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NONDIMENSIONALITY AND NONLINEARITY IN LINKAGES BETWEEN CONGRESS AND CONSTITUENCIES*

by

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INTRODUCTION

It is widely recognized that linkages between congressmen and their constituencies tend to be rather more complex phenomena than the conceptual maps of behavioral research suggest. This paper is directed to research grounded in an interest group theory of politics and concerned with the form and content of such linkages, particularly those between members of the House of Representatives and the mass publics comprising their constituencies. We shall not be interested in linkages to more specialized constituencies such as organized pressure groups, local party influentials, wealthy patrons, etc., even though a concern with these linkages is easily subsumed by the more general interest group perspective. By a mass public we refer to the total constituency as a collectivity or to any sub-collectivity within it which forms a community of interest in respect to decisions taken in Congress. Two kinds of research touch upon this family of linkages: first, that done on linkages to opinions and attitudes in mass publics; and, second, that done on linkages to publics which share a reward position in virtue of involvement in similar activities or similar life situations (which we are calling "communities of interest").

Recognizing the deceptive simplicity of the basic postulate of the interest group perspective--simply put, that linkages should function as channels through which constraints on congressional behavior are communicated--the thrust of

behavioral research in this area has been in the direction of so mirroring the process of representation as to describe it in more realistically complex models. Thus, some efforts have sought to demonstrate that constraints arising from the beliefs of constituents can be seen in linkages between dimensions in the organization of their electoral attitudes and dimensions of congressional action--specifically, dimensions in the organization of their electoral attitudes that reflect the issue areas explicit in congressional decision making. A congressman's vote, in this view, is some function of what his constituents believe, his perception of these beliefs, and the congruence between his beliefs and their beliefs (Miller and Stokes, 1964). This is a conceptually satisfying model, one that maps a complex communication in a theoretically plausible design. Built into it, however, are questions of further interest, and it is to these that our remarks are addressed.

There are two assumptions in this kind of research. The first deals with the content of linkages, the second with the model by which he describes them. The rest of this paper is organized into two main sections, each dealing with one of these issues. In the first section, we shall challenge the assumption that linkages give rise to constraints on congressional behavior only when they reflect dimensions in constituents electoral beliefs which mirror general issue areas of congressional action. Reanalysis of data on attitude organization in mass publics suggests a single <u>issue-free</u> dimension of orientation to government activity that yields constraints

on roll call behavior, rather than multiple dimensions reflecting several general issue areas. In the second part of the paper, we consider the implications of varying rates of responsiveness on the parts of legislators to the constraints arising from their constituents beliefs and interests. In so doing, we challenge the assumption of the linearity of linkages between constituency and congress. Following Bentley's theory of the interest group basis of politics (Bentley, 1949), we present a flexible formalization of alternative non-linear linkage models, illustrating their utility with detailed analysis of aggregate patterns in roll call voting over several issue-areas.

THE ORGANIZATION OF ELECTORAL ATTITUDES

The development of an understanding of the operation of legislative bodies is perhaps the major area in which behavioral research has led to a deeper understanding of the functioning of a major political institution (for an overview of this field, see MacRae, 1968). However, there exists a contradiction between theory regarding the rather precise linkages that are presumed to exist between constituency attitudes and congressional behavior, on the one hand, and research on attitude organization among the mass electorate on the other. In particular, research suggests that popular political attitudes are not highly enough structured to place the kinds of constraints on legislative behavior that are postulated to exist.

In their analysis of American political attitudes, Campbell and his colleagues (1960) report that 1956 data on issues relating to domestic welfare scale according to Guttman's criteria (See Guttman, 1950), as do foreign policy issues, with no relationship between scales. Axelrod, however, returning to the Survey Research Center's 1956 election study, and substituting cluster analysis (Bonner, 1964) for more conventional scaling techniques, found no strong structuring of political attitudes (Axelrod, 1967). Indeed, the domestic welfare issues could only be regarded as scalable if a criterion value of $\emptyset/\emptyset$ max of .14 were acceptable. $\emptyset/\emptyset$ max tends to be greater than a correlation coefficient for the same data, and a value of .75 is generally regarded as necessary for Guttman scaling (See Cureton, 1959). Axelrod's analysis did produce a cluster of items including domestic welfare and non-welfare issues, and foreign policy issues, that were more highly interrelated than the items in Campbell's scales. He defined this cluster as "populism."

Converse's (1964) analysis of the Survey Research Center data similarly failed to discover the degree of mutual constraint among political attitudes that would be expected to appear in a unidimensional space. While his report on data collected in a study of the 1958 congressional election show that the relationships between attitudes <u>within</u> domestic or foreign arenas were stronger than relationships between attitudes cross-cutting domestic and foreign issues, even the former associations were weak. (Cf McPhee, <u>et al.</u>, 1962.)

The mean tau-gamma coefficient (see Goodman and Kruskal, 1954) among attitudes, within both domestic and foreign realms, was .23. Moreover, McClosky, et al. (1960) has previously demonstrated that among members of the mass public, even such a manifest political cue as party choice is not an important constraint on issue position.

Luttberg (1968) takes issue with Converse's findings. In a factor analytic study of survey data collected in 2 Oregon communities, he finds no difference in the mutual constraint of attitudes between leaders and followers. The items he used, however, refer to local rather than national political issues, and hence pose no problems for us. The notion that people have more structured beliefs on local than on national issues is not incompatible with our formulation.

ISSUE LINKAGES BETWEEN LEGISLATION AND CONSTITUENCY

This apparent weakness of attitude structure not withstanding, Miller and Stokes (1966: 357), analyzing the same data that Converse (1964) used, report the construction of three scales, using techniques developed by Guttman and others, covering three issue domains: social welfare, American involvement in foreign affairs, and civil rights.

Eight attitude items had been included in the 1958 survey. Each of them appeared in one of the scales. The three scales defined by Miller and Stokes' analysis were:

A. Social Welfare Scale.

1. The government should leave things like electric power and housing for private businessmen to handle.
2. The government in Washington ought to see to it that everybody who wants to work can find a job.
3. If cities and towns around the country need help to build more schools, the government in Washington ought to give them the money they need.

B. Internationalism Scale.

1. This country would be better off if we just stayed home and did not concern ourselves with problems in other parts of the world.
2. The United States should give economic help to the poorer countries of the world even if those countries can't pay for it.
3. The United States should keep soldiers overseas where they can help countries that are against communism.

C. Civil Rights Scale.

1. If Negroes are not getting fair treatment in jobs and housing, the government should see to it that they do.
2. The government in Washington should stay out of the question of whether white and colored children go to the same school.[1]

For the 116 congressional districts in which interviews were conducted in 1958, mean constituency scores were computed, and correlated with the attitudes and roll-call behavior

of congressmen, with weights being assigned to each district approximately proportional to the number of interviews taken. The relationship between constituency opinion and roll-call votes in the area of civil rights was about .65, the highest correlation attained. The agreement between congressmen and their constituents on economic welfare was approximately .4, and on the question of foreign involvement, the correlation was less than .2.

RESCALING THE 1958 DATA

The seeming contradiction between the absence of highly structured constituency attitudes, on the one hand, and the constraints that seem to be placed on congressional behavior by constituency opinion, on the other, has led us to further explore the data utilized by Miller and Stokes. An attempt was made to replicate their three scales, using the multi-scaling program developed by the Institute for Social Research for use on the IBM 7090 computer at the University of Michigan. The 8 attitude items, which had 5 point Likert response scales, were dichotomized by collapsing the strongly agree and agree categories, and the strongly disagree and disagree categories. Undecided responses were treated as missing data. This is consistent with the logic of Guttman scaling, which suggests that the selection of a cutting point will not affect the scalability of an item, although it may affect that item's position on the scale. The 8 items were submitted as a single data set, with no a priori assumption of unidimensionality. The minimum

coefficient of reproducibility acceptable was set at .85, and adjacent items were tested for statistical independence using the chi-square distribution as a criterion. Adjacent items not related to each other at the .01 level or better were discarded.

Given these constraints, a single 3 item index, containing one item from each of the 3 scales derived by Miller and Stokes, was generated. The items included were:[2]

1. If Negroes are not getting fair treatment in jobs and housing, the government should see to it that they do.

2. If cities and towns around the country need help to build more schools, the government in Washington ought to give them the money they need.

3. The United States should give economic help to the poorer countries of the world even if those countries can't pay for it.

These items scaled with a coefficient of reproducibility of .979. While we do not suggest that they measure a unidimensional attitude space, they do seem to share as a common characteristic orientations toward federal governmental activity, regardless of arena.

Insofar as 2 of these items concern government expenditures, one might choose to interpret the index as measuring economic liberalism. Lipset (1968) has argued that the liberal-conservative dimension must be divided into economic and non-economic arenas, and although the first item in our index does not directly confront the issue of government

expenditures in the realm of civil rights, this is one plausible interpretation of the index.

CONSTITUENCY LIBERALISM AND ECONOMIC ROLL-CALLS

To test this interpretation of our index, we studied the relationship between constituency attitudes and congressional votes on federal expenditures. Like Miller and Stokes, we computed mean index scores for constituencies. However, rather than weighting the 116 congressional districts in the total sample, we included in our analysis only data from the 36 districts in which 20 or more interviews were taken. Research by Segal and Wildstrom (1968) has shown that a cluster of 20 interviews produces a close estimate of population parameters. Note that this is not a major discrepancy between our procedures and those of Miller and Stokes. Their constituency weights were roughly proportional to the number of interviews taken; so the districts we studied were those that played the greatest part in their analysis, while those in which only 1 or 2 respondents were interviewed, which we omitted, presumably contributed little explanation or error variance to their study.

Our mean index scores were correlated with the percentage of 21 roll calls in which each constituency's representative voted "yea" or "nay" in opposition to moves to limit federal spending in 1958.[3] Over the set of districts studied, the zero-order correlation between mean constituency opinion and congressional roll-call behavior was slightly greater than .18;

roughly the same magnitude that Miller and Stokes found with regard to constituency-legislator agreement on foreign involvement.

Miller and Stokes suggest that constituency influence on legislators is based upon agreement between a legislator's votes and "his own policy views or his perceptions of the district views," and a correspondence between the "attitudes or perceptions governing the Representative's acts," and the actual opinion of his constituency.

A corollary to this formulation of legislators representing the interests of their constituents is that if there is no correspondence between the legislator's acts and the opinions of his constitutents, there will be dissatisfaction and the legislator will not be re-elected. To test this proposition, we computed the relationship between constituency attitudes and congressional roll-calls for those 6 districts in our set of 36 that elected someone other than the incumbent to Congress in 1958. The correlation for these 6 districts was -.63, a statistic the magnitude of which must be interpreted in the light of the low case base. More importantly, with these cases accounted for, the relationship between constituency attitude and roll-call behavior for the remaining 30 districts was .43. This is lower than the direct linkage found to exist between constituency attitudes and representatives' roll-call behavior in the area of civil rights by Miller and Stokes. It is greater than the relationship they found in the areas of domestic welfare and foreign involvement. Thus,

once we take into account legislators who are punished by their constituencies for not voting in accordance with popular opinion, our essentially issue-free index of popular support for federal expenditures becomes a better prediction of legislative roll-call behavior than are 2 of the 3 issue-related scales used by Miller and Stokes.

Our results to this point do not lead us to refute an interest group theory of politics, but they do suggest that there are alternative means of defining interest to those found in the literature. More importantly, utilizing the variance contributed by non-responsive legislators as an example, we argue that one cannot assume the linearity of linkages between constituency and Congress, and hypothesize that the shape of the "influence curve" may well be a function of the issues at question. It is to this proposition that we now turn our attention.

THE INTEREST GROUP THEORY OF POLITICS

Both our own research and that of Miller and Stokes is based upon an "interest group" theory of politics, such as that suggested by Bentley (1949), which asserts a relationship between the decision-making of elected representatives, and the pressures brought to bear on them by communities of interest within their constituencies. It was Bentley's view that activities gave rise to interests, that interests coalesced to produce pressures, and that decisions could be analyzed in relation to the matrix of such pressures,

convergent and nonconvergent, placed on representatives.

Under the assumption that elected representatives will act rationally to maximize their election chances by catering to such interests, and assuming that there is full communication in the political system to make interests visible, this theory can be formalized to produce statements about the process of government that are not obvious. In what follows, we shall present a limited formalization of certain implications of Bentley's model and treat these implications in conjunction with data on Congressional roll-call voting. It will be argued that judgements about the nature of the political process can be deduced from departures of observed voting patterns from those predicted under the Bentley model. A limited number of such patterns will be considered, as will a convenient method of operationalizing the concepts in Bentley's theory.

SYSTEM-LEVEL CONSEQUENCES OF BENTLEY'S THEORY

1. It can be argued that Bentley's model of decision-making presumes a tendency for representatives to act in their self-interests. The rational action principle may be interpreted as a disposition to maximize the political returns on each accountable decision. We may infer that the principal criterion of such returns is assessed as the effect of the given decision upon the probability of re-election. Therefore, the evaluation of self-interest translates, in political terms, into an evaluation of the interests of those upon whom the political fate of the representative depends: In maximizing

self-interest in given decision situations the representative takes cues from constituents who are in a position to affect his political fate.

This is not, of course, an unambiguous dependency. In fact, the majority of issues on which votes are taken are of no (or little) consequence to a representative's constituents. This does not imply that his decisions on votes on which his constituents are indifferent have no consequence for his election chances. In such matters other relevant political variables may enter the calculus. For example, when a vote is relevant to others but not to himself, a sequential exchange can be arranged in which he can vote in another's interests in return for their votes on future bills relevant to his. If the vote has partisan overtones and district interests are ambiguous, party allegiance can pay off in campaign assistance or other relevant political capital. Generally votes on bills in which there is little political relevance to constituents can be an effective short-term investment in future action situations.

Self-interest is clear when constituency pressures are congruent, not necessarily when they are intense. Intensity of pressure from constituents guarantees only the concern of the representative with an issue, not his vote. When all sources of pressure are congruent, the vote is also determined. When there are conflicting pressure, political success depends upon estimating the difference of the consequences of supporting one side and alienating the other. In such conflicted

situations, and in cases where the legislation is controversial but information on constituency interests and opinions is ambiguous, it is likely that efforts will be made to seek out clarifying influence and advice or, if cross pressures are too intense, to leave the field by not voting.

Regardless of the action taken, the assumption holds that it is the effort to maximize returns (and/or to minimize losses) which is the structuring principle. In terms of Bentley's model of the creation of pressures upon decision, the aggregate or collective decision or outcome in a given vote is determined by the simultaneous influence of all such pressure from all constituencies upon representatives. But the probability that a single representative will vote for a given interest is in proportion to the capacity of the interest to alter his election chances. The greater such capacity, the higher the probability of votes supportive of it.

2. Putting aside questions of the comparability of different legislator's evaluations of the same pressures or interests, Bentley's general theory suggests an aggregate proposition. Over a large number of individuals evaluating district interests of different magnitudes, the probability of their collective support for the interest increases directly with the strength of the interest.

In terms of Bentley's model, let us consider that the capacity of an activity to (generate a community of interest which can) effect pressures on representatives to make decisions favoring it is some increasing function of the proportion

of district constituents engaged in it. This hypothesis can be represented, for example, by the linear function plotted in Figure 1.

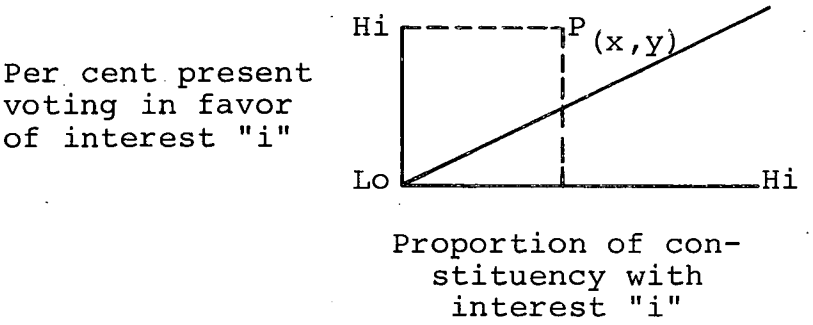


Figure 1

Along the horizontal axis is plotted the proportion of the constituency which can be said to be in favor of some interest, i. The vertical axis plots the probability of decisions favoring interest i made by representatives. Thus, the point $P_{(x,y)}$ in Figure 1 would indicate that y per cent of the representatives from districts with x per cent constituents supporting interest i vote in favor of it.

For different kinds of interest and different issue areas, one would expect different functions describing the rate at which pressures are translated into favorable decisions. The theory specifies only that the family of functions corresponding to its understanding of the political process should be monotonic and increasing. Deviations from the expectation indicate irregularities in the process of representation.

A limited number of plausible interpretations of how the political system is functioning may be inferred from observing functions fulfilling the expectations of Bentley's theory.

A set of hypothetical functions is plotted in Figures 2A-E; supplemented by all conceivable linear functions of positive slope, they represent possible voting patterns which are hypothetically interpretable. The 45° line in each graph, of course, represents the locus of probabilities of supporting an interest if the pressures effectively influencing representatives' votes were directly proportional to the presence of the interest in their districts.

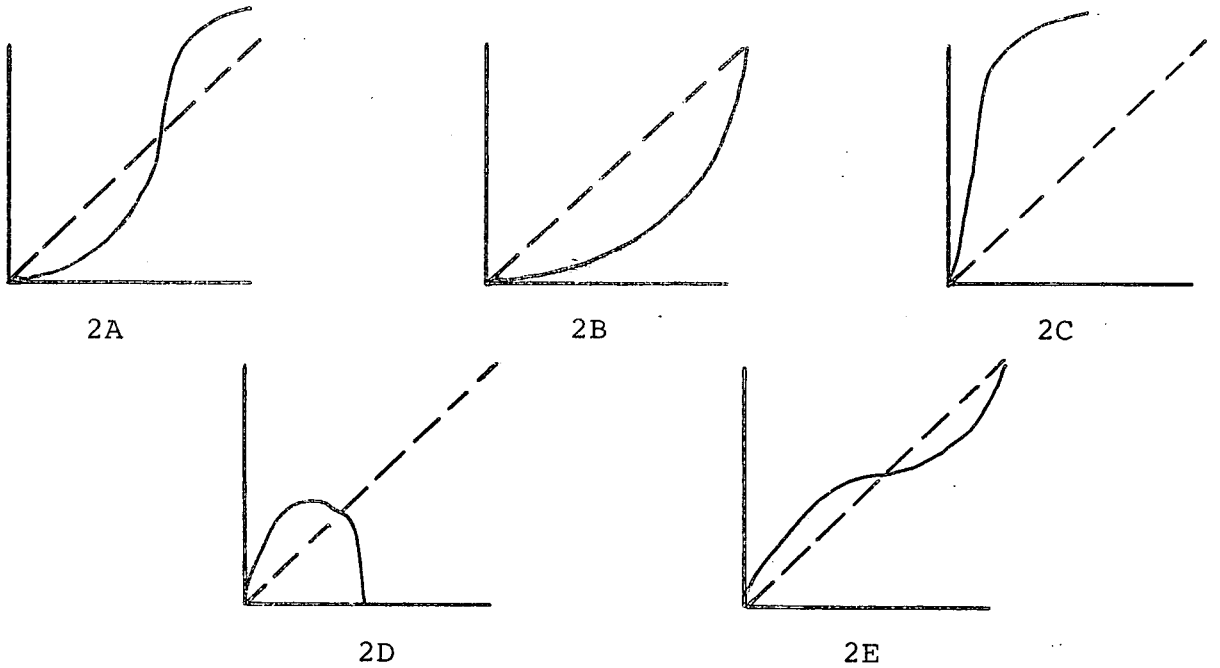
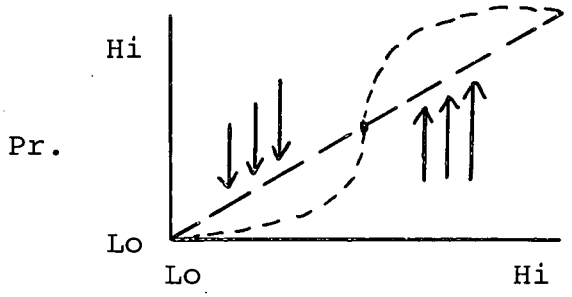


Figure 2

As depicted, it also seems plausible to represent departures from this simple linear plot as a function of some point along the X-scale at which an interest begins to generate effective pressures. Such a flex point must naturally be different from interest to interest, depending upon the actual or imagined political and social correlates of the given

interest. For example, it may take only a relatively small proportion of a district's economic base in some area to generate effective pressure because of the organized political lobbying and campaign financing which might be associated with it. On the other hand, for some less manifestly political or organized segment of the constituency, say consumers, a considerably larger proportion of the constituency might be necessary to capture the representative's attention. Under this assumption, Figure 1 might be embellished with hypothetical lines of force which, to the left of the flex point, would resolve into a vector depressing the probability of favoring the interest, and, to the right, resolve into a vector inflating the probability.

Such processes might be represented by the resulting function plotted in Figure 2A.



This function suggests that an interest is at issue in which the implications of support or opposition are clear and fully communicated; the observed distribution fairly well polarizes representatives into two groups, separated clearly at some point along the x-axis at which the benefits from favoring the interest start to exceed the losses from ignoring or opposing it. Calculations of benefits vs. losses which are so

unambiguously possible as to produce such a polarization, furthermore, suggest the explicit operation of opposing pressures. It may be hypothesized, therefore, that such a distribution is a likely consequence of the case of competing interests (the flex point moving more or less with the relative efficacy of the interest favoring the decision in question.)

The functions in Figures 2B-C, by contrast, represent the special cases in which uniform pressures either depress or inflate the efficacy of pressures from an interest. It may be inferred that such distributions reflect a consensus of opinions as to the value of the issues, making the probability of support or opposition to some extent independent of whatever special interests are associated with it. (By contrast, Figure 2A reflects an issue independent of such value considerations, for example, most "political" issues which are amenable to compromise. Some "ideological" issues are also likely to polarize voting. It requires a more elaborate conceptual system, however, to interpret ideological issues as a function of activities within constituencies.) Figures 2A-C, however, all include functions compatible with the proposition that there is some positive correlation between the magnitude of district interests and the probability of representation. Their differences describe different rates of transformation of interests into pressures (Figures 2B-C) and/or different resultants of competing pressures (Figure 2A).

Figure 2D departs from the expectations of the theory; in this case, there is no positive transformation of interests into pressures and pressures into representation. If such a distribution were observed, the theory would lead us to infer that there was some disruption (breech, circumvention, etc.) of the political process: namely, a situation in which the disadvantage to people in power of responding to pressures from certain interests out of power increases with the proportion of the population constituted by the interest.

It is highly probable that all of these functions represent special cases in the legislative process. Most voting outcomes are in reality the result of many of these factors operating among subsets of representatives to produce observed functions compounded of several effects. In addition, the theory does not explicitly take account of the influence of partisan considerations and other extra-constituency influences. This does not imply, however, that the theory can play no part in their assessment. It is an interesting empirical problem, for example, to assess the conditions (or issue-areas) in which a factor such as region or party allegiance blots out constituency pressures. Under the hypothesis that representatives are normatively expected to represent district interests, the theory at least provides us with a framework for assessing the departures from this expectation.

Consider the departures represented by the function in Figure 2E. The following things are notable: (1) the effect of pressures in the lower portion of the curve is inflated;

(2) the middle of the curve is rather flat, indicating either equal cross pressures or negating external influences; and (3) the effect of pressures in the upper part is deflated. This kind of response function is clearly compounded of several effects. What combination might be expected to produce it? Observing the pattern suggests several possibilities--for example, a combination of 2B and 2C and 2D, or 2A and 2E--which, with appropriate information, could be explored empirically. This could be accomplished by decomposing the aggregate function into separate functions for each subset of representatives who might be expected, on other grounds, to be differentially responsive to the same interest. Once a decomposition is effected into some limited number of theoretically interpretable partial functions (which can be reaggregated to produce the observed distribution), one has identified the bases in terms of which representation in given issue areas might be predicted. (Such a procedural rational resembles other partialing or factoring logics, except that the limits of the factoring are specified ahead of time by the objective of decomposing the aggregate relationship into theoretically identifiable partial functions, e.g., polarized districts, positively or negatively consensualized districts, districts in which the translation of interests into effective political influence is disrupted.)

If it is possible to do this on some votes, a clearer picture of the political process should result and prediction of future effects should be possible. The benefits of this

strategy and conceptual approach are its simplicity and parsimony. The theory begins with a principle of action (utility maximization) attributed to individual representatives, from which system-level consequences have been synthesized.

METHODS AND OBJECTIVES

The publication of the Congressional District Data Book provides us with a supply of data about the composition of constituencies. To illustrate the usefulness of the approach outlined above, we shall consider roll-call voting in the House of Representatives in conjunction with estimates of the size of various district interests abstracted from this supply of data.

We shall have two types of data: roll-call votes and measures of the proportion of people (or other units of analysis, such as laborers or industrial production, etc.) in a district who may be hypothesized to share an interest. Operationalization of the theoretical constructs--activities, interests, pressures, and decisions--is therefore imprecise. We shall be equating decisions with votes, and assuming that votes are the product of various hypothetically operating pressures. We think of pressures as phenomena intervening between district interests and representative's decisions. Interests are also unmeasured but thought to be proportional to some measure of activities within the constituency. Needless to say, there is room for a good deal of unmeasured influence to affect assessment of the legislature process in

the terms of the model. This is to be born in mind in the subsequent considerations.

Having determined upon a given issue area, however, one may proceed to observe the translation of interests into pressures, first, by ranking all constituencies on some selected indicator (or set of indicators) of their interest composition and, second, computing the proportion of representatives in each rank who vote in support of the interest on relevant legislation. The observed proportions can then be plotted to produce a function that may be assessed like those considered in the last section.

To illustrate this approach, and to consider some of the implications of Bentley's Model, we shall present an analysis of roll-call voting on civil rights legislation. And to assess the joint effect of interests and partisan allegiances, we shall also consider votes on agricultural and labor issues. These data are intrinsically interesting because they illustrate how very differently the political system operates in different circumstances.

VOTING ON CIVIL RIGHTS LEGISLATION

If the political system were operating in accord with Bentley's Model, one would expect to observe that support for legislation favoring an expansion of legal guarantees for civil rights would be positively related to the proportion of non-whites in Congressional districts. Of course this is not the case, at least for the House of Representatives

considered in the aggregate.

Figure 3.1 presents the curve of support for selected civil rights legislative in the 87th Congress (HR-7371 and SJ-Res 29) for all Congressional districts ranked in terms of non-white population composition. The plot reveals a function resembling that in Figure 2E, inflated in the lower values of the X-scale and flat toward the middle. From this we may deduce the compounding of several effects into the observed distribution. Given the nature of the issue-area, one may hypothesize that the observed pattern is likely the result of compounded regional tendencies. That is, in the South, it is likely that as per cent non-white increases, the probability of favoring civil rights legislative decreases, while in the North, the response to civil rights is more tinged by value concerns approaching consensus.

Decomposing the aggregate distribution into distributions for regions and specific bills produces the two clear patterns graphed in Figure 3.2. The pattern for the North on both bills approximates Figure 2C, where it was hypothesized that the effects of pressures are inflated due to a rather prevasive consensus as to the values inherent in the issues. The two Southern response function, conversely, closely resemble the cure in Figure 2D, depicting a breech in the political process. Taken together, the processes operative in the North and South determine the aggregate distribution.

The civil rights issue-area is an example of the representative process which is the combined result of two

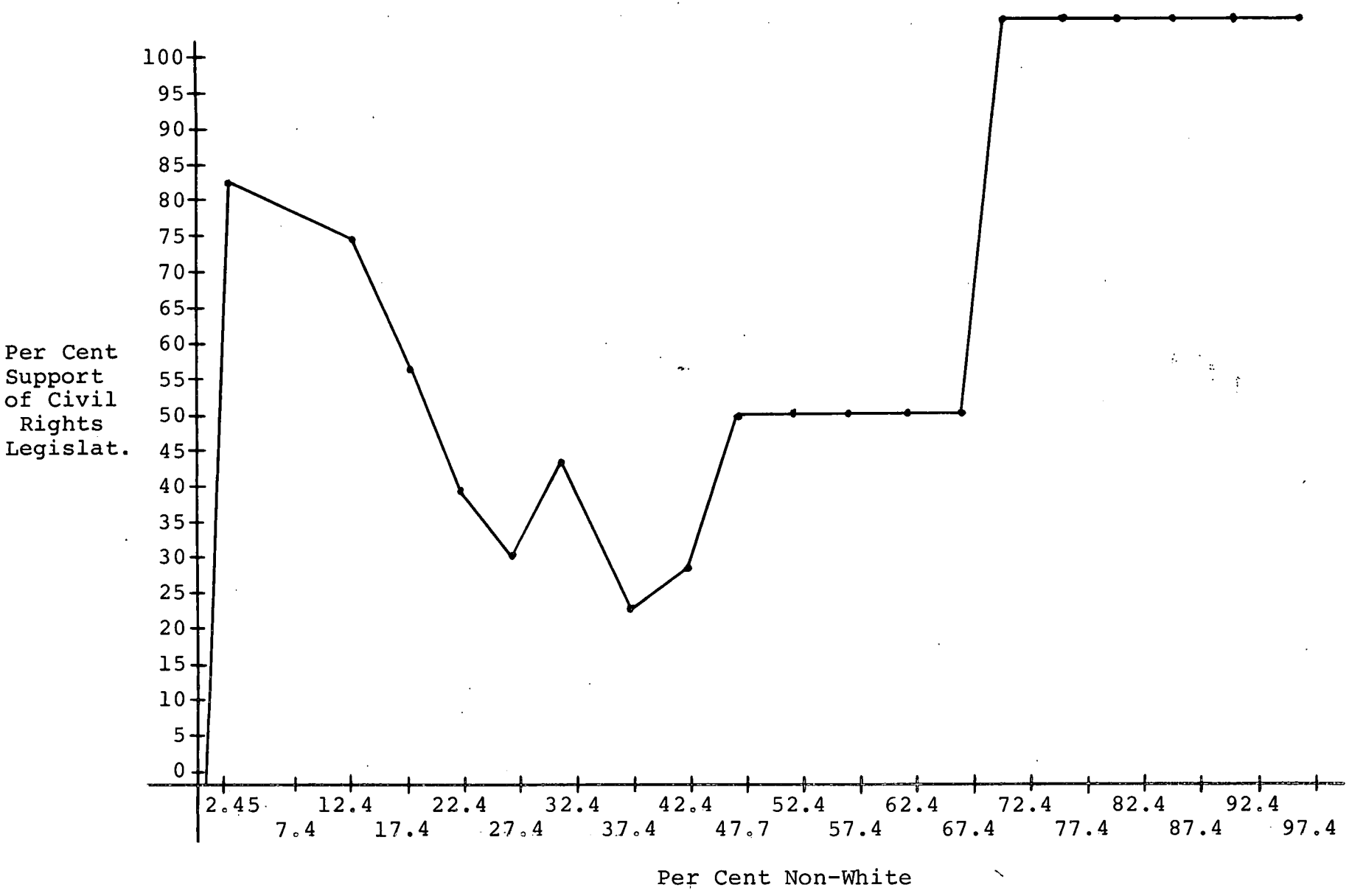


Figure 3.1. Percentage Distribution of Support for Civil Rights Legislation, All Districts, 87th Cong.

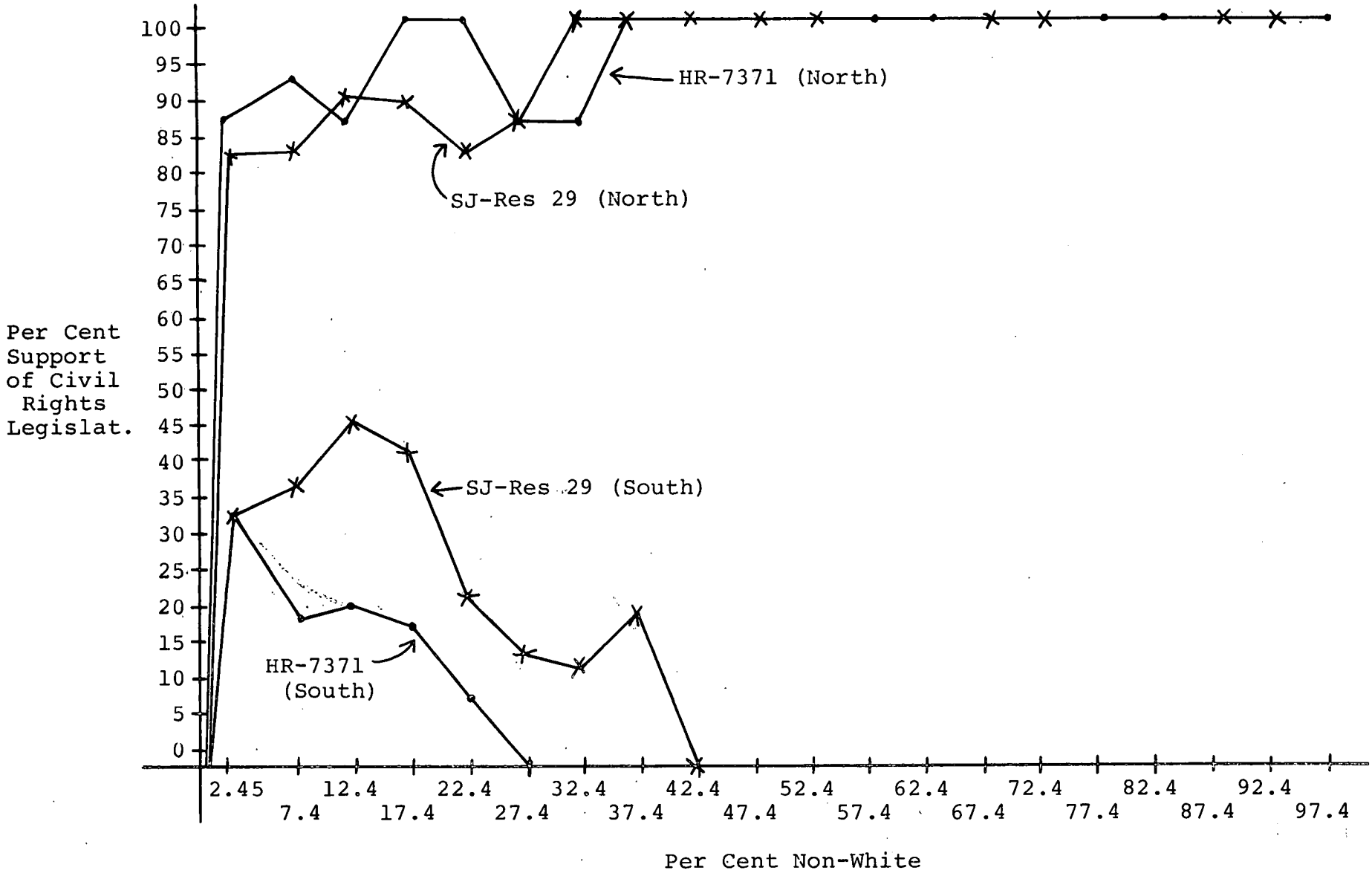


Figure 3.2. Percentage Distributions of Support for Civil Rights Legislation, All Congressional Districts by Per Cent Non-White, Controlling North-South Dichotomy, 87 Cong.

regional tendencies, one that conforms to the expectations of interest group theory and the other that deviates from those expectations. We are led to infer from the utility-maximization schema that the gains of supporting civil rights interests in the North are evaluated consistently in excess of the objective capacity of non-whites to influence election chances. In the South, where the opposite is the case, we are led to the conclusion that the political process circumvents the capacity of non-whites to exercise their electoral influences.

An examination of all civil rights legislation considered in the 87th and 88th Congress revealed a consistent replication of these regional tendencies.

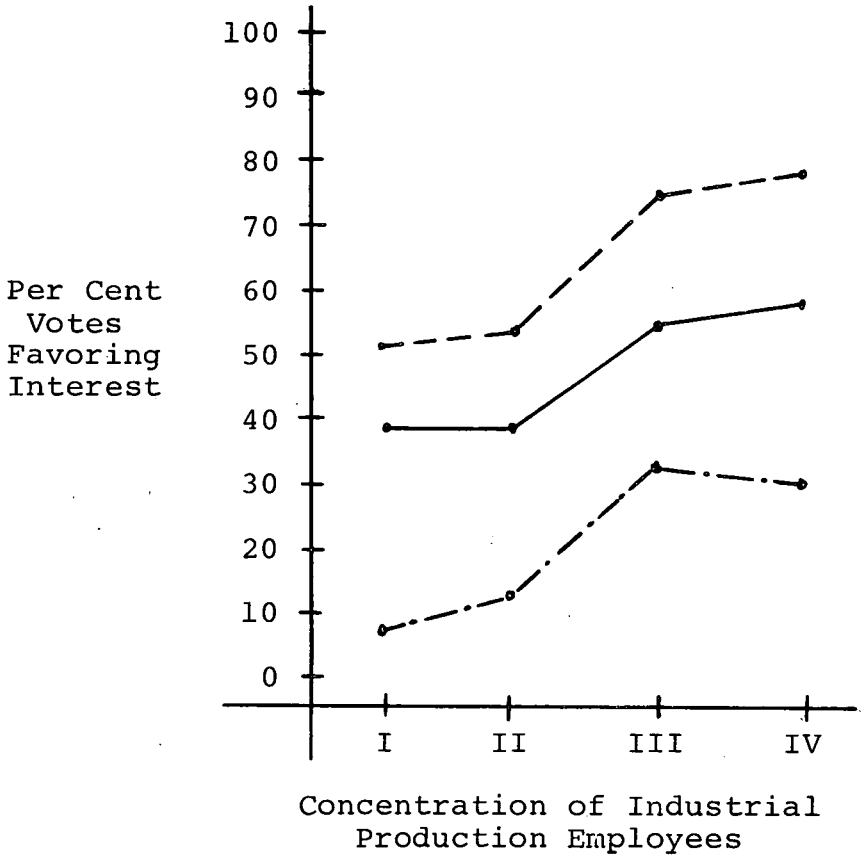
VOTING ON INDUSTRIAL AND AGRICULTURAL LEGISLATION

Clear measures of meaningful constituency interests are also available in other areas. Less detailed examinations of agricultural and production workers' interest representation may be considered here to review the Bentley theory in different issue-areas. In doing this we shall also consider the effect of party allegiance on the interest hypothesis.

To observe the efficacy of pressures from various district concentrations of industrial employees, the distribution of votes on HR-3935 (87th Congress) has been determined in relation to the proportion of the populations of districts composed of industrial workers. The range of such concentrations is narrower than for non-white (from about 0.5% to about

16.7%), and is here subdivided into four ranks containing approximately equal numbers of districts. HR-3935 was an amendment to weaken the minimum wage proposal of the president, and was opposed by labor interest. We consequently consider a "nay" vote to be favorable to the labor interest and to the administration. The distribution of votes favoring labor is plotted in Figure 4.1. The aggregate plot is consistent with the theory, and the shape of the functions suggests at least two lines of interpretation. First, the general function resembles Figure 2A, suggesting a decision-frame in which there is high communication in the system and good visibility of the consequences of voting for or against. Therefore, we would expect that further decomposition of the function would produce partial functions replicating the same pattern, i.e., of the same shape with a clear "flex point" at which rewards outbalance costs. Secondly, the flex point--falling between II and III--might be interpreted itself, say, as a threshold of industrialization in districts, beyond which the impact of industrial organization in districts begins to ramify beyond its immediate boundaries (perhaps, producing aggregation of convergent labor dependent interests). (This implication might be assessed, for example, by summing the number of interests correlated with the concentration of industrial employees which also predict to this voting function.)

Decomposing the distribution by party affiliation confirms these expectations. (See Figure 4.1) The curves for



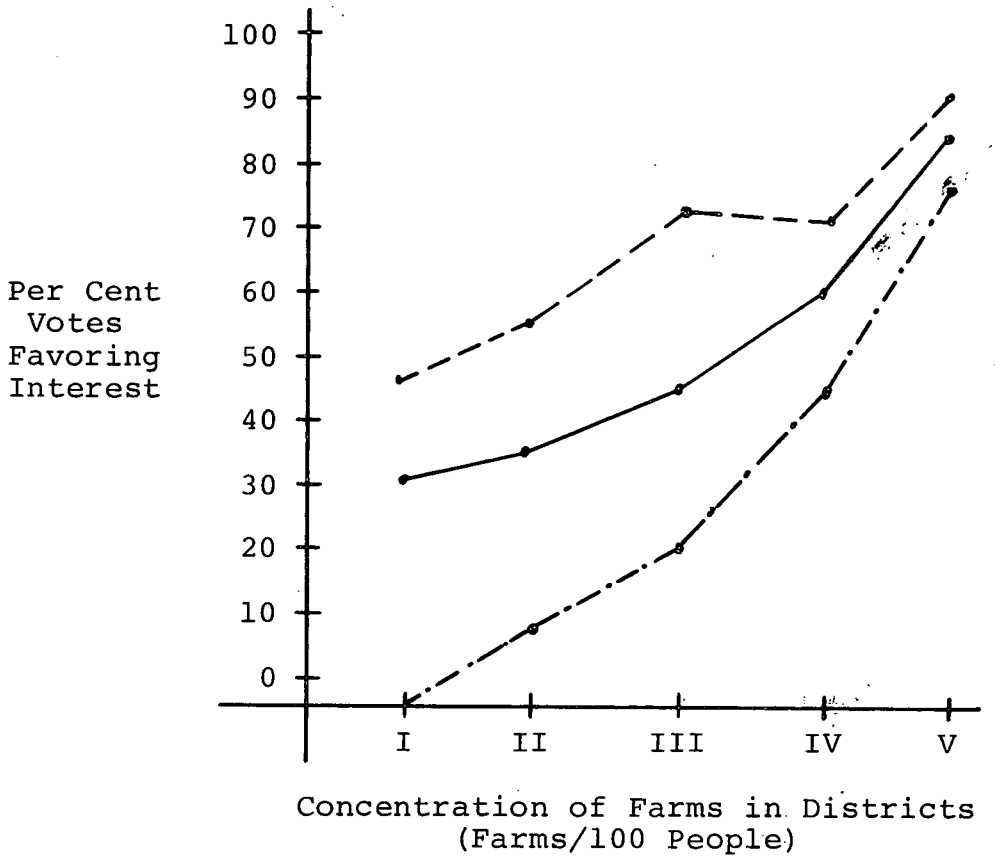
Concentrations:
I = .52 - 3.9%
II = 4.0 - 6.45%
III = 6.5 - 8.67%
IV = 8.68 - 16.65%

Figure 4.1. HR-3935

Democrats and Republicans parallel one another, though at different magnitudes. The effect of party is clear and strong, but quite independent of the pressures exerted by labor interests.

On votes pertinent to agriculture, similar results can be observed. The concentration of farms in districts maybe standardized for this purpose by computing a farm: population rate (i.e., the number of farms per 100 people). The distribution on this variable is from 0.0 to 10.9, and has been broken into five categories containing approximately equal numbers of districts.

To observe the efficacy of agricultural interests as indexed by this farm concentration measure, consider the distribution of votes on the Agricultural Act of 1961 (S-1643, 87th Congress), a bill containing provisions for wheat and feed grain control programs as well as provisions for trade, aid to farmers in housing, etc.--a mixture of items both supported and opposed by farm interests. The percentages are plotted in Figure 4.2. The aggregate distribution fits the predictions of the interest theory and, like that for the labor bill, resembles the hypothetical function from which it was deduced that the political process was operating with good communication and visibility of the consequences of interest-related decisions. And, again, a flex point appears near the center of the range of farm concentration. The same expectation holds; decomposing the distribution should produce internal replications of the aggregate function.



Concentrations:
I = 0.0 - 0.21%
II = 0.22 - 0.73%
III = 0.74 - 2.55%
IV = 2.56 - 4.65%
V - 4.66 - 10.97%

Figure 4.2. S-1643, 87th Congress, House of Representatives

Controlling for party affiliation yields the two internal distributions also plotted in Figure 4.2. Clearly, the expectation is confirmed. In addition, the plots reveal another tendency. At low farm concentrations, there is greater variance about the aggregate tendency than at high concentrations. This tendency for the distributions by party to converge as a function of interest concentration, relative at least to the labor voting pattern, suggests that agriculture is an issue-area permitting fewer external influences to compound themselves with itself after it achieves some degree of political leverage within districts. As one might expect in most issue areas, low interest concentrations permit a representative to yield to other politically relevant influences, such as party affiliation. At high concentrations, the efficacy of the interest intensifies, and as efficacy rises exogenous influences on the activities->interest->pressure->decisions chain are muted.

SUMMARY AND CONCLUSIONS

This paper has challenged the notion that the linkages between congressmen and their constituencies are to be seen in terms of general issue areas. As alternatives, we have suggested that such linkages can be viewed either in terms of general orientations toward government activity that are issue-free, or in terms of influence processes with regard to specific issues.

Secondly, we have argued that regardless of the level of attitude generality with which one is concerned, linkages between legislators and those they represent tend to complex phenomena, yielding non-linear relationships which are therefore not amenable to standard correlational procedures.

Finally, we have provided a simple and operationally feasible formalization of representation. The theory is based on the proposition that representatives will act rationally so as to maximize their self interests. The electoral accountability of representatives equates their personal interests with the interests of their constituents. Bentley's theory of political processes may be used to interpret system-level consequences of this tendency. In Bentley's terms it may be assumed that the political system is operating to represent interests of constituents when the aggregate probability of decisions favoring given interests is an increasing, monotonic function of their magnitude (i.e., ability to alter election chances). The consequence is compatible with several differently interpretable political processes: consensus, compromise, and competing interests, etc. Variations from these patterns are also interpretable: disruptions in the political process, compounding of several effects.

Several of these patterns have been illustrated with data from Congressional roll-call votes, under the hypothesis that the manner in which the political process functions is issue-specific. All roll-calls on civil rights legislation

in the 87th and 88th Congress, for example, were found to be decomposable into regional tendencies--consensus in the North, disruption of representation in the South. On agricultural and labor bills in the 87th Congress, on the other hand, the patterns suggested competing interests with good communication in the political system. Furthermore, in both these cases, the influence of party alignment was controlled and shown to be operative but also responsive to interest pressure. On agricultural interests, moreover, the tendency was for partisan (exogenous) influences to decrease as a function of interest-concentration.

In all circumstances, the theory also permits certain deductions to be made from observed system tendencies to the tendencies of representatives or to the nature of certain influence processes. For example, it may be hypothesized that flex points in agriculture or labor votes denote thresholds of agricultural or industrial organization within constituencies. Such thresholds may be meaningful as indicators of underlying patterns of social organization and of degrees of ramification of particular communities of interest.

These considerations suggest the worth of further applications of the interest theory to the political process. The particular approach employed in this paper remains loose but suggestive. More sophisticated applications of the same model are readily conceivable (e.g., utilizing the joint distribution of several interest, combined in different ways, to make more accurate predictions).

Table 1. Percentage Distributions of Support for HR-7371 and SJ-Res 29 Separately and Combined from All Congressional Districts, by Per Cent Non-White, 87th Congress.

Percentage Interval:	Per Cent Agreement With		
	HR-7371	SJ-Res 29	Combined
0.0-4.9	85. (213)	82. (213)	83. (426)
5.0-9.9	80. (66)	76. (66)	78. (132)
10.0-14.9	70. (40)	78. (41)	74. (81)
15.0-19.9	52. (21)	62. (21)	57. (42)
20.0-24.9	35. (20)	40. (20)	38. (40)
25.0-29.9	26. (23)	36. (23)	30. (46)
30.0-34.9	35. (17)	47. (17)	41. (34)
35.0-39.9	14. (14)	28. (14)	21. (28)
40.0-44.9	28. (7)	28. (7)	28. (14)
45.0-49.9	50. (8)	50. (8)	50. (16)
50.0-54.9	50. (2)	50. (2)	50. (4)
55.0-59.9	0. (0)	0. (0)	0. (0)
60.0-64.9	0. (0)	0. (0)	0. (0)
65.0-69.9	50. (2)	50. (2)	50. (4)
70.0-74.9	100. (1)	100. (1)	100. (2)
75.0-79.9	0. (0)	0. (0)	0. (0)
80.0-84.9	0. (0)	0. (0)	0. (0)
85.0-89.9	100. (1)	100. (1)	100. (2)
90.0-94.9	100. (1)	100. (1)	100. (2)
95.0 or more	0. (0)	0. (0)	0. (0)

Table 2. Percentage Distributions of Support for Civil Rights Legislation (HR-7371, SJ-Res 29), Holding Constant Northern-Southern District Dichotomy, by Per Cent Non-White, 87th Congress, House of Representatives.

Percentage Interval:	Northern Districts			Southern Districts		
	HR-7371	SJ-Res 29	(N)	HR-7371	SJ-Res 29	(N)
0.0-4.9	87.7	84.3	(204)	33.3	33.3	(9)
5.0-9.9	92.7	83.6	(55)	18.2	36.4	(11)
10.0-14.9	86.6	90.0	(30)	20.0	45.5	(11)
15.0-19.9	100.0	88.8	(9)	16.2	41.6	(12)
20.0-24.9	100.0	83.3	(6)	7.2	21.4	(14)
25.0-29.9	85.7	85.7	(7)	0.0	12.5	(16)
30.0-34.9	85.7	100.0	(7)	0.0	10.0	(10)
35.0-39.9	100.0	100.0	(2)	0.0	16.6	(12)
40.0-44.9	100.0	100.0	(2)	0.0	0.0	(5)
45.0-49.9	100.0	100.0	(4)	0.0	0.0	(4)
50.0-54.9	100.0	100.0	(1)	0.0	0.0	(1)
55.0-59.9	0.0	0.0	(0)	0.0	0.0	(0)
60.0-64.9	0.0	0.0	(0)	0.0	0.0	(0)
65.0-69.9	100.0	100.0	(1)	0.0	0.0	(1)
70.0-74.9	100.0	100.0	(1)	0.0	0.0	(0)
75.0-79.9	0.0	0.0	(0)	0.0	0.0	(0)
80.0-84.9	0.0	0.0	(0)	0.0	0.0	(0)
85.0-89.9	100.0	100.0	(1)	0.0	0.0	(0)
90.0-94.9	100.0	100.0	(1)	0.0	0.0	(0)
95.0 or more	0.0	0.0	(0)	0.0	0.0	(0)

Table 3. Percentage Distribution of Roll-Call Votes Favorable to Labor Interests on HR-3935 (Fair Labor Standards Amendment of 1961, House of Representatives, 87th Congress), by District Concentration of Industrial Employees, and by Party Affiliation of Representative.

% Industrial Workers of Total District Population	% Votes Favorable to Labor Among					
Range	Aggregate	(N)	Democrats	(N)	Republicans	(N)
I - 0.52 - 3.99	38.9	(108)	51.3	(78)	6.7	(30)
II - 4.00 - 6.45	38.9	(108)	53.6	(69)	12.8	(39)
III - 6.50 - 8.67	54.2	(107)	75.5	(53)	33.3	(54)
IV - 8.68 - 16.65	57.4	(108)	79.3	(58)	32.0	(50)

Table 4. Percentage Distribution of Roll Call Votes Favorable to Agricultural Interests on S-1643 (Agricultural Act of 1961 House of Representatives, 87th Congress), by District Concentration of Forms and by Party Affiliation of Representatives.

No. of Farms/100 People in District	% Votes Favorable to Farm Interests Among:					
Range	Aggregate	(N)	Democrats	(N)	Republicans	(N)
I - 0.00 - 0.21	31.0	(87)	46.6	(58)	0.0	(29)
II - 0.22 - 0.73	35.6	(87)	54.9	(51)	8.3	(36)
III - 0.74 - 2.55	45.5	(88)	72.1	(43)	20.0	(45)
IV - 2.56 - 4.65	62.1	(87)	70.9	(55)	46.9	(32)
V - 4.66 - 10.97	83.9	(87)	89.3	(56)	74.2	(31)

FOOTNOTES

1. Guttman suggests 10 items as the minimum that can be used to define a unidimensional space. While we have never seen a scale that meets this criterion, we are uneasy about using the rhetoric of scalogram analysis to describe 2 or 3 item sets. High coefficients of reproducibility can be obtained among small numbers of interrelated but non-unidimensional attributes, and it thus seems safer here to utilize the techniques of scaling to construct an index that is not assumed to be unidimensional.

2. We do not mean to suggest that our failure to replicate the scales utilized by Miller and Stokes indicates a misrepresentation of the data on their part. Indeed, it is quite probable that their scales were constructed utilizing methods more sophisticated than those developed by Guttman. See for example Coombs (1965). We do take issue with their failure to present the criteria upon which these scales are based. Stokes states, in a paper prepared for the 1967 meetings of the American Political Science Association, that "the content of the attitude items and the methods by which they have been used to form these three attitude scales or dimensions" are reported in Miller and Stokes (1966). That they do not appear there is obviously an oversight, but we hope that these materials will be made availabile in their forthcoming volume, Representation in the American Congress.

3. Percentage scores for congressmen were taken from the Congressional Quarterly Almanac for 1958.

REFERENCES

Axelrod, R.
1967 "The structure of public opinion on policy issues," Public Opinion Quarterly, 31 (Spring): 55-60.

Bentley, A.
1949 The Process of Government. Bloomington: Principia Press.

Bonner, R. E.
1964 "On some clustering techniques," IBM Journal of Research and Development, 8 (January): 22-32.

Campbell, Angus, et al.
1960 The American Voter. New York: Wiley.

Converse, Philip E.
1964 "The structure of belief systems in mass publics," in David Apter (ed.), Ideology and Discontent. New York: Free Press.

Coombs, Clyde H.
1965 A Theory of Data. New York: Wiley.

Cureton, Edward E.
1959 "Note on ϕ/ϕ max," Psychometrika, 24 (March): 89-91.

Goodman, Leo A., and William H. Kruskal.
1954 "Measures of association for cross-classifications," Journal of the American Statistical Association, 49 (December): _____.

Guttman, L.
1950 "The basis for scalogram analysis," in S. A. Stouffer, et al., Measurement and Prediction. Princeton: Princeton University Press.

Lipset, Seymour Martin.
1968 Revolution and Counter-Revolution. New York: Basic Books.

Luttberg, Norman R.
1968 "The structure of beliefs among leaders and the public," Public Opinion Quarterly, 32 (Fall): 398-409.

MacRae, Duncan, Jr.
1968 "The sociology of legislatures," International Encyclopedia of the Social Sciences. New York: Collier-Macmillan.

McClosky, Herbert; Paul J. Hoffman; and Rosemary O'Hara.
1960 "Issue conflict and consensus among party leaders and followers," American Political Science Review, 54 (June): 406-427.

McPhee, William N.; Bo Anderson; and Harry Milholland.
1962 "Attitude consistency," in William N. McPhee (ed.), Public Opinion and Congressional Elections. New York: Free Press.

Miller, Warren E. and Donald E. Stokes.
1966 "Constituency influence in congress," in Angus Campbell, et al., Elections and the Political Order. New York: Wiley.

Segal, David R. and Stephen H. Wildstrom.
1968 Community effects on political attitudes. University of Michigan mimeo.