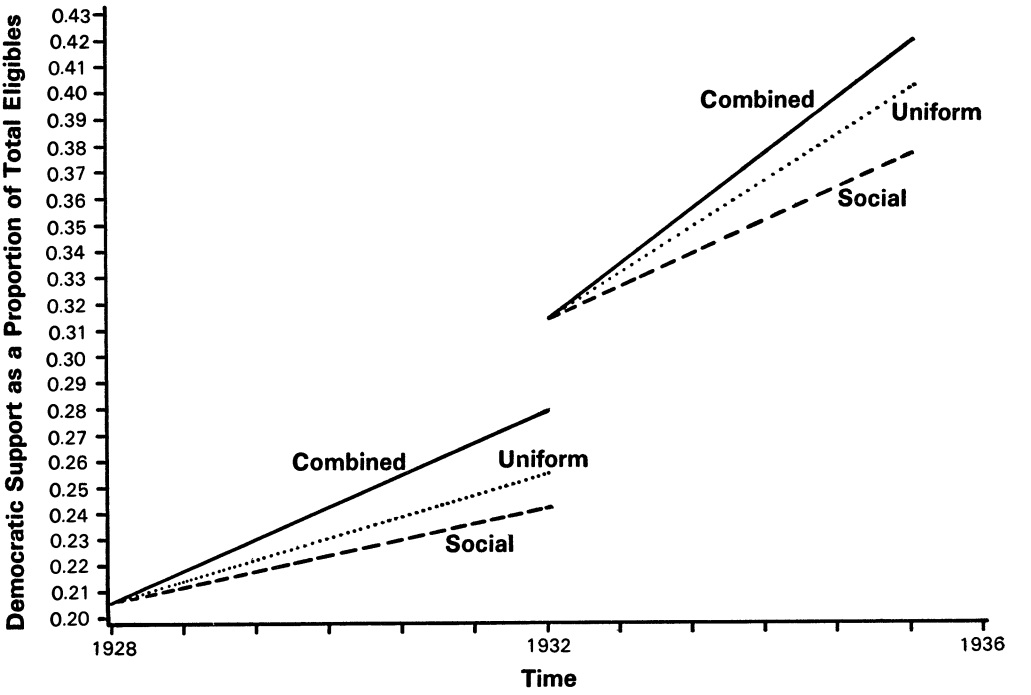
in 1932. They were conceivably more interested in their own domestic situations than in politics, and they were perhaps unsure of what any government could do for them, given decades of Republican political dominance and a previously widespread public acceptance of the principle of nonintervention in the private economy. But in 1936 they saw the difference between the parties, and partisan politics in the United States experienced a massive infusion of new as well as formerly demobilized voters from working class areas.[6]

Figure 3 suggests a related story for urban voters (of whom many were workers). There was little overall movement to the Democrats from the pool of nonvoters in urban areas between 1928 and 1932, as is indicated by the near vertical course of the curve labeled "Urban" through 1932 (although there was certainly variation between many particular urban areas, of course). Yet after 1932 the diagonal movement for the curve indicates that the urban areas experienced heavy Democratic mobilization among new voters. Voters in farm areas acted in an entirely different fashion. The Democrats managed to mobilize some new voters in 1932 from such areas. However, in 1936 the Democrats had no comparable success from the farming areas. Indeed, a fraction of their 1932 farmland supporters failed to turn out at all.[7]

The Relative Impact of the Mechanisms for Change

Figures 4–7 change the focus of this analysis to ask a question based on the

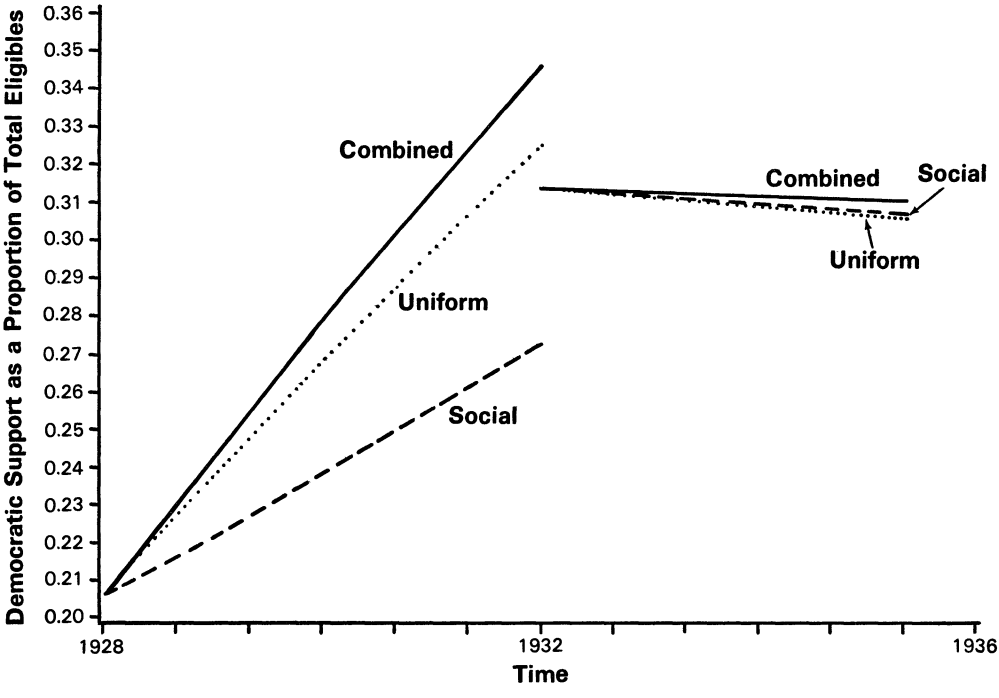
Figure 5. Simon Bounds for Democrats from New Voters (Urban-conditioned)



structure of the model explored here. Within each mathematical statement characterizing growth and decay for the partisan and nonvoter populations, there are both uniform and social components. It is descriptively useful as well as analytically important to evaluate the relative impact of the two components. Figure 4 displays what is titled the "Simon bounds" for aggregate partisan change *for* the Democrats *from* the ranks of the Republicans. Figure 5 contains a similar representation for partisan change for the Democrats from new voters. Both Figures 4 and 5 are drawn with respect to the urban-conditioned environment. Figures 6 and 7 are a similar representation for the farm-conditioned environment. The term *Simon bounds* references an early work by Herbert A. Simon (1957), in which substantive meanings were explicitly tied to formal mathematical expressions of social change of the type used here. In all figures, time is on the horizontal axis and Democratic support as a proportion of the total eligibles is on the vertical axis.

To begin with an interpretation of Figure 4, the curves labeled "Combined" represent the total longitudinal gains for the Democrats in urban areas and are identical to the urban-conditioned trajectories presented under the "Urban" label in Figure 1. The lines labeled "Uniform" and "Social" are computed using only the system's uniform or social components (respectively) as inputs to the joint Democratic and Republican totals. For example, to compute the Democratic vote represented by the lines labeled "Uniform" in Figure 4, the parameter b was set to zero.

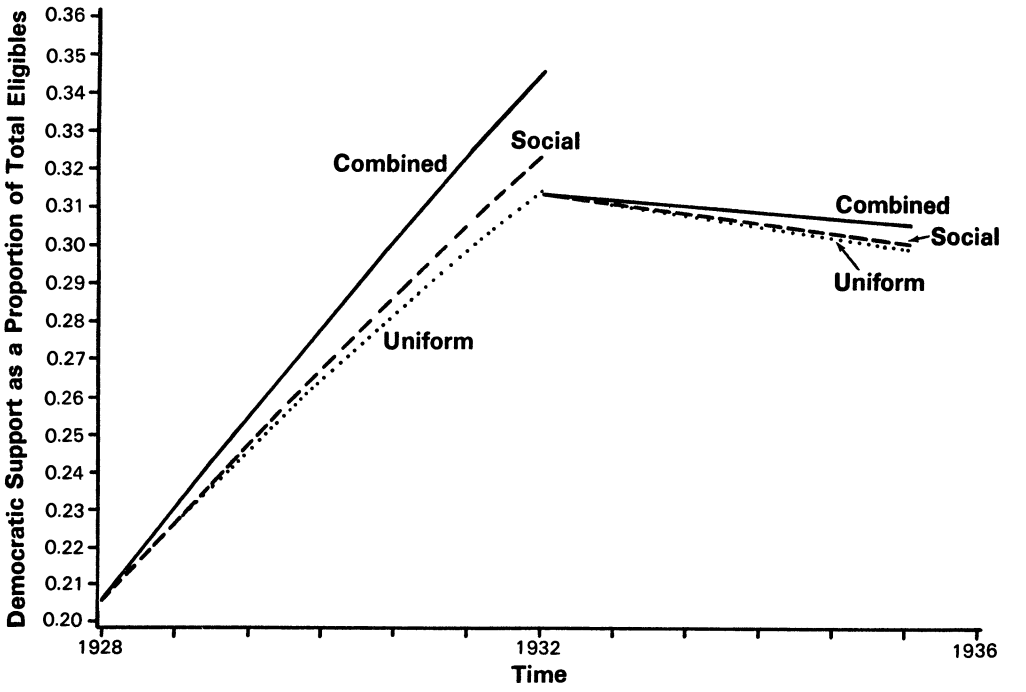
Figure 6. Simon Bounds for Democrats from Republicans (Farm-conditioned)



This parameter represents the probability of recruiting a Republican for the Democrats at an instant in time due to the interactive influences of the two existing partisan populations. Setting this component to zero leaves only Democratic gains due to nationally uniform Republican defections (i.e., parameters f and q, mediating the uniform components of the expressions for Democratic and Republican change). Alternatively, the lines labeled "Social" are computed by setting the uniform components between the Republicans and the Democrats to zero, leaving only the social component in the model. Briefly, the lines labeled "Uniform" in Figure 4 use only the uniform components of the model as inputs to the nationally changing partisan totals, whereas lines labeled "Social" use only the social components.

For urban environments during the period from 1928 to 1932 in Figure 4, note that the social component of the model contributes only a very slightly larger share of the national Democratic vote gain than the uniform component. This is indicated by the height of the social time path relative to the height of the uniform time path. Both the uniform and the social paths are lower than the combined path since the former both contributed to the national totals, and the absence of either would produce a lower outcome. This suggests that Democratic gains from the Republicans in 1932 in urban areas were approximately equally dependent on the localized abilities of the Democratic party to compete (i.e., converting more Republicans where the Democrats are strong and fewer Republicans where the Democrats are weak) as on a more uniformly

Figure 7. Simon Bounds for Democrats from New Voters (Farm-conditioned)



distributed sense of dissatisfaction with the Republicans.

The time paths on the right of Figure 4 (for the period from 1932 to 1936) indicate that the uniform component was dominantly responsible for any further Democratic gains from the Republicans in urban areas. This is evidenced by the much greater height of the uniform time path relative to the social time path. Recall from Figure 2 that there were very few Democratic gains from the Republicans in urban areas in 1936. The results of Figure 4 suggest that the Democrats did not have to rely on their own localized partisan strengths in order to maintain those gains.

Figure 5 contains the Democratic time paths identifying the "Simon bounds" with respect to Democratic gains in urban areas from the new voters. Comparing the 1928–32 with the 1932–36 period, note that the relationship between the uniform and social time paths is similar between periods. In both periods, Democratic gains from the new voters were relatively independent of local Democratic party strengths. Apparently these new voters (fewer in 1932 than in 1936) were driven by the national sense of crisis and (especially in 1936) the overall Democratic appeal. In other words, Democratic mobilization of new voters in urban areas was relatively less dependent on existing local Democratic partisan strengths.

Recall from the discussion of Figures 2 and 3 that Democrats gained a great deal of Republican support as well as a substantial amount of new voter support from farm areas in 1932. Figures 6 and 7 present the Simon bounds for Democratic

gains from the Republicans and the new voters within farm-conditioned environments. The trajectories on the left side of Figure 6 indicate that the Republican-to-Democrat defections in 1932 were not a result of locally dependent partisan competitions. This is evidenced by the much greater height of the uniform trajectory relative to the social trajectory. Following 1932, there was much less of a difference between the separate components of the competition. But the Democrats did not gain much from the farm-based Republicans in 1936 (in fact, they seem to have lost support there).

Figure 7 reveals an interesting difference from the pattern presented in Figure 6. From the new voters in 1932, the dominant component of the Democratic gains came from the local partisan competitions in areas where existing Democratic organizations could successfully mobilize former nonparticipants. In this figure, the social component has a substantially higher trajectory than the uniform component. The same pattern exists after 1932, but the relative impact of farm-based new voters on Democratic gains in 1936 was slight overall (from Figure 3).

In summary, Figures 4–7 present an interesting and contrasting picture of the dynamics of partisan competitions in urban and farm environments. In the urban areas, the movement toward the Democrats by new voters was a phenomenon that occurred in large part uniformly throughout these areas, relatively independent of existing Democratic strengths. Among Republican-to-Democratic conversions in 1932, the effects of the uniform and social components were more or less equal. In farm areas the situation was also complex. Uniform movement dominated among Republican-to-Democratic conversions. However, new voters from farm areas were most easily brought into the Democratic ranks when the local Democratic presence was relatively strong.

The nature of this recruitment as described above corresponds to findings reported elsewhere by Beck (1974) regarding the environmental properties of county-level partisan competitions during periods of dealignment. In farm areas, the early Democratic success came from former Republicans across-the-board (i.e., "uniformly") who were fed up with Republican farm policies (or perhaps the lack of them) and some new voters in locations in which there was an existing Democratic presence. Thus Roosevelt's relatively "gentle" campaign, filled with farm-oriented themes, aided local Democratic mobilization efforts among new voters in rural areas. But the already-mobilized former Republicans did not need the party contact. They jumped ship more uniformly than the new voters, and their impact on the early Democratic success was much greater than that of the new voters.

It was only after 1932 that the New Deal coalition began to form around identifiable centers of Democratic strength in urban areas. When this occurred, the movement was relatively less dependent on local partisan competitive abilities than on the national momentum of the times. The campaign of 1936 did not represent the politics of the former status quo. The Democrats had a new and coherent message, a message that had direct appeal to the urban masses. It seems that the radical nature of the message transformed the campaign from one where local party organizations were a major factor in the processes of converting Republicans (as in 1932 for urban areas) to one in which the party more accurately benefited from the windfall resulting from the newly energized and volatile electorate.

These results for farm and urban areas suggest that during periods of rapid change in mass voting patterns party organizations are more likely to be victims or beneficiaries, than causes, of the

mass movements. When the movements are of smaller magnitude, the activity of the party organizations have much greater impact. However, large aggregate movements, especially involving new voter activity as with the Democrats in 1936, could also be seen as the beginning of the renaissance of local party apparatuses, reenergized by the masses after years of decay with little national-level guidance. When partisan politics settled down, the enhanced organizational strength of the Democratic party was certainly a factor in the dominance of the party in national politics until the 1950s.

Remarks

In this study I develop and explore a model of mass political behavior with respect to the realigning period in the United States from 1928 to 1936. The analysis suggests that vote switching from the Republicans to the Democrats dominated the 1932 part of the realignment. However, discontent with the Republicans was not distributed equally or even near equally across social groups in the nation. Voters in farm areas—both former Republicans and some new voters—joined the Democratic ranks in large numbers. But urbanites responded to the Democratic appeal with less enthusiasm in 1932. Republican urban voters converted at a rate lower than that for the nation as a whole, and the nonvoters in these areas generally stayed put. Moreover, these results suggest that some workers may have even withdrawn from active participation in the electorate in 1932 rather than be drawn toward an emergent Democratic party that had not yet developed a clear identity.

The election of 1936 changed the character of Democratic politics. Some voters from the farm areas returned to the Republican fold. But urbanites and workers flooded the Democratic party's ranks. Moreover, these new Democrats of 1936 were also predominantly new voters.

The model developed here characterizes the nature of the partisan competitions as a dynamic process containing both nationally uniform and locally interactive partisan ingredients (the so-called uniform and social components of the model). In a situation of national crisis combined with large-scale mass movements, the uniform components often dominate, especially given weaknesses in the local party structures of at least one party. But when the mass movements are less severe but the political climate is favorable, the social components of partisan mobilization can yield substantial gains as well. In either case, the rejuvenation of the party organization as linked to the resurgence in its national fortunes must certainly enhance the party's long-term prospects of securing the attachments of these newly oriented partisans.

Appendix A

All of the models (i.e., the entire system) can be rewritten in reduced form. For purposes of explanation (since all three derivatives have similar structural forms), the present discussion is limited to the mathematical statement for dD/dt. Taking advantage of the identity $D + R + N = 1$, solving for N and making the substitution into equation 3 produces

$$dD/dt = fR + bRD + m(1 - R - d) + aD(1 - R - D) + k.$$

This simplifies to

$$dD/dt = (k + m) + D[(a - m) + (b - a)R - aD] + (f - m)R,$$

or, in reduced form,

$$dD/dt = \beta_0 + D[\beta_1 + \beta_2 R - \beta_3 D] + \beta_4 R. \qquad \text{(A-1)}$$

All of the right-hand-side components of equation A-1 are standard features of many such reduced form models, which are described in the literature on dynamic modeling (Danby 1985; Haberman 1977; Hirsch and Smale 1974; Huckfeldt, Kohfeld, and Likens 1982; Luenberger 1979; Nisbet and Gurney 1982). In reduced form (thus in the complete absence of the original structural equations), substantive interpretations might be proposed as follows: β_0 represents a term characterizing constant growth; β_1 describes growth based only on existent levels of D (exponential growth or decay); β_2 controls the interactive input to the model as either growth or decay; β_3 is a logistic limitation to growth, where growth in D slows as D approaches an upper bound; and β_4 represents noninteractive gain (or loss) dependent on existent levels for R. The problem with the reduced form expressions is that the above interpretations do not characterize the more complex social processes, such as are revealed through the imbedded (i.e., nonreduced) parameters found in the original structural equations. This problem is characteristic of all reduced form models, which leads to the natural desire to estimate complex systems in their structural representation. Hanushek and Jackson offer the following interpretation of the two forms: "The reduced form equations summarize the entire structural model in terms of the total changes expected in each endogenous variable from a change in any one of the exogenous variables. The structural model on the other hand 'explains' how those changes occur and describes the behavioral process underlying the predicted changes" (1977, 227).

It is not necessary to estimate the models in their reduced form. Indeed, for estimation purposes, the models are best left in their original structural form (with all of the model-to-model parameter interdependencies left explicit), thus allowing for statistical tests for all of the original (nonreduced) parameters. This is a general problem of nonlinear parameter estimation toward which is directed a sizable body of literature in both the engineering and econometric fields (Bard 1974; Dennis and Schnabel 1983; Hamming 1971; Judge et al. 1982, 773–74; SAS Institute 1984, chap. 21). The precise methods of parameter estimation as they are used in this analysis are explained in Appendix B.

Appendix B: The Calculations

The iterative parameter estimation procedure used in this analysis has its roots in a broad literature spanning a variety of diverse disciplines. Perhaps the most lucid description of the general procedure can be found in Hamming 1971. The focus of the related literature is the merger of standard numerical approximation techniques with least squares unconstrained optimization procedures. Much of the relevant literature is identified in Dennis and Schnabel 1983 (pp. 364–70; see also Hamming 1973). Interested readers might also find useful Fletcher 1965, Powell 1964, and Dennis, Gay, and Welsh 1981a, 1981b.

The following description of the estimation technique used in this analysis is necessarily brief. A more thorough description of the technique (including software written in SAS) is available from me.

The estimation process begins by computing a trajectory using guessed (but plausible) values of the parameters (a process to be repeated often with different values). A Runge-Kutta approximation to definite integration is then used, the first step of which takes the form

$$\text{DNEXT} = D + h(dD/dt),$$

to compute an overtime trajectory for each partisan population, where h is a small number. This iteration is repeated a fixed number of times to yield the next

election's predicted partisan total (in the above example, for the Democrats).

The predicted values for the Democrats, Republicans, and nonvoters are then evaluated with regard to their fit to the actual data. The fit is calculated as

$$\text{FIT} = 1 - (RSS/TSS),$$

where *RSS* is the residual sums of squares between the predicted and actual values for each group, and *TSS* is the total sums of squares measuring the total variation for each group between the two elections.

The partial derivatives of the fit surface with respect to all parameters are then computed as

(change in fit / change in parameter).

This is accomplished by disturbing each parameter around its present value and evaluating the concomitant change in fit. All of this is done for one parameter at a time.

The estimated parameter values are then moved through the parameter space in order to maximize the fit based on the directional information contained in the vector of partials for the fit surface. This movement is accomplished iteratively using the relation

$$\text{BNEXT} = B + z(P),$$

where the vector of partials for the fit surface is P, the vector of parameter values is B, and z is a small number. The value of z can vary depending on the steepness of the overall fit surface and the proximity of the maximum to that surface. Movement in the parameter space continues until the maximum to the surface has been reached, as is indicated by an evaluation of the partials to the fit surface.

With any one attempt at arriving at the maximum of the fit surface, there is no guarantee that the achieved maximum is the global maximum of the surface. This is characteristic of all nonsmooth problems of this sort. The usual practice of varying the initial parameter values as a safeguard has been followed here.

The chi-squared statistics for the parameters test the impact of each parameter on the predicted values for each group (i.e., Democrats, Republicans, and nonvoters) from which the measures of fit are derived. First, predicted values for each group are calculated using the optimal values for each parameter. Second, new predicted values are calculated after setting each parameter to zero (one at a time). The differences between the two population sets are used to compute the chi-squared statistics. Thus a low chi-squared value indicates that an estimate has little impact on the predicted surface (and thus the model) and that the null hypothesis that the parameter equals zero should not be rejected.

Interested readers can obtain a free copy of the computer program which was used for the above estimations by contacting the author at the BITNET address POLSCB at EMUVM1. The program is machine-readable and thoroughly annotated. All inquiries should include a BITNET address to which the response should be sent.

Notes

1. There are three basic reasons for the previous unavailability of a usable complete collection of U.S. county-level aggregate data. First, the electoral data are available from the Inter-University Consortium for Political and Social Research data collections in what amounts to a scattering of over two hundred separate data files. County-level returns for all states and all years have not been organized into a few accessible, large, data files. Second, the available data sets, although scattered, are still terribly complete. There are data for literally hundreds of parties, covering all U.S. congressional, presidential, and many state elections. The bottom line is that the variable names in the separate data sets are not comparable. One cannot simply merge the data sets since the variable names do not correspond in year or party. Third, the information that is necessary to merge the various data sets is contained in the variable labels. There are often hundreds of variable labels for the many data sets, each of which needs to be read individually, and from which new

variable names need to be constructed. Thus the process of identifying particular partisan returns for all counties in the U.S. has been unusually difficult, given normal constraints of staff, budget, and personal wear and tear.

2. Since this analysis focuses on the time period from 1928 to 1936, some questions regarding some of the long-term aspects of the realignment remain unanswered. It is not clear whether a vote-switching realignment in 1932 implies a permanent reorientation of what would be thought of as the "normal vote" for many voters. Some have suggested that many of the switchers of 1932 returned to their earlier Republican habits by 1940 (Petrocik 1981, 57). Survey responses (were they available) could have been used to query the voters' inner psychological commitments to particular partisan labels and attachments. However, in the absence of such data, reliance is made on an examination of the voting patterns of the early period, identifying vote switching and nonvoter interactions but leaving open the question of whether or not both the 1932 and the 1936 elections represented a deviating electoral period for some voters in which previous partisan allegiances were subsequently reestablished.

3. Writing each parameter in this fashion is different from simply estimating the nonconditioned system separately, using select subsets of the aggregate data for each estimation. Writing the parameters as a linear function of a conditioning variable allows the use of all of the data, as well as an interpretation of the system based on progressive changes in characteristics of the social environment.

4. The data utilized here were made available by the Inter-University Consortium for Political and Social Research. Neither the original collectors of the data nor the consortium bear any responsibility for the analyses or interpretations presented here.

5. The problem of organizing the data described in n. 1 was accomplished by first printing (on magnetic disk) a listing of the many data sets. A Basic program was then constructed which "read" each of the listings. This program also wrote computer code in SAS based on the information from these listings. The result was a program written in SAS that recoded all variables in all data sets to have common names containing embedded information that had been extracted from the original variable labels. All of the data sets were then merged to produce the manageable set used here.

6. It seems unlikely that the results for the worker populations would be influenced to a large degree by an ecological aggregation effect, although such a possibility does exist with any analysis of aggregate data. The farm and urban results would appear less susceptible to such aggregation effects due to the relative homogeneity of these areas. However, the areas with large worker populations also tend to be heavily urban, and the results for the workers tend to have similar dynamic properties to that of the urban areas. Moreover, subsequent checking with alternative statistical strategies ranging from simple weighted correlations to more complicated logistic structures indicates that the present description of worker behavior is not a product of the particular model specification used here but rather a real structural characteristic of these data.

7. A conditional analysis similar to the above was also performed to test for differences in the partisan and new voter dynamics for the southern states as compared with the nonsouthern states. This analysis is not included in the body of the text only for reasons of space. However, the basic result is that there were no large differences in the directions of partisan and nonvoter change between southern and nonsouthern states (see also Shively 1971–72). This is not to say that the magnitudes of the static partisan totals for each election were similar, for obviously they were not. But the characteristics of change did not vary according to this division of region. In the southern states as well as the nonsouthern states, vote switching from the available pool of Republicans (admittedly small in the South) to the Democrats still dominated the 1932 election, whereas the new voters had their greatest impact in the 1936 contest.

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