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Explaining stability in democratic political systems: A dialogue between behavioral research and social choice theory

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EXPLAINING STABILITY IN DEMOCRATIC POLITICAL SYSTEMS: A DIALOGUE BETWEEN BEHAVIORAL RESEARCH AND SOCIAL CHOICE THEORY

by
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Finally, to my wife Dorothy: I lovingly dedicate this dissertation to you.

PREFACE

In an influential article from the early 1980s, the formal theorist Gordon Tullock surveyed the results of recent work in the fields of social choice theory and spatial models of elections, and identified a puzzling inconsistency between theory and fact. Such diverse phenomena as cyclical majorities, free riding, and disequilibrium in spatial voting games, he noted, seemed to imply that the taking and implementation of collective decisions is fraught with insoluble dilemmas. Yet actual decision making bodies and representative institutions routinely arrive at and successfully carry out majority decisions. Thus, the chaos forecast by social choice theorists has not come to pass. This realization led Tullock to query, why so much stability?

This question might well be echoed by behavioral researchers, as they survey the results of empirical studies on the nature of mass political orientations. While the social choice theorist frequently assumes perfectly informed actors with fixed policy objectives, the behaviorist's findings paint a less flattering portrait of the mass public's political capacities. In the behavioral literature, it is far from a given that most citizens even have opinions about important political issues, let alone that these opinions matter much at all to an electorate which seems more easily swayed by such variables as candidate images, partisan loyalties, and retrospective evaluations of incumbent performance. Such characteristics would seem to imperil the functioning of representative democracy. How can elected officials implement the opinions of a public that largely lacks opinions? And if citizens do possess opinions but base their vote decisions on

other criteria, how can they select representatives who reflect their policy preferences? In short, why so much stability?

My central goal in this dissertation is to develop answers to this question which satisfy both behavioral researchers and social choice theorists. I do not believe that scholars from either subdiscipline have adequately explained how democratic representation processes can function in the face of the dilemmas which they identify. Yet while neither social choice theory nor behavioral research provides convincing answers by itself, I believe their combined perspectives will succeed where each alone has failed. That is the perspective which I adopt in this dissertation. Specifically, I take as a starting point the complex but realistic models of political preferences developed by behavioral researchers, and deduce their collective implications via the formal methods employed by social choice theorists. This combined approach provides insights into democratic representation processes, thereby illuminating the "paradox of democratic stability" which puzzles both behavioral researchers and social choice theorists. For behaviorists, it answers the question, how can democratic representation processes function, given empirical findings of low levels of political information and involvement in the mass public? For social choice theorists, it answers the question, why do the collective dilemmas deemed likely by social choice theorists occur so infrequently in actual political systems?

My research strategy is novel in that social choice theory and behavioral research have evolved quite independently of each other. Behaviorists rarely work out the collective implications of their empirically-grounded models of political preferences. Social choice theorists, meanwhile, ignore the complex but realistic preference models developed by the behaviorists, preferring instead to employ simplistic assumptions which facilitate their analyses. The insights I obtain by combining these two research traditions provide two of the major themes which run through this dissertation. These are:

1. Democratic representation processes can function successfully, even if large portions of the mass public are politically uninformed and uninvolved. It is not the case, as behavioral researchers speculate, that public opinion will be unstructured if large portions of the public lack policy preferences or ideological orientations. On the contrary, I demonstrate (and support with a wide body of empirical evidence) that public opinion will feature a collectively ideological structure even if many or most members of the public lack ideological orientations. Furthermore, it is not the case that an electorate which deemphasizes candidates' policy platforms is likely to elect representatives who do not reflect its policy preferences. I report the results of simulated elections which indicate that, paradoxically, electorates which deemphasize issues are more likely to select "representative" candidates than are entirely issue-oriented electorates. In these and other ways, a mass public which falls short of the democratic ideal does not hinder -- and in some cases even enhances -- democratic representation.

2. Many of the collective dilemmas identified by social choice theorists appear improbable, given the behaviorists' models of political preferences. Many of the disturbing results which formal theorists have derived using simplistic models of political preferences are dramatically altered when we apply the behaviorist's more complete, empirically-grounded perspective. For instance, while spatial modelers have uniformly concluded that policy equilibria do not exist in multiparty elections, I demonstrate that such equilibria do exist when voters choose according to the behaviorist's multivariate model of the vote decision. I further argue that it is not the case, as social choice theorists have concluded, that cyclical majorities are probable in multiparty elections; instead, I demonstrate that under the behavioral voting model, cyclical majorities are improbable for any number of parties. I support my formal demonstration with survey data drawn from France, Britain, and the United States.

These two themes combine to suggest a third lesson to be drawn from this dissertation:

3. The behaviorists' debates over the structure of mass political orientations matter. By this I mean that competing behavioral models of political preferences have dramatically different implications for democratic representation processes. For instance, I conclude that electorates are more likely to select representatives who reflect their policy preferences if voters are moderately interested in a large number of issues (as specified in most multivariate voting formulations) than if they are passionately engaged in some smaller number (as in Converse's notion of issue publics). Furthermore, I demonstrate that in multiparty elections, candidate issue strategies and the prospects for policy equilibrium depend largely on the role that partisanship plays in the voter's decision. In these and many other ways, controversies in behavioral research have ramifications for how well democratic representation processes can be expected to work. This dissertation thereby helps clarify the stakes in the behaviorists' debates.

I hope to convince the reader of these points in the course of this dissertation. Underlying this entire undertaking, moreover, is a more general argument about political science research strategy: namely, a "dialogue" between social choice theory and behavioral research yields insights important to both subdisciplines. While working on this project, I have been repeatedly surprised that the results I obtain have not been previously discovered. I state this not simply because I believe these results are important (that is for the reader to judge), but because many of them involve demonstrations which are neither formally nor methodologically taxing. Put baldly, many of my arguments are not only true, they are also obvious. However, they are only obvious once you know where to look. These arguments have not been made before, I surmise, simply because behaviorists and social choice theorists do not look at each others' work. This tradition, if mutual neglect may comprise a tradition, unnecessarily

limits each subfield's contributions to political science. I therefore hope this dissertation inspires both behavioral researchers and social choice theorists to take up topics of mutual interest.

THE CHAPTERS IN THIS DISSERTATION

In chapter one, I argue for a perspective on democratic representation processes which combines the empirical findings of behavioral research and the formal rigor of social choice theory. I outline a large number of collective dilemmas identified by formal theorists and behaviorists, and contrast the simplistic models of political preferences that social choice theorists apply to these problems with the more realistic models of political preferences developed by behaviorists. In the second chapter I describe these behavioral models in more detail, with particular emphasis on two competing models of political attitudes -- Converse's notion of issue publics, and the "diffused ideology" formulation. I integrate these perspectives on issue attitudes into the behaviorist's multivariate model of the vote, which combines both issue and nonissue variables such as partisanship and sociodemographic characteristics.

Chapters three and four explore the implications of the multivariate voting model for party issue strategies and policy equilibria in multiparty elections. In chapter three I demonstrate that in multiparty <u>but not</u> two-party elections, vote-seeking parties should adopt platforms which reflect their partisans' policy preferences. This pressure for responsible parties, I speculate, enhances stability in multiparty systems. I then report the results of a series of computer-simulated elections which confirm that, under the behavioral model of the vote, policy equilibria generally exist in multiparty systems. These equilibria, moreover, find parties located near their partisans in the issue space. These results illuminate why multiparty systems are stable,

in contrast to the disequilibrium results reported by spatial modelers. Chapter four develops an empirical application to party issue strategies in the 1983 British national election.

In chapter five, I examine the structure of the mass public's preferences under the issue publics and diffused ideology models of issue attitudes introduced in chapter two. I present a formal demonstration that under each of these models, groups of voters will display a collective ideology even if many or most of the individuals who compose them have preferences which are inconsistent with the hypothesized ideological continuum; this collective ideological structure, moreover, precludes cyclical majorities. I support my formal argument with survey data drawn from France, Britain, and the United States. From the perspective of behavioral researchers, these results illuminate how public opinion can possess a coherent structure even if large sections of the electorate are uninvolved and uninformed about politics. From the perspective of social choice theorists, my analysis falsifies their conclusion that cyclical majorities are probable in multiparty systems.

Chapter six explores the link between the behavioral model of the vote and the desirability of several different voting systems, including plurality. I employ Monte Carlo simulation techniques to estimate each voting system's tendency to select the Condorcet candidate -- e.g., the candidate who would defeat all others in a two-way race. Because such a candidate generally reflects the electorate's policy preferences (which is why he commands majorities against all rivals), a voting system's "Condorcet efficiency" provides an estimate of how often candidates who reflect the electorate's policy preferences are selected. My results suggest a counterintuitive conclusion: the less issue-oriented the electorate, the more likely that the Condorcet candidate will be selected, particularly under plurality. This result, which I explain with an informal argument, provides an insight into how electorates may be largely unmotivated by issues, yet nonetheless select candidates who reflect their issue preferences.

Following chapter six, I provide a summary of the major propositions I have derived during the course of this dissertation.

CONCLUSION

The main purpose of this dissertation is to explain why democratic representation processes work in the face of numerous dilemmas identified by social choice theorists and behavioral researchers. My theoretical approach combines these research traditions by formally developing the collective implications of the behaviorists' models of political preferences. I believe this "dialogue" between behavioral research and social choice theory represents an important advance, and yields insights on stability in democratic political systems.

TABLE OF CONTENTS

LIST OF FIGURES

FIGURE

LIST OF TABLES

TABLE

CHAPTER 1: BEHAVIORAL RESEARCH, COLLECTIVE OUTCOMES, AND THE PROBLEM OF DEMOCRATIC REPRESENTATION

Summary: In this introductory dissertation chapter, I argue for a "dialogue" between behavioral research, on the one hand, and social choice theory and spatial modeling on the other. The likelihood of candidate spatial equilibria, voting cycles, and other phenomena of interest to social choice theorists and spatial modelers depends on the assumptions they make about how individuals choose among competing alternatives; yet these analysts typically ignore the empirically-grounded models of political preferences developed by behavioral researchers. Behaviorists, meanwhile, frequently speculate that the low levels of political information and involvement they find among members of the mass public imperils democratic representation processes; yet they fail to rigorously work out the collective implications of their individual-level findings. By exploring the collective implications of the behaviorists' complex but realistic models, we gain insights into why the dilemmas deemed likely by social choice theorists and behaviorists occur infrequently in actual political systems.

In the decades after World War II, political scientists operating from two different research perspectives argued for disturbing conclusions which suggested that representative democracy is unworkable. One approach, dating back to The American Voter (Campbell, et. al, 1960) is behavioral research. Behaviorists emphasize the empirical study of citizens' political preferences, with a heavy reliance upon survey data. The second set of approaches, dating back to Arrow (1951) and Downs (1957), includes social choice theory and spatial modeling. These research traditions, which I label collective choice approaches, focus on the collective outcomes of individual choice behavior; in this endeavor they

typically employ mathematical modeling or computer simulation techniques. Behavioral research and collective choice theory, which focus on political preferences at two different "levels of analysis", have evolved independently of each other.

From their individual-level perspective, behavioral researchers have produced disturbing findings regarding citizens' political attitudes and voting behavior, leading them to speculate that the connection between elected representatives and their constituents will break down. The impetus was provided by Converse (1964, 1970), who argued in a classic series of articles that large proportions of the American electorate lacked "true" attitudes on important political issues. If citizens are as capricious as Converse's analysis suggested, then the link between the public and elected representatives is effectively severed, since representatives will be unable to interpret the attitudes of citizens who <u>have</u> no real attitudes; as Achen argued (1975, p. 1227), Converse's conclusions imply that "Democratic theory loses its starting point." Furthermore, behavioral voting research suggests that even if citizens do possess genuine issue attitudes, their votes are more readily swayed by such variables as party identification, candidate images, and retrospective evaluations of incumbent performance (Converse and Pierce, 1986; Erikson and Romero, 1990; Jackson, 1975). Although such nonissue concerns may be "rational", they seemingly facilitate the selection of candidates whose platforms diverge from their constituents' preferences, since such candidates will not suffer undue electoral penalties by advocating unpopular policies. Such a result, which I label an unrepresentative election, jeopardizes democratic representation processes.[1]

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[1] In chapter six, I formally define the term "unrepresentative election" as an election which fails to select the Condorcet candidate (e.g., the candidate who would defeat all others in a pairwise vote), when such a candidate exists.

Collective choice theorists have identified a different set of problems which threaten to disrupt democratic representation. For instance, spatial modelers focusing on candidate issue strategies have concluded that candidate policy equilibria -- e.g., locations in the policy space to which vote-seeking candidates will gravitate -- are unlikely except under highly restrictive conditions (e.g., Cox, 1990; McKelvey, 1986). This result suggests that the connection between voters and elected representatives is severed "from above", since even issue-oriented voters will be unable to translate these preferences into votes for candidates who continually alter their policy platforms. Meanwhile, social choice theorists have identified several collective dilemmas which stymie effective representation, two of which are voting paradoxes and "breakdowns" in social choice functions. When citizens' aggregate issue preferences result in a voting paradox (e.g., when there is no policy which would defeat all others in a series of pairwise votes), then even if citizens have true preferences, representatives will be unable to implement any policy which some majority would not wish to overturn. Second, the society's social choice function (e.g., the method by which votes are counted) may select a candidate whose platform is broadly unacceptable to the electorate even though a rival exists who more closely mirrors voters' values. Under the plurality system, for instance, a number of centrist candidates might split the support of moderate voters, thereby ensuring the victory of an extremist rival. In this case, even an issue-oriented electorate may select an "unrepresentative" representative.

In this dissertation I argue for a new perspective on the representation dilemmas identified by collective choice theorists and behavioral researchers. This perspective takes as a starting point the behaviorists' complex models of political preferences, and explores their collective implica-

tions via the formal methods employed by collective choice theorists. Specifically, I begin with two contrasting behavioral perspectives on political preferences -- Converse's model of issue publics, and the competing "diffuse attitudes" formulation -- and deduce each model's implications for the representation dilemmas described above. My central conclusions are:

1) **Democratic representation processes will function successfully, even if, as much behavioral research suggests, large portions of the mass public are politically uninformed and uninvolved.**

2) **Under the behaviorists' models of political preferences, many of the collective dilemmas identified by social choice theorists appear improbable.**

My approach is novel in that behavioral research and collective choice theory have evolved independently of each other. Behavioral researchers do not, as a rule, rigorously explore the collective implications of their empirically-grounded models of political attitudes and voting behavior. Collective choice theorists, meanwhile, typically (but with exceptions to be noted later) ignore the complex models developed by the behaviorists, preferring instead to employ simplistic individual-level assumptions which facilitate their analyses. By establishing a dialogue between these two research traditions, I gain insights into democratic representation which neither approach alone can provide.

This chapter is divided into three sections. In Section I, I review the debate among behaviorists concerning the structure of citizens' issue attitudes, with particular emphasis upon two models: the "Issue Publics" model developed by Converse, and the competing "Diffused Ideology" formulation. I then summarize the results of behavioral research on

issue voting, which studies the impact of both issue and nonissue motivations on citizens' vote choices. Section II contrasts these behavioral results with the simplistic individual-level assumptions employed by social choice theorists and spatial modelers, and summarizes the alarming implications these simpler assumptions hold for the likelihood of representation dilemmas. In Section III, I argue for an approach which combines the insights of behavioral research and social choice theory, and identify three issues to which this new perspective can be applied: candidate issue strategies and policy equilibria in multiparty elections, cyclical majorities and the collective structure of public opinion, and unrepresentative elections.

SECTION I: Behavioral Models of Issue Attitudes and the Vote.

An unsettling finding from survey research has been the discovery of what appears to be a large component of randomness in citizens' responses to questions designed to measure their attitudes on political issues. If citizens are asked the same question at two different times, for instance, a significant proportion change their answers (Zaller and Feldman, 1992). Furthermore, there appears to be little relationship between respondents' responses to <u>different</u> questions at the <u>same</u> time, even on issues which appear to tap a common ideological dimension. One of the field's most enduring controversies involves the interpretation of these findings.

In one of the first and most famous analyses of political survey data, Converse (1964) explained these results by positing that the electorate is usefully conceived as a collection of <u>issue publics</u>, which are composed of relatively small groups of citizens passionately interested in some particular policy dimension. According to this interpretation, citizens possess unvarying attitudes on those policy

questions which engage their interest (and hence offer perfectly stable over-time survey responses to these questions), but typically lack attitudes on many other policy issues, and answer those questions randomly in survey situations. This formulation implies that "large portions of an electorate simply do not have meaningful beliefs, even on issues that have formed the basis for intense political controversy among elites for substantial periods of time" (1964, p.245). In addition, Converse argued, most citizens lack a coherent political ideology which would enable them to work out a set of ideologically consistent issue positions.

Converse's conclusions have been hotly contested by analysts who maintain that mass political orientations display considerably more structure and stability than is posited in the Issue Publics model. First, various scholars contend that the notion of issue publics misspecifies the structure of public opinion by positing that citizens exhibit passionate interest in one set of political issues while ignoring the rest. Instead of these sharp divisions of public interest, these analysts argue, citizens possess graduated degrees of interest with respect to different political issues (see Inglehart, 1985). The second and more serious criticism leveled against the Issue Publics model is that it understates the degree to which citizens possess meaningful and ideologically constrained issue attitudes. In the view of many scholars, both the fluctuation in citizens' over-time responses and the low correlations between attitudes at the same time point -- which Converse took as evidence of nonattitudes and low attitude constraint, respectively -- are instead the product of "measurement error", which arises from the difficulty of mapping one's attitudes onto the vague language of survey questionnaires (Achen, 1975; Feldman, 1989; Inglehart, 1985; Jackson, 1983). According to this Diffused Ideology model, most citizens possess ideologically structured attitudes which extend to virtually every political issue.

In summary, the Issue Publics and Diffused Ideology models advance conflicting hypotheses concerning the diffusion of ideology and extent of issue attitudes among members of the mass public, as well as divisions of interest in public opinion. The Issue Publics model posits that citizens exhibit sharp divisions of interest with respect to different political issues, as opposed to the graduated degrees of interest posited by the Diffused Ideology model. Under the Diffused Ideology model, meanwhile, citizens' attitudes extend to virtually all political issues, while the Issue Publics model posits that the typical citizen ignores many important policy questions. Finally, citizens' attitudes are ideologically con- strained under the Diffused Ideology but not the Issue Publics formulation.

One reason for the intense debate over the structure of citizens' issue attitudes and voting behavior is their alarming normative implications. Converse, who developed the Issue Publics model, was attacked as an elitist because his formulation implied that members of the mass public were largely incapable of making informed political choices, and by extension that these choices were best left in the hands of a politically sophisticated minority. Although this charge is unfair, the notion that citizens lack issue attitudes is troubling, and raises the question of whether representative democracy is possible. Inglehart, commenting on the instability of citizens' attitudes revealed in survey research, expresses the view (shared by many behaviorists) that widespread nonattitudes jeopardize democratic representation:

> The implications of these findings were disturbing... Under democratic norms, public officials are supposed to implement the preferences of a majority of citizens, but if most citizens don't really have any coherent or stable preferences about major political issues, why should political decision makers take them into account? Indeed, how could they? (1985, p.97).

This concern for representation processes extends to behavioral research on voting as well. If voters possess true attitudes but are more easily swayed by such variables as party identification and candidate images, as some studies suggest (e.g., Brody and Page, 1979; Markus and Converse, 1979), then candidates can take unpopular positions (and representatives may implement unpopular policies) and suffer no electoral penalty. In this case, an "irresponsible" electorate encourages its representatives to be irresponsible as well.

It is important to note that although behavioral researchers frequently speculate about the wider implications of their findings, their primary goal is to ascertain the structure of citizens' political preferences and vote decision processes, rather than to explore the implications of this structure for representative democracy. Behaviorists do not, as a rule, rigorously work out the collective implications of their complex models of issue attitudes and voting behavior -- and therefore, their apprehensions regarding the viability of democratic processes -- are based, for the most part, upon "common sense" rather than systematic deductions from their models.[3] Thus, when behaviorists assert that elected officials would be unable to interpret public opinion if citizens lack issue attitudes, they do not specify the extent of true attitudes necessary for a viable democracy, nor whether democratic representation depends on the distribution as well as the extent of these attitudes among members of the mass

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[3] This summary does <u>not</u> imply that behaviorists ignore the structure of the public's aggregate preferences. Behaviorists frequently study aggregate data, but usually in an attempt to deduce the structure of <u>individuals</u>' ideological orientations. Inglehart (1985), for instance, notes that mass attitudes are much more stable at the aggregate than the individual level, and deduces that <u>individuals</u> therefore have stable underlying attitudinal predispositions, which are masked by measurement error.

public. Such issues, a behaviorist might reply, are the province of collective choice theorists.

SECTION II: Social Choice and Collective Outcomes

Although collective choice theorists do, in fact, theorize about the relationship between individuals' political attitudes and voting behavior, on the one hand, and the possibility of various collective outcomes, on the other, their results appear suspect to behavioral researchers. The problem, from the behaviorists' perspective, is that collective choice theorists typically employ assumptions which diverge from the behaviorists' empirically-grounded models. Three of the most common individual-level models employed in collective choice analysis are the impartial culture and the partial culture, and deterministic voting. To understand how widely these formulations depart from the behaviorists' models, we must examine them in more detail.

The impartial culture. In an impartial culture, all voters choose randomly from among the available alternatives or candidates. This assumption is used frequently in studies on the probability of voting paradoxes (Gherlein and Fishburn, 1976; Niemi, 1969), and when assessing the likelihood of unrepresentative elections (Merril, 1988; Nurmi, 1992). The impartial culture model implies that citizens lack any attitudinal or ideological basis for their choices, and is therefore even more pessimistic than Converse concerning the public's political capacities.

The partial culture. Analysts who investigate the probability of voting paradoxes frequently assume that the public consists entirely of likeminded voters -- e.g., citizens with identical biases vis-a-vis the competing alternatives or candidates (Berg, 1985; Gerhlein, 1987; Mitchell and Trumbell, 1992).

Every voter in this partial or socially homogeneous culture is assumed to draw her preference ordering from an identical probability distribution; for example, when choosing among candidates A,B, and C, each voter might be assigned a 10% probability of ranking the candidates in the order ABC, a 12% probability of BCA, and so on. This model of individual choice behavior bears no clear relationship to the attitudinal or voting behavior advanced by behavioral researchers.

The deterministic voter. In spatial models of elections, issues are usually assumed to drive voting decisions in a deterministic fashion, with voters always voting for the candidate closest to their views (Erikson and Romero, 1990).[3] Spatial modelers employ this assumption when theorizing about candidate issue strategies and election outcomes. It also appears frequently in studies of the probability of unrepresentative elections (Chamberlin and Cohen, 1978; Merril, 1988). Given behavioral researchers' findings that voters 1) frequently lack attitudes, and 2) are primarily motivated by nonissue factors, the spatial voting model's assumption of a totally issue-oriented electorate appears overly optimistic.

The general quest of the collective choice theorists who employ these individual-level assumptions is to estimate the likelihood that various representation dilemmas will actually occur. For instance, Gerhlein and Fishburn (1976) have developed computable solutions for the probability of a voting paradox under the impartial and partial culture assumptions, while various analysts have used the deterministic voter model when estimating the likelihood of unrepresentative elections (Chamberlin and Cohen, 1979, Merril, 1988; Nurmi, 1992). These calculations are typically extremely complex, even though they are abstracted from simple models of issue attitudes and voting behavior. Indeed, one motivation for

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[3] I discuss probabilistic spatial voting models below.

collective choice theorists' simplistic individual-level assumptions is that they simplify the analysis of representation dilemmas; under more realistic assumptions, these computations might become impossibly complex.

The probability results collective choice theorists have presented are generally bleak. Spatial modelers find that when voters choose deterministically, two-party equilibria rarely exist for more than one issue dimension, while multiparty equilibria are improbable under any circumstances (Eaton and Lipsey, 1975; Cox, 1990). Social choice theorists, meanwhile, estimate that when citizens choose among several alternatives, voting paradoxes are highly probable in an impartial culture (DeMeyer and Plott, 1970; Gerhlein and Fishburn, 1976), probable for certain partial cultures (Bell, 1990; Gerhlein, 1987), and possible (though unlikely) when voters choose deterministically (Merril, 1988; Nurmi, 1992).[4] Finally, under the impartial culture and deterministic voting models, unrepresentative election outcomes grow increasingly likely as the number of candidates and voters increases (Chamberlin and Cohen, 1978; Merril, 1988; Nurmi, 1992).

These results are disturbing because they imply that representation dilemmas will be commonplace. The good news, paradoxically, is that because these results are based on such simplistic and restrictive models of individual preferences, they do not necessarily generalize to "real world" political contexts. Collective choice theorists, who employ these assumptions for analytical convenience, recognize this

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[4] This summary, which greatly simplifies the findings concerning voting paradoxes, does <u>not</u> imply that the probability of a voting paradox depends solely on the analyst's assumptions concerning voting behavior. Other factors which affect these probability estimates are the number of alternatives, voters, and (for spatial models) issue dimensions. I examine the literature on voting paradoxes in more detail in chapter six.

limitation; indeed, they have devoted considerable effort to working out the implications of less restrictive choice models. In recent years, for instance, spatial modelers studying two-party elections have gone beyond deterministic models of voting to probabilistic models in which voters' utility functions contain a random component, much like the error term in the behaviorists' multivariate model (Enelow and Hinich, 1981; Coughlin, 1990); at least two recent efforts extend this approach one step further by incorporating measured nonissue variables into the voter's decision calculus (Erikson and Romero, 1990; Jackson, 1991). Meanwhile, social choice theorists have developed notions such as "semi-single-peakedness" in an effort to relax the deterministic voter model as it applies to voting paradoxes (Niemi, 1983). While these less restrictive models developed by collective choice theorists lead to more general results, there are still reasons to believe these results are not general <u>enough</u>. In the first place, these more general models have only been applied to narrow aspects of the representation dilemmas described earlier (for instance, probabilistic voting models have been applied to two-party elections but not multiparty contests). Furthermore, many of these alternative models still place substantial restrictions on individual choice behavior, which limits the generality of the results.

In sum, both behavioral researchers and collective choice theorists have reported results which suggest that the following representation dilemmas are likely: 1) elected representatives may be unable to implement the electorate's preferences, either because many citizens <u>have</u> no real preferences, or because of voting paradoxes, 2) citizens with preferences may be confused by candidates who constantly alter their platforms, and 3) the electorate may select a candidate whose platform does not reflect its issue attitudes, either because voters are motivated by nonissue concerns or because of a "breakdown" in the social choice function, as described on page three. Yet both perspectives appear incomplete.

Behaviorists, who develop data-driven models of individuals' political orientations, do not rigorously work out these models' collective implications. Social choice theorists and spatial modelers, who analyze complex models of preference aggregation, base their models on simplistic assumptions concerning citizens' preferences -- even though, from the perspective of behaviorists, these models misspecify the structure of political attitudes and voting behavior in the mass public. In short, scholars from both research traditions could benefit if behavioral research and collective choice theory were somehow combined.

SECTION III: A Behavioral Perspective on Social Choice Dilemmas.

The challenge, then, is to integrate the insights of behavioral research and collective choice theory. Specifically, it would be desirable to formulate decision rules which capture the attitudinal and voting models developed by behaviorists, and systematically apply them to the representation dilemmas of interest to social choice theorists and spatial modelers. This appears to be a daunting task. After all, collective choice theorists encounter great difficulty in deducing the collective implications of even the most simplistic individual-level assumptions. Suppose we introduce added complications in the form of empirically-based models which posit sharp differences with respect to the extent of citizens' ideological orientations, issue attitudes, and voting behavior. Is it possible to work out the collective implications of these more "realistic" models of individual choice behavior?

In this dissertation, I argue that the answer to this question is <u>yes</u>. It <u>is</u> possible to incorporate the contrasting assumptions which underlay the Diffused Ideology and Issue Publics models into more general models of voter motivations,

and explore their implications for the representation dilemmas discussed above. Although these more complex behavioral models create additional analytical difficulties in some cases, in other respects their added realism actually simplifies our analysis.

The succeeding chapters of this dissertation are given over to this analysis. Specifically, after outlining a model of voter preferences which can incorporate contrasting assumptions concerning citizens' issue attitudes -- a task I undertake in chapter two -- I employ this model to address three issues raised above:

1) Will party platforms reflect voters' policy preferences, and will these platforms be stable? If voters are largely unmotivated by issues, as some behavioral research suggests, then political parties can safely disregard public opinion, and the will of the majority may be thwarted. If voters are issue-oriented, however, the disequilibrium results reported by spatial modelers imply that parties may continually alter their platforms, thereby weakening the connection parties and voters. In chapter three, I analyze elections under the behavioral model of voter preferences developed in chapter two, and develop several analytical results concerning parties' behavior in two-party and multiparty elections. These suggest that in multiparty but not two-party elections, parties lose votes when they adopt platforms divergent from their partisans' issue preferences. This pressure for responsible parties implies that the partisan voter motivations identified by behavioral researchers enhance stability, a proposition which I support with the results of computer-simulated elections. In chapter four I develop an empirical application to party issue strategies in the 1983 British general election, which supports the hypotheses developed in chapter three.

2) Can elected representatives interpret and implement the public's preferences? Behavioral researchers have speculated

that representatives cannot implement the preferences of an electorate which lacks coherent preferences about major political issues (Inglehart, 1985); meanwhile, social choice theorists argue that when cyclical majorities occur, then even if citizens have coherent preferences it will be impossible to implement a policy which some majority would not wish to overturn. In chapter five, I present a formal demonstration that under both the Diffused Ideology and Issue Publics models outlined above, groups of voters will display a collective ideology even if many or most of the individuals who compose them have preferences which are inconsistent with the underlying ideological continuum; this collective ideology, moreover, precludes cyclical majorities. I support my formal argument with survey data drawn from France, Britain, and the United States. These results illuminate how public opinion may appear coherent to elected representatives even when large sections of the public are "innocent of ideology."

3) How often will unrepresentative election outcomes occur? In the example given on page three, in which a candidate running on an extremist platform wins election because a number of more moderate rivals split the centrist vote, representative democracy has been "thwarted" in the sense that the winner's platform does not reflect the electorate's policy preferences. In chapter six, I employ Monte Carlo techniques to evaluate the likelihood of unrepresentative elections under the Issue Publics and Diffused Ideology models. My results suggest that unrepresentative elections are more likely under the Issue Publics than the Diffused Ideology model. Furthermore, the less issue-oriented the electorate, the lower the probability of an unrepresentative election. I explain the intuition behind this surprising result, which provides an insight into how electorates which are largely unmotivated by issues may nonetheless select candidates who reflect their issue preferences.

The results I report in this dissertation should be of

equal interest to behavioral researchers and collective choice theorists. For the latter, my analysis suggests that their models should be grounded in more realistic models of political preferences, and that these empirically-grounded models need not produce overwhelming analytical difficulties. From the perspective of behavioral researchers, my results concerning representation dilemmas imply, at the simplest level, that the longstanding debate over the structure of citizens' political attitudes and voting behavior matters. As I demonstrate in subsequent chapters, the Diffused Ideology and Issue Publics models have very different (and surprising) implications for the likelihood of representation dilemmas.

Finally, I wish to draw the reader's attention to one issue which I do not intend to examine: that is the behaviorists' longstanding debate concerning the structure of mass political orientations. This debate, which has generated scores of publications over the past 25 years, appears scarcely nearer to a resolution than when it began; I have no desire to enter the fray. Therefore, while this dissertation does explore the collective implications of the behaviorists' models, it does not investigate the empirical status of the models themselves.[5] Put more simply, I do not ask whether Converse's Issue Publics model is correct. Rather, I ask what would happen if it were.

To address the questions posed above, we must first develop a model of voter preferences which allows us to incorporate varying assumptions concerning voters' issue attitudes and ideological orientations. This is the subject of the next chapter.

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[5] Some of the survey data I review in chapter five is consistent with the Diffused Ideology model but not the Issue Publics model. However, as I stress above, I do not consider this a valid "test" of the two models, and therefore draw no conclusions concerning their empirical status.

CHAPTER 2: AN EXPOSITORY DEVELOPMENT OF A BEHAVIORAL VOTING MODEL WHICH INCORPORATES ISSUE PUBLICS AND DIFFUSED IDEOLOGY

Summary: This chapter reviews the debate among behavioral researchers concerning the status of citizens' issue attitudes, with particular emphasis on the Diffused Ideology and Issue Publics models outlined in chapter one. After working out each model's implications for issue voting, I incorporate them into the general multivariate voter decision model characteristic of behavioral voting research; this probabilistic model introduces such nonissue motivations as the voter's partisanship and demographic characteristics. I discuss some conceptual limitations of this approach, which I illustrate with hypothetical examples.

Section I: The Diffuse Ideology and Issue Publics Models: Theoretical and Methodological Issues.

I.A. The Evolution of the Debate.

The development of behavioral research in the postwar era provided disturbing evidence about the coherence and stability of mass political orientations. This evidence, which was largely derived from the 1956-58-60 American panel study, was of two complementary kinds. First, large proportions of the American public changed their reported opinions on important policy issues when asked the same questions in different years. Second, there appeared to be scant constraint between citizens' opinions on different issues at the same time. A citizen who believed in federally guaranteed jobs, for

opposed them to favor government intervention in the housing and electricity markets, in spite of the common intellectual issue which appeared to be involved. These findings prompted a longstanding, often heated debate which has haunted behavioral research ever since.

A central role in this debate was played by Converse (1964, 1970), who explained these findings in terms of an Issue Publics model of mass political orientations. The Issue Publics model is based upon two hypotheses. The first is the black and white hypothesis, that on any single issue dimension, one segment of the public lacks meaningful issue attitudes, while the other segment (which constitutes the "issue public" for the dimension) is intensely interested in the issue and consequently possesses perfectly stable attitudes. This hypothesis implies that any observed fluctuation in a citizen's over-time responses indicates random answering, which in turn signals a "nonattitude":

> [this model] posits a very sharp dichotomy within the population according to processes of change that are polar opposites. There is first a "hard core" of opinion on a given issue, which is well crystalized and perfectly stable over time. For the remainder of the population, response sequences over time are statistically random...This "black and white" model is credible in its assumption that a mass public contains significant proportions of people who, for lack of information about a particular dimension of controversy, offer meaningless opinions that vary randomly in direction during repeated trials over time (1964, pp. 242-243).

Using the assumption that all observed response fluctuations in the 1956-60 American panel study implied nonattitudes, Converse estimated that upwards of 80% of the public lacked opinions on certain policy questions (1964, p.245).

The second hypothesis which underlies the Issue Publics

model is the attitude constraint hypothesis, that citizens' political beliefs on different issues are rarely constrained by an overarching political philosophy or ideology. Converse supported this claim by emphasizing the following findings: 1) the attitudes citizens expressed on different issues at the same time point showed a weak statistical relationship, even when the issues appeared to tap a common underlying orientation, 2) respondents displayed a limited understanding of such concepts as the left-right or conservative-liberal continuum, and 3) respondents rarely mentioned these concepts spontaneously in response to open-ended questions (1964, pp.214-231).

Several caveats concerning the Issue Publics model are in order. With respect to the attitude constraint hypothesis, Converse did not claim that all citizens lacked ideological orientations. Instead, he argued that, in addition to a large number of citizens who were "innocent of ideology", the American electorate contained a small upper stratum which consistently employed an ideological continuum when deriving issue attitudes and evaluating candidates.[1] Second, Converse emphasized that the black and white hypothesis was an extreme claim which applied primarily to highly abstract items; on more typical issues, he argued, peoples' attitudes may be more or less stable.[2] Finally, Converse stressed that the hypothe-

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[1] By coding responses to open-ended questions on political candidates, for instance, Converse determined that only 2.5% of his American electorate sample consistently used a general ideological continuum, while another 9% peripherally referred to a general ideological continuum. The remaining 88.5% failed to use an ideological dimension in answering the questions (1964, p.229).

[2] In the 1956-58-60 panel study, for instance, the item which showed the best fit with the black and white hypothesis asked respondents whether or not the federal government should "leave things like electric power and housing for private businessmen to handle." This item posed as an object of potential attitude not just the federal government or private

sis that many citizens lack meaningful attitudes on any specific political question (as the black and white model posits) does not imply that these individuals lack political attitudes altogether. Instead, Converse posited that different citizens fall into differing issue publics, so that "one man takes an interest in policies bearing on the Negro and is relatively indifferent to important controversies in other areas. His neighbor may have few crystalized opinions on the race issue, but he may find the subject of foreign aid very important. Such sharp divisions of interest are part of what the term "issue public" is intended to convey (1964, p.246)."

I emphasize this final caveat because, although Converse stressed it repeatedly, it has been widely ignored by scholars critical of the Issue Publics model.[3] As Converse noted with respect to the black and white hypothesis,

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businessmen, but a type of relation between the two. The question, moreover, is not worded in a way that makes clear which party -- government or business -- will profit from which arrangement. On conceptually "simpler" items, such as school desegregation, guaranteed employment, and foreign aid, the statistical properties of citizens over-time responses led Converse to propose an amended version of the model:

> ...were the truth of the matter isolable, we would discover that a very large proportion of the responses to the other items in the battery could best be understood in terms of two sharply discontinuous classes of respondents, the stable and the random. What is new in these items, and what leads further data to diverge somewhat from the black and white model, is the presence of some few people who are undergoing some meaningful evolution of attitudes on the issue in question (1970, p.175).

[3] This misinterpretation has led to heated exchanges between Converse and several of his critics. See the studies by Pierce and Rose (1974), and Judd and Milburn (1980), and Converse's (1974, 1980) spirited rejoinders for the clearest expression of this debate.

> Social psychologists [view] the individual as a vibrant bundle of attitudes. Nothing we have said need call this view into question...However, it is all too easy to assume from such a view that mere selection of a "familiar" object or controversy as a point of attitude measurement must evoke true attitudes in all or almost all of a test population. There is, of course, a very wide logical leap from the first of these propositions to the second. Possible objects of attitudes are infinite, and a person can be seen as a vibrant bundle of attitudes without any assurance that his attitudes extend to more than a tiny subset of such objects (1970, p.177, emphasis added).

In summary, the central thrust of the Issue Publics model is that citizens possess meaningful and stable attitudes concerning a number of political issues which excite their interest, but typically lack attitudes on many other questions which engage political elites; furthermore, most citizens lack an overarching political ideology which constrains those political attitudes they do possess. Public opinion is therefore fragmented into a narrower set of issue publics, which are largely unconnected to each other.

The Issue Publics model, which paints a bleak portrait of the mass public's political capacities, has been challenged on several counts. First, various scholars contend that the black and white hypothesis, which posits sharp divisions of interest with respect to different issues, misspecifies the structure of public opinion. Instead, these analysts maintain, citizens exhibit graduated degrees of interest (and therefore attitude stability) with respect to different political questions. As Inglehart argues,

> ...the Black and White model is problematic. Apart from its alarming normative and epistemological implications, it is inherently implausible, because it postulates that the public is dichotomized intc two radically different types of respondents -- a large group of apoliticals and a small group of

> rigid ideologues, with nothing in between. A large body of survey research, including some of Converse's own work, suggests that this is unlikely -- the public normally falls at various points along a continuum, rather than being concentrated at the extremes (1985, p.99).

As noted earlier, Converse himself emphasized that the black and white hypothesis was a limiting case, which applied only to highly abstract issues. Nonetheless, to the extent the criticism is valid, it suggests that even on such complex issues as the power and housing question which served as the original basis for the black and white hypothesis (see footnote 2), citizens attitudes' exhibit varying degrees of stability.

The second and more serious criticism directed against the Issue Publics model is that it severely understates the degree to which citizens possess meaningful and ideologically constrained issue attitudes. According to various scholars, both the fluctuations which occur in citizens' over-time responses and the low correlations between attitudes at the same time point -- which Converse took as evidence of nonattitudes and low attitude constraint, respectively -- are instead the product of "measurement error", which arises from the difficulty of mapping one's attitudes onto the vague language of survey questionnaires (Achen, 1975; Erikson, 1978; Feldman, 1989; Jackson, 1983; Judd and Milburn, 1980; Inglehart, 1985; Zaller and Feldman, 1992). When this measurement error is corrected, these analysts argue, the fundamental conclusion of the Issue Publics model is altered: citizens do in fact possess meaningful (and reasonably stable) attitudes which extend to virtually every issue. Furthermore, their attitudes are tightly constrained by an overarching political ideology.

The two arguments summarized above by no means exhaust

the criticisms directed against the Issue Publics model.[4] However, these criticisms are sufficient to produce a portrait of the mass public's political capacities which challenges Converse's conclusions in every particular. They suggest that citizens take at least a passing interest in most political issues, and that their thinking about these questions is informed by an overarching ideology. Consequently, citizens possess large numbers of ideologically constrained attitudes. Because this model posits that ideological tendencies (and issue attitudes) are widely diffused throughout the electorate, I label this the Diffused Ideology model.

In summary, the Issue Publics and Diffused Ideology models advance conflicting hypotheses concerning the diffusion of ideology and extent of issue attitudes among members of the mass public, as well as divisions of interest in public opinion. The Issue Publics model posits that citizens exhibit sharp divisions of interest with respect to different political issues, as opposed to the graduated divisions of interest posited by the Diffused Ideology model. Under the Diffused Ideology model, meanwhile, citizens' attitudes extend to virtually every political issue, while the Issue Publics model posits that citizens typically ignore many policy questions. Finally, while the Issue Publics model posits the electorate is largely "innocent of ideology", the Diffused Ideology model posits that ideological tendencies are widely diffused throughout the mass public.

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[4] Two additional perspectives on mass political orientations which challenge the Issue Publics model have been put forth by Pierce and Rose (1974) and Zaller and Feldman (1992). Pierce and Rose argue that attitudes are not single points but rather a continuum, so that while a citizen's "state of mind" (and hence his survey response) may fluctuate, his underlying "true attitude" remains stable. Zaller and Feldman, meanwhile, maintain that re-sponse fluctuations indicate ambivalence rather than nonattitudes.

At the risk of taxing the reader's patience, I emphasize again that this summary presents an extreme version of the Issue Publics model. Converse did not claim that citizens exhibit sharp divisions of interest with respect to all (or even most) issues, nor that all citizens are bereft of a political ideology. I have presented the "pure" issue publics approach here so as to throw the debate over the structure of mass political orientations into sharp relief. However, when developing an Issue Publics and Diffused Ideology approach to voter preferences, I employ a model which allows us to vary -- and thereby relax -- our assumptions concerning voters' issue attitudes and ideological orientations.

I.B. The Implications of the Issue Publics and Diffused Ideology Models for Voter Preferences.

Having reviewed the Issue Publics and Diffused Ideology models, we may now explore their implications for voting behavior, an exercise which requires us to link each model's perspectives on citizens' political attitudes and ideologies to their vote preferences. Unfortunately, behaviorists, who have produced scores of studies on the empirical status of each model, have little to say concerning their relationship to voting behavior. The difficulty stems from the fact that most behavioral analyses of issue and ideological voting employ what Rivers (1988) has labeled the "homogeneity assumption": that all voters employ identical decision rules, and therefore assign the same "weight" to a given issue or ideological dimension. According to these empirical approaches, voters may prefer candidates because they take different issue positions, but not because they have different decision rules. In fact, if two voters have identical issue attitudes, ideological orientations, and demographic characteristics (as measured through their survey responses), then any of the standard methods of analyzing voting behavior would certainly

predict that the two would cast identical votes.[5] However, in light of the extreme divisions of interest in issues posited by the Issue Publics model, such a conclusion appears unwarranted. If one voter is passionately engaged in a policy debate which leaves another voter indifferent, for instance, then identical policy preferences need not imply identical voter decision rules.

To link the Issue Publics and Diffused Ideology models to the vote, therefore, we must go beyond the standard behavioral voting model to a formulation which permits heterogeneity in voters' decision processes. Because there is no base of empirical research which addresses this issue, I set forth a set of "connecting assumptions" which represent my interpretation of the Issue Publics and Diffused Ideology models, as they apply to issue voting:.

Assumption 1 (on nonattitudes): If a voter does not have a meaningful attitude concerning an issue, then that issue has no impact upon his vote.

Assumption 2 (on divisions of interest): The greater the voter's interest in an issue, the more the issue influences his vote.

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[5] Two methods of estimating differential issue weights have been employed in behavioral research, albeit with limited success. The first has been to ask citizens what is important to them (e.g., Rabinowitz, Prothro and Jacoby, 1982). Unfortunately, because citizens are notoriously bad reporters of their own decision processes, this approach yields scant additional explanatory power, compared with the homogeneous voting model. The second method is to estimate separate regressions for different groups in the population (Hibbs, 1981). However, this approach 1) imposes identical issue weights within each group, and 2) requires that the analyst employ arbitrary assumptions concerning respondent groupings. See Rivers, 1988, for a discussion of these problems.

Assumption 1, which I take to be self-evident, requires no elaboration. Assumption 2, although it may at times misspecify the citizen's decision process, strikes me as a reasonable translation of the notion of divisions of interest in issues to the calculus of voting. It is certainly possible that a voter vitally interested in a particular policy question will nonetheless attach greater weight to nonpolicy concerns; such a voter, for instance, might regard a particular candidate as so lacking in integrity or competence that he could not support him, regardless of his platform. Furthermore, if the voter is unsure of the competing candidates' platforms -- or if the candidates take identical positions -- then that issue will have scant impact on his vote choice, regardless of the importance he attaches to it. These examples (which I take up in chapter four) make clear that Assumption 2 applies to issue voting "all other things being equal". In this form, I feel it captures the impact of divisions of interest on the vote.

Assumptions one and two have contrasting implications for issue voting under the Diffused Ideology and Issue Publics models. First, they imply that the sharp divisions of interest in issues posited by the Issue Publics model translate into sharp differences in the impact these issues have on different voters. Converse posits that voters who fall outside of an issue's "public" lack relevant issue attitudes, and hence by assumption one that issue does not enter their voting calculus; by contrast, members of the issue's public care passionately about the policy question, which therefore weighs heavily in their vote decision. Under the Issue Publics model, therefore, any given issue tends to strongly influence the votes of the issue's "public", but leaves the remainder of the electorate unmoved. Under the Diffused Ideology model, by contrast, voters' degrees of interest in different issues -- and hence their issue weights -- will be distributed along a continuum, rather than being concentrated at the extremes.

Therefore, the Diffused Ideology model implies that issues have a graduated impact upon voters' preferences.

Because behavioral researchers have virtually ignored the type of heterogeneous voting rules outlined above, this perspective on issue voting under the Diffused Ideology and Issue Publics models has not been empirically tested (see footnote 5). However, I feel it captures each model's substantive implications; the reader, having reviewed each formulation, may judge for himself. Our next task is to incorporate this interpretation into the behaviorist's more general model of the vote choice.

Section II: A Probabilistic Issue Voting Model Which Incorporates the Notions of Issue Publics and Diffused Ideology.

II.A: A Random Utility Model of Issue Voting

In their empirical analyses of issue voting, behaviorists typically represent the voter's candidate evaluations, which drive her vote choice, via a random utility model in which her utilities for competing candidates are a function of both her issue attitudes and nonissue variables (Page and Brody, 1979; Achen, 1992). For instance, if a voter i is called upon to select a preferred candidate from the set S=(A,B,...,N), her utility $U_i(K)$ for any candidate K in S can be represented by an issue term $I_i(K)$, which captures i's issue losses with respect to K's platform, and an error term ϵ_{iK}, which represents nonissue components of her candidate evaluation:

$$U_i(K) = I_i(K) + \epsilon_{iK} \qquad (1).$$

In this formulation, the issue loss component $I_i(K)$ depends on the candidate's platform, the voter's preferred policy positions, and (what is interesting, from the perspective of the Issue Publics and Diffused Ideology models) the degree of importance she attaches to different issues. For purposes of exposition, I assume a specific functional form for $I_i(K)$, and an obvious choice is the quadratic loss function, which behavioral researchers almost always employ in their empirical analyses of issue voting:

$$I_i(K) = \Sigma_{j=1}^{m} b_{ij}(x_{ij} - k_j)^2 \quad , \qquad (2)$$

where the right hand side of equation (2) sums i's quadratic losses with respect to candidate K's platform, for the set of issues (i,2,...,m). The term x_{ij} represents i's issue position on the jth dimension, k_j the position of candidate K, and b_{ij} the weight (or importance) she attaches to issue j. Because issue losses increase with the distance between x_{ij} and k_j, the coefficient b_{ij} is negative.

The relative importance of issue and nonissue factors to the voter's candidate evaluations depends on the magnitude of the nonissue terms ϵ_i and the voter's issue weight coefficients b_i.[6] The assumption I employ here is that the nonissue terms $(\epsilon_{i1}, \epsilon_{i2}, \ldots, \epsilon_{iN})$ are independently and identically distributed type I extreme value random variables (see McFadden,

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[6] Of course, the impact of issues on the vote depends equally upon the issue distances between candidates and voters. I take up this subject in chapter three.

1978).[7] This assumption, which is characteristic of logit analysis, has been employed in many studies on voting in two-candidate elections (e.g., Erikson and Romero, 1990), and renders the voter's decision probabilistic, from the behavioral researcher's perspective.[8] It allows us to express the probability $P_i(K/S)$, that voter i prefers K over all other candidates in S, as a function of her issue losses with respect to the different candidates:

$$P_i(K/S) = \frac{e^{I_i(K)}}{e^{I_i(A)} + e^{I_i(B)} + \ldots + e^{I_i(N)}} , \quad (3)$$

$$= \frac{e^{\sum_{j=1}^{n} b_{ij}(x_{ij} - k_j)^2}}{e^{\sum_{j=1}^{n} b_{ij}(x_{ij} - a_j)^2} + \ldots + e^{\sum_{j=1}^{n} b_{ij}(x_{ij} - n_j)^2}} \quad (4).$$

Equation (4) incorporates several restrictive assumptions

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[7] The distribution for a type I extreme value distribution is $F(x) = \exp[-\exp(-x)]$.

[8] This interpretation of random utility maximization is termed <u>interpersonal</u>, and is characteristic of most discrete choice modeling in transportation, economics, and political science. An alternative interpretation, <u>intra-personal</u> random utility maximization, assumes that the individual's subjective utility for each alternative fluctuates, and the alternative with the highest momentary value is selected. This assumption frequently appears in studies in which individuals are asked to discriminate between various sensations, such as the length of lines, the brightness of colors, and so on. See Suppes, et al., 1989 for a review of the theory of intra-personal random utility maximization.

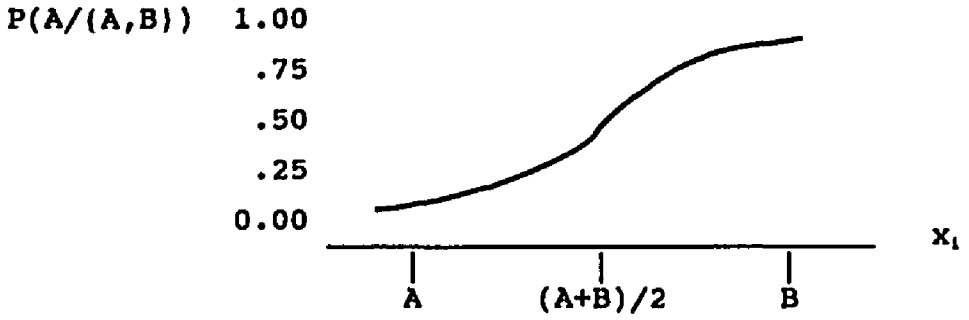
which I discuss in the appendix. First, however, I illustrate how it can accommodate the contrasting assumptions which characterize the Issue Publics and Diffused Ideology models, such as the importance of issues to the vote, divisions of interest with respect to different issues, and the extent of ideology in the mass public.

The importance of issues. Using equation (4), we may vary the relative importance of issue and unmeasured nonissue factors to the vote choice by varying the voter's issue weight coefficients b_i. When we posit these coefficients as extremely large, voter i's decision is primarily driven by issues; when these issue coefficients are near zero, issues have scant impact upon her vote choice.

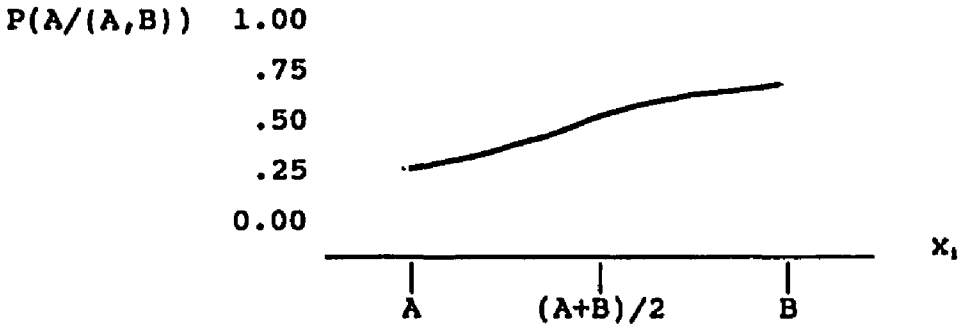
This point is illustrated in figure 1, which shows how the vote can vary probabilistically as a function of the importance the voter attaches to the issue, b_{ij}, and her position x_{ij} on a single issue dimension j. The slopes pictured in figures 1A-1C represent the probability $P_i(K/(K,L))$ that voter i prefers candidate K to candidate L (located at 0 and 1.0 on the issue dimension j, respectively), plotted against her issue position x_{ij}. In figure 1A, voter i attaches great importance to issue j ($b_{ij} = 4.0$), which produces a high and almost deterministic degree of issue voting; the probability function $P_i(K/(K,L))$ therefore resembles a step-function which "breaks" at the midpoint between the positions of candidates A and B. Next observe figure 1B, which assumes a medium degree of issue voting ($b_{ij} = 1.0$). Now the slope of the probability function $P_i(K/(K,L))$ flattens out, indicating the reduced impact of issue j on the vote; when voter i is located precisely at candidate L's position on issue j ($x_{ij} = 1.0$), for instance, there is still a probability $P_i(K/(K,L)) = .27$ that

FIGURE 2.1: THREE DIFFERENT DEGREES OF ISSUE VOTING

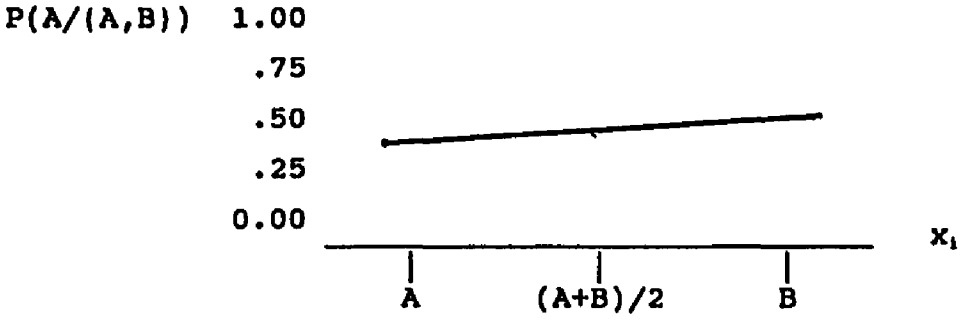
1A: WEAK ISSUE VOTING



1B: MODERATE ISSUE VOTING



1C: STRONG ISSUE VOTING



i prefers candidate K. For figure 1C, in which the voter's issue weight b_{ij} is set at the "low" value of 0.25, the slope of the vote probability function $P_i(K/(K,L))$ is virtually flat, indicating that issue j plays virtually no role in the vote choice.

Divisions of issue interest. We may represent voters who attach different degrees of importance to two different issues k and h by varying the relative sizes of the voter's issue weight coefficients b_i. If b_{ih} is much smaller than b_{ij}, for example, then voter i attaches greater importance to issue j than to issue h. Figure 2 illustrates this point by presenting three sets of indifference contours corresponding to the issue loss function given by equation (2), for a two-dimensional issue space.* In figure 2A, voter i attaches equal weight to issues h and j ($b_{ih}=b_{ij}$), and therefore his indifference curve (e.g., the set of spatial locations at which he would be indifferent between the two candidates) includes all points equidistant from the positions of candidates K and L. Figure 2B illustrates the situation in which voter i weighs issue h four times as heavily as j ($b_{ih}=4b_{ij}$); in this case, her indifference curve reflects her unwillingness to trade off issue losses with respect to issue h against losses from j. In figure 2C, voter i places great stress on issue j while ignoring issue h entirely ($b_{ih}=0$), so that her comparative evaluation of the platforms of candidates K and L depends entirely on her position along the jth issue dimension. This

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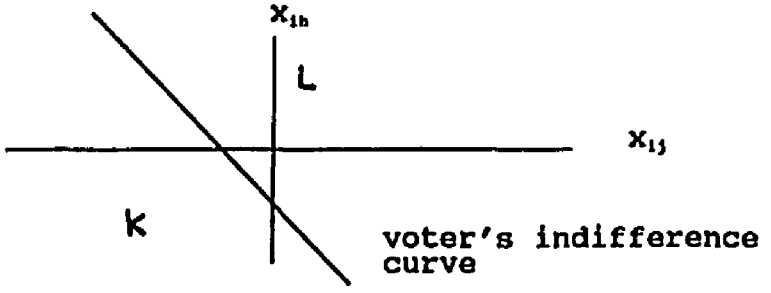
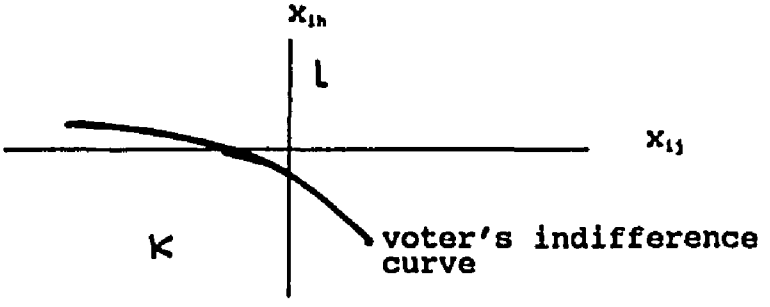
* These contours represent indifference on issue grounds. It is of course plausible that the voter is indifferent between the candidates' platforms, but still prefers one or the other because of nonissue factors represented in the ϵ_i term in equation (1).

FIGURE 2.2 THREE EXAMPLES OF THE RELATIVE IMPORTANCE OF TWO DIFFERENT ISSUES

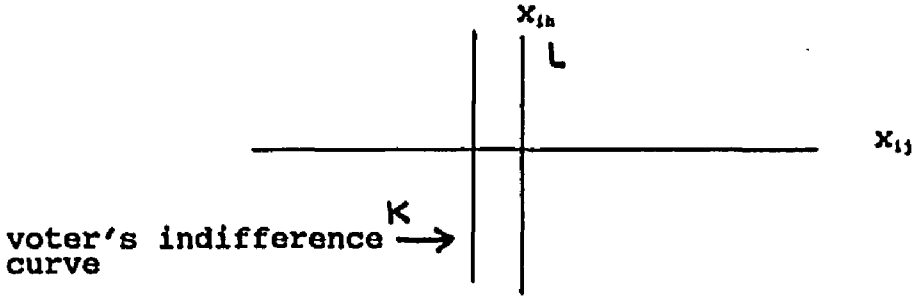
2.2A: VOTER ATTACHES EQUAL WEIGHT TO ISSUES J AND H



2.3B: VOTER WEIGHS ISSUE H FOUR TIMES AS HEAVILY AS J



2.3C: IDEOLOGICAL ELECTORATE



assumption corresponds to Converse's Issue Publics model, which posits that citizens are vitally interested in some dimensions of controversy but indifferent to others.

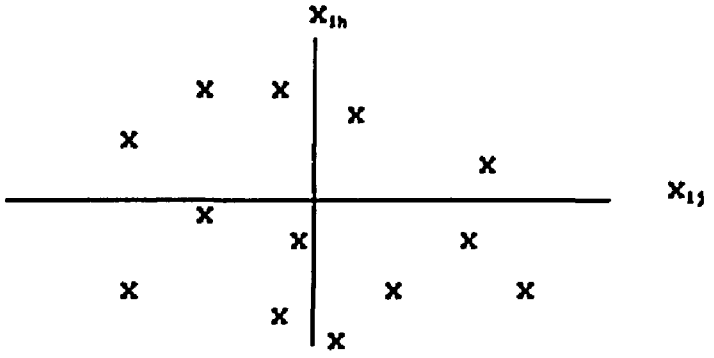
The importance of ideology. There are two approaches we may take to representing ideological voting. The first is to posit that in place of (or in addition to) issue dimensions, the voter and candidates take positions on some number of ideological dimensions, which enter the voter's decision calculus via an ideological loss function identical to the issue loss function given in equation (2). This assumption appears frequently in spatial voting models (see Downs, 1957, chapter two, and Feld and Grofman, 1989).

The second approach makes use of the notion of attitude constraint, discussed earlier. In this formulation, the voter's ideology enters his decision calculus indirectly, through its effect upon his issue positions. An ideological voter, for instance, will tend to exhibit a highly constrained set of issue attitudes, while an apolitical voter's attitudes will be largely unstructured. According to this approach, we vary the importance of ideology to the vote by varying the correlation between the voter's positions on different issues.

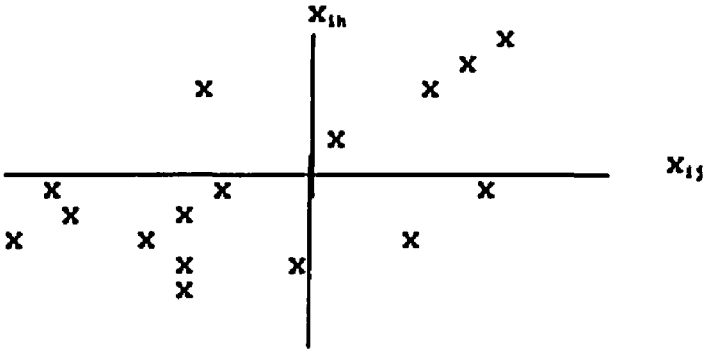
Figure 3 represents three different assumptions concerning the degree of ideological constraint in the voting population. Figure 3A pictures an apolitical electorate, in which there is (on average) no connection between voters' positions on issues j and k. In figure 3B, voters' attitudes are slightly constrained by an overarching ideology, so that there is a weak correlation between voters' positions. Figure 3C represents an ideological electorate, for which voters'

FIGURE 2.3: EXAMPLES OF DIFFERENT DEGREES OF IDEOLOGICAL CONSTRAINT

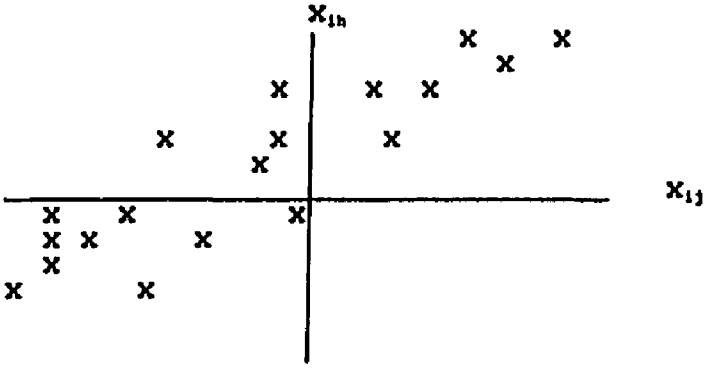
2.3A: APOLITICAL ELECTORATE



2.3B: WEAK IDEOLOGICAL CONSTRAINT



2.3C: IDEOLOGICAL ELECTORATE



positions on issues j and k are highly correlated.

II.B: Representing the Issue Publics and Diffused Ideology models

The preceding examples illustrate how the behaviorist's random utility model can accommodate conflicting assumptions regarding the importance of issues to the vote, divisions of interest in issues, and the degree of ideological constraint between voters' positions on different issues. In Figure Four, I combine these assumptions so as to capture the "complete" Issue Publics and Diffused Ideology models. Figure 4A, which illustrates Converse's Issue Publics model, pictures an electorate which displays sharp divisions of interest with respect to both issues h and j, so that the voters' issue weight coefficients b_{ij} and b_{ih} take on either a high value of ten, (if the voter is part of the issue's "public"), or zero (if the voter is outside this public); the result is that some voters (such as v_1) attach great importance to both issues, others (such as v_4) consider one issue paramount, and still others (such as v_8) are indifferent to both issue dimensions. Note further that, in keeping with Converse's finding of low degrees of attitude constraint, there is no connection between voters' positions on different issues.[10]

In figure 4B, an electorate which chooses according to the Diffused Ideology model displays graduated degrees of

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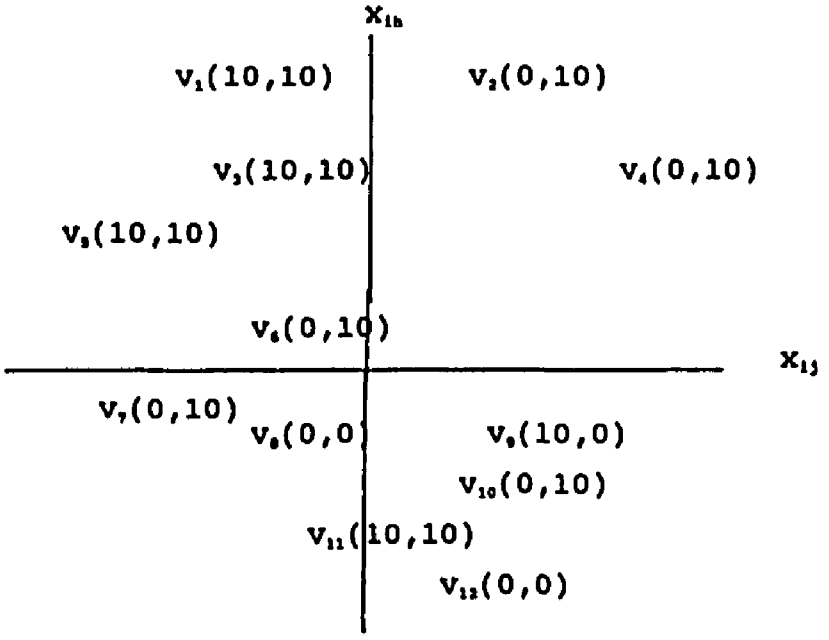
[10] According to Converse's perspective, it is questionable that voters outside of an issue's public should even be assigned a position along the issue dimension. However, I adopt the convention that such voters be placed according to their reported issue positions, even if their responses are actually random; since their assigned issue weights are zero, this convention does not affect their vote probabilities.

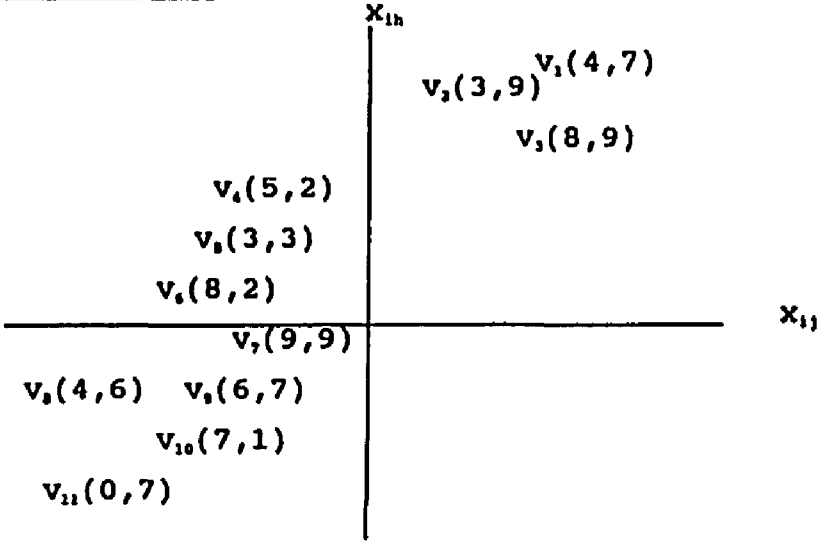
FIGURE 2.4: CITIZENS' ISSUE LOCATIONS AND ISSUE WEIGHTS UNDER THE ISSUE PUBLICS AND DIFFUSED IDEOLOGY MODELS

(NUMBERS IN PARANTHESES INDICATE THE VOTER'S ISSUE WEIGHTS WITH RESPECT TO ISSUES J AND H, RESPECTIVELY)

4A: ISSUE PUBLICS



4B: DIFFUSED IDEOLOGY



interest in issues i and j; these graduations are reflected in voters' issue weights, which range from low values (e.g., 0<b<2), to "medium range" values (3<b<7), up to values near ten, which indicate the voter is extremely interested in the issue. The electorate displays a considerable degree of ideological constraint, which is reflected in the correlation between voters' positions along the dimensions j and h.

II.C: An extension of the random utility voting model which incorporates measured nonissue motivations.

The random utility approach outlined above represents an advance over the assumptions collective choice theorists typically employ -- such as deterministic voting and the partial and impartial cultures reviewed in chapter one -- in that it can accommodate both probabilistic choice and the notions of issue publics and diffused ideology. From the behaviorist's perspective, however, this formulation remains underspecified. Behaviorists see the vote choice as both probabilistic and multivariate, frontloading the voting equation with a series of measured nonissue variables, such as the respondent's partisanship and demographic characteristics. This more general representation of voter i's utility for candidate K takes the form

$$U_i(K) = c_0 + \Sigma_{h=1}^{n} c_h p_{ih} + \Sigma_{j=1}^{n} b_{ij}(x_{ij} - k_j)^2 + \epsilon_{ix} \qquad (5)$$

$$= J_i(K) + I_i(K) + \epsilon_{ix} \quad , \qquad (6)$$

where the constant c_0 is the intercept of the regression model, and $\Sigma_{h=1}^{n} c_h p_{ih}$ represents the linear effects (e.g., the c_h terms) of measured nonissue variables (the p_{ih} terms). $\Sigma_{j=1}^{n} b_{ij}(x_{ij} - k_j)^2$ and ϵ_{ix} again represent quadratic issue losses and unmeasured sources of the respondent's candidate evalua-

tion, respectively. In equation (6), $J_i(K)$ summarizes the measured nonissue components of voter i's evaluation of candidate K (e.g., $[c_0 + \Sigma_{h=1}^{n} c_h p_{ih}]$), and $I_i(K)$ again represents the issue component of i's candidate evaluation. The probability $P_i(K/S)$ that voter i prefers candidate K from the set S of competing candidates is therefore expanded to include the measured nonissue motivations summarized by the J_i terms as follows:

$$P_i(K/S) = \frac{e^{J_i(K)+I_i(K)}}{e^{J_i(A)+I_i(A)} + \ldots + e^{J_i(N)+I_i(N)}} \qquad (7)$$

Having developed a formal model of voter preferences which can incorporate probabilistic voting, measured nonissue motivations, and the Issue Publics and Diffused Ideology models of issue attitudes, we are now equipped to investigate the representation dilemmas outlined in chapter one. I begin, in chapter three, with the first of the three questions outlined at the end of chapter one: under the behavioral model of the vote, will parties' platforms reflect voters' policy preferences, and will these platforms be stable?

CHAPTER 3: ELECTORAL COMPETITION IN MULTIPARTY SYSTEMS: THE PRESSURE FOR RESPONSIBLE PARTIES

SUMMARY: Most applications of spatial modeling to the problem of multiparty electoral competition are pessimistic regarding the prospects for equilibrium. I analyze party vote-seeking strategies under the behavioral voting model outlined in chapter two, and demonstrate that in multiparty but not two-party elections, parties should adopt platforms which reflect their supporters' issue positions. This pressure for responsible parties suggests that partisanship enhances stability in multiparty systems. I then report the results of computer-simulated elections in which I vary the importance of issues to the electorate's vote choice, divisions of interest in issues, and partisanship. The results confirm that partisanship enhances stability, but suggest that both high degrees of issue voting and sharp divisions of interest in issues decrease the likelihood of equilibrium. Multiparty spatial equilibrium therefore appears less likely under the Issue Publics than the Diffused Ideology model of issue attitudes.

As outlined in chapter one, spatial modelers and behavioral researchers have each argued for disturbing conclusions which suggest that political parties may not faithfully represent voters' preferences. Spatial modelers, for instance, have concluded that when voters are issue-oriented, party spatial equilibria -- e.g., locations in the policy space to which vote-seeking parties will gravitate -- are unlikely to exist. This result suggests that the connection between voters and candidates is severed "from above", since issue-oriented voters will be unable to translate their preferences into votes for parties which continually alter their platforms. By contrast, much behavioral voting research concludes that voters are in fact inattentive to issues, and instead more easily swayed by such variables as party iden-

tification, retrospective evaluations of incumbent performance, and candidate images. If this conclusion is correct, then parties may advocate unpopular policies without suffering undue electoral penalties. The combined perspectives of spatial analysis and behavioral research therefore cast democratic representation processes between a rock and a hard place: if voters are issue-oriented then party platforms are likely to be unstable, yet if voters deemphasize issues then parties may safely ignore their policy preferences. Either outcome weakens the bond between the mass public and its elected representatives.

In this chapter I examine these arguments from the perspective of the multivariate voting model developed in chapter two, and argue that such pessimistic conclusions are unwarranted. It is not the case that vote-seeking political parties may ignore the policy preferences of inattentive voters. Instead, I present a formal argument that in multiparty but not two-party elections, vote-seeking parties should behave responsibly towards their supporters. That is, in multiparty elections parties generally attract greater support by adopting platforms which reflect the views of their current constituency than they would by courting new constituencies via new sets of policies. This extremely important result flows directly from the properties of the behavioral model of the vote; while it is based upon a formal demonstration, I believe my analysis captures important insights into the nature of multiparty competition. Furthermore, it is not the case, as spatial modelers have posited, that vote-seeking parties will be motivated to present unstable platforms. I report the results of computer-simulated elections which indicate that under the behavioral model of the vote, multiparty spatial equilibria usually exist. In addition to its salutary implications for democratic representation, this finding is important from the perspective of spatial modeling research, since previous analyses of multiparty spatial competition have failed to uncover equilibrium outcomes.

The results I develop here have several other interesting implications for scholars from different disciplines. For spatial modelers, my approach represents the first approach to multiparty competition which incorporates either probabilistic voting or measured "nonspatial" variables such as political partisanship; because it is these advances which permit the existence of spatial equilibrium, this is of no small importance. For behaviorists, I demonstrate that multiparty spatial equilibrium is *more* probable under the Diffused Ideology than the Issue Publics model. This result, combined with the central role which I ascribe to partisanship in stabilizing parties' platforms, highlights the importance of empirical studies of these phenomena.

This chapter is divided into two sections. In section I, I briefly review previous spatial approaches to the study of multiparty competition, and outline the advantages of employing the behavioral voting model in the context of a spatial analysis. I then discuss the assumption that parties seek votes, which informs my analysis of multiparty competition, and proceed to analyze parties' issue strategies when voters choose probabilistically; the results I obtain apply equally to the Diffused Ideology and Issue Publics models. As outlined above, this section lays particular emphasis on the strategic implications of partisan biases, and provides several "real world" examples which serve to elucidate its underlying logic. Section II presents the results of several sets of computer-simulated elections in which I vary the electorate's degree of partisanship, issue motivations, and divisions of interest in issues. The results provide a test of the hypotheses developed in Section I, and allow me to generate further hypotheses about the prospects for policy equilibria under the Diffused Ideology and Issue Publics models.

Section I: Party Issue Strategies and the Behavioral Model of the Vote.

I.A: A Brief Review of Models of Multiparty Competition

Since the publication of Anthony Downs' An Economic Theory of Democracy in 1957, the spatial theory of voting has informed numerous approaches to the study of two-party elections. Building on the Downsian framework which posits party competition in a single dimension with issue-oriented voters, subsequent models have incorporated voter uncertainty (Shepsle, 1972; Enelow and Hinich, 1982), probabilistic voting (Enelow and Hinich, 1984; Coughlin, 1990; Erikson and Romero, 1990), candidate ideological motivations (Cox, 1989; Wittman, 1990), and endogenous voter issue preferences (Jackson, 1990). The market for spatial models of two-party elections is decidedly bullish.

It is puzzling that spatial models of multiparty elections are much rarer than their two-party counterparts.[1] Most of the world's democracies feature more than two competitive parties, and rational choice models of cabinet formation, a related subject, are relatively plentiful (Greenberg and Shepsle, 1987; Austin-Smith and Banks, 1987). However (with exceptions to be noted later), multiparty models of spatial competition appear to be in short supply.

Two reasons for the scarcity of multiparty spatial models are frequently cited. First, such models tend towards greater mathematical and geometrical complexity than two-party models,

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[1] In this and subsequent chapters, the term "multiparty competition" refers to competition among three or more parties.

which makes it difficult to reach conclusions analytically. This problem is especially troublesome when multiple issue dimensions are introduced; the analysts who have tackled this subject have produced virtually no predictions concerning parties' spatial strategies.[3] Second, multiparty spatial models appear less likely to yield electoral equilibria than do two-party models (Cox, 1990). Since the search for possible equilibria is one of the central quests of spatial modelers, the absence of equilibrium is a powerful deterrent to the construction of multiparty models. This problem also occurs in two-party spatial models when multiple issue dimensions are introduced; however, by developing theories of probabilistic voting, analysts of two-party elections have been able to "reestablish" equilibrium (Enelow and Hinich, 1982, 1989; Erikson and Romero, 1990). Unfortunately, no comparable theory of probabilistic voting has been developed for multi-party systems.

The mathematical representations of the Diffused Ideology and Issue Publics models developed in chapter two provides such a model. As we have seen, these probabilistic voting models can incorporate measured nonissue variables (such as party identification and sociodemographic characteristics), as well as varying assumptions concerning the diffusion of ideology, the extent of issue attitudes, and divisions of interest in issues among different sections of the electorate. Moreover, these behavioral models of the vote are mathematically tractable. These formulations thereby allow us to introduce the notion of probabilistic voting, which enhances

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[3] Two exceptions to this generalization are the "directional" voting model proposed by Rabinowitz and McDonald (1989), which predicts that in multi-party systems parties will avoid the center of the issue space, and Eaton and Lipsey's (1975) work on multi-agent competition in economics, which contains several predictions which can be extended to multi-party elections.

the possibility of multiparty electoral equilibria, while maintaining a degree of mathematical simplicity which permits us to deduce results analytically. I begin this analysis with a discussion of possible party motivations.

I.B. The Assumption of Vote-seeking Parties

When theorizing about multiparty elections, the spatial modeler confronts the challenge of devising realistic party motivations. In a two-party, winner-take-all (e.g., plurality) contest, the assumption of vote-seeking parties seems a plausible starting point. For multiparty competition, by contrast, the question of party motivations grows more opaque. Not only do many democratic systems employ proportional representation, in which the "losing" parties may gain substantial electoral rewards, but even those losses parties sustain at the ballot box are frequently recouped when governing coalitions are formed. In Germany, for instance, both the Christian and Social Democratic Parties have typically received 40-45% of the vote in national elections during the postwar era -- yet the weakly-supported Free Democratic Party has been included in virtually every governing coalition, despite never having surpassed 13% of the popular vote. Outcomes such as these have prompted some analysts of multiparty systems to shift their focus away from party vote-seeking strategies, and towards the calculus of coalition formation (Budge and Laver, 1986; Riker, 1962). Other scholars argue that, because electoral support does not guarantee membership in the governing coalition, parties face a "reduced cost" to pursuing policy goals (e.g., Axelrod, 1970; De Swaan, 1973; Lipjhart, 1984).

The above considerations notwithstanding, in this section I analyze parties' vote-seeking strategies. This focus does not imply that I reject alternative party motivations, nor that I believe that parties and candidates single-mindedly

seek votes. However, I feel we may safely assume that most parties are partially motivated by votes, while some parties are primarily motivated by votes. For those readers who remain skeptical of the vote-seeking assumption, I emphasize that both the formal results and strategic intuitions I develop in this section do not depend on the assumption that parties are pure vote-seekers. Instead, my analysis provides insights into the question: to the extent parties pursue votes, what are advisable issue strategies? The answers I propose suggest that partisanship is a stabilizing force in multiparty systems, and that a political system's electoral history shapes party strategies and election outcomes.

In my subsequent analysis I adopt four conventions frequently employed in the spatial modeling literature. First, as outlined above, I view political parties as unitary actors who single-mindedly seek votes, without regard to policy motivations. Second, I assume costless spatial mobility -- that is, that parties may alter their platforms without incurring an electoral penalty. Third, I analyze elections with no voter abstentions. The final convention I employ concerns the notion of probabilistic voting. As outlined in chapter two (see footnote eight), although voters generally have fixed preferences (i.e., at any moment they prefer one party with a 100% probability), their votes appear probabilistic from the perspective of the behaviorist, who typically lacks data concerning many of the factors which influence their choices. In other words, the random element in voters' choices is located in the observer rather than the voter himself.[3] In the context of the voting models I employ here, therefore, voters' choices are probabilistic from the

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[3] Some voters undoubtedly vacillate between candidates, so that one may assert that the probability the voter will eventually settle on party A lies between the extremes of 0 and 100%, from the voter's perspective; this is a reasonable interpretation of a voter who identifies herself as undecided.

perspective of the political parties; when I state that a voter prefers a certain party with an 80% probability, for instance, this means that the political party (or its leaders) assign an 80% chance to receiving his vote.

I.C: Party Issue Strategies Under the Behavioral Voting Model

In chapter two, we established that the behavioral voting model can incorporate varying assumptions concerning the importance of issues to the vote choice, divisions of interest in issues, the extent of ideology in the electorate, and the impact of such nonissue motivations as the voter's partisanship and sociodemographic characteristics. The model has a further application which is central to parties' issue strategies. By analyzing the behavioral vote probability function, we can estimate both the likelihood that citizens vote for different parties and determine how these probabilities shift when parties alter their issue platforms. The model thereby allows us to identify groups of voters who are especially responsive to parties' platforms, in the sense that they are likely to shift their vote towards (or away from) the party in response to platform changes. Because vote-seeking parties should weigh such voters' issue preferences more heavily during the election, they exert a disproportionate influence upon parties' election strategies.

Recall that the behavioral voting model outlined in chapter two represents a voter i's utility for a candidate K, $U_i(K)$, and the probability he votes for K, $P_i(K/S)$, by the formulations

$$U_i(K) = J_i(K) + I_i(K) + \epsilon_{iK} \quad , \qquad (1)$$

$$= E_i(K) + \epsilon_{iK} \qquad (2)$$

$$P_i(K/S) = \frac{e^{E_i(K)}}{e^{E_i(A)} + e^{E_i(B)} + \ldots + e^{E_i(N)}} \qquad (3).$$

The first term on the right hand side of equation (1), $J_i(K)$, represents measured nonissue sources of voter i's utility for K, such as partisanship and sociodemographic characteristics, while the second term, $I_i(K)$, represents i's issue losses with respect to K's platform; the sum of these terms is summarized as $E_i(K)$ in equation (2). The disturbance term ϵ_{iK} represents unobserved sources of the voter's evaluation of K. In equation (3), $P_i(K/S)$ represents the probability that voter i selects K from the set of candidates S=(A,B,...,N), when the random terms $(\epsilon_{iA}, \epsilon_{iB}, \ldots, \epsilon_{iN})$ are independently distributed type I extreme value random variables.

Let us now consider party K's vote-seeking calculus. When K contemplates a change in its platform, the likelihood that voter i switches his support to K (if K moves nearer to i) or switches away from K (if K moves away from i) can be obtained by differentiating the right hand side of (3) with respect to the voter's issue losses $I_i(K)$:

$$\frac{dP_i(K/S)}{dI_i(K)} = \frac{e^{E_i(K)} \times [e^{E_i(A)} + \ldots + e^{E_i(K+1)} + \ldots + e^{E_i(N)}]}{[e^{E_i(U_A)} + e^{E_i(U_B)} + \ldots + e^{E_i(U_N)}]^2}$$

$$= P_i(K/S) \times [1 - P_i(K/S)] \quad .$$

The derivative $dP_i(K/S)/dI_i(K)$ represents the elasticity or marginality of voter i's decision vis-a-vis party K, with respect to his issue losses with respect to K's platform. The higher the value of $dP_i(K/S)/dI_i(K)$, the greater the likeli-

hood i switches his vote towards or away from K. I label this derivative the voter's responsiveness $r_i(K)$ to party K's platform.

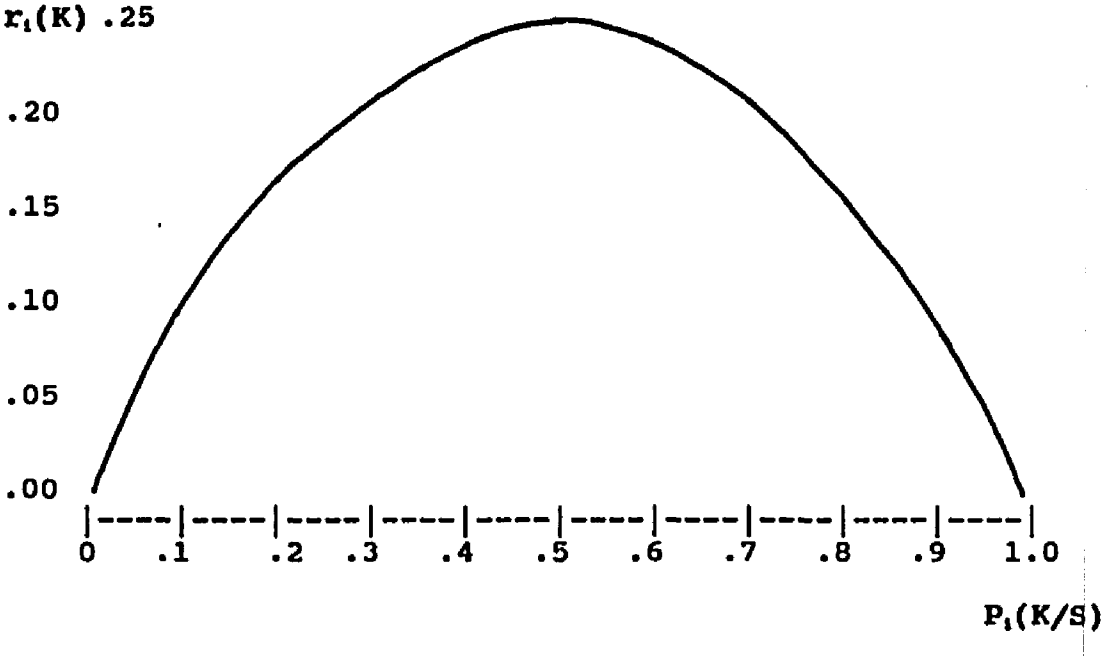
$$r_i(K) = P_i(K/S)\times[1 - P_i(K/S)] \qquad (4).$$

Note that $r_i(K)$ is proportional to the product of the probability the voter chooses K and the probability he does not choose K. For instance, if the probability that a citizen votes for party K is .10, then the voter's responsiveness $r_i(K)$ to K is $.10(1 - .10) = .09$. The derivative reaches a maximum of .25 when i's vote probability for party K is .50, and declines monotonically on either side, as shown in figure 1.

The relationship between the voter's probability of supporting K and her responsiveness to K is an important starting point for the analysis of party voting strategies: the more uncertain the voter's preference for a party, the more responsive he is to that party's platform. This proposition has been advanced in connection with two-party elections (see Coughlin, 1990, and Erikson and Romero, 1990, p.1107), and makes intuitive sense. As an example drawn from American politics, consider the conventional wisdom which holds that the Democratic party should woo political independents while taking African Americans "for granted". The rationale for this strategy holds that this approach gains many independents' votes, since independents frequently waver between voting democratic and republican -- i.e., their vote probabilities are near 50%. By contrast, many African Americans strongly prefer the Democratic to the Republican party -- so that their probabilities of voting Democratic approach 100% -- and hence are unlikely to switch their votes if the Democrats fail to court them. The Democrats thereby gain more votes by targeting independents than they lose by spurning African Americans; this because, in the terminology employed here, indepen-

FIGURE 3.1: THE RELATIONSHIP BETWEEN THE PROBABILITY THE VOTER SELECTS PARTY K AND HIS RESPONSIVENESS TO K

$$r_i(K) = P_i(K/S) \times [1 - P_i(K/S)]$$



dents are more responsive to the Democrats than are African Americans.

As the preceding example illustrates, a voter's degree of responsiveness to a party is not equivalent to his commitment to that party. An African American may be unresponsive to the Democrats because he is firmly committed to them; an evangelical Christian, by contrast, may be unresponsive because he dislikes the Democratic party, and is committed to voting <u>against</u> it.

Note that, although certain types of voters (e.g., independents) are more responsive to a given political party than are other voters (e.g., African Americans), in the case of a two-party system, any given voter is <u>equally</u> responsible to both parties:

PROPOSITION 3.1. In a two-party race with no voter abstentions, any voter is equally responsive to both parties' platforms.

PROOF: If voter i has no probability of abstaining in an election between parties A and B, then the sum of the probabilities $P_i(A)$ and $P_i(B)$ that he votes for parties A and B, respectively, is one. Therefore:

$$P_i(A) + P_i(B) = 1 \quad \langle\!=\!=\!\rangle \begin{cases} P_i(A) = 1 - P_i(B) \\ P_i(B) = 1 - P_i(A) \end{cases}$$

$$\langle\!=\!=\!\rangle \quad [P_i(A)]\times[1 - P_i(A)] = [P_i(B)]\times[1 - P_i(B)]$$

$$\langle\!=\!=\!\rangle \quad r_i(A) = r_i(B), \text{ by equation (4).}$$

The logic underlying Proposition 3.1 is that, when a

voter chooses between exactly two parties, the probability that one party gains his support equals the probability the other party loses it. In the case of African American voters, for instance, their strong preference for the democratic party implies they rarely switch their votes when ignored by the Democrats or when courted by the Republicans; African American voters are therefore unresponsive to both parties. Independent voters, by contrast, are pursued by both the Republicans and Democrats because, since their votes are perceived to "hang in the balance", they are responsive to each party.

When we move from the two-party to the multiparty spatial model, parties' vote-seeking considerations are altered in two important ways. First, in a multiparty election, a voter may be responsive to some parties but unresponsive to others. For instance, if voter i votes for party A with a probability of $P_i(A) = .70$, and parties B and C with probabilities $P_i(B) = .25$ and $P_i(C) = .05$, respectively, than i's responsiveness to each party is given as follows:

$$r_i(A) = [P_i(A)]\times[1 - P_i(A)] = .70\times(1 - .70) = .21$$

$$r_i(B) = [P_i(B)]\times[1 - P_i(B)] = .25\times(1 - .25) = .19$$

$$r_i(C) = [P_i(C)]\times[1 - P_i(C)] = .05\times(1 - .05) = .05 \quad .$$

In this example, voter i is much more responsive to parties A and B than he is to party C. This is because the voter is viewed as "wavering" between A and B, so that modest changes in his evaluation of either party may prompt him to alter his vote. Because his expected utility for C is less than for either A or B (hence the lower vote probability), it is unlikely that a marginal increase in his utility for C will be sufficient to move it past both rival parties in the voter's estimation.

More generally, when comparing a voter's degree of

responsiveness to different parties, the following important result holds:

PROPOSITION 3.2: In a multiparty election, each voter is most responsive to the party he is most likely to support.

PROOF: Let $P_i(M)$ be i's vote probability with respect to M, the party he is most likely to support, and $P_i(L)$ his vote probability with respect to some other competing party. The following inequalities must hold:

(a) $P_i(L) + P_i(M) < 1$, since by assumption there exist Three nonzero vote probabilities

(b) $P_i(L) = P_i(M) - Y$, for some $Y > 0$, since by assumption $P_i(M) > P_i(L)$.

By substituting (b) into (a), we obtain

(c) $2P_i(M) - Y < 1$.

We calculate the difference between voter i's responsiveness to parties M and L, $[r_i(M) - r_i(L)]$, by employing equation (2):

$$r_i(M) - r_i(L) = [P_i(M)]\times[1 - P_i(M)] - [P_i(L)]\times[1 - P_i(L)]$$

$$= [P_i(M)]\times[1-P_i(M)] - [P_i(M)-Y]\times[1 - (P_i(M) - Y)]$$

(d) $$= Y\times[1 + Y - 2P_i(M)]$$

By (b), Y is positive; therefore, (d) implies that $[r_i(M) - r_i(L)]$ is positive if and only if $[1 + Y - 2P_i(M)]$ is positive

$$r_i(M) - r_i(L) > 0 \quad <==> \quad 1 + Y - 2P_i(M) > 0$$

$$<==> \quad 2P_i(M) - Y < 1 \quad \text{True, by (c).}$$

This demonstration actually establishes that the voter's degree of responsiveness to different parties reflects his rank order of vote probabilities. That is, he is most responsive to the party he is most likely to support, next-most responsive to the party he is next-most likely to support, and so on. This result is illustrated by the example from page eight, in which a voter whose likelihood of supporting parties A, B, and C -- .70, .25, and .05, respectively -- is responsive to each party at the rates of $r_i(A)=.21$, $r_i(B)=.19$, $r_i(C)=.05$.

Before discussing the logic which underlies this extremely important result, let us consider its implications. Proposition 3.2 implies that political partisans, who are typically disposed to vote for the party with which they identify, are more responsive to that party than they are to rival parties. Thus, socialists are most responsive to the socialist party, Tories are most responsive the Tory party, and so on. Because vote-seeking parties are motivated to court those voters who are responsive to their platforms, this suggests in turn that partisans are weighed most heavily by their own parties; therefore, the socialist party weighs socialists more heavily than do rival parties, the Tory party weighs Tories most heavily, etc. To state this result in plain english, Proposition 3.2 implies that a party gains more by courting voters who are disposed to vote for it than it loses by spurning voters who are disposed to vote against it. This leads to the following proposition:

PROPOSITION 3.3: In multiparty systems, vote-seeking parties should behave responsibly towards their partisans.

Proposition 3.3 provides a persuasive explanation for the

observed stability in multiparty systems. Political partisans usually share the policy goals espoused by their party. By proposition 3.2, these partisans are also more responsive to their party than to its rivals; hence, if parties change their platforms, they will be betraying those voters who are responsive to their platform.[4] This implies that moving away from an established platform will cost a party electoral support. This suggests in turn the additional proposition:

PROPOSITION 3.4: In multiparty systems, a partisan electorate enhances the likelihood of policy equilibria.

Although the strategic considerations outlined above provide insights into party issue strategies, they shed no light on several issues central to this dissertation. For instance, while the suggestion that vote-seeking parties should be responsible to their partisans is intriguing, the question of whether any "formal" multiparty spatial equilibrium exists remains unanswered. Furthermore, what form might such equilibria take, and are they more probable under the Diffused Ideology or the Issue Publics model? As we shall see in the next section, it is difficult to derive answers to these questions analytically. However, I present the results

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[4] To avoid confusion, I emphasize that while Proposition 3.2 implies that a partisan is more responsive to his adopted party than its rivals, this does <u>not</u> imply that the voters who are most responsive to a party are its partisans. As the example of american blacks illustrated (albeit in a two-party system), a party may take its own partisans "for granted", and instead woo independent voters. To illustrate with a european example, although a "hard-core" communist is more responsive to the Communists than he is to competing parties, he may support the Communists so strongly that he is unresponsive to <u>all</u> parties: the Communists take his support for granted while rival parties write him off. By contrast, a voter who merely "leans" towards the Communist party is more responsive to the Communists than the hard-core Communist supporter, precisely because he wavers in his decision. I explore this subject in the computer simulations in section II.

of computer-simulated elections which provide us with tentative answers.

Section II: Multiparty Equilibrium and the Behavioral Voting Model: a Formal Analysis and Computer Simulation

II.A: A Formal Analysis

To deduce equilibrium outcomes in a spatial model of party competition, it is necessary to represent each party's expected vote shares as a function of their issue positions. Define V(A) as the number of voters in the set (1,2,...m) expected to vote for party A, so that

$$V(A) = \Sigma_{i=1}^{n} P_i(A/(A,B...N)) \quad , \qquad (5)$$

$$= \Sigma_{i=1}^{n} \frac{e^{E_i(U_A)}}{e^{E_i(U_A)} + e^{E_i(U_B)} ... + e^{E_i(U_N)}} . \qquad (6).$$

To maximize its vote share, party A must find the set of issue positions $(a_1,a_2,...a_j)$ that maximize V(A). Party A maximizes this function when the partial derivatives of V(A) with respect to $(a_1,a_2,...a_j)$ equal zero. Thus, if party A is already at equilibrium on all issue dimensions except issue j, this condition implies that

$$\frac{dV(A)}{da_j} = \Sigma_{i=1}^{n} \frac{dP_i(A/(A,B...N))}{da_j} = 0 \quad ,$$

and $d^2V(A)/da_j$ is negative. The solution is the weighted mean a^*_j, which satisfies the condition

$$a^*_j = \frac{\sum_{i=1}^{n} w^A_{ij} a_{ij}}{\sum_{i=1}^{n} w^A_{ij}} \qquad (7)$$

where

$$w^A_{ij} = \frac{dP_i(A/\{A,B,\ldots N\})}{da_j}$$

$$= (b_{ij})[P_i(A/\{A,B,\ldots N\})][1 - P_i(A/\{A,B,\ldots N\})]$$

The weight variable w^A_{ij} represents the issue salience b_{ij} to the voter, multiplied by the voter's responsiveness to party A's platform.

To discover party A's optimum location on an issue dimension j, the analyst varies the party's issue position along this dimension in order to locate the mean voter preference, weighted by the voters' estimated issue weights with respect to party A. Unfortunately, the movement of A along the issue dimension alters voters' estimated vote probabilities $P_i(A/\{A,B\ldots N\})$, which in turn shifts their issue weights w^A_{ij}. It is these issue-driven shifts in voters' issue weights which render the search for the weighted mean complex, from the analyst's perspective.

While it is possible to derive representable solutions for equation (7) (and thereby deduce parties' optimal issue strategies) under certain highly restrictive conditions, I have not discovered a general solution to this problem; hence, I am unable to ascertain the conditions (if any) which permit

multiparty spatial equilibria. To derive tentative results, I will therefore turn to the power of the computer.

II.B: A Computer Simulation of Multiparty Spatial Competition

In simulating elections under the random utility voting model, I hope to shed light on three questions:

1) Is multiparty equilibrium possible under the probabilistic voting models outlined in chapter two?

2) Is equilibrium more or less likely under the Diffused Ideology model, as compared with Issue Publics? More generally, how does the nature of multiparty competition vary with the degree of issue voting in the electorate, and divisions of interest in public opinion?

3) What effect does partisanship have on parties' vote-seeking strategies?

To obtain answers to these questions, I simulated elections in which three vote-seeking parties A, B, and C competed in a one-dimensional issue space bounded by the integers [0,1]. Each electorate was composed of 100 voters, whose locations in the issue space were randomly generated from a uniform distribution of points located at intervals of .01 in the ideological space [0,1]. In the first set of simulations, voters were assumed to have no partisan bias, so that voters' evaluations of the competing parties was a function of their issue losses and a random error term. Thus, let a, b, and c be the issue positions of parties A, B, and C, respectively, and x_i the issue position of a voter located in the ideological space [0,1]. The voter's utility function with respect to each party is given by

$$U_i(A) = s_i(a - x_i)^2 + \epsilon_{iA}$$

$$U_i(B) = s_i(b - x_i)^2 + \epsilon_{iB}$$

$$U_i(C) = s_i(c - x_i)^2 + \epsilon_{iC}$$

where s_i represents the salience of the issue to the voter; larger values of s_i indicate that the voter is increasingly "issue-oriented". The error terms $(\epsilon_{iA}, \epsilon_{iB}, \epsilon_{iC})$ are assumed to be independently distributed Type I Extreme Value Random Variables, so that the voter's choice probabilities with respect to the competing parties are given by the function represented in equation (3):

$$P_i(A) = \frac{e^{s_i(a - x_i)^2}}{e^{s_i(a - x_i)^2} + e^{s_i(b - x_i)^2} + e^{s_i(c - x_i)^2}}$$

with analogous functions for parties B and C.

In the simulated elections each party is assumed to view the issue positions of its rivals as fixed, and to select the issue location which maximizes its expected vote share. Parties are constrained to adopt a position occupied by one of the voters; each party therefore chooses from 101 possible issue locations in each "round" of the election. Parties move in sequence so that 1) party A locates the position which maximizes its expected vote share, given the current locations of parties B and C; 2) party B locates its most favorable location given the position of C and A's new location, and so on. The election is over when no party can improve its

expected vote share.[5]

Results for the Diffused Ideology model. Under the Diffused Ideology model outlined in chapter two, citizens display graduated degrees of interest in a specific issue or ideological dimension, so that the impact of the issue on their vote choices will fall along a continuum, rather than being concentrated at the extremes. To approximate this condition, I assigned identical issue salience coefficients to all voters in each simulated election. Figure two diagrams the sequence of moves in one such election, in which the issue salience s was set at s=20. The random distribution of voters is illustrated at the top of the figure, while the sequence of issue strategies adopted by the competing parties is illustrated below.[6] In this first example, all three parties "begin" at the issue location .50 (i.e., the center of the issue space [0,1]). Party A moves first, and shifts away from the center to the location .40; although this move displeases the majority of voters, the party gains more expected votes from voters on the left than it loses from those on the right, and its expected vote share rises from 33.3% to 35.8%. With the voters to the left of center being courted by party A, party B stands to lose fewer leftwing votes by moving to the right (since A wins a plurality of these votes anyhow), and therefore moves to a point slightly right of center, at .57. B's vote share jumps from 32.1% to 34.9%. This vote gain comes entirely at the expense of party C, which, now that it

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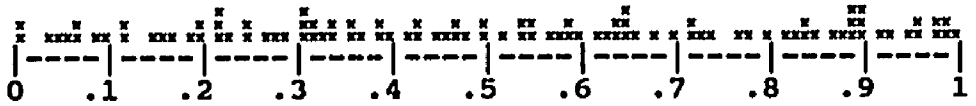
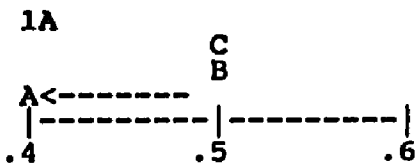
[5] In these simulations each party was allowed to relocate a maximum of 40 times; if no equilibrium had been reached by this point, the simulation was ended.

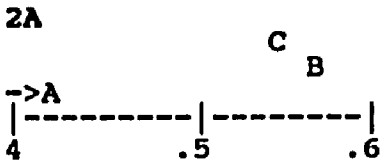
[6] This simulated election is unusual in that the parties reach a spatial equilibrium after only four relocations; in most of the simulations for which an equilibrium was reached, the competing parties relocated 5-10 times. However, by using this "shorter" simulation as an example, it is possible to diagram the complete sequence of party relocations on one page, thereby conserving space.

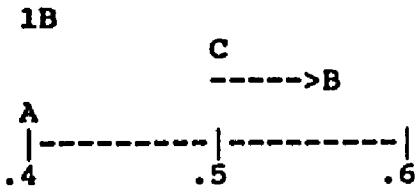
FIGURE 3.2: SIMULATED ELECTION UNDER DIFF. IDEOLOGY MODEL

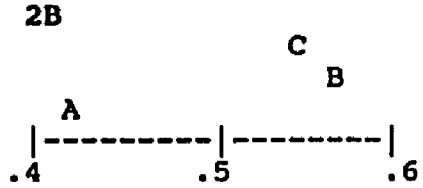
(ISSUE SALIENCE S=20 FOR ALL VOTERS)

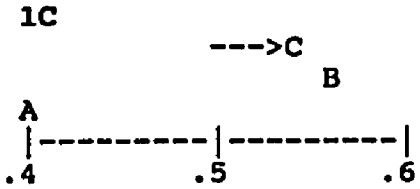


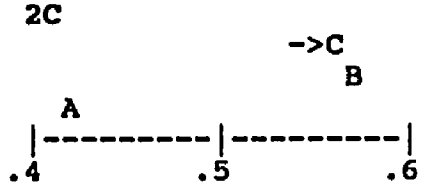












PARTY LOCATION			PARTY VOTE SHARE		
PARTY A	PARTY B	PARTY C	PARTY A	PARTY B	PARTY C
.50	.50	.50	33.3	33.3	33.3
.40	.50	.50	35.8	32.1	32.1
.40	**.57**	.50	36.2	34.9	28.9
.40	.57	**.54**	36.6	32.7	30.7
.42	.57	.54	36.7	32.6	30.7
.42	**.57**	.54	36.7	32.6	30.7
.42	.57	**.55**	36.8	32.3	30.9

is "squeezed" in the middle, sees its vote share drop to 28.9%, while A's rises slightly to 36.2%. Party C responds by moving to the point .54, and thereby regains some of the votes it lost by being squeezed; C's share rises to 30.7%, while B's share falls to 32.7%. After some further minor adjustments, the parties reach an equilibrium which finds parties A, B, and C located at .42, .57, and .55, respectively.

The simulation reported above suggests several properties of multiparty competition with probabilistic voting. First, multiparty spatial equilibria exist under the Diffused Ideology model. In this example party A is in equilibrium to the left in the issue space, while parties B and C are to the right. Second, parties may receive differing vote shares at equilibrium; here party A received a 4.5% plurality over party B. Finally, note that in this election the order of party movement was crucial to the final results. Although the three parties began from the same point (and hence with identical expected vote shares), party A, by virtue of being allowed to move first, was able to stake out a position to the left of center, leaving its two rivals to compete for votes from center and right-wing voters. In this case, being allowed to move first proved advantageous.

Table one reports the results of further sets of simulations conducted under the Diffused Ideology model, for different levels of the issue salience s. For each level of issue salience reported in column one (which range from s=5 to s=40), I conducted 100 simulated elections from randomly selected voter distributions. Column two reports the percentage of elections in which the competing parties reached

equilibrium.[7] These results indicate very clearly that the more issue-oriented the electorate (e.g., the higher the value of the issue salience coefficient s) the lower the likelihood that a spatial equilibrium exists. This finding is consistent with a well-known result obtained for deterministic electorates (i.e., all voters vote with certainty for the nearest party), that no equilibrium is possible in the one-dimensional, three-party case (Eaton and Lipsey, 1975); it now appears we can amend this result to read, "no equilibrium is possible if voting is sufficiently deterministic in the three-party, one-dimensional case."

PROPOSITION 3.5: The more issue-oriented the electorate, the less the likelihood that a multiparty spatial equilibrium exists.

Column three reports the average spatial dispersion between the parties when equilibria exist, with spatial dispersion defined as the distance between the rightmost and leftmost parties (in the simulated election summarized in figure two, for instance, the degree of spatial dispersion is .15, since at equilibrium the leftmost party A is located at .42 and the rightmost party B at .57). This measure provides an estimate of the parties' tendancy to "cluster" at equilibrium, and clearly suggests that as the electorate becomes more issue oriented, parties become more dispersed.

---

[7] Because simulations were terminated after 40 moves by each party (see footnote five), the reported percentages may understate the true frequency of multiparty equilibria. However, in only three of the 800 simulations summarized in table 2 did the parties reach equilibrium after more than 20 moves. This powerfully suggests that (for the three-party case) equilibrium is generally reached quickly, and that the percentages reported in table 2 therefore represented very close approximations of the true frequency of equilibrium.

TABLE 3.1: RESULTS OF COMPUTER-SIMULATED ELECTIONS UNDER THE DIFFUSED IDEOLOGY MODEL

(100 SIMULATIONS CONDUCTED FOR EACH LEVEL OF ISSUE SALIENCE)

ISSUE SALIENCE S	PROPORTION OF ELECTIONS WITH EQUILIBRIUM	AVERAGE SPATIAL DISPERSION
40	1%	.36
35	3%	.35
30	26%	.22
25	88%	.19
20	100%	.18
15	100%	.17
10	100%	.10
5	100%	.05

Results for the Issue Publics model. In the computer simulations described above, I assumed that all voters attached the same degree of importance to the issue dimension. However, Converse's Issue Publics model posits that this assumption is unrealistic -- instead, voters belong to different issue publics, composed of citizens who share a passionate interest in the issue. To simulate electoral competition under the Issue Publics model, I reanalyzed the previous simulations under the assumption that 50% of the electorate was apolitical (and hence were assigned an issue salience of s=0) while the remaining 50% were ideologues, who were assigned high issue saliences.* Figure three presents a simulated election under the Issue Publics model, in which the electorate depicted in figure two is "reanalyzed", under the alternative assumption that 50% of the voters are apolitical, while the 50% who are ideologues are assigned an issue salience of s=30. The mean issue salience assigned to each voter is therefore 15 (30 divided by two). In this example, parties A, B, and C eventually reach an equilibrium at .45, .59, and .59, respectively, with A receiving a plurality of 36.7.% of the popular vote.

Table two reports the results of further simulations conducted under the Issue Publics model. The mean issue salience listed in column one represents the salience assigned to the ideologues, divided by two (since 50% of the electorate is assumed to be apolitical). The results reported in column two, which reports the frequency of spatial equilibria, confirm that under the Issue Publics model equilibrium grows less frequent as ideologues become more ideological. However,

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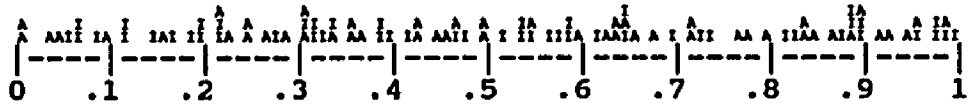
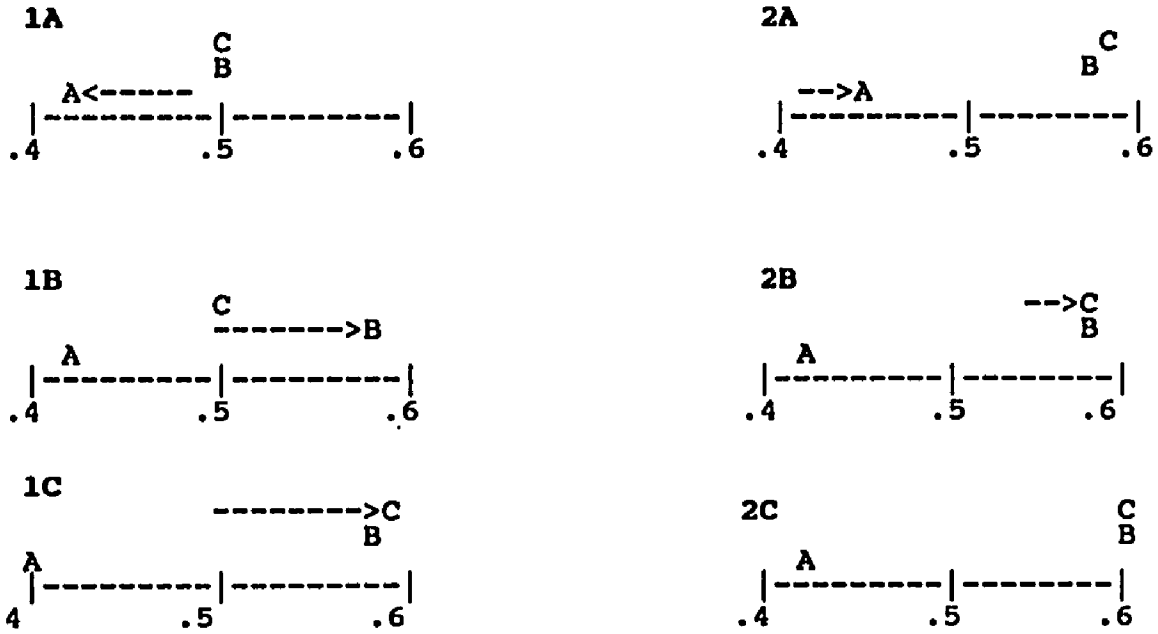
* Each voter in this simulated election was randomly assigned an issue salience s, with a probability of .50 that s=0, and a probability of .50 that the issue salience was high.

FIGURE 3.3: SIMULATED ELECTION UNDER THE ISSUE PUBLICS MODEL

(S=20 FOR IDEOLOGUES, S=0 FOR APOLITICALS)

(A'S REPRESENT APOLITICALS, I'S REPRESENT IDEOLOGUES)





PARTY LOCATION

PARTY A	PARTY B	PARTY C
.50	.50	.50
.42	.50	.50
.42	**.58**	.50
.42	.58	**.59**
.45	.58	.59
.45	**.59**	.59
.45	.59	**.59**

PARTY VOTE SHARE

PARTY A	PARTY B	PARTY C
33.3	33.3	33.3
35.6	32.2	32.2
36.0	34.9	29.9
36.6	31.6	31.8
36.7	31.5	31.8
36.7	31.6	31.7
36.7	31.6	31.7

when comparing these results with those reported in table three, note that for each level of issue salience s, equilibrium is more frequent under the Diffused Ideology than the Issue Publics model. This leads to the following proposition:

PROPOSITION 3.6: Multiparty policy equilibrium is more likely under the Diffused Ideology than the Issue Publics model.

Results on party identification. In Section I, I speculated that vote-seeking parties are motivated to behave responsibly towards their partisans. In order to investigate this hypothesis, I incorporated party identification in subsequent simulations. I began by placing the parties A, B, and C at the issue locations .33, .50, and .67 respectively, and then conducted a simulated voting run in which each voter selected a preferred party according to the logistic probability functions outlined above. The result was an electorate in which each party enjoyed widespread support among voters adjacent to its ideological location, but only scattered support from spatially remote voters. Each voter was then assigned a "party identification bias" equal to a comparative issue advantage of one standard deviation of the error term associated with voters' paired choice comparisons. The probability that a partisan of party A would vote for A in subsequent elections is therefore given by the function

$$P_i(A/(A,B,C)) = \frac{e^{[E_i(U_A)+1]}}{e^{[E_i(U_A)+1]} + e^{E_i(U_B)} + e^{E_i(U_C)}}$$

with analogous functions describing the vote probabilities of partisans of parties B and C. The result is an electorate in

TABLE 3.2: RESULTS OF COMPUTER-SIMULATED ELECTIONS UNDER THE ISSUE PUBLICS MODEL

(100 SIMULATIONS CONDUCTED FOR EACH LEVEL OF ISSUE SALIENCE)

AVERAGE ISSUE SALIENCE S	PROPORTION OF ELECTIONS WITH EQUILIBRIUM	AVERAGE SPATIAL DISPERSION
40	0%	--
35	0%	--
30	1%	.30
25	0%	--
20	2%	.40
15	30%	.24
10	91%	.20
5	100%	.12

AVERAGE ISSUE SALIENCE S = (SALIENCE S FOR IDEOLOGUES)/2

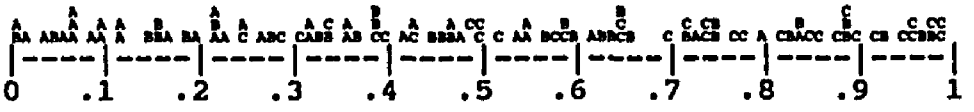
which a voter who is indifferent between the three parties on issue grounds votes for the party with which he identifies with a probability of 58%, and votes for each of its two rivals with a probability of 21%; this degree of party identification bias is less than has been estimated for recent American or British elections (Erikson and Romero, 1990; Rose and McCallister, 1988). Having created an electorate in which voters were "biased" towards rival parties, I proceeded to conduct a new set of simulated elections.

Figure Four shows the results of one such simulation in which the voters' issue salience was set at S=20. The scatterplot at the top of Figure four indicates that party A's partisans cluster to the left in the ideological space [0,1], while voters partial to B and C's are located near to the center and to the left of the issue space, respectively. Party A moves rightward towards its partisans, while C moves leftward, nearer its own supporters; party B, whose partisans are concentrated near the center, remains precisely in the center of the issue space at .50. Note that each party is "responsible" to its supporters, in that equilibrium finds party A near to its partisans on the left, party B near its centrist partisans, and so on; I refer to such equilibrium outcomes, in which the parties maintain their initial left-right ordering (e.g., party A on the left, B at the center, and C on the right), as ideologically ordered outcomes.

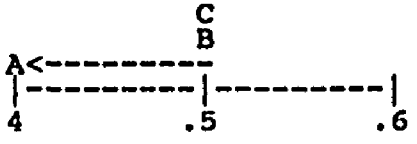
Table three reports the results of further simulations conducted with partisan voters. In these elections, the degree of partisan bias imputed to each voter was +1, as in the preceding example, and all voters were assigned an identical issue salience, as in the Diffused Ideology model. The results reported in columns two and three report the frequency of equilibrium and the mean spatial dispersion between parties at equilibrium, plotted against the voters' degree of issue involvement; these results mirror those

FIGURE 3.4: SIMULATED ELECTION UNDER THE DIFFUSED IDEOLOGY MODEL, WITH PARTISAN VOTERS (S=20)

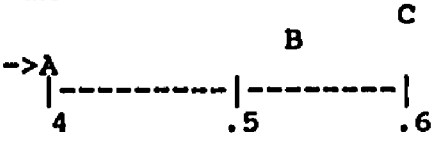
(A,B, AND C REPRESENT PARTISANS OF PARTIES A, B, AND C),



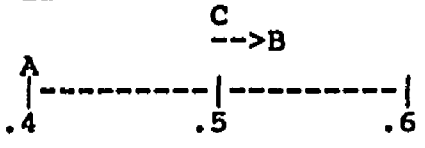
1A



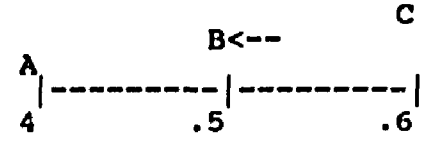
2A



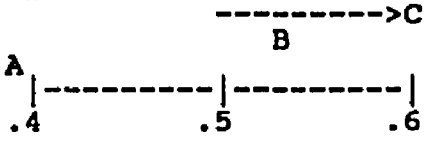
1B



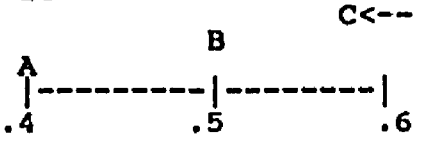
2B



1C



2C



PARTY LOCATION			PARTY VOTE SHARE		
PARTY A	PARTY B	PARTY C	PARTY A	PARTY B	PARTY C
.50	.50	.50	35.3	33.0	31.7
.38	.50	.50	36.8	31.8	31.4
.38	**.54**	.50	36.9	32.9	30.2
.38	.54	**.60**	35.5	31.7	32.4
.40	.54	.60	35.9	31.6	32.1
.40	**.50**	.60	35.0	32.5	32.5
.40	.50	**.58**	35.0	32.3	32.7

reported in table two, in that spatial dispersion increases with greater issue involvement while the frequency of spatial equilibrium declines. Column four, which reports the frequency of ideologically ordered outcomes, provides compelling support for the proposition that partisanship enhances stability: literally every equilibrium outcome finds the parties ideologically ordered!

CONCLUSION

The central argument I present in this chapter is that in multiparty but not two-party elections, parties should adopt platforms which reflect their supporters' issue positions. The results of the computer-simulated elections reported in section II confirm this argument in every respect. In addition, these simulations indicate that both the importance of issues, and divisions of issue interest have important implications for party spatial strategies in multiparty systems. The principal results are as follows: 1) partisanship enhances the likelihood of equilibrium, and encourages parties to behave responsibly towards their partisans; 2) the greater the importance of issues to the vote, the lower the likelihood of equilibrium; 3) Spatial equilibrium is less likely under the Issue Publics than the Diffused Ideology model.

Although these computer simulations are intriguing, a skeptic might argue that they provide few insights into "real world" political systems. Do our theoretical results shed light on party issue strategies in historical elections? The answer to this question is outlined in the next chapter, in which I analyze party issue strategies in the 1983 British general election.

TABLE 3.3: RESULTS OF COMPUTER-SIMULATED ELECTIONS WITH PARTISAN VOTERS

(100 SIMULATIONS CONDUCTED FOR EACH LEVEL OF ISSUE SALIENCE)

SALIENCE	PROPORTION OF ELECTIONS WITH EQUILIBRIUM	AVR.SPATIAL DISPERSION	PROP. OF IDEOLOGICALLY ALIGNED ELECTIONS
40	35%	.40	100%
35	98%	.41	100%
30	100%	.37	100%
25	100%	.39	100%
20	100%	.36	100%
15	100%	.35	100%
10	100%	.33	100%
5	100%	.29	100%

CHAPTER 4: VOTING BEHAVIOR AND PARTY ISSUE STRATEGIES IN THE 1983 BRITISH NATIONAL ELECTION

Summary: Existing empirical applications of random utility voting models examine situations in which the voter chooses between exactly two parties or candidates. I develop a statistical method for applying the random utility model to situations in which the voter confronts three or more alternatives, and illustrate and test this method against voting data from the 1983 British National Election Study. This empirical analysis allows me to test the hypotheses concerning party issue strategies developed in chapter three. My results confirm the proposition that parties should behave responsibly towards their partisans.

The random utility voting model outlined in chapter two has been successfully applied to choice behavior in economics (Calfee, 1980; Train, 1986), transportation (Duncan, 1979) geography (Cliff and Ord, 1981; Wrigley, 1985), and two-party elections (Erikson and Romero, 1990). However, it has not been employed in empirical analyses on voting data from multiparty systems, nor in spatial models of multiparty elections.[1] In this chapter I develop both of these applica

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[1] Some scholars have applied a dichotomous random utility model to the vote in multiparty systems (e.g., Dutter, 1990). In these studies, the alternatives available to the electorate are grouped into two larger sets, so that the voter's decision is viewed as a dichotomous choice; Listhaug (1989), for instance, analyzes voters' preferences among several Norwegian parties by grouping them into parties of the left or right. However, no voting behavior studies exist which apply random utility to voters' choices among three or more alternatives.

tions. First, I analyze voting behavior in the 1983 British National Election, with particular emphasis on the impact of issues and partisanship. I then employ the resulting parameter estimates to analyze the issue strategies of the Labour, Alliance, and Conservative parties. The results support the hypothesis developed in chapter three, that parties should adopt platforms which reflect their partisans' issue positions.

This chapter is divided into three sections. In section I, I review empirical approaches which apply the random utility voting model to two-party elections, and outline a statistical method which extends this approach to multiparty systems; this method is a variation on multinomial logit analysis. Section II applies this statistical technique to citizens' voting behavior in the 1983 British general election. I empirically test the assumptions which underlay the random utility approach -- in particular the crucial independence from irrelevant alternatives property -- and discuss the role political issues played in shaping citizens' vote choices. In Section III, I develop a method for roughly estimating parties' optimal issue strategies, and employ the parameter estimates reported in Section II to determine the optimal locations for the Labour, Alliance, and Tory parties. The resulting optimal party locations confirm Proposition 3.3 from the preceding chapter: vote-seeking parties should behave responsibly towards their partisans.

Section I: A Logit Model of the Vote in Multiparty Elections

I.A: The Dichotomous Logit Model

In empirical studies on voting data from two-party elec-

tions, political scientists typically identify variables such as the respondent's party identification, issue attitudes, and sociodemographic characteristics as influences upon the vote (e.g., Erikson and Romero, 1990; Jackson and Gerber, 1990; Markus and Converse, 1979). The voter's utility differential when comparing two competing parties A and B is then written:

$$U_i(A) - U_i(B) = b_i + \Sigma_{j=1}^{n} b_{ij}[(x_{ij} - b_j)^2 - (x_{ij} - a_j)^2] + b_2 PI_i + b_4 Z_i + \epsilon_{iAB} \quad (1)$$

$$= b_i + b_3 J_{A/B} + b_2 PI_i + b_4 Z_i + \epsilon_{iAB} \quad (2)$$

where $U_i(A)$ and $U_i(B)$ represent individual i's utility for party A's election and party B's election, respectively. The voter selects A if $U_i(A)$ is greater than $U_i(B)$, selects B if $U_i(A)$ is less than $U_i(B)$, and selects randomly or abstains if $U_i(A)$ equals $U_i(B)$. The first term on the righthand side of equation (1), b_i, represents the voter's preference for A (if b_i is positive) or B (if b_i is negative) based upon systematic, though unmeasured, influences. The second term represents the voter's issue preference for party A over party B; this is a function of the difference in squared Euclidean distance between the voter and parties B and A, respectively. The third and fourth dependent variables, PI_i and Z_i, represent the voter's party identification and a set of sociodemographic variables (i.e. class, income, race, etc.). The disturbance term ϵ_{iAB} represents random unobserved sources of the voter's comparative evaluation of A and B. Equation (2) is identical to (1), except that the voter's comparative issue evaluation is now written in the reduced form $J_{A/B}$.

Note that equation (1) differs from the random utility representation presented in chapter two (see equation six, page 17) in that it is presented in terms of a utility dif-

ferential between A and B, rather than as the voter's strict (measured) utilities for each candidate. This formulation proves computationally convenient, in that it allows the analyst to express the voter's "logodds" ratio (e.g., the log of the ratio of the probability the voter prefers A to the probability he prefers B) in the form of equation two. Thus, given the assumption that the disturbance term ϵ_{iAB} represents the difference between two type I extreme value random variables (see chapter two, page 12):

$$\log_e \frac{P(A/(A,B))}{P(B/(A,B))} = b_1 + b_2 J_{A/B} + b_3 PI_i + b_4 Z_i \quad , \qquad (3)$$

where P(A/(A,B)) = the probability the voter prefers A to B

P(B/(A,B)) = the probability the voter prefers B to A.

Equation (3) can be rewritten to express the probability the voter prefers A to B, as follows:

$$P_i(A/(A,B)) = \frac{1}{1 + e^{[b_1 + b_2 J_{A/B} + b_3 PI_i + b_4 Z_i]}} \qquad (4).$$

I.B: The Multinomial Logit Model: Conceptual Problems

The dichotomous logit formulation outlined above can be extended to multiparty systems by estimating the parameters of a series of logodds equations of the form given in equation (3). Because the parameters of every equation are estimated simultaneously, the same variables must be included in each

function. In the case of the British electorate in 1983, which was faced with a choice between three major political parties, the following logodds equations might be estimated in order to analyze how citizens choose between the Labour, Alliance, and Conservative parties:[3]

$$\log_e \frac{P(A/(A,C))}{P(C/(A,C))} = b_{11} + b_{12}J_{A/C} + b_{13}J_{L/C} + b_{14}J_{A/L} + b_{15}L + b_{16}A + b_{17}C \quad (5)$$

$$\log_e \frac{P(L/(L,C))}{P(C/(L,C))} = b_{21} + b_{22}J_{A/C} + b_{23}J_{L/C} + b_{24}J_{A/L} + b_{25}L + b_{26}A + b_{27}C \quad (6)$$

$$\log_e \frac{P(L/(L,A))}{P(A/(L,A))} = b_{31} + b_{32}J_{A/C} + b_{33}J_{L/C} + b_{34}J_{A/L} + b_{35}L + b_{36}A + b_{37}C \quad (7),$$

where $J_{N/M}$ = the issue component of the respondent's comparative issue evaluation of N and M.

A, L, C = dummy variables for identification with the Alliance, Labour, and Conservative parties.

= 1 if the voter identifies with party.
0 otherwise.

The requirement that an independent variable which is relevant to a single paired comparison be included in the functions associated with every paired comparison raises two obstacles to our use of the multinomial logit approach. The

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[3] These equations do not include sociodemographic variables which might plausibly be linked to the vote, such as class, education, or race. I omit these variables in order to simplify the presentation of equations (5)-(7).

first problem concerns the specification of citizens' comparative issue evaluations of rival parties: each logodds equation will contain independent variables which appear irrelevant to the dependant variable. Thus equation (5) includes the independent variables $J_{L/C}$ and $J_{A/L}$ -- the respondent's comparative issue evaluations of Labour versus the Conservatives, and of the Alliance versus Labour, respectively --which should not affect the dependent variable, which is the voter's probability of choosing between the Alliance and the Conservatives; indeed, by the assumption of independence from irrelevant alternatives (see chapter two, pages 17-19), the voter's preference between any two parties is independent of his evaluation of all other parties. As the number of political parties increases, the number of "specious" independent variables included in each equation grows.[3]

Although the result is a series of equations which are aesthetically displeasing, in theory this problem is not fatal; if the independence of irrelevant alternatives property is satisfied, we would expect the coefficients associated with the "irrelevant" variables to be insignificant. The more serious problem is that there is perfect correlation between the various issue comparison variables. This follows from the fact that all are linear functions of the respondent's positions on the set of campaign issues. For instance, the respondent's comparative issue evaluation of the Labour and Conservative parties, $J_{L/C}$, and his comparison between the Alliance and Conservatives $J_{A/C}$, can be expressed as

$$J^1_{L/C} = (c - x_1)^2 - (1 - x_1)^2 = c^2 - 1^2 + 2(1 - c)x_1 \qquad (8)$$

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[3] The number of comparative issue evaluation variables which would have to be included in the model is equal to [n(n-1)/2], where n is the number of competing parties. In a five-party system such as France, this would require 10 such variables.

$$J^{1}_{A/C} = (c - x_i)^2 - (a - x_i)^2 = c^2 - a^2 + 2(a - c)x_i \quad , \qquad (9)$$

where a, c, and 1 represent the issue positions of the Alliance, Conservative, and Labour parties, respectively, and x_i the voter's issue preference. Because the various comparative issue evaluation terms are correlated, they cannot be entered simultaneously as independent variables.

The second problem is that in practice it is difficult to estimate the coefficients associated with the party identification variables. Because most citizens "vote their party identification", political partisans rarely express a preference (i.e., vote) in paired comparisons between parties with which they do not identify. For instance, Conservative partisans rarely voted for either the Alliance or Labour parties in the 1983 general election; therefore, we cannot reliably estimate the value of the Conservative party coefficient b_{3} in equation (7), since the estimate of b_{3} depends on the relative number of votes Conservatives cast for the Labour and Alliance parties. Thus, citizens' voting behavior does not provide enough information for us to estimate the coefficients in the paired choice comparison functions characteristic of the multinomial approach.

I.C: A Possible Solution

To address both these problems, I propose to employ an expanded set of voter preferences inferred from the voters' rankings of the competing parties. Because the British election survey data we employ in Section Three contains, in addition to the citizen's reported vote, her second choice, we obtain the voter's preference when choosing between pairs of parties she has rejected. Citizens' party rankings thereby allow us to infer preferences in all possible paired choice comparisons, thereby alleviating the problem of unreliable

estimates for the party identification variables. Because multinomial logit analysis cannot accommodate ranking data, to obtain the paired choice functions I estimate the parameters of a series of dichotomous logit equations. Therefore, instead of estimating all paired choice functions simultaneously (the multinomial logit procedure), I estimate each paired comparison equation separately.

By estimating a series of dichotomous logit functions, I am also able to sidestep the problem of correlation between the voters' comparative issue evaluations. Because each paired comparison function is estimated separately, I include in each equation only that comparative issue evaluation relevant to each specific paired choice comparison. Therefore, I reestimate equations (5)-(7) as

$$\log_e(A/C) = b_{11} + b_{12}J_{A/C} + b_{13}L + b_{14}A + b_{15}C \qquad (10)$$

$$\log_e(L/C) = b_{21} + b_{22}J_{L/C} + b_{23}L + b_{24}A + b_{25}C \qquad (11)$$

$$\log_e(L/A) = b_{31} + b_{32}J_{L/A} + b_{33}L + b_{34}A + b_{35}C \qquad (12).$$

This formulation implicitly assumes that a citizen's preference between any two parties is independent of his evaluation of all alternative parties; i.e., that the independence of irrelevant alternatives property (IIA) outlined in chapter two is satisfied with respect to voting behavior. Several statistical tests of the IIA assumption as it applies to multinomial logit analysis have been proposed (Horowitz, 1982; McFadden, et al., 1977; Sobel, 1980). However, because the approach I employ depends on dichotomous logit analyses, these tests are not appropriate here. Instead, I suggest an intuitively plausible criterion for assessing the accuracy of the model's

predictions which, while it does not constitute a rigorous statistical test, should nonetheless provide a basis for judging whether the IIA property is satisfied. This test is outlined in Section II.B.

Section II: Party Voting and the 1983 British Election

I turn now to an analysis of citizen voting behavior in Britain, as represented by the 1983 British National Election Study (BNES). After locating the issue positions of the competing parties, I estimate a series of dichotomous logit equations predicting preferences in paired comparisons among the Labour, Alliance, and Conservative parties. I discuss my empirical results, with special emphasis on the relative influence of party identification and issue preferences upon the vote choice. Next, I employ these equations to derive vote probability estimates for citizens with varying party and issue orientations; by comparing these predictions with the respondent's reported vote, I test the independence from irrelevant alternatives assumption. I then outline a method which can be used to estimate vote-maximizing parties' optimal issue locations, and deduce these locations for the Conservative, Alliance, and Labour parties.

II.A: The Logit Equations

The paired comparison functions I employ are the logodds equations 10-12, which predict the voter's preferences as a function of his comparative issue evaluations and party identification. Issue preferences are defined as the respondent's self-placement on seven-point issue scales for each of

the five issues included in the BNES.[4] Party policy positions are assumed to correspond to the mean perceptions of the respondents (party and respondent issue positions have been rescaled from the 21-point scales employed in the BNES to the more familiar seven-point scales used in the American National Election Studies). In calculating citizens' comparative issue evaluations $J_{A/C}$, $J_{L/C}$, and $J_{L/A}$, I assume quadratic functions with respect to issue losses, as in equations (8) and (9). In addition to the five issue variables, the equations include three dummy variables for respondent party identification. These variables take on the value one if the respondent indicates he identifies with the party, and zero otherwise.[5] Finally, the citizen's preference in the paired choice between the two rejected parties is inferred from his party ranking data.

Table 1 reports the mean position of the respondents and their perceptions of the parties' issue positions for the five issues included in the analysis. As indicated by the three left hand columns, the voters order the Labour, Alliance, and

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[4] A sixth issue, which concerned citizens' preferences for a national crime policy, was included in the initial multivariate analysis but subsequently dropped because its estimated impact upon the vote was insignificant.

[5] In this paper I do not consider the reciprocal relationship between citizens' issue preferences and party identification, although this subject clearly has great bearing on the relative importance of each variable in determining the vote. If partisanship drives issue preferences, then our model overstates the importance of issues; if issue preferences drive partisanship the reverse is true. However, to untangle this question empirically requires a separate paper, and, because previous studies report conflicting results, I doubt that such a paper would settle the issue. For a treatment of this subject in the British context see Franklin (1985); Jackson (1975), Markus and Converse (1979), and Erikson (1982) have analyzed the question with American survey data.

TABLE 4.1: MEAN RESPONDENT ISSUE POSITIONS AND PERCEIVED PARTY ISSUE POSITIONS, BRITAIN, 1983

	MEAN RESPONDENT PERCEPTIONS OF PARTY POSITIONS			
	LABOUR	ALLIANCE	CONSERV.	MEAN RESP. POSITION
LEFT-RIGHT	2.5	3.6	5.1	3.7
HEALTH	2.5	3.4	4.9	3.5
INFLATION/ UNEMPLOYMENT	1.9	3.0	4.8	2.7
NATIONALIZE INDUSTRY	2.0	3.9	5.9	4.8
NUCLEAR WEAPONS	1.9	3.6	5.8	3.9

left hand columns, the voters order the Labour, Alliance, and Conservative parties from left to right on every issue; furthermore, the distance between the Labour and Conservative parties (as perceived by the voters) is at least 2.4 points on the seven-point issue scales for each issue. The right hand column reports the voters' mean preferred position, which falls between the Labour and Conservative positions on all issues, and in each case lies closest to the Alliance position.

Table 2 reports the results of the dichotomous logit analyses described above. Note that for the five issues listed in the table, the reported coefficient is a maximum likelihood estimate of the effect of the citizen's comparative issue evaluation upon his preference in a paired comparison between those two parties. With the exception of the nuclear weapons issue, all the issue coefficients are positive and significant (except the Health issue coefficient in the Alliance-Labour paired comparison, which is positive but not statistically significant). This is precisely the result one expects, although it should give pause to analysts who discount the influence of issues upon the vote choice (Heath et al., 1985; Rose & McAllister, 1986). Although these issue coefficients appear minute compared with the coefficients associated with the respondent's political party affiliation, because these issues represent quadratic loss differentials small coefficients may translate into substantial impacts upon the vote. I return to this subject shortly.

The effects of party identification are powerful and operate in the expected direction. The intercept term in each equation represents the political independent's preference in each paired comparison. The positive intercepts in both sets of comparisons involving the Conservative party indicate that the Conservatives enjoyed an advantage over each of their rivals based upon variables omitted from the equations. This

TABLE 4.2: DICHOTOMOUS LOGIT ANALYSES OF BRITISH VOTING, 1983

	LOG_e(ALL./LAB)	LOG_e(CONS./LAB)	LOG_e(CON./ALL.)
INTERCEPT	0.27 (0.31)	0.73 (2.54)	0.28 (1.10)
CONSERV.	1.21 (2.22)	3.83 (6.98)	2.77 (4.23)
ALLIANCE	2.11 (3.18)	-0.14 (-0.27)	2.25 (3.77)
LABOUR	-2.59 (-2.85)	-3.25 (-3.40)	-0.38 (-0.67)
LEFT-RIGHT	.03 (4.59)	.03 (3.96)	.03 (5.59)
HEALTH	.02 (1.21)	.02 (1.94)	.03 (2.63)
INFLATION/ UNEMPLOYMENT	.04 (3.09)	.02 (2.37)	.04 (2.01)
NATIONALIZE	.03 (5.70)	.04 (3.51)	.03 (2.79)
NUCLEAR WEAPONS	.01 (0.66)	.03 (1.99)	.00 (0.18)
pseudo R^2	.49	.60	.43

finding squares with previous accounts of the 1983 election, which found that the Conservatives won decisively without broad-based support for their policies (Crewe, 1989; Crewe & Searing, 1988; Franklin, 1985). It is surprising, at first glance, that allegiance to the Conservatives structures voters' preferences in the paired comparison between the Alliance and Labour (the coefficient associated with Conservative party membership in the Alliance/Labour paired comparison function is 1.21). Upon reflection, however, this finding makes sense. The Conservative and Labour parties are antagonists of long standing; it is natural that members of each party have acquired a distaste for their rivals, a distaste which does not extend to the Alliance.

II.B: Estimating Vote Probabilities: a Rough Test of the Independance of Irrelevant Alternatives Property

By employing equation (4), the empirical results reported above allow us to infer respondents' choice probabilities in paired comparisons. These dichotomous choice probabilities can in turn give us the voter's choice probabilities over the three competing British parties. To infer these probabilities, we make use of the IIA property, which holds that the voter's choice over three or more alternatives can be expressed as a function of his choice probabilities in paired comparisons:

$$P(L/\{L,A,C\}) = \frac{1}{1 + \frac{P(A/\{L,A\})}{P(L/\{L,A\})} + \frac{P(C/\{L,C\})}{P(L/\{L,C\})}} \qquad (13).$$

Equation (13) can be expressed in terms of logit equations (10)-(12) as follows:

$$P(L/L,A,C) = \frac{1}{1 + e^{b_{21} + b_{22}J_{L/C} + b_{23}L + b_{24}A + b_{25}C} + e^{b_{31} + b_{32}J_{L/C} + b_{33}L + b_{34}A + b_{35}C}} \quad (14).$$

Note that equations (13) and (14) hold only if the independence from irrelevant alternatives property is satisfied; if the IIA property is violated, this result will not hold. As the hypothetical example in which two "Green" parties competed with a Conservative party illustrated (see chapter two), when alternatives are not independent the random utility model misspecifies citizens' predicted vote probabilities, and in these situations citizens' observed voting behavior will not match the model's predictions. Therefore, one simple criterion for judging whether the results of our dichotomous logit analyses support the IIA property is the following: if the IIA property is satisfied, then the overall vote shares predicted for each party should match the vote shares the parties actually obtain.[6]

Tables 3A and 3B compare the party vote shares predicted by the model with the survey respondents' reported votes in

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[6] It is in fact possible to contrive situations in which individuals' predicted choices are accurate in the aggregate even though the IIA property is violated for individuals, if individual deviations from the model's assumptions "cancel each other out" (see Wrigley, 1985, chapter 10). However, this result occurs only in contrived scenarios which appear irrelevant to elections. Nonetheless, I should emphasize that the test of the IIA property I propose is not definitive; should the predicted vote shares generated by our model prove accurate, we may place greater confidence in the IIA assumption, but cannot regard it as proven.

the 1983 election, stratified by the voters' positions on the issue of nationalization of industry.[7] These predicted vote shares are generated according to the assumption that citizens' preference orderings satisfy the IIA property; therefore, the degree of correspondence between the predicted and observed vote shares bears on the question of whether this assumption is justified. Table 3A shows the results for the survey sample as a whole. The parties' predicted vote shares are a nearly perfect match with the actual vote shares obtained, which tends to support the assumption of independence from irrelevant alternatives. This result could be misleading, however, because the logit equations we employ include the respondent's party identification, which is highly correlated with the vote; any multivariate analysis which includes these variables would predict voting quite accurately. A fairer test for the model is to examine its success in predicting the vote choices of political independents. The results are reported in table 3B. Although the fit between predicted and observed vote shares is considerably looser than in table 3A, the results remain impressive. Despite the diminished

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[7] In assigning vote probabilities in a multiparty election based upon functions estimated via dichotomous logit analyses, a statistical issue arises concerning the relationship between these functions. The equality

$$\log_e(L/A) = \log_e(L/C) - \log_e(A/C) \quad ,$$

implies that in a three-party election (which features three possible paired comparisons), it is necessary to estimate only two such functions in order to infer the third. However, because the paired comparison functions reported in table 2 employ different issue comparison variables, we cannot employ this procedure. I therefore employ all three estimated logodds equations to calculate the probabilities reported in tables 3A-3B. The result is that citizens' estimated vote probabilities do not necessarily sum to one; however, in the empirical analysis the sum of each voter's estimated probabilities was between .984 and 1.022, suggesting that these deviations from unity result from statistical "noise" in the estimation of the paired comparison functions.

TABLE 4.3A: PARTIES' PREDICTED AND ACTUAL VOTE SHARES STRATIFIED BY RESPONDENT'S POSITION ON NATIONALIZATION OF INDUSTRY: ALL VOTERS

		LABOUR		ALLIANCE		CONSERVATIVE	
N	ISSUE POSITION	PRED.	ACTUAL	PRED	ACTUAL	PRED.	ACT.
284	1	.70	.74	.16	.13	.15	.13
149	2	.68	.72	.16	.14	.17	.14
144	3	.53	.58	.26	.20	.20	.21
1034	4	.32	.32	.35	.38	.31	.29
336	5	.13	.11	.33	.36	.54	.53
386	6	.10	.11	.23	.22	.68	.66
940	7	.10	.08	.17	.18	.74	.74
		.28	.28	.25	.27	.46	.45

TABLE 4.3B: PARTIES' PREDICTED AND ACTUAL VOTE SHARES STRATIFIED BY RESPONDENT'S POSITION ON NATIONALIZATION OF INDUSTRY: INDEPENDENTS

		LABOUR		ALLIANCE		CONSERVATIVE	
N	ISSUE POSITION	PRED.	ACTUAL	PRED	ACTUAL	PRED.	ACT.
37	1	.51	.41	.29	.38	.20	.23
40	2-3	.37	.40	.33	.25	.30	.35
117	4	.30	.25	.30	.34	.34	.40
81	5-6	.13	.07	.29	.34	.57	.59
86	7	.10	.12	.20	.29	.70	.59
		.30	.27	.30	.32	.40	.41

sample size most estimates are within a few points of the observed vote shares, and the overall proportion of independents predicted to vote for each party is with 3% of the observed proportion in each case.[8]

As outlined in footnote 5, these results cannot prove that the IIA property was satisfied in the 1983 British election; they are, however, entirely consistent with this conclusion. What we can say is that in the 1983 election, British voters in the aggregate behaved as if their preference orderings satisfied the IIA condition, and that the circumstances in which this behavior would be observed if the IIA condition was in fact violated appear farfetched (see Wrigley, 1985, for an extended discussion of this issue). In this spirit I employ the IIA property to explore the relationship between citizens' issue preferences and party election strategies in the 1983 British election.

Section III: Optimal Party Issue Locations in the 1983 British General Election

We may estimate the vote-maximizing issue locations for the Labour, Alliance, and Conservative parties by combining our empirical results from section I with the theoretical analysis of party issue strategies from chapter three (pages 43-53). With respect to the Labour party , for instance, the number of voters V(L) in the set (1,2,...m) it can expect to receive can be expressed as

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[8] In addition to the results reported in Table 2, I stratified the parties' predicted and actual vote shares by respondents' positions on the four other issues included in the logit analysis. The degree of predictive accuracy was in every case similar to the results reported for the nationalization issue.

$$V(L) = \Sigma_{i=1}^{n} P_i(L/(L,A,C)) \qquad (15).$$

To maximize its vote share, the Labour party must find the set of issue positions $(l_1,l_2,...l_j)$ that maximize V(L). The Labour party maximizes this function when the partial derivatives of V(L) with respect to $(l_1,l_2,...l_j)$ equal zero. Recall from chapter three that, if the Labour party is already at equilibrium on all issue dimensions except issue j, this condition implies that the solution is the weighted mean l^*_j, which satisfies the condition

$$l^*_j = \frac{\Sigma_{i=1}^{n} w^*_{ij} l_{ij}}{\Sigma_{i=1}^{n} w^*_{ij}} \quad , \qquad (16)$$

where

$$w_{ij} = (b_{ij})[P_i(A/(A,B,...N))][1 - P_i(A/(A,B,...N))] \qquad (17).$$

To discover the Labour party's optimum location on an issue dimension j, the analyst varies the party's issue position along this dimension in order to locate the mean voter preference, weighted by the voters' estimated issue weights with respect to the Labour party. Unfortunately, the movement of the Labour party along the dimension alters voters' estimated vote probabilities $P_i(L/(L,A,C))$, which in turn shifts their issue weights w^*_{ij}. It is these issue-driven shifts in voters' issue weights which render the search for the weighted mean complex, from the analyst's perspective.

In chapter three, my response to this problem was to study the results of computer-simulated elections. Unfortunately, this approach proves unmanageable when working with

empirical data. There is, however, an alternative approach for electorates which engage in little or moderate amounts of issue voting. If nonissue variables such as party identification and sociodemographic characteristics have an impact upon the vote which exceeds the impact of citizens' issue preferences, then voters' issue weights will vary only marginally in response to changes in the parties' issue positions, and can be viewed as "constants" by the analyst when computing parties' weighted mean positions.

To illustrate this point, consider Figures 1A and 1B, which graph the probability of a Conservative vote, and the derivative of this probability with respect to the respondent's evaluation of the Conservatives, as a function of his party identification and preference on the nationalization of industry issue. These probabilities and derivatives are calculated under the alternative assumptions that the voter identifies with the Conservative, Alliance, and Labour parties, and that he is a political independent. Note that while there is considerable variation across the derivatives in figure 1B as a function of the voter's party identification, there is very little with respect to his issue preference. Thus, the issue weight associated with independents is substantially higher than that for partisans of the Alliance, which is in turn higher than the weight for Labour and Conservative identifiers; however, the weights associated with Conservatives who favor and oppose nationalization of industry are virtually identical, and the same is true for voters who identify with the Alliance and Labour parties, and (to a lesser extent) independents.

If issue weights are unresponsive to variations in the voter's issue preference, then they must also be unresponsive to changes in the political party's issue position. The results reported in figure 1B suggest that, from the perspective of the analyst who seeks an electorally optimal position for the Conservative party, the issue weights assigned to

FIGURE 4.1A: ESTIMATED PROBABILITY OF VOTING FOR THE CONSERVATIVE PARTY, BY POLITICAL PARTISANSHIP AND PREFERENCE ON NATIONALIZATION. OF INDUSTRY

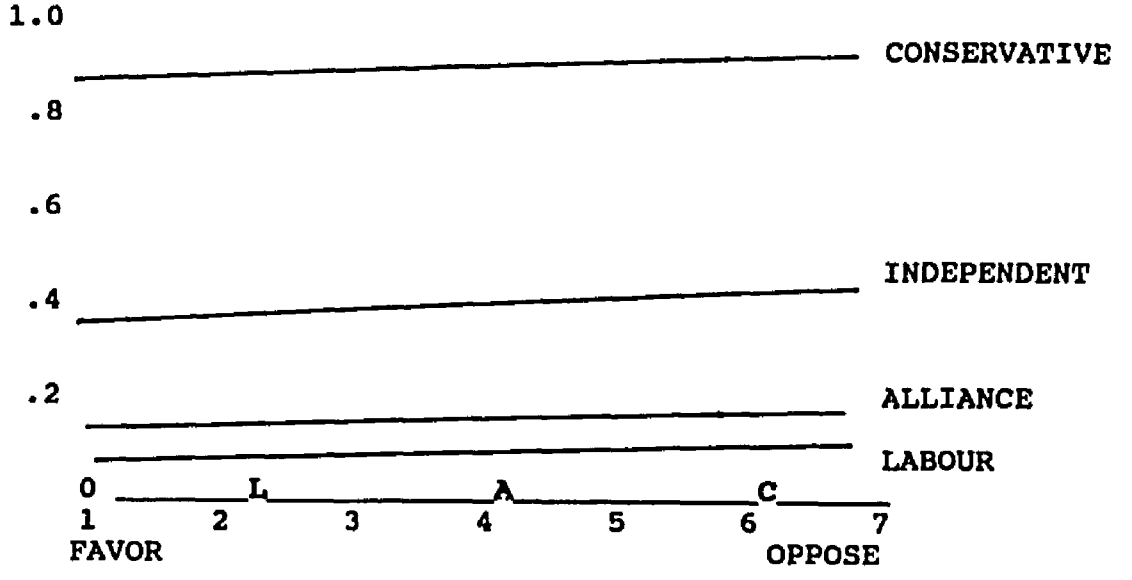
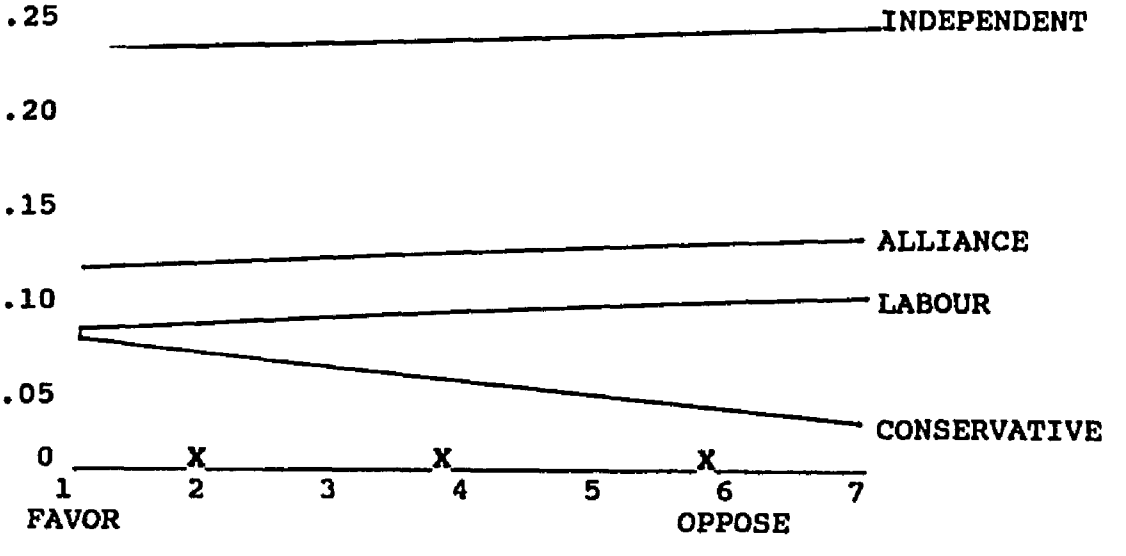


FIGURE 4.1B: DERIVATIVES OF ESTIMATED PROBABILITY OF VOTING CONSERVATIVE WITH RESPECT TO RESPONDENT'S ISSUE EVALUATION OF CONSERVATIVES, BY PARTY I.D.



different voters may be viewed as constant as the party's position is varied along the nationalization of industry dimension. In such situations, if we compute voter issue weights using only the nonissue components of the vote equations, and then employ these "constant" issue weights to calculate parties' optimal issue locations, we should obtain an estimate very near to the "true" optimum. Before discussing this point, however, we must ascertain whether the assumption of constant voter issue weights, which appears to be a reasonable approximation concerning voters' weights with respect to the Conservative party, applies equally well to the Alliance and Labour parties.

Figures 2A and 2B illustrate how a hypothetical voter's issue weights shift in response to changes in the position of the Labour and Alliance parties on the nationalization of industry issue. In each case the issue weight is calculated for a citizen who is located at two on the seven point scale, and who has no opinion on the other campaign issues (so that the nationalization issue is the only one which enters the calculation of the weight coefficient). By hypothesizing a relatively extreme voter issue position, we ensure a demanding test of the hypothesis that these weights are unresponsive to variations in parties' issue positions.[9] Figure 3A locates the Alliance and Conservative parties at their mean perceived locations (3.9 and 5.9, respectively), and, varying the position of the Labour party, plots the resulting issue weights with respect to the Labour party under the alternative assumptions that the voter identifies with Labour, the Alliance, the Conservatives, or is independent. The four issue

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[9] Because we vary each party's issue position over the entire issue space [1-7], and the parties' perceived locations are almost perfectly symmetric with respect to the center, it makes little difference whether we locate the voter at two or six on the scale; placing the voter at six would reverse the sign of the slopes of the issue weight curves without substantively altering our conclusions.

FIGURE 4.2A: ISSUE WEIGHT FOR LABOR PARTY, BY RESPONDENT PARTY I.D. VOTER LOCATED AT 2 ON NATIONALIZATION OF INDUSTRY SCALE.

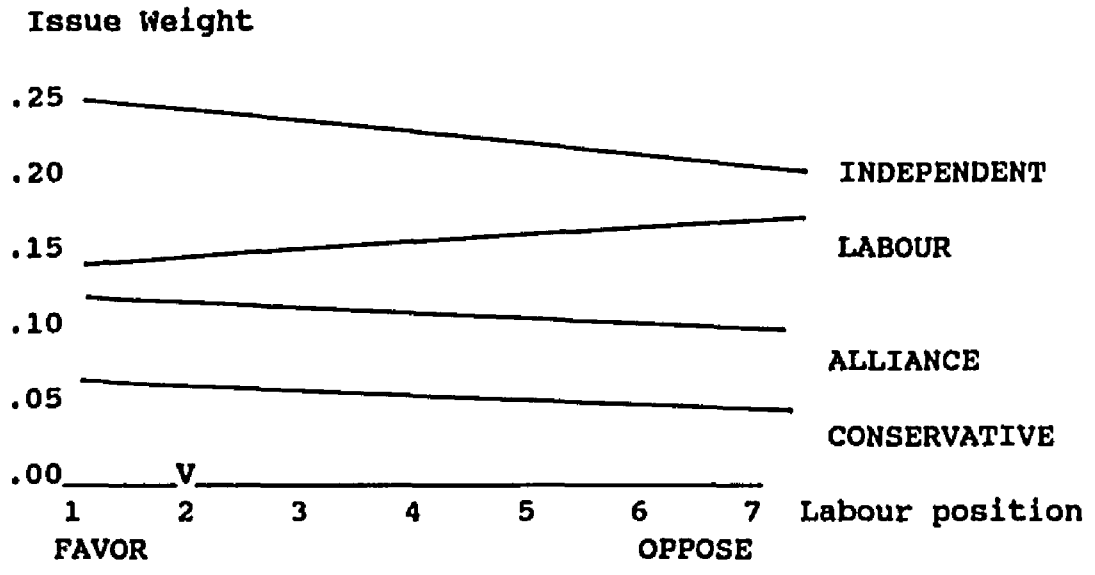
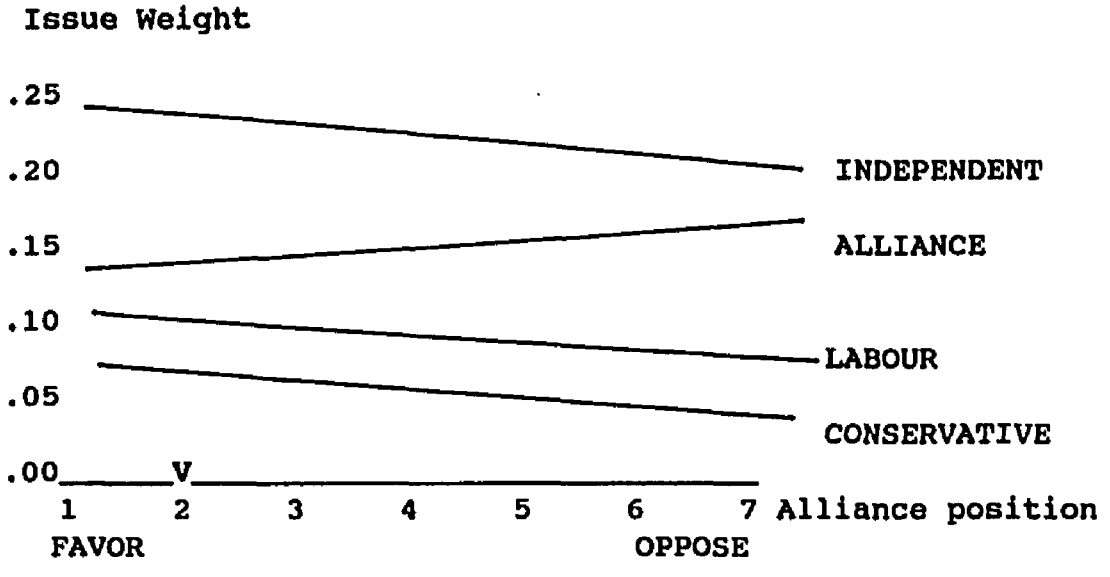


FIGURE 4.2B: ISSUE WEIGHT FOR ALLIANCE PARTY, BY RESP. P.I.



weight slopes are nearly flat, indicating that voters' issue weights are not responsive to changes in the Labour party's position. Figure 3B confirms this result for voters' issue weights with respect to the Alliance.

Because the coefficients associated with voters' comparative evaluations on the nationalization of industry issue are larger, on the average, than those for the other issues (see table 2), voters' issue weights are actually more responsive to shifts in parties' positions on nationalization than on the other campaign issues. Since we have seen that voter issue weights were not responsive to party shifts on nationalization, it follows they were unresponsive to shifts on other issues, as well. I therefore proceed to calculate parties' optimal issue locations, under the simplifying assumption that these issue weights are constants determined by the voters' nonissue attributes.

To compute each voter's weight with respect to a specified party's issue position, I first compute the probability the respondent votes for the party based on her party identification (the lone nonissue attribute included in the paired choice comparison functions). I then calculate the derivative of this probability, and use this derivative as the weight the voter is assigned in the political party's electoral calculus. To illustrate this procedure, consider the case of a citizen who identifies with the Labour party. Based upon the logit equations presented in table 2, the "nonissue" probabilities that this individual will vote for each of the three parties are:

$$P(\text{votes Labour}) = \frac{1}{1 + e^{.73-3.25(\text{LABOUR})} + e^{.28-2.59(\text{LABOUR})}}$$

$$= .83$$

$$P(\text{vts Alliance}) = \frac{1}{1 + e^{.28-.38(\text{LABOUR})} + e^{-.27+2.59(\text{LABOUR})}}$$

$$= .09$$

$$P(\text{votes Cons.}) = \frac{1}{1 + e^{-.73+3.25(\text{LABOUR})} + e^{-.28+.38(\text{LABOUR})}}$$

$$= .07$$

The derivatives of these probabilities, with respect to the voter's evaluation of each party, are

$$dP(\text{votes Labour})/d(\text{Labour evaluation}) = .83\times(1-.83) = .14$$

$$dP(\text{votes Alliance})/d(\text{Alliance eval.}) = .09\times(1-.09) = .08$$

$$dP(\text{votes Conservative})/d(\text{Cons. eval.}) = .07\times(1-.07) = .07.$$

These derivatives then become the weights which are used to compute each party's optimal issue position.[10] The issue

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[10] This procedure in analogous to the method employed by Erikson and Romero to deduce spatial equilibria in two-candidate elections (1990, pp.1106-7). However, because such equilibria generally feature identical candidate issue positions, the issue evaluation component automatically drops out when estimating voters' issue weights. Therefore, in the two-candidate situation it is feasible to search for a global

TABLE 4.4: ISSUE WEIGHTS ASSIGNED TO VOTERS, AS A FUNCTION OF VOTER'S PARTY IDENTIFICATION

	RESPONDENT'S PARTY IDENTIFICATION			
RESPONDENT'S ISSUE WEIGHT	LABOUR	ALLIANCE	CONSERV.	INDEPENDENT
LABOUR	.14	.08	.04	.22
ALLIANCE	.08	.14	.05	.18
CONSERVATIVE	.07	.10	.08	.25

weights assigned to Conservatives, members of the Alliance, and independents are shown in table 4. Several points are worth noting. First, for each party, the issue weight assigned to independent voters is greater than that for political partisans, indicating that these voters should weigh particularly heavily when parties plot their issue strategies. Second, there is great variation in the issue weights assigned to different types of voters; from the perspective of the Conservative party, for instance, independent voters (issue weight=.24) "weigh" over three times as much as those who identify with the Labour party (issue weight=.07). Third, note these measures of voter responsiveness support the proposition developed in chapter three, that partisan voters are more responsive to their adopted party than its rivals.

These variations in voters' issue weights should drive parties' issue strategies to the extent different types of voters have differing policy preferences. If partisans of the three parties (as well as independents) have similar distributions of issue preferences, then the total vote weight at any issue location will be proportional to the number of voters who hold that issue position; in this case party strategists can plan under the simplifying assumption that all voter weights are equal, and the calculation of individual voter weights is unnecessary. This issue is addressed in Table 5, which shows voters' mean party issue weights, stratified by their attitudes towards increased nationalization of industry. If partisans of the competing parties in fact had similar preference distributions, then the mean voter issue weights would not vary as a function of citizens' ideological locations. In fact, these weights vary dramatically. From the perspective of the Labour party, voters located at the center

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equilibrium; I pursue the more modest goal of "roughly" estimating party spatial locations which should prove electorally advantageous.

TABLE 4.5: ISSUE WEIGHTS ASSOCIATED WITH VOTING FOR VARIOUS PARTIES, STRATIFIED BY RESPONDENT'S POSITION ON NATIONALIZATION OF INDUSTRY

RESPONDENT ISSUE POSITION	MEAN VOTER ISSUE WEIGHTS		
	LABOUR	ALLIANCE	CONSERVATIVE
1	.14	.13	.09
2	.14	.14	.08
3	.15	.12	.10
4	.12	.13	.10
5	.08	.10	.09
6	.06	.10	.09
7	.06	.08	.10
MEAN	3.98	4.58	4.88

of the issue scale are twice as responsive as voters on the far right (seven on the 7-point issue scale); this is because those voters on the right tend to be Conservatives, who vote unwaveringly for their chosen party, while the voters in the center are primarily members of the Alliance and political independents, whose voting decisions are more in doubt. From the Alliance party's perspective, as well, the preponderance of Conservatives on the right makes this issue location electorally unattractive.

The strategic implications of differentiating between voters according to their issue weights are summarized at the bottom of table 5, which averages these weighted voter means for each party. The Labour party's weighted mean is to the left of the Alliance, which is in turn to the left of the Conservative party. Of course, both the Labour and Conservative parties were perceived as being more "extreme" on these issues than their weighted issue means suggest was desirable; nonetheless, the finding that the parties' weighted means are consistent with their observed left-right ordering supports the proposition developed in chapter three, that party identification may act as a "brake" to prevent parties from deserting their supporters.

Table 6 reports the parties' mean weighted issue positions for the five issues included in the voting analysis. On every issue except left-right location, the weighted means of the Labour, Alliance, and Conservative parties are ordered from left to right, respectively. Note that the Labour party's position is invariably to the left of the voter mean; this is because, as noted earlier, the Labour party's own partisans weigh more heavily in its electoral calculus than members of the Alliance or Conservative parties. The Conservative party's weighted mean is near the voter mean on each issue. This is precisely what we would expect, since in the

TABLE 4.6: WEIGHTED PARTY ISSUE POSITIONS AND MEAN RESPONDENT POSITIONS, 1983

MEAN RESPONDENT POSITION WEIGHTED BY VOTER'S ISSUE WEIGHT

	LABOUR	ALLIANCE	CONSERV.	MEAN RESP POSITION
LEFT-RIGHT	3.3	3.7	3.6	3.7
HEALTH	3.1	3.4	3.9	3.5
INFLATION/ UNEMPLOYMENT	2.1	2.4	2.7	2.7
NATIONALIZE	4.0	4.6	4.9	4.8
NUCLEAR WEAPONS	3.2	3.6	3.9	3.9

Conservative party's voting calculus members of all three parties are weighed (approximately) equally.

CONCLUSION

The results reported in this chapter suggest that the random utility model is a potentially valuable tool for analyzing multiparty elections. At the empirical level, it appears that the key assumption which informs the theory -- the independence from irrelevant alternatives property -- is satisfied with respect to voting behavior in the 1983 British general election. Furthermore, our analysis of party issue strategies supports the proposition developed in chapter three, that voters' partisan biases anchor party issue strategies.

This chapter completes my investigation into the link between behavioral models of the vote and spatial models of multiparty competition. I turn next to the second set of collective dilemmas outlined in chapter one. These concern the possibility that, from the perspective of elected officials, public opinion may be impossible to implement or interpret.

CHAPTER 5: IDEOLOGICAL CONSISTENCY IN INDIVIDUALS AND GROUPS: A BEHAVIORAL PERSPECTIVE

Summary: In a recent series of papers, Feld and Grofman (1988, 1991) have argued that a group may exhibit an ideological basis for its preferences even when many of its members appear to lack ideological orientations. I extend this argument by linking the study of collective ideology to the Diffused Ideology and Issue Publics models of mass political orientations developed in chapter two. I explore each model's implications for both the standard approach to the study of collective ideology and the new perspective advanced by Feld and Grofman. I conclude that under both the Issue Publics and the Diffused Ideology models, the mass public will display collectively ideological preferences which preclude voting cycles. This result provides insights into how a public whose members are largely "innocent of ideology" may nonetheless be faithfully represented by elected officials. I illustrate my arguments with survey data drawn from France, Britain, and the United States.

As outlined in chapter one, the results reported by behavioral researchers and social choice theorists raise the possibility that elected representatives can neither interpret nor implement the public's collective preferences. From the behaviorists' perspective, many empirical studies on citizens' political preferences report low levels of information and attitude constraint in the mass public (e.g., Achen, 1975; Feldman and Zaller, 1992; Jackson, 1983); if individuals' preferences are as unstructured as these analyses suggest, then it appears intuitively plausible that the public's collective preferences -- e.g., public opinion -- will be equally unstructured, and hence difficult for elected officials to interpret. Such an outcome threatens the link between the public and elected representatives, and thereby

raises the disturbing possibility that representative democracy is impossible.

Social choice theorists, meanwhile, have identified the phenomenon of voting cycles, which may undermine democratic representation processes even in situations where most individuals do possess structured preferences. When citizens' aggregate preferences cycle (e.g., when there is no alternative which would defeat all others in a series of pairwise votes), then majority rule processes should be chaotic, since representatives will be unable to implement any policy which some majority would not wish to overturn. Social choice theorists have demonstrated that the existence of voting cycles is precluded only under highly restrictive conditions (Black, 1958; Sen, 1966), and furthermore, that when voters' preferences are drawn randomly from the set of all possible preference orderings, cycles are virtually guaranteed in voting over large numbers of alternatives (McKelvey, 1979; Schofield, 1978).

In a recent series of papers, however, Feld and Grofman (1986, 1988, 1991) have argued that a group can be characterized as exhibiting an ideological basis for its preferences even in situations where many or most of its members possess preferences which are inconsistent with the underlying ideological continuum. These collective preference structures, moreover, preclude voting cycles. This argument is important because it relaxes the ideological requirements individuals must satisfy in order than public opinion may be meaningful to representatives (because it is structured) and result in stable majority choices (because it does not cycle). In so doing, the social choice theorist's focus on preference aggregation is married to the behaviorist's empirically-grounded view that individuals have limited ideological capacities.

In this chapter I propose to extend the dialogue in-

itiated by Feld and Grofman in three ways. First, I link my exploration of collective ideological consistency to the Issue Publics and the Diffused Ideology models of mass political orientations developed in chapter two. By deducing the collective implications of specific behavioral models, I explicitly link behavioral research and social choice theory. Second, I explore each behavioral model's implications for the "traditional" perspective on collective ideological consistency, in which groups are viewed as ideological to the extent they contain individuals with ideologically consistent preferences. Third, I reinterpret Feld and Grofman's conclusions concerning collective ideological consistency in light of these behavioral models. This analysis supports their contention that collectively ideological preferences will frequently exist, but implies different preference structures than the ones these authors postulate.

I begin by briefly reviewing the Diffused Ideology and Issue Publics models, and discuss each model's relationship to the left-right ideological continuum.

Section I: The Implications of the Issue Publics and Diffused Ideology Models For Political Preferences Along the Left-Right Dimension.

Recall from chapter two that under Converse's Issue Publics model of mass political orientations, citizens can be divided into an ideological minority, which cares passionately about a particular dimension, and an apolitical majority indifferent to the dimension. Under the Diffused Ideology model, by contrast, citizens fall at various points along a continuum, rather than being concentrated at the extremes.

For the remainder of this discussion, I assume that a particular ideological continuum (which I label the left-right

continuum for convenience) has been specified, and that the set of alternatives available to the citizen (e.g., political parties or candidates) can be arrayed along it. To link the Diffused ideology and Issue Publics models to voters' preferences over these ideologically-ordered alternatives, I employ the assumptions developed in chapter two. Specifically, I assume that citizens evaluate alternatives on the basis of their left-right locations to the extent they believe this dimension is important. At one extreme, the ideological minority in Converse's Issue Publics model evaluates alternatives exclusively on the basis of ideology; these ideologues therefore invariably possess single-peaked preferences with respect to the specified ordering of alternatives. At the other extreme, apolitical voters' preferences are unrelated to the ideological continuum, and therefore appear random, from the perspective of the analyst.[1] In the language of social choice theorists, this group of apoliticals represents an impartial culture. A voter who falls between these extremes -- as posited by the Diffused Ideology model -- will consider both the candidates' (or parties') ideological positions and "non-ideological" factors when choosing among alternatives.

I analyze these voters' contrasting preferences via the probabilistic voting functions introduced in chapter two. These functions separate a voter i's utility for a hypothetical candidate or political party A, $U_i(A)$, into an ideology

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[1] This assumption that the ideological minority evaluates alternatives exclusively on the basis of ideology departs somewhat from the exposition in chapter two, in which members of an issue's public were assumed to place a heavy, but not necessarily exclusive, emphasis on that issue when evaluating alternatives. I employ this more simplistic formulation here because 1) it allows me to compare my results directly with Feld's and Grofman's, and 2) it seems more plausible that voters' preferences would be completely determined by a left-right (or liberal-conservative) ideological dimension than by a single issue dimension.

component $I_i(A)$, which represent the voter's quadratic loss with respect to A's position along the left-right dimension, and an error term ϵ_{iA} generated from a type I extreme value distribution:

$$U_i(A) = I_i(A) + \epsilon_{iA} \quad , \qquad (1)$$

$$I_i(A) = b_i(x_i - a)^2 \quad , \qquad (2)$$

where b_i in equation (2) represents the salience of the left-right dimension to voter i, x_i his position on that dimension, and a the position of candidate A. The probability $P_i(A/S)$ that voter i prefers candidate A when choosing from the set S=(A,B,...,N) is then given by the function:

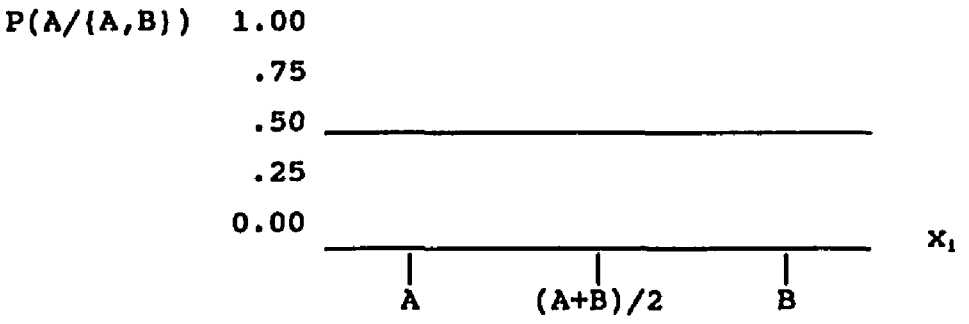
$$P_i(A/S) = \frac{e^{I_i(A)}}{e^{I_i(A)} + e^{I_i(B)} + \ldots + e^{I_i(N)}} \qquad (3).$$

To refresh the reader's memory, the preferences associated with the different types of voters postulated by the Issue Publics and the Diffused Ideology models, which were developed in chapter two, are reproduced in figure 1. Figures 1A and 1B plot the probabilities P(A/(A,B) that the apoliticals and ideologues posited in Converse's Issue Publics model prefer candidate A to candidate B, as a function of their positions along the left-right continuum. In figure 1A, an apolitical chooses randomly between A and B. In figure 1B, an ideologue prefers A if and only if A's platform lies nearest his preferred point. Figure 1C, which represents the voting function for a citizen motivated by both ideology and nonideological motivations, as postulated by the Diffused Ideology model, takes the form of an S-shaped logistic ogive. The slope of this function depends on the salience b_i the

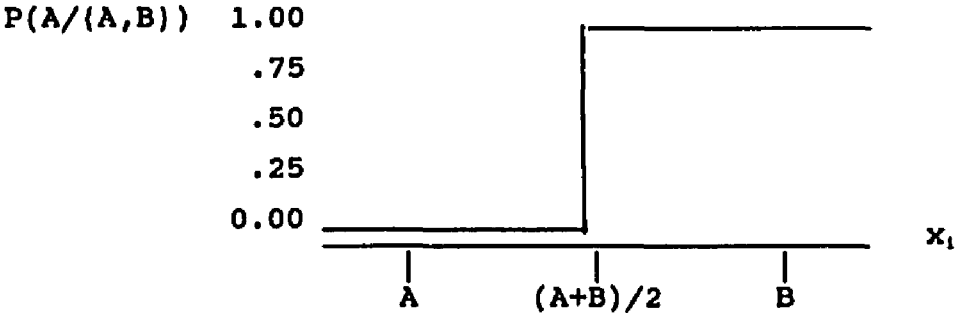
FIGURE 5.1: TWO COMPETING MODELS OF CITIZENS' POLITICAL PREFERENCES

BLACK AND WHITE MODEL

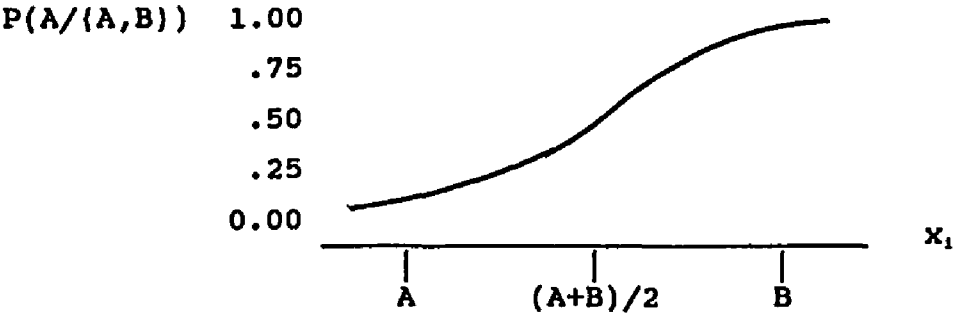
1A: APOLITICAL CITIZEN



1B: IDEOLOGICAL CITIZEN



1C DIFFUSED IDEOLOGY MODEL



voter attaches to the left-right dimension. If b_i is small, the voter attaches little importance to the ideological dimension, and the S-curve flattens out, resembling the apolitical voter's constant probability function illustrated in figure 1A. If b_i is large, the voter resembles an ideologue, and the S-curve will resemble the step-function illustrated in figure 1A.

The preceding exposition has merely retraced the ground covered in chapter two. There is, however, one new result on voters' preferences which I shall now introduce. This result refers not to the voter's preferred party (e.g., her vote choice), but to her complete ranking of all the available alternatives:

lemma one: The probability that voter i has the preference ordering A>B>...>N, $R_i(A>B>...>N)$, can be represented as follows:

$$R_i(A>B>...>N) = P_i(A/S) \times P_i(B/S-A) \times ... \times P_i(N-1/(N-1,N)) \quad (4).$$

PROOF: See Rivers (1988).

For instance, when ranking three candidates A, B, and C, if the probability that voter i prefers A to both B and C is .50, and the probability she prefers B to C is .70, then the probability her preference ordering is A>B>C is $(.70)\times(.50) = .35$.

Equations 1-4 imply that citizens' choice probabilities are "single-peaked", in the sense that citizens are progressively less likely to prefer alternatives as they are further from their ideal points in either direction; moreover, by employing the quadratic loss function with respect to ideology

(equation 2), we ensure that voters' ideological losses (and hence choice probabilities) are symmetric around these ideal points. Ordinarily, such restrictive assumptions would limit the generalizability of our results. However, the results I derive for the Diffused Ideology model are essentially negative, in that they demonstrate that certain aggregate properties do not hold under the assumptions of equations 1-4; clearly, if these negative results obtain under the restrictive assumptions, they obtain under less restrictive formulations as well. The one "positive" result I obtain (reported in Section III.C) is reanalyzed in the appendix under a less restrictive choice model.

I begin with the "standard" approach to the study of group ideology, which treats groups as ideologically consistent to the extent that their members are consistent. I shall argue that this approach has merit under the Issue Publics model, but is worthless when the Diffused Ideology model describes citizens' preferences.

Section II: Implications for the Study of Ideology in Individuals and Groups: the Standard Approach

Following Feld and Grofman (1988), I shall say that an individual has ideologically consistent preferences for a set of choices arrayed along the left-right continuum if her preference ordering is single-peaked with respect to that ordering -- i.e., she has a most desired alternative and prefers each of the other alternatives less as they are further away from the preferred alternative in either direction. For example, if three alternatives A, B, and C are arrayed from left to right, then four preference orderings (ABC, BAC, BCA, and CBA) are ideologically consistent, and the two others (ACB and CAB) are ideologically inconsistent. To see that ACB is ideologically inconsistent (e.g., non-single-peaked), note that if A is the voter's first choice, then

since A is to the left of B, the voter must be located to the left of B as well, in which case she must be closer to B than to C along the ABC continuum. A similar chain of reasoning demonstrates that CAB is ideologically inconsistent.

Most approaches to the study of ideology in groups focus on the ideological orientations of individual group members. From the perspective of such studies, a group is viewed as ideological to the extent that its members are, and therefore the degree of group ideology can be ascertained simply by counting the number of individuals with ideologically consistent preferences or with some form of ideological self-identification. This simple "counting" approach is standard in the political science literature (i.e., Converse, 1964; Converse and Pierce, 1986; Fleishman, 1986; Hamill and Lodge, 1986). Other, more sophisticated methodologies which have been used to analyze group ideology, such as Guttman scaling and factor analysis, also focus on the degree to which a single (or at most a few) dimensions can explain the choices of individual group members (Feld and Grofman, 1988).

II.A: Ideological Preferences Under the Issue Publics Model.

Under the Issue Publics model, the ideological minority invariably possess ideologically consistent preferences, since these preferences are determined entirely on the locations of the alternatives along the ideological continuum. The preference orderings of apoliticals, meanwhile, are random, and will therefore be ideologically consistent (e.g., single-peaked) with only chance frequency. When choosing among three alternatives, for instance, the probability that an ideologue has ideologically consistent preferences is 1.0, and the probability an apolitical has such preferences is 2/3, since there are four orderings which are single-peaked (ABC, BAC, BCA, CBA) and two which are non-single-peaked (ACB and CAB) with respect to the specified continuum ABC.

The fact that there exist two different types of voters with known (and fixed) probabilities of exhibiting ideologically consistent preferences simplifies the traditional approach to the study of ideology in groups. By counting the proportion of citizens in a population with ideologically consistent preferences, we may deduce the proportion of ideologues by using the following approach. Let S be the proportion of the population with ideologically consistent preferences over n alternatives. Since all preference orderings are equally likely among apoliticals, the proportion of apoliticals with single-peaked preferences is equal to 2^{n-1} (the number of single-peaked orderings over n alternatives) divided by n! (the number of possible orderings). Therefore, when I is the true proportion of ideologues in the population (all of whom possess single-peaked preferences) and A the true proportion of apoliticals, we may estimate the proportion by making use of the following equalities:

$$\begin{cases} I + A = 1.0 \\ I + (2^{n-1}/n!)A = S \end{cases} \quad ==> \quad I = \frac{S - (2^{n-1}/n!)}{1 - (2^{n-1}/n!)} \qquad (5).$$

Thus, if 80% of a given population has ideologically consistent preferences over three alternatives (e.g., S=.80 and n=3), the proportion of ideologues in the population would be estimated at $(.80-2^{3-1}/3!)/(1-2^{3-1}/3!) = .40$.[3]

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[3] This method is analogous to the approach Converse (1964) employed to determine the proportion of respondents with meaningful attitudes with respect to various items in the 1956-58-60 American panel study. Using the assumption that one part of the population answered any given item randomly while the remainder gave perfectly consistent answers in each of the three waves of the survey, Converse subtracted the proportion of respondents who would give consistent answers by chance from the observed proportion of consistent respondents. He posited that the difference represented the proportion of respondents with true attitudes.

This chain of reasoning leads us to our first proposition:

PROPOSITION 5.1: Under the Issue Publics model, the proportion of voters with ideological preference orderings allows the analyst to estimate the extent that the group is ideological.

Using equation (5), we may also estimate the probability that an individual with ideologically consistent preferences is in fact an ideologue. This probability P(I) is simply equal to (I/S), the estimated proportion I of ideologues in the population (as given by equation (5)), divided by S, the observed proportion of the population with ideologically consistent preferences:

$$P(I) = I/S = \frac{S - (2^{n-1}/n!)}{S[1 - (2^{n-1}/n!)]} \qquad (6).$$

In the preceding example, for instance, in which 80% of the population had single-peaked preferences over three alternatives, the probability that a voter with single-peaked preferences is an ideologue would be estimated at $(.80-2^{3-1}/3!)/.80(1-2^{3-1}/3!) = .50$.

This suggests our second proposition:

PROPOSITION 5.2: Under the Issue Publics model, an individual's preference ordering is a useful indicator of the strength of his ideological motivations.

Propositions one and two suggest that, when the analyst has strong theoretical reasons for believing that the Issue

Publics model describes the distribution of ideological motivations in a population, an examination of citizens' preference orders provides useful information about the extent to which the group is ideological. I now show that this is not the case under the Diffused Ideology model.

II.B: Ideological Tendencies Under the Diffuse Ideology Model.

Figure two illustrates a situation in which a voter V is located to the left of parties A, B, and C, which are arrayed from left to right along the left-right dimension. Party A is far to the left of B, which is in turn slightly to the left of C. In this situation, an ideologue in the Issue Publics model would invariably have the single-peaked preference ordering ABC. However, this is not the case under the Diffused Ideology model, which posits that voters possess both ideological and nonideological motivations. Given the proximity of parties B and C, for instance, it is plausible that voter V could prefer C to B, even if he is motivated primarily by ideology. This choice could result if V is unable to distinguish between the parties' positions, or if, given B's small advantage over C on ideological grounds, some trivial "nonideological" factor is sufficient to shift the voter's preference to C.

FIGURE 5.2: HYPOTHETICAL PLACEMENT OF VOTER AND PARTIES

Suppose now that our hypothetical voter V is in fact primarily motivated by ideology, and therefore prefers the ideologically proximate party A to the ideologically distant parties B and C with a probability $P(A/(A,B,C)) = .99$, which approaches certainty. Suppose further that due to the

ideological similarities of parties B and C, the probability P(C/(B,C)) that the voter prefers C to B equals .40, despite C's (minute) disadvantage on ideological grounds. Given these hypothetical choice probabilities, the probability that V has the non-single-peaked preference order ACB, R(A>C>B), can be deduced from equation (3) as follows:

$$R(A>C>B) = P(A/(A,B,C))\times P(C/(B,C)) = (.99)\times(.40) - .40.$$

In this hypothetical example, the probability that V has the ideologically inconsistent preference ordering ACB is approximately .40. Yet if V's preferences were entirely random, the probability she would have an ideologically inconsistent ordering would be only 1/3 (since two of the six possible preference orderings, ACB and CAB, are non-single-peaked). Paradoxically, V's ideological motivations actually increase the probability her preferences will appear unstructured to the analyst. This "paradox of ideologically inconsistent preferences" suggests the following propositions:

PROPOSITION 5.3: Under the Diffused Ideology model, a voter's preference ordering is not a reliable indicator of the strength of his ideological motivations.

PROPOSITION 5.4 (corollary to 5.3): Under the Diffused Ideology model, the proportion of individuals with ideologically consistent preferences is not a reliable indicator of the extent to which the collectivity is ideological.

II.C: An Empirical Example of the "Paradox of Ideologically Inconsistent Preferences."

The preceding example demonstrates that it is possible, in theory, to concoct situations in which the probability that

a voter has single-peaked preferences declines as her ideological motivations increase. The student of individual and collective ideology may nonetheless view this demonstration as essentially a technical complication, which has little chance of occurring in real-world contexts. However, an analysis of respondents' preference orderings in the 1988 French Presidential Election Study suggests that this paradox must be taken seriously.

In the 1988 French presidential election, voters were asked to choose from among five major parties: the Communists, Socialists, UDF (Union Democratique Francais), RPR (Rassemblement Pour La Republique), and National Front. The left-right ordering of these parties, as perceived by most political analysts (e.g., Pierce, 1993; Schlesinger and Schlesinger, 1990) was Communist-Socialist-UDF-RPR-National Front. Given this continuum, a voter's preferences over any subset of these parties would be ideologically consistent only if it was single-peaked with respect to the above ordering.

What is interesting about this election, from our perspective, is not merely the specified left-right ordering of parties, but the parties' relative proximities along this continuum. Two parties, the UDF and RPR, were regarded as "center-right"; among sophisticated political observers, a consensus existed that while the RPR was further to the right, both parties shared similar philosophies and platforms -- i.e, were "ideologically proximate." The structure of this situation strongly resembles the hypothetical example from 3.b., in which the ideological proximity of two parties caused voter V, who was strongly motivated by ideology, to have ideologically inconsistent preferences with a probability that exceeded chance. This fortuitous event enables us to test the "paradox of non-single-peaked preferences" in a historical setting.

In the 1988 French Presidential Election Study, conducted

by Pierce in conjunction with SOFRES, respondents were asked to place the five major French parties along a left-right continuum, and to indicate their feelings towards each of the parties by choosing a number from 0 to 100 (with zero indicating the least positive feelings). The respondents' mean left-right placements of the parties confirmed the perceptions of the "experts", both in the parties' ordering along the continuum and in the close proximity of the UDF and RPR:

Mean respondent left-right placement of French political parties, 1988.

Communists:	1.73
Socialists:	3.04
UDF:	4.83
RPR:	5.52
National Front:	6.66

Source: French Election Study.[3] (N = 852)

By using respondents' feeling thermometer ratings of the parties as a surrogate for utility (Feld and Grofman, 1988; Niemi and Wright, 1987; Weisberg and Grofman, 1981), it is possible to derive their complete preference orders, and thereby determine whether respondents' preferences over all parties -- or any subset of parties -- are ideological with respect to the specified left-right continuum. Because the number of possible orderings of five parties is an unmanageable 120, I will confine my attention to respondents' orderings over subsets of three parties.

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[3] These means represent the perceptions of those respondents who located all five parties on the left-right scale and reported their own preferred position along the left-right dimension.

Before examining the data, let us clarify our theoretical expectations. Which groups of respondents should we expect to exhibit high proportions of ideologically inconsistent preferences, and over which set(s) of parties? The example in section 3.b. suggested that the "paradox of ideologically inconsistent preferences" is likely when choosing over sets of alternatives which include two or more similar choices; this suggests we should study respondents' preferences over sets of parties which include both the UDF and RPR, since these parties were perceived by survey respondents as ideologically proximate. Furthermore, the hypothetical example suggests this paradox is most likely among voters who are ideologically distant from the UDF and RPR, but proximate to some rival party. Respondents who located themselves to the left on the seven-point left-right scale (e.g., at one through three) meet this requirement: they are distant from the UDF and RPR, but near the Communists and Socialists.[4] When choosing over the triple (Socialist, UDF, RPR), for instance, voters on the left should have a high probability of preferring the Socialists to both the UDF and RPR, but, because of the ideological proximity of the latter two parties, may prefer the UDF to the RPR with a probability that only slightly exceeds chance. By an analogous chain of reasoning, one can demonstrate that leftist respondents are likely to possess non-single-peaked preferences orderings over the triple (Communist,UDF,RPR).

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[4] Voters located at the extreme right (seven on the left-right scale) also meet these criteria, since they are near the National Front, but distant from both the UDF and RPR. However, since only 18 survey respondents placed themselves on the extreme right, the data concerning their preferences is statistically insignificant. Thirteen of these respondents had single-peaked preferences over the UDF-RPR-National Front continuum; the number which could have been expected to have single-peaked preferences by chance is 12.

Table 1, which reports the proportion of respondents with ideologically consistent preferences over each possible triple of parties, stratified by voters' left-right positions, provides the data necessary to test these hypotheses. Thus, the proportion .87 in the upper right hand corner indicates that 87% of respondents who placed themselves at six or seven on the left-right scale had single-peaked preferences over the triple (Communists, UDF, RPR). The crucial data, from our perspective, are the four underlined proportions in the upper left hand corner of the table. These report the proportions of voters on the left (at 1-3) with single-peaked preferences over the triples (Communist, UDF, RPR) and (Socialist, UDF, RPR). The results powerfully support our hypotheses concerning the paradox of ideologically inconsistent preferences. By sighting down the first two columns, (for respondents located at 1-2 and 3, respectively), the reader may confirm that respondents on the left do have abnormally low proportions of ideologically consistent preferences over these two sets of parties. Three of these four proportions fall below .67 -- which is the proportion of respondents who would have single-peaked preferences by chance alone.[8]

One further aspect of table 1 is worth noting. While leftist respondents have low proportions of ideologically consistent preferences over the triples (Communist, UDF, RPR) and (Socialist, UDF, RPR), their proportions of ideologically consistent preferences over other triples of parties are in the range of .80-.93 -- well above chance, and approximately equal to the proportions reported for centrist and right-wing respondents in the three right hand columns. This suggests

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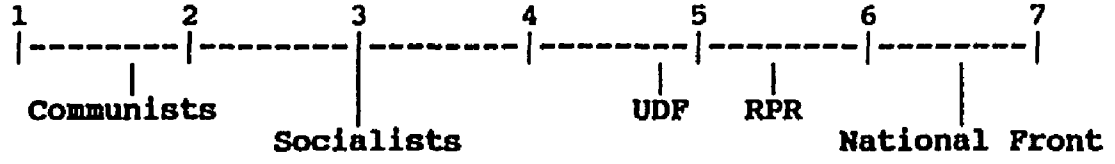
[8] The result which is inconsistent with this hypothesis -- that 78% of those respondents located at three have single-peaked preferences over the set (Communists, UDF, RPR) -- is not especially surprising. These respondents are nearly midway between the Communists and the UDf, and consequently do not, as a group, strongly prefer the Communists to the UDF and RPR.

TABLE 5.1: PROPORTION OF RESPONDENTS WITH IDEOLOGICALLY CONSISTENT PREFERENCES, 1988 FRENCH PRESIDENTIAL ELECTION STUDY

(MEAN RESPONDENT LEFT-RIGHT PLACEMENT OF PARTIES)



PROPORTIONS OF IDEOLOGICAL SUBGROUPS WITH IDEOLOGICALLY CONSISTENT REFERENCES OVER VARIOUS SUBSETS OF PARTIES

SET OF PARTIES	RESPONDENT'S LEFT-RIGHT POSITION			
	1-2	3	4	5
COMM,UDF,RPR	.62	.78	.84	.92
SOC,UDF,RPR	.60	.61	.79	.83
COMM,SOC,UDF	.88	.91	.90	.94
COMM,SOC,RPR	.89	.90	.86	.90
COMM,SOC,NTL.FR	.87	.86	.87	.85
COMM,UDF,NTL.FR	.84	.93	.90	.88
COMM,RPR,NTL.FR	.83	.91	.90	.88
SOC,UDF,NTL.FR	.90	.90	.90	.92
SOC,RPR,NTL.FR	.88	.89	.87	.90
UDF,RPR,NTL.FR	.85	.89	.84	.84

that leftist respondents are as strongly motivated by ideology as are other respondents; it is the leftists' ideological position, relative to the parties, which makes their preferences over certain sets of alternatives appear incoherent to the analyst.

I believe this empirical example of the paradox of ideologically inconsistent preferences represents an important insight. It is remarkable, I submit, that our representation of preferences under the Diffused ideology model allowed us to identify groups of respondents whose preferences appear even less structured than those of respondents who choose randomly. I feel this finding, in and of itself, invalidates the use of individuals' preference orderings as a measure of their ideological consistency.

We have seen that the Diffuse Ideology and Issue Publics models have contrasting implications for voters' preference orderings, and hence for the study of ideology in individuals and groups. As I noted in the introduction, however, Feld and Grofman (1988, 1991) have recently put forward an alternative perspective on collective ideological consistency, under which group preferences may be characterized as ideological even when most of the individuals who compose them have incoherent preferences. I now turn to the implications of the Diffuse Ideology and Black and Issue Publics models for Feld's and Grofman's argument.

Section III: A New Approach to Collective Ideological Consistency

The assumption that a collectivity cannot be ideological unless it is composed of ideologically oriented individuals,

which informs most approaches to the study of collective ideology, appears intuitively plausible. However, Feld and Grofman have demonstrated that the collective preferences of groups of citizens may exhibit an underlying ideological structure even if these voters, as individuals, are largely "innocent of ideology." This demonstration depends on a notion of collective ideological consistency which goes beyond the focus on individuals outlined in Section II. I outline this new perspective on collective ideology, and then apply it to the study of collective preferences under the Issue publics and Diffused Ideology models. This analysis suggests that ideological subgroups (e.g., groups of citizens with identical self-identified left-right orientations) will exhibit ideologically consistent preferences. However, the structure of these preferences differs depending upon the behavioral model we employ.

III.A. The Notions of Ideological and Borda Margins

The notion of the public's collective preferences developed by Grofman and Feld (1988, 1991) focuses on group preferences in paired comparisons of the available alternatives. When a collectivity chooses between two alternatives, the difference between the proportions preferring each alternative indicates both the direction and the strength of the group preference. When choosing among three alternatives A, B, and C, for instance, if 90% of the public prefers A to B but only 60% prefers A to C, then the public prefers A to B more strongly than it prefers A to C.

A group's preferences in all possible paired comparisons of alternatives are given by a matrix of margins. For the four alternative case, for instance, the public's preferences in paired comparisons involving alternatives A, B, C, and D

can be written as

	A	B	C	D
A	-	m(A,B)	m(A,C)	m(A,D)
B		-	m(B,C)	m(B,D)
C			-	m(C,D)
D				-

,

where m(A,B) indicates the margin be which the public prefers A to B in a paired comparison. m(A,B) may take on a negative value if a majority prefers B to A.

Feld and Grofman's approach consists in demonstrating that certain structured relationships between a group's preference margins may occur even in situations where many or most group members lack an ideological basis for their choices. Specifically, they identify two distinct structures to a group's matrix of margins which will occur, depending on whether group members are motivated by ideology or instead by some "valuative" dimension such as candidate competence or integrity. The first pattern, which should characterize ideologically-motivated choices, is the <u>ideological margins condition</u> (Feld and Grofman, 1988). A matrix of margins satisfies this condition if and only if there is a way of ordering the alternatives such that, in every row above the main diagonal, margins increase (or at least do not decrease) as we move to the right, <u>and</u> in every column, above the main diagonal, margins increase (or at least do not decrease) as we move from the entry in the top row downward.

The second condition on margins, which may characterize preferences based upon some underlying valuative dimension,

is the Borda margins condition (Feld and Grofman, 1991).[6] A matrix of margins satisfies the Borda margins condition if and only if there is a way of ordering alternatives such that, in every row, margins increase (or at least do not decrease) as we move to the right and, in every column, margins increase (or at least do not decrease) as we move in the row upward.

The ideological margins condition is identical to the Borda margins condition, except that the direction of increasing margins in the columns is reversed: for ideological margins, the margins increase as we move down each column, while under the Borda margins condition margins increase as we move upward. These conditions are represented in figure 3, reproduced from Feld and Grofman (1991). In both figures the direction of the arrows indicates the direction of increasing margins. For the ideological margins condition the arrows point in a clockwise direction, while for the Borda margins condition both arrows point towards the upper right hand corner of the matrix of margins.

The ideological and Borda margins conditions are important for two reasons. First, when the ideological margins condition is satisfied, then the group's preference structure is the same as that which would occur if all group members had single-peaked preferences along the left-right dimension; hence, such a group may be characterized as ideological in its choices, even when most group members have preferences which are inconsistent with the underlying ideological continuum. When group preferences satisfy the Borda margins condition, the group's preference structure is the same as would occur

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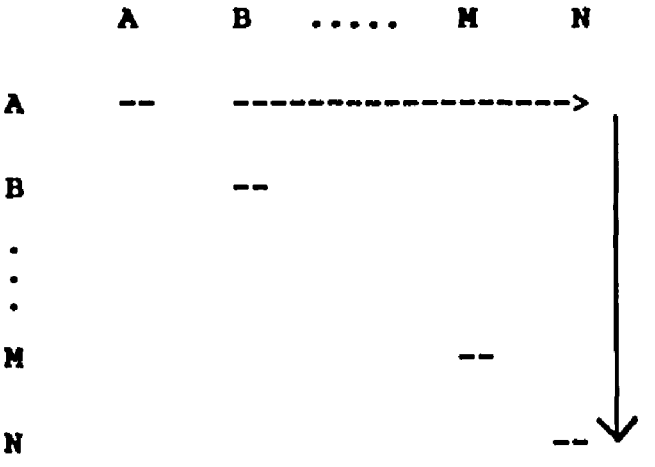
[6] This label arises from the fact that when the matrix of margins meets this condition, the ordering of candidates in the matrix corresponds to their order of finish in an election held under the Borda vote-counting method (Feld and Grofman, 1991).

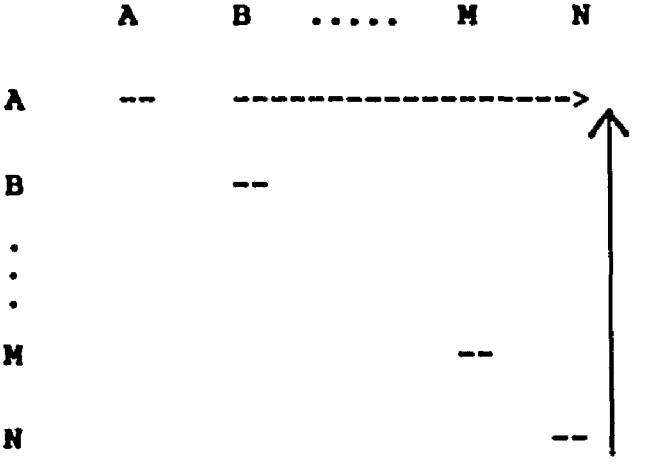
FIGURE 5.3: COMPARING THE IDEOLOGICAL MARGINS CONDITION AND THE BORDA MARGINS CONDITION

(ARROWS INDICATE THE DIRECTION OF INCREASING MARGINS)

3A: IDEOLOGICAL MARGINS



3B: BORDA MARGINS



if each member ranked the alternatives from "best" to "worst" along some valuative dimension; this despite the fact that many members may be unable to distinguish between the relative "goodness" of competing alternatives. The Borda and ideological margins conditions thereby relax the "judgmental" or ideological requirements that individuals must meet in order that collectivities may be characterized as responding to choices along some underlying dimension. This approach thereby moves beyond the standard individualistic perspective on collective consistency.

Second, when either the Borda or ideological margins condition is satisfied, group preferences are necessarily transitive (Feld and Grofman, 1991). The existence of either group preference structure therefore precludes voting cycles, and thereby ensures a degree of stability for majority rule processes.

III.B: The Structure of Collective Preferences Under the Issue Publics Model

Proposition 5.5: When choosing among alternatives arrayed along a left-right dimension, the Issue Publics model implies that the preferences of the entire electorate and its ideological subgroups will satisfy the ideological margins condition.

HEURISTIC ARGUMENT: Feld and Grofman (1988) have argued that Proposition 5.5 holds for a group composed entirely of ideologues. I summarize their demonstration, and extend it to groups composed of both ideological and apolitical voters, as posited by the Issue Publics model.

Feld and Grofman demonstrate that the collective preferences of groups of ideologues must satisfy the ideological margins condition, using as an illustration a three-alternative example:

> If all voters have single-peaked preference orderings over the [left-right] continuum ABC, then everyone who prefers A to B must also prefer A to C. Therefore... the total number of individuals voting for A over C would have to be at least as great as the number voting for A over B. Similarly, single-peaked preference orderings over the continuum ABC imply that everyone who prefers A over C also prefers B over C. Hence, if everyone in the group has single-peaked preferences, the total voting for B over C would be at least as great as the number voting for A over C. Thus the voting margins would have the ordering
>
> $$m(A,B) < m(A,C) < m(B,C)$$ (1988, p.777).

This demonstration, which can be extended to cases involving more than three alternatives, implies that when a group of ideologues chooses over a set of alternatives, the group's matrix of margins will satisfy the ideological margins condition when these alternative are ordered from left to right, as illustrated below:

	A	B	C
A	--	m(A,B) -->	m(A,C)
			↓
B		--	m(B,C)
C			--

The extension of this argument to groups composed of both ideologues and apoliticals is straightforward. Because the preferences of apoliticals are random, the expected collective preference margins of apolitical groups is zero for every possible paired comparison. Therefore, for the combined groups of ideologues and apoliticals, a left-right ordering

of the group's matrix of margins will satisfy the ideological margins condition, since this is true for the ideologues, and the preferences of the apoliticals cancel each other out.[7]

III.C: The Structure of Collective Preferences Under the Diffused Ideology Model

Proposition 5.6: When choosing among alternatives arrayed along the left-right dimension, the Diffused Ideology model implies that the preference margins of ideological subgroups will satisfy the Borda margins condition.

PROOF: Because citizens are posited to choose probabilistically under the Diffused Ideology model, we represent the expected value of a group's preference margin for A over B, E[m(A,B)], as a function of the choice probabilities of all group members. For the set of voters {1,2,...,n}, for instance, the expected margin is

$$E[m(A,B)] = 2\Sigma_{i=1}^{n} P_i(A,B) - n \qquad (7).$$

By substituting the probability function given in equation (3) into (7), we obtain

$$E[(m(A,B)] = 2\Sigma_{i=1}^{n}\left(\frac{e^{I_i(A)}}{e^{I_i(A)} + e^{I_i(B)}}\right) - n \qquad (8).$$

---

[7] Feld and Grofman suggest this extension of their original argument -- although they do not specify that they are addressing the Issue Publics model -- when they note: "This aggregate ideological consistency might arise [if] ... there is a relatively ideological elite whose preferences, combined with the self-counteracting "noise" of the non-ideological masses, determine the group preferences." (1988, p.779, emphasis added)

Consider now the situation in which an ideological subgroup is located at the point V along the left-right continuum. For any set of political candidates arrayed along this continuum, there exists an ordering $(C_1, C_2, \ldots, C_{n-1}, C_n)$ such that C_1 is closest to V, C_2 is next closest, and so on. Because voters evaluate candidates' ideological positions based on proximity (see equation 2), each citizen in the ideological subgroup ranks the candidates' ideological positions as follows:

$$I(C_1) > I(C_2) > \ldots > I(C_{n-1}) > I(C_n) \qquad (9).$$

By substituting this series of inequalities into equation (3), it follows that for every voter in the ideological subgroup, the following relationship must exist:

$$\begin{array}{lccccc}
 & C_1 & C_2 & C_3 \ \ldots\ldots\ldots & C_{n-1} & C_n \\
C_1 & --- & P_i(C_1,C_2) < P_i(C_1,C_3) & < \ldots < & P_i(C_1,C_{n-1}) & < P_i(C_1,C_n) \\
 & & \vee & & \vee & \vee \\
C_2 & & --- & P_i(C_2,C_3) < \ldots < & P_i(C_2,C_{n-1}) & < P_i(C_2,C_n) \\
 & & & & \vee & \vee \\
\vdots & & & & \vdots & \vdots \\
 & & & & & \vee \\
C_{n-1} & & & & --- & < P_i(C_{n-1},C_n) \\
C_n & & & & & ---
\end{array} .$$

Because this series of inequalities holds for every member of the ideological subgroup, it follows from equation (8) that the expected preference margins for the group satisfy the Borda margins condition:

	C_1	C_2	C_3	C_{n-1}	C_n
C_1	---	$E[m(C_1,C_2)]$	$< E[m(C_1,C_3)] <...< E[m(C_1,C_{n-1})] < E[m(C_1,C_n)]$		
C_2		---	$E[m(C_2,C_3)] <...< E[m(C_2,C_{n-1})] < E[m(C_2,C_n)]$		
.				.	.
.				.	.
.				.	.
C_{n-1}				---	$E[m(C_{n-1},C_n)]$
C_n					---

Therefore, if the matrix of margins is ordered from the most proximate candidate (C_1) to the most distant candidate (C_n), the following relationship will hold between voters' preference margins (arrows indicate the direction of increasing preference):

	C_1	C_2	C_3	C_{n-1}	C_n
C_1	---	$m(C_1,C_2)$	$m(C_1,C_3)$	$m(C_1,C_{n-1})$	$m(C_1,C_n)$
C_2		---	$m(C_2,C_3)$	$m(C_2,C_{n-1})$	$m(C_2,C_n)$
.					.
.					.
.					.
C_{n-1}				---	$m(C_{n-1},C_n)$
C_n					---

This relationship satisfies the Borda margins condition.

This demonstration is intriguing because it suggests groups may exhibit Borda margins even when choosing from sets of ideologically ordered alternatives. Proposition 5.6 therefore implies that there are two distinct structures to group preferences -- ideological and Borda margins -- which are each compatible with ideologically-motivated choices.

Two limitations on Propositions 5.5 and 5.6 should be noted. First, both predictions concern the expected relationships between groups' preference margins. It is possible, particularly in small groups, that collective preferences will violate these margin conditions because the random components of voters' preferences do not "even out". Second, Proposition 5.6 -- but not 5.5 -- depends on the assumption that all voters have symmetric utility curves. When this assumption is relaxed, voters' preference margins may violate the Borda margins condition even in large groups. An analysis of group preferences when members' utility curves are asymmetric is presented in the appendix.

While it might appear that the Borda and Ideological margins conditions could be simultaneously satisfied (but for different orders of margins), Feld and Grofman (1991) have demonstrated that when there are four or more alternatives this is impossible (except in cases of ties). Propositions 5.5 and 5.6 are therefore inherently contradictory. In the next section I provide some empirical data about the extent to which ideological subsets of voters in various countries satisfy the Borda and ideological Margins conditions.

Section IV: Empirical Evidence on Ideological and Borda Margins

Table two shows the matrix of margins for the subset of respondents to the 1988 French Presidential Election Study who

placed themselves at three on the seven-point, left-right scale. Because the entries in the Socialist party column are uniformly positive -- indicating that the Socialists would defeat every other party in a pairwise comparison -- the subgroup's majority preferences do not cycle. More importantly, note that this matrix of margins satisfies the Borda Margins condition: the subgroup's preference margins increase as we move from left to right along each column, and increase as me move upward in each row.

Table three shows the matrix of margins for all ideologically self-identified subgroups in the French study (except the subgroups located at one and seven on the left-right scale).[8] Each subgroup's matrix of margins is arranged according to the group's preference ordering, which allows the reader to quickly determine whether the matrix satisfies the Borda Margins condition. The last two columns in the lower part of the table show whether the matrices satisfy the Borda or ideological margins conditions. Three of the five subgroups have Borda margins. The two which do not (located at five and six on the left-right scale) exhibit "near Borda margins"; in each case, the subgroup's preferences fail the Borda condition by a single margin comparison, which is circled in the table.

Tables four and five present the preferences of ideologically self-selected subgroups drawn from British and American National Election Studies.[9] Table four, reprinted from Feld

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[8] The subgroups located at the extreme points of the left-right scale are omitted because of the relatively small number of respondents. The collective preferences of the subgroup located at one (n=28) satisfy the Borda margins condition; the matrix of margins for voters on the far right (n=18) satisfy neither the Borda nor the Ideological Margins condition.

[9] The data on U.S. respondents' preference orderings was derived from respondents' thermometer ratings of the candidates. The British National Election Study of 1983 did not

TABLE 5.2: MARGINS IN PAIRWISE CHOICES AMONG FRENCH POLITICAL PARTIES, FOR RESPONDENTS LOCATED AT THREE ON THE LEFT-RIGHT SCALE.

MATRIX OF PAIRWISE PREFERENCE MARGINS

	SOC.	COM.	UDF	RPR	NATL.FR.
SOCIALIST	--	86	94	95	96
COMMUNIST		--	6	35	80
UDF			--	31	77
RPR				--	73
NATL. FRONT					--

SOURCE: 1988 FRENCH PRESIDENTIAL ELECTION STUDY (N=277).

TABLE 5.3: MARGINS IN PAIRWISE CHOICES AMONG RESPONDENTS WITH DIFFERENT LEFT-RIGHT POSITIONS, FANCE 1988

LEFT-RIGHT POSITION		MATRIX OF PAIRWISE PREFERENCE MARGINS				
		SOC.	COMM.	UDF	RPR	NTL.F
	SOCIALIST	--	30	86	93	93
2	COMMUNIST		--	49	65	82
	UDF			--	28	65
	RPR				--	33
		SOC.	COMM.	UDF	RPR	NTL.F
	SOCIALIST	--	86	94	95	96
3	COMMUNIST		--	6	35	80
	UDF			--	31	77
	RPR				--	73
		SOC.	UDF	RPR	NTL.FR	COMM.
	SOCIALIST	--	10	28	57	80
4	UDF		--	14	51	70
	RPR			--	46	59
	NATL. FRONT.				--	-12
		RPR	UDF	SOC.	NTL.FR.	COMM.
	RPR	--	11	74	87	94
5	UDF		--	67	70	95
	SOCIALIST			--	32	74
	NATL. FRONT				--	30
		RPR	NTL.FR.	UDF	SOC.	COMM.
	RPR	--	32	50	71	90
6	NTL. FRONT		--	4	53	73
	UDF			--	60	85
	SOCIALIST				--	52

LEFT-RIGHT LOCATION	PREFERENCE ORDERING	BORDA MARGINS	IDEOLOGICAL MARGINS
2	SCURN	yes	no
3	SCURN	yes	no
4	SURCN	yes	no
5	RUSNC	no	no
6	RNUSC	no	no

and Grofman (1988), reports the preferences of ideological subgroups from the 1980 American National Election Study. Each subgroup has Borda margins except for the moderates, whose preferences fail to satisfy the Borda margins condition only because Reagan's margin over Kennedy (23%) is one percentage point higher than Carter's margin over Kennedy (22%).[10] Table five presents the preferences of British respondents, subdivided according to their self-placements along the left-right scale. As the bottom part of the table indicates, each subgroup's preferences satisfy the Borda margins condition.

DISCUSSION

The data presented in Section IV support the Diffused ideology model so strongly that I feel compelled to comment upon it. In the course of my brief research career I have looked for relationships between voting behavior and other variables, frequently finding no statistical relationship where I expected to find one, and at other times finding evidence that weakly supported my hypotheses. Never before, however, have I found evidence <u>this</u> strong. I emphasize that I do <u>not</u> claim this data proves that the Diffused Ideology model accurately portrays citizens' preferences, nor even that it is more realistic than the Issue Publics model. In the first place, it is possible to construct scenarios under which my findings, which appear to support the Diffused Ideology model at the expense of the Issue Publics model, are in fact

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ask citizens to rate the political parties; therefore, I constructed preference orderings from the respondent's reported vote and her reported second choice.

[10] Note that the preferences of voters in the "end categories" -- liberal and extremely liberal, and conservative and extremely conservative -- are grouped together.

TABLE 5.4: MARGINS IN PAIRWISE CHOICES AMONG RESPONDENTS WITH DIFFERENT SELF-IDENTIFIED IDEOLOGICAL POSITIONS, 1980 AMERICAN NATIONAL ELECTION STUDY

IDEOLOGICAL POSITION		MATRIX OF PAIRWISE PREFERENCE MARGINS			
		CARTER	KENNEDY	FORD	REAGAN
EXTRM. LIBERAL	CARTER	--	5	41	71
	KENNEDY		--	23	46
	FORD			--	40
		CARTER	KENNEDY	FORD	REAGAN
	CARTER	--	11	11	29
SOMEWHAT LIBERAL	KENNEDY		--	1	25
	FORD			--	24
		FORD	CARTER	REAGAN	KENNEDY
	FORD	--	4	7	29
MODERATE	CARTER		--	5	22
	REAGAN			--	23
		FORD	REAGAN	CARTER	KENNEDY
SOMEWHAT CONSERVATIVE	FORD	--	8	26	54
	REAGAN		--	19	52
	CARTER			--	35
		REAGAN	FORD	CARTER	KENNEDY
EXTRM. CONSERVATIVE	REAGAN	--	19	44	59
	FORD		--	37	51
	CARTER			--	35

IDEOLOGICAL POSITION	PREFERENCE ORDERING	BORDA MARGINS	IDEOLOGICAL MARGINS
EXTREMELY LIBERAL	CKFR	yes	no
SOMEWHAT LIBERAL	CKFR	yes	no
MODERATE	FCRK	no	no
SOMEWHAT CONS.	FRCK	yes	no
EXTRMEMELY CONSERVATIVE	RFCK	yes	no

Source: Feld and Grofman, 1988.

compatible with the latter formulation.[11] Second, the debate between partisans of the Issue Publics and the Diffused Ideology model has continued, unabated, across nearly three decades and scores of publications. I would not presume to instruct partisans of either model that my research is the last word on the matter.

This caveat aside, I submit that my analysis and empirical findings are important for three reasons. First, the results presented in section 3 point to severe limitations to the standard approach to the study of collective ideology. Such an approach has merit, I suggest, only in situations where the analyst has strong prior reasons for believing that the Issue Publics model describes the structure of a population's preferences. Under the Diffused Ideology model this simple "counting" approach may lead to erroneous conclusions, as it would have in the case of the 1988 French election.

Second, the evidence presented in section 5 powerfully suggests that, in actual elections, groups of likeminded voters have an ideological basis for their preferences, even if most group members base their preferences primarily upon "nonideological" factors. This finding provides empirical

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[11] One such scenario might proceed as follows. If, under the Issue Publics model, ideologues have difficulty distinguishing between similar (i.e., spatially proximate) alternatives, then ideologues' aggregate preference margins will tend to be larger when choosing between two distant (and hence discriminable) alternatives, as opposed to proximate ones. This would cause the ideological margins prediction to break down, and could in some cases lead to the Borda margins characteristic of the Diffused Ideology model. Ironically, in discussing possible origins of ideological margins, Feld and Grofman (1988) invoke an explanation reminiscent of the Diffused Ideology model: "the aggregate ideological [margins] might arise in several ways...One possibility is that there is a diffuse ideological tendency among a large proportion of the electorate that is sufficient to generate ideology in the aggregate (1988 p. 779, emphasis added).

TABLE 5.5: MARGINS IN PAIRWISE CHOICES AMONG RESPONDENTS WITH DIFFERENT POSITIONS, 1983 BRITISH ELECTION STUDY

LEFT-RIGHT POSITION		MATRIX OF PAIRWISE PREFERENCES		
		LABOUR	ALLIANCE	CONSERV
	LABOUR	--	54	66
1-2	ALLIANCE		--	46
	CONSERVATIVE			--
		LABOUR	ALLIANCE	CONSERV
	LABOUR	--	13	15
3	ALLIANCE		--	12
	CONSERVATIVE			--
		ALLIANCE	CONSERV	LABOUR
	ALLIANCE	--	7	16
4	CONSERVATIVE		--	8
	LABOUR			--
		CONSERV	ALLIANCE	LABOUR
	CONSERVATIVE	--	30	37
5	ALLIANCE		--	27
	LABOUR			--
		CONSERV	ALLIANCE	LABOUR
	CONSERVATIVE	--	50	81
6-7	ALLIANCE		--	53
	LABOUR			--

LEFT-RIGHT LOCATION	PRFERENCE ORDERING	BORDA MARGINS	IDEOLOGICAL MARGINS
1-2	LAC	yes	no
3	LAC	yes	no
4	ACL	yes	yes
5	CAL	yes	no
6-7	CAL	yes	no

confirmation of Feld and Grofman's contention that there is a collective perspective on ideology which goes beyond the study of ideological consistency in individuals.

Finally, the data suggest that respondents (collectively) rank alternatives "as if" each respondent was choosing according to the Diffused Ideology model. For both candidates (or political parties) and social choice theorists, this finding concerning how citizens behave may be more important than why they behave that way. Suppose, for instance, that the Issue Publics model is in fact "correct", but that ideologues' choices are nonetheless probabilistic because they have difficulty distinguishing candidates' issue locations (as elaborated in footnote 10). From the perspective of the vote-seeking candidate, who is aware in a general way of the distribution of voter preferences but not of their perceptions of candidate positions, voters behave as posited in the Diffused Ideology model -- and hence it is reasonable for him to formulate his campaign strategy under this "working assumption." From the perspective of the social choice theorist, meanwhile, voting cycles are precluded so long as voters' aggregate preferences appear to reflect an underlying ideological orientation. Even if this ideological orientation is in fact illusory, the collective preference structures discussed here -- whose existence was empirically confirmed in three Western democracies -- ensure some stability in collective decision making processes.

CHAPTER 6: AN INVESTIGATION INTO THE DESIRABILITY OF ALTERNATIVE VOTING SYSTEMS

Abstract. This chapter evaluates five voting systems according to their tendency to select Condorcet candidates -- e.g., the candidate who would defeat all others in a two-way race. To this end I employ Monte Carlo simulations conducted under the assumptions of both the Diffused Ideology and Issue Publics models of mass political orientations. In these simulations I vary both the number of issue dimensions and relative dispersion of candidates and voters. The results suggest that in small groups (such as committees), voting systems' Condorcet efficiencies do not depend on the model of mass political orientations. For large groups of voters (such as those for national or regional elections), however, Condorcet efficiency is much higher under the Diffused Ideology than the Issue publics model. Furthermore, the less issue-oriented the electorate, the greater the probability that the Condorcet winner will be selected. This result provides an insight into how electorates may be largely "innocent of ideology", and yet produce stable political outcomes.

A number of different methods of counting votes (e.g., voting systems) have been proposed to determine the winner in a single-winner, multicandidate election (Borda, 1781; Coombs, 1954; Brams and Fishburn, 1978). Because different voting systems may produce different winners, several criteria have been advanced to assess the desirability of alternative systems. Perhaps the most widely accepted criterion is the Condorcet principle, which holds that in a multicandidate election, the candidate who would defeat each of the others in a two-way race should be selected. That this candidate, known as the Condorcet winner, should be selected, is an extension of the notion of majority rule from the two-can-

didate to the multicandidate setting (Merril, 1985).

Various scholars have employed Monte Carlo simulation techniques to assess the tendency for the Condorcet candidate to be selected under alternative voting systems. However, as outlined in chapter one most of these efforts employ assumptions about voters' preferences at odds with the empirical findings of behavioral researchers. Two of the most common of these assumptions are the impartial culture, which posits that voters choose randomly from among the competing candidates (see Niemi, 1969, Nurmi, 1990, and Gerhlein and Fishburn, 1976), and the deterministic voter assumption, that all voters are entirely issue-oriented (Chamberlin and Cohen, 1979; Merril, 1988). Given the wide disparity between these assumptions and the behavioral models of mass political orientations summarized in chapter two, the results of previous Monte Carlo simulations provide scant evidence concerning electoral systems' desirability for "realworld" political situations.

In this chapter I bring an empirically-grounded perspective to bear on five voting systems by simulating elections under the Issue Publics and the Diffused Ideology models summarized in chapter two. These voting systems are: plurality, plurality with runoff, the Borda count, the Coombs method, and the Hare system. Under the plurality system, each voter casts a single vote for a single candidate, and the candidate with the most votes wins. Plurality with runoff -- frequently used for primary elections in the United States as well as French presidential elections -- is a two-stage contest in which the two top vote-getters from the first "round" compete in a subsequent runoff election. Under the Hare, Coombs, and Borda systems, a complete preference ordering is obtained for each voter. The Hare system then successively eliminates the candidate with the fewest first-place votes, with the second place votes of her supporters transferred to augment the first-place totals of the remaining candidates. This process

is repeated until one candidate obtains a majority (Merril, 1985). The Coombs system, by contrast, successively eliminates the candidate with the most last-place votes. Under the Borda system, a candidate is awarded n-1 votes for each first-place voter ranking (in an n-candidate race), n-2 votes for each second-place ranking, down to zero votes for each last-place ranking. The candidate with the most votes is then declared the winner.

The criterion I employ to evaluate each system is Condorcet efficiency, which is defined as the proportion of a given class of elections for which the Condorcet candidate is selected, when one exists. By employing Monte Carlo simulation techniques, I hope to shed light on the following questions concerning each voting system:

1) How frequently does the voting system select the Condorcet candidate, when one exists?

2) Does the voting system select the Condorcet winner more or less often under the Diffused Ideology model, compared with the Issue Publics model?

3) How do the answers to the above questions depend on other variables, such as the degree of issue voting, the size of the electorate, and the number of issue dimensions?

This chapter is divided into two sections. In section I, I report the results of simulated elections with small groups, conducted under spatial model assumptions. In these simulations I vary the number of issue dimensions, the relative spatial dispersion of voters and candidates, and the model of voter preferences (e.g., Diffused Ideology versus Issue Publics). Section II summarizes the results of simulations for larger groups of voters.

Section I: Condorcet Efficiency in Small Groups Under the Diffused Ideology and Issue Publics Models

I.A: Methodology and Assumptions

SPATIAL DISTRIBUTION OF VOTERS AND CANDIDATES. To simulate multiparty elections for small groups, I generated sets of 15 voters and five candidates who were randomly placed in a one- or two-dimensional issues space bounded by the interval [1,7]. Both voters and candidates were drawn from a normal distribution centered at four; for voters this distribution had a one-point standard deviation, while for candidates the standard deviation was set at either one or one half. By setting the standard deviation for candidates at only one half in some simulations, I incorporated the finding that, in multiparty systems, candidates and parties tend to display more centrist ideologies than the electorates in which they compete (Dutter, 1990). Following Merril (1988), I refer to the ratio of the standard deviations of the marginal distributions of voters and candidates as the measure of relative dispersion.

ASSUMPTIONS ABOUT VOTING BEHAVIOR. The models of voting behavior I employ are based upon the probability functions for the Diffused Ideology and Issue Publics models outlined in chapter two. These functions separate a voter i's utility for a hypothetical candidate or political party A, $U_i(A)$, into an ideology component $I_i(A)$, which represent the voter's quadratic loss with respect to A's position along the left-right dimension, and an error term ϵ_{iA} generated from a type I extreme value distribution:

$$U_i(A) = I_i(A) + \epsilon_{iA} \quad , \qquad (1)$$

$$I_i(A) = b_i(x_i - a)^2 \quad , \qquad (2)$$

where b_{ij} in equation (2) represents the salience of the dimension to voter i, x_{ij} his position on that dimension, and a_j the position of candidate A. The probability $P_i(A/S)$ that voter i prefers candidate A when choosing from the set S=(A,B,...,N) is then given by the function

$$P_i(A/S) = \frac{e^{I_i(A)}}{e^{I_i(A)} + e^{I_i(B)} + \ldots + e^{I_i(N)}} , \qquad (3)$$

and the probability that voter i has the preference ordering A>B>...>N, $R_i(A>B>...>N)$, is equal to

$$R_i(A>B>...>N) = P_i(A/S) \times P_i(B/S-A) \times \ldots \times P_i(N-1/(N-1,N)) \qquad (4).$$

Using these probability functions, I simulate elections under six different scenarios, which represent variations of the Issue Publics and Diffused Ideology models. These are:

The weak, moderate, and strong Diffused Ideology models. In the Diffused Ideology (DI) model, the importance of issues varies with the magnitude of the issue salience coefficients b_i in equation (2). I employ the alternative assumptions that b equals 1/3 (weak DI), one (moderate DI), and three (strong DI). Under the weak DI model, voters' preferences are only marginally related to their preferred issue positions, so that such a society resembles the impartial culture. Under the assumptions of the strong DI model, by contrast, voters' evaluate the candidates almost entirely on the basis of issues.

Figures 1A-1C show the probability $P_i(A,B)$ that a hypothetical voter prefers candidate A to candidate B, under the weak, moderate, and strong Diffused Ideology models outlined above. In this example the competing candidates A and B are

located at points three and four in a one dimensional issue space, and the probability that the voter prefers A declines as the voter moves to the right along the issue dimension. However, this probability function $P_i(A,B)$ is relatively flat in the weak DI model (figure 1A), while it resembles a step-function under the strong DI model (figure 1C).

The weak, moderate, and strong Issue Publics models. Under the Issue Publics model, the importance of issues to the vote choice depends on the proportion of voters intensely interested in each issue dimension to the proportion who are uninterested, or apolitical, with respect to the dimension. In simulated elections under the weak Issue Publics model, I assume 20% of the electorate is ideological with respect to a given issue dimension j; these ideologues are assigned a high and nearly deterministic issue salience coefficient $b_j = 10$. The remaining 80% of the electorate is apolitical with respect to the issue, and is therefore assigned an issue salience of $b_j = 0$.[1] Under the strong Issue Publics model the proportion of ideological and apolitical voters are reversed, so the 80% of the electorate is ideological and 20% apolitical with respect to each dimension. Under the moderate Issue Publics model, I assume that 50% of the electorate is ideological with respect to each dimension.

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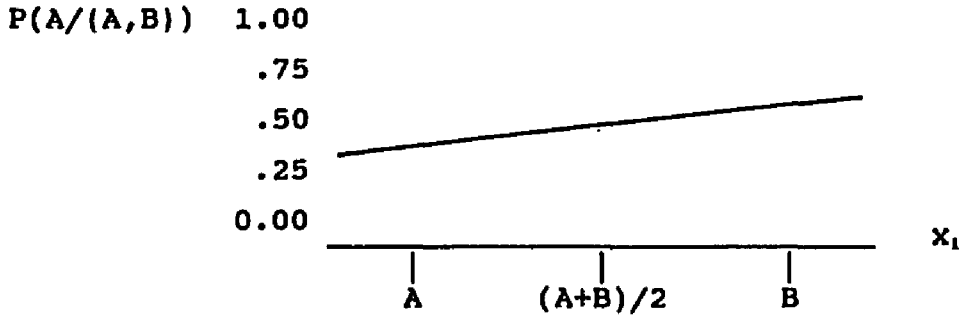
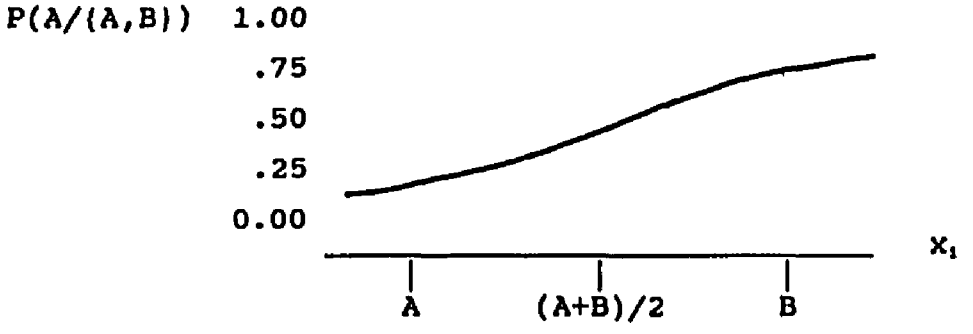
[1] For simulated elections in two dimensions, I assume there is no correlation between a voter's interest in the first and second dimensions. Hence, under the weak Issue Publics model (which posits that 20% of the electorate is ideological with respect to a given dimension), 4% of the electorate will be ideological with respect both dimensions (20%×20%), 64% of the electorate will be apolitical with respect to both dimensions (80%×80%), while the remaining 32% of the electorate will be ideological with respect to one dimension.

FIGURE 6.1: THREE DIFFERENT DEGREES OF ISSUE VOTING

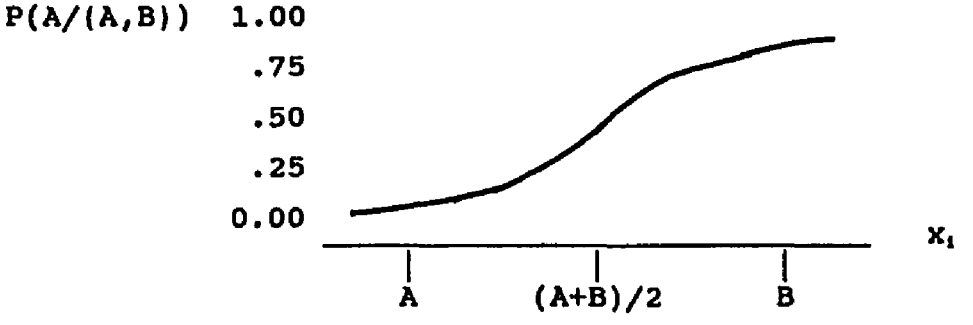
1A: WEAK ISSUE VOTING



1B: MODERATE ISSUE VOTING



1C: STRONG ISSUE VOTING



I.B: Simulation results for small groups

Figure two illustrates a simulated election for a one dimensional issue space, under the assumptions of the moderate Diffused ideology model. The set of voters ($v_1, v_2, \ldots, v_{15}$) and candidates (A,B,C,D,E) were generated from identical normal distributions centered at four with a one-point standard deviation, so that the relative dispersion of voters and candidates is 1.0. Each voter's complete candidate ranking is provided, with the percentage in parenthesis representing the probability the voter would rank the candidates in this precise order; this percentage is calculated under the assumptions of equation (4).[2] Note that voters' generally reflect their ideological locations. For instance, of the voters to the left of four on the seven-point scale (v_1-v_7), all but one favors candidate A or B, while voters to the right of four (v_8-v_{15}) overwhelmingly support candidates D and E. However, because voters' candidate evaluations are perturbed by an error term, they sometimes prefer spatially distant candidates to more proximate competitors. The most extreme example is voter v_{12}, who ranks candidate E last, despite being nearest to E (the probability that v_{12} would rank the candidates in this order, 0.2%, makes this the most unlikely of the 15 candidate rankings in this simulation.

By studying the voters' rankings, the reader can determine that candidate C would defeat all other candidates in two-way votes, and is therefore the Condorcet winner in this

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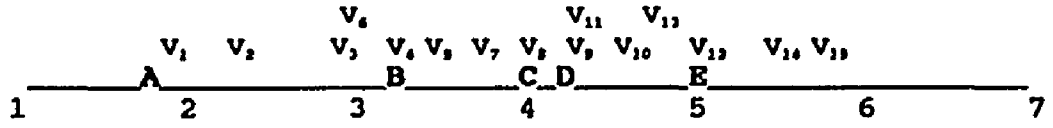
[2] The probabilities associated with these rankings -- most of which vary between 1% and 8% -- may strike the reader as surprisingly low. However, because there are 120 possible rankings of five candidates, these ranking probabilities exceed random chance for every voter except v_{12}, who ranked candidate A last despite being nearest to A; the probability of her preference order was 0.2%.

FIGURE 6.2: SIMULATED ELECTION WITH 15 VOTERS AND FIVE CANDIDATES

MODERATE DIFFUSED IDEOLOGY MODEL (b_j=0.5 for all voters)



CANDIDATE RANKINGS

V_1:	AC.BDE	(8%)	V_8:	EC.ADB	(1%)
V_2:	BAC.DE	(16%)	V_9:	EC.BAD	(2%)
V_3:	BAC.ED	(3%)	V_{10}:	CDB.EA	(6%)
V_4:	AB.DCE	(8%)	V_{11}:	EC.DAB	(5%)
V_5:	BC.ADE	(6%)	V_{12}:	DB.CAE	(0%)
V_6:	CBE.AD	(1%)	V_{13}:	DCE.BA	(4%)
V_7:	BC.AED	(4%)	V_{14}:	ED.CBA	(36%)
			V_{15}:	EDC.BA	(54%)

WINNER UNDER ALTERNATIVE ELECTORAL SYSTEMS

Plurality:	E
Runoff:	B
Coombs:	C
Hare:	B
Borda:	C

simulated election. At the bottom of Figure two, the winner under the five electoral systems under review is listed. E, the most right-wing of the candidates, receives a plurality of first-place votes, and therefore wins under the plurality system. Candidate B wins under the Runoff and Hare systems. The Coombs and Borda systems select the Condorcet winner C.

Table one presents simulated results for voting systems' Condorcet efficiencies for 15 voters in a one-dimensional model, with a relative dispersion of 1.0. For each combination of voting system and model of mass political orientations, the reported percentage represents the proportion of elections in which the Condorcet winner was selected, when one existed. Thus, the 65% figure in the upper left hand corner indicates that the plurality voting system selected the Condorcet winner in 65% of the simulations conducted under the weak Issue Publics model (500 elections were simulated, giving a standard error of about two percentage points). The results indicate that, of the five voting systems under review, the plurality system selects the Condorcet winner the least frequently while the Coombs system selects it the most frequently.[3] Furthermore, the voting systems' Condorcet efficiencies do not vary substantially with the model of mass political orientations.

Table two presents further results on Condorcet efficiency for small groups of voters. Two levels are given for both the parameters of relative dispersion and the number of issue dimensions. While the number of issue dimensions has comparatively little effect upon Condorcet efficiency, note that when

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[3] These findings are consistent with the results obtained by Merril (1985, 1986), who simulated elections under the assumption of an entirely issue-oriented electorate.

TABLE 6.1: CONDORCET EFFICIENCY OF VARIOUS ELECTORAL SYSTEMS UNDER ALTERNATIVE MODELS OF VOTING BEHAVIOR

(15 VOTERS, FIVE CANDIDATES, ONE ISSUE DIMENSION)

DISPERSION = 1.0

VOTING SYSTEM	ISSUE PUBLICS			DIFFUSED IDEOLOGY		
	WEAK	MODERATE	STRONG	WEAK	MODER.	STRONG
PLURALITY	65%	65%	63%	60%	70%	66%
RUNOFF	80	82	83	86	84	83
HARE	88	85	88	80	88	93
BORDA	82	83	88	85	90	89
APPROVAL	71	75	82	72	79	82
COOMBS	89	93	98	91	92	97
% CONDORCET WINNERS	78	82	94	77	81	94

the candidates' dispersion is low relative to the voters' -- i.e., when candidates tend to take centrist positions -- then greater issue-voting by the electorate decreases Condorcet efficiency for the plurality, runoff, and Hare systems. This occurs because when candidate dispersion is low, the Condorcet candidate (who is usually the candidate nearest the center) is squeezed by surrounding opponents, and hence receives few first-place votes. For the Borda and Coombs systems, the degree of issue voting among the electorate has little impact upon Condorcet efficiency.

The most interesting result reported in table two is that, while voting systems' Condorcet efficiencies vary with both the relative dispersion parameter and the degree of issue voting, they are nearly identical under the Diffused Ideology and Issue Publics models -- that is, for each voting system Condorcet efficiency is similar under the strong versions of the Issue Publics and Diffused Ideology models, similar under the weak versions of each model, and so on. This suggests that the answer to the question posed earlier, does an electoral system's Condorcet efficiency depend on the model of mass political orientations, is no:

Proposition 6.1: For elections with small numbers of voters, the likelihood the voting system selects the Condorcet candidate is approximately equal under the Issue Publics and Diffused Ideology models.

As we shall shortly see, however, this proposition does not apply to elections with large numbers of voters.

SECTION II: CONDORCET EFFICIENCY FOR LARGE GROUPS

II.A: Methodology and assumptions

TABLE 6.2: CONDORCET EFFICIENCY OF VARIOUS ELECTORAL SYSTEMS WITH 15 VOTERS AND FIVE CANDIDATES

ONE DIMENSION

VOTING SYSTEM	DISPERSION = 1.0 ISSUE PUBLICS W	M	S	DIFFUSED IDEOLOGY W	M	S	DISPERSION =.5 ISSUE PUBLICS W	M	S
PLURALITY	65%	65%	63%	60%	70%	66%	58%	38%	27%
RUNOFF	80	82	83	86	84	83	80	62	39
HARE	84	81	85	80	83	83	84	65	40
BORDA	82	83	88	85	90	89	82	84	85
APPROVAL	74	75	82	72	79	82	73	74	76
COOMBS	89	93	98	91	92	97	88	89	94
% CONDORCET WINNERS	78	82	94	76	81	94	77	80	95

TWO DIMENSIONS

VOTING SYSTEM	DISPERSION = 1.0 ISSUE PUBLICS W	M	S	DIFFUSED IDEOLOGY W	M	S	DISPERSION =.5 ISSUE PUBLICS W	M	S
PLURALITY	65	66	70	66	76	73	61	40	33
RUNOFF	83	82	80	82	79	84	78	60	48
HARE	82	86	85	85	86	83	85	68	50
BORDA	85	82	86	89	95	95	83	84	85
COOMBS	91	96	99	93	94	98	92	92	94
APPROVAL	75	78	80	77	83	83	75	76	78
% CONDORCET WINNERS	75	81	95	78	85	95	77	84	92

When simulating elections with large numbers of voters, we encounter two problems. First, the time and computer expense of running these simulations is prohibitive. Second, when the simulated electorates contain hundreds (or thousands) of voters generated from an identical probability distribution, the voter distribution in each simulation resembles every other; since we are interested in electoral systems' performance with a variety of voter distributions, this feature is undesirable.

To finesse these two problems, I reanalyze the simulated elections for small groups reported in tables one and two using an alternative set of assumptions. Whereas for those earlier simulations each randomly generated voter ideal point represented a single voter, I now assume that each point represents a voting bloc, comprising thousands (or millions) of voters with identical issue preferences. With large numbers of voters, the random (nonissue) components of voters' candidates evaluations will "cancel each other out", so that the distribution of voters' candidate rankings within each voting bloc correspond to the probability function for rankings given by equation (4). If each member of a voting bloc has an estimated 15% probability of ranking three candidates in the order A > B > C, for instance, then as the voting bloc grows in size the observed proportion of A > B > C rankings will approach 15%; by assuming that each bloc contains large numbers of voters, we ensure that the deviation from this expected proportion will be minuscule.[4] For the purposes of the simulated elections, therefore, I assume that the proportion of a voting bloc with a specific candidate ranking is exactly equal to the expected proportion, as given

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[4] If each voting bloc represents 10,000 voters, for instance, then if each voter has a .15 probability of ranking the candidates in the order A>B>C, there is a probability of .95 that the observed proportion the voting bloc with this ordering will fall between .14 and .16.

by equation (4). Because each simulation incorporates only 15 voting blocs, the distribution of voters differs substantially across simulations.

In order to adapt the convention of voting blocs to the Diffused ideology model, I employ one additional assumption: with respect to each issue dimension, every bloc has an identical ratio of ideologues to apoliticals. Under this assumption, the results of these simulations are independent of the proportion of voters in the population who are ideological with respect to each dimension -- which implies, in turn, that the outcome of an election is the same under the weak, moderate, and strong versions of the Issue Publics model -- this because the preferences of the apoliticals will cancel each other out, leaving the preferences of the ideologues to determine the election outcome, regardless of the proportion of ideologues to apoliticals in the voting population. This implies in turn that, when employing voting blocs, voting systems' Condorcet efficiencies are identical under the weak, moderate, and strong versions of the Issue Publics model.

While the simulations I conduct assume 15 voting blocs and five candidates, I illustrate this simulation approach with an example which assumes only five voting blocs and three candidates.[8] Figure three shows the results of a simulated election in which the candidates A, B, and C, as well as the voting blocs V_1-V_5, were randomly generated from identical normal probability distributions. The voters in each bloc are assumed to evaluate the candidates according to the moderate Diffused Ideology model outlined in section I. The first five columns report the proportion of each voting bloc expected to

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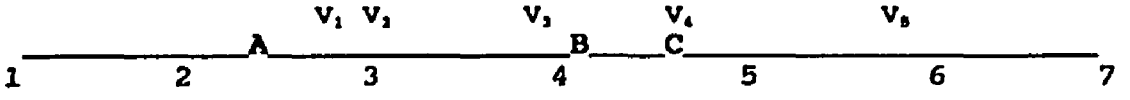
[8] I do not present a simulated election with five candidates because under this condition there are 120 different candidate rankings; to present the probability of every possible ranking for each voting bloc would require several pages.

FIGURE 6.3: SIMULATED ELECTION WITH FIVE VOTING BLOCS AND THREE CANDIDATES, ONE DIMENSION, DISPERSION = 1

MODERATE DIFFUSED IDEOLOGY MODEL



	PROPORTION OF CANDIDATE RANKINGS WITHIN EACH VOTING BLOC					PROPORTION OF CANDIDATE RANKINGS ACROSS BLOCS
	V_1	V_2	V_3	V_4	V_5	$(V_1+V_2+V_3+V_4+V_5)/5$
ABC	.31	.21	.13	.04	.01	.14
ACB	.19	.16	.10	.06	.03	.11
BAC	.23	.21	.18	.07	.02	.14
BCA	.09	.15	.26	.32	.33	.23
CAB	.12	.14	.14	.11	.07	.12
CBA	.07	.13	.19	.40	.54	.27

WINNER UNDER ALTERNATIVE ELECTORAL SYSTEMS

Plurality: C

Runoff: C

Coombs: C

Hare: C

Borda: B

rank the candidates in a particular ordering. For instance, 23% of the voters in voting bloc v_1 are expected to rank the candidates A > B > C, 18% A > C > B, and so on. Column six, which is the average of columns one through five, gives the expected proportion of all voters who will rank the candidates in each of the six possible orders. This column shows that the least common ranking should be ACB, which can be expected to occur 11% of the time, while the most common is CBA, at 27%.

The candidate ranking percentages reported in column six allow us to determine the winners under alternative electoral systems. The plurality system, for instance, counts the candidates' first-place votes. Because 14% of the voters are expected to rank the candidates A > B > C and 11% A > C > B, candidate A receives (12% + 11%) = 23% of the first-place votes. Candidate B receives a 37% vote share (14% rank the candidates B>A>C, and 23% rank them B>C>A), while C receives the remaining 40% of the votes, thereby winning under the plurality system. Candidate C is selected under the runoff, Coombs, and Hare systems, as well, while the Condorcet candidate B wins under the Borda system.

II.B: Simulation results for voting blocs

Table three presents simulated Condorcet efficiencies for elections involving 15 voting blocs and five candidates. For simulations conducted under the Diffused Ideology model, I present results for weak, moderate, and strong degrees of issue voting. By contrast, I report a single measure of each voting system's Condorcet efficiency under the Issue Publics model, since Condorcet efficiency under this model is independent of the degree of issue voting.

In the comparisons of voting systems' Condorcet efficiencies, two levels are given for both the number of dimensions

TABLE 6.3: CONDORCET EFFICIENCY OF VARIOUS ELECTORAL SYSTEMS UNDER ALTERNATIVE MODELS OF VOTING BEHAVIOR

(15 GROUPS OF VOTERS, FIVE CANDIDATES)

ONE DIMENSION

	DISPERSION = 1.0				DISPERSION = .5			
		DIFFUSED IDEOLOGY				DIFF. IDEOLOGY		
VOTING SYSTEM	ISSUE PUBLICS	W	M	S	ISSUE PUBLICS	W	M	S
PLURALITY	60	98	85	64	20	99	70	26
RUNOFF	79	99	92	82	40	100	78	46
HARE	80	100	93	85	44	100	77	47
APPROVAL	78	100	90	83	76	100	88	80
BORDA	88	100	96	91	86	100	90	87
COOMBS	94	100	100	96	85	100	93	89
% CONDORCET WINNERS	100	100	100	100	100	100	100	100

TWO DIMENSIONS

	DISPERSION = 1.0				DISPERSION = .5			
		DIFFUSED IDEOLOGY				DIFF. IDEOLOGY		
VOTING SYSTEM	ISSUE PUBLICS	W	M	S	ISSUE PUBLICS	W	M	S
PLURALITY	66	100	85	71	33	99	78	43
RUNOFF	84	99	97	86	51	100	81	58
HARE	85	99	94	89	50	98	83	62
APPROVAL	81	100	93	81	80	99	91	84
BORDA	88	100	96	89	87	99	95	90
COOMBS	96	100	100	99	89	99	97	91
% CONDORCET WINNERS	100	100	100	100	99	100	100	99

(one and two) and the relative dispersion of candidates to voters (1.0 and 0.5), while four different ideological profiles are studied (the Issue Publics and the weak, moderate, and strong Diffused Ideology). The results suggest four important conclusions. First:

Proposition 6.2: The Borda and Coombs systems select the Condorcet candidate more consistently than do other voting systems.

These systems' Condorcet efficiencies exceed 84% under every possible combination of parameters. This result, coupled with the results reported in table two (which show that the Borda and Coombs systems perform equally well in elections with small numbers of voters), justifies Proposition 6.2. This finding is consistent with Merril's (1986) analysis of Condorcet efficiency under the alternative assumptions of a random society and spatial model conditions with deterministic voting. The fact that the Borda and Coombs systems are efficient under a variety of different assumptions concerning voters' decision rules, the number of issue dimensions, and the relative dispersion of candidates to voters, suggests that both voting systems will serve the public well, insofar as the selection of the Condorcet candidate is desireable.

Proposition 6.3: The greater the degree of issue voting, the lower the likelihood that the Condorcet candidate will se selected.

For the weak Diffused Ideology model, which postulates low citizen issue involvement, every voting system selects the Condorcet winner at least 98% of the time; by contrast, under the assumption of high voter issue involvement represented by

the strong Diffused Ideology model, Condorcet efficiency declines for every voting system, falling below 50% for some simulations involving the plurality, runoff, and Hare systems. These results suggest that low degrees of political involvement (hence issue voting) are actually beneficial, in the sense that they enhance the likelihood that the Condorcet candidate will be selected.

The explanation for this finding is as follows: as citizens' issue involvement increases, it becomes increasingly likely that they will prefer candidates located near their preferred issue positions. Consequently, when a centrist (Condorcet) candidate is squeezed by surrounding opponents, she receives few first-place votes from an issue-oriented electorate; she therefore fares poorly under the plurality, runoff, and Hare systems, which count first-place votes. When citizens discount issues, by contrast, this "squeezing" effect is mitigated by voters' non-issue considerations.[4]

Proposition 6.4: When candidates take centrist position relative to voters, the likelihood that the Condorcet candidate is selected declines, especially under plurality.

When the candidate/voter dispersion ratio is 1.0 -- i.e.,

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[4] Merril (1985) incorporates the effect of voters' perceptual uncertainty of the candidates' spatial positions, which has the effect of decreasing the importance of issues in citizens' candidate rankings. His finding that perceptual uncertainty enhances Condorcet efficiency is therefore consistent with my findings, and the explanation he proposes is similar to mine: "it appears that under these [Hare and runoff] systems, a centrist [Condorcet] candidate may avert early elimination by surrounding candidates, and have a good chance of winning after the field is winnowed, if each candidate's position is effectively smeared over a wider territory through perceptual uncertainty (p. 396)."

when candidates are as dispersed as the voters -- the lowest simulated Condorcet efficiency is 60% (for the plurality system under the Issue Publics model). However, when candidates take more centrist positions represented by a .5 dispersion ratio, the results reported in tables three indicate that Condorcet efficiency frequently falls below 50% for the plurality, runoff, and Hare systems. Condorcet efficiency declines to a lesser degree under the Borda and Coombs systems.

These findings support the simulation studies by Merril (1985) and Chamberlin and Cohen (1978). When candidates cluster near the center, the most centrist candidate -- who is frequently the Condorcet winner -- is squeezed especially hard by her rivals, and therefore receives few first-place votes. Because the plurality, runoff, and Hare systems count first-place votes, Condorcet efficiency drops precipitously as candidates become more centrist; the remaining systems, which tend to select candidates who are broadly acceptable to the electorate, suffer less.

Proposition 6.5: In elections with large numbers of voters, the Condorcet candidate is more likely to be selected under the Diffused ideology than the Issue Publics model.

This result can be traced to the fact that in voting over large groups the preferences of apoliticals cancel each other out, leaving the ideologues to determine the winner; because centrist (Condorcet) candidates are likely to be "squeezed" when voters are issue-oriented, they fare poorly under the Issue Publics model. This is especially true for the plurality, runoff, and Hare systems, which count first-place votes.

CONCLUSIONS

The simulation results reported in this chapter provide insights into the properties of voting systems and their relationship to alternative models of mass political orientations. From the perspective of the social choice theorist, perhaps the most important result is the finding that, by the criterion of Condorcet efficiency, the plurality system performs poorly in comparison to other voting systems; this because centrist candidates tend to be "squeezed" by rivals, and hence receive few first-place votes. The poor performance of the plurality system -- and to a lesser extent the runoff and Hare systems, which also emphasize first-place votes -- holds under to a variety of assumptions concerning the size of the electorate, the dimensionality of the issue space, and the voters' decision rules. The Borda and Coombs systems, meanwhile, performed well under every possible set of assumptions.

Although the poor performance of the widely-used plurality system is unsettling, our results suggest a counterintuitive proposition which alleviates this problem: when voters choose probabilistically and assign sufficiently small importance to issues (as posited under the weak Diffused Ideology model), the tendency of centrist candidates to be squeezed is lessened, and the Condorcet candidate is more likely to be selected. Therefore, to the extent that the selection of the Condorcet candidate is desireable, an electorate which is largely "innocent of ideology" may actually ensure political stability.

CHAPTER 7: WHY SO MUCH STABILITY?

In this dissertation I have advanced several arguments to explain why democratic representation processes function successfully in the face of the obstacles identified by behavioral researchers and social choice theorists. I have worked out these arguments, moreover, within an analytical framework which combines the behavioral researcher's empirically-grounded perspective on individual preferences and the social choice theorist's formal models of preference aggregation. It is now time to review the results of this effort. In this concluding section I present brief, non-technical summaries of some of the major arguments presented in this dissertation, and discuss their importance for political science research. For each argument I ask two questions. First, what is the central intuition which underlies this argument? Second, does this intuition tell us anything new and important about politics?

I consider in turn each of the arguments I have advanced in response to the questions about democratic representation processes posed at the end of chapter one (pages 13-14). These questions are: 1) Can elected representatives interpret and implement the public's preferences?, 2) How often will unrepresentative elections occur?, and 3) Will party platforms be stable, and will they reflect voters' policy preferences?

Question 1: Can elected representatives interpret and implement the public's preferences?

Answer: Yes. My argument consists in demonstrating that even if large segments of the public are uninformed and uninvolved in politics, the public's preferences will exhibit a collective ideological structure, which makes them possible for elected officials to interpret. Moreover, this collective structure precludes cyclical majorities, so that representatives may implement a stable majority decision. The logic which underlies my demonstration is that, with large numbers of voters, the random or "non-ideological" considerations which motivate individuals tend to cancel each other out, leaving ideology as the dominant factor which structures public opinion. Thus, even though some voters are swayed by candidate images, others by partisanship, and still others by retrospective evaluations of incumbent performance, these voters' ideological motivations -- however weak they may be -- stand out when their preferences are aggregated. For this reason, groups of voters are usually more ideological than the individuals who compose them.

Is this argument important? Of the many arguments advanced in this dissertation, I feel most confident in asserting that this demonstration captures something fundamentally important about politics. I state this, first, because the collective ideological structures which I predict should occur in actual political systems -- specifically, "Borda" preference margins -- in fact do occur in France, Britain, and the United States. This impressive empirical confirmation convincingly demonstrates that my argument is no mere "technical" exercise. Second, I believe it provides an insight into why politicians and political commentators routinely speak of groups of voters (i.e., the far left, moderates, etc.) as thought these groups display coherent, ideologically-ordered preferences. An

interesting project would be to extend this collective perspective on ideology to socioeconomic or ethnic groups -- such as African Americans, Catholics, union members, and so on -- to determine whether these groups also display collectively ideological preferences.

Question: How often will unrepresentative elections (e.g., elections which fail to elect the Condorcet candidate) occur?

Answer: Unrepresentative elections will occur infrequently, despite the conclusions of social choice theorists. Paradoxically, the less issue-oriented the electorate, the lower the probability of an unrepresentative election. Social choice theorists have concluded that Condorcet candidates -- e.g., candidates who would defeat all rivals in a series of pairwise votes -- are extremely vulnerable under the plurality system, because such centrist candidates are liable to be "squeezed" on the left and the right by less centrist competitors, and hence receive few first-place votes. I argue that this conclusion depends on the unrealistic assumption that voters are entirely issue-oriented. If voters are only partly motivated by issues -- as in the behavioral model of the vote -- then centrist candidates may survive being squeezed. My argument thereby suggests a paradoxical hypothesis: centrist candidates, who are broadly acceptable to the public on the basis of issues, may prosper precisely <u>because</u> voters are not entirely issue-oriented. In general, these centrist candidates fare better under the behavioral model of the vote than under the pure issue voting models employed by social choice theorists.

<u>Is this argument important?</u> My argument implies that social choice theorists are unduly pessimistic about the likelihood of unrepresentative elections, and for this reason it is important to social choice theorists. From the standpoint of

behavioral research, the argument is important in this sense: it provides a novel insight into how electorates which are largely unmotivated by issues may nonetheless select representatives who reflect their policy preferences. This demonstration therefore helps explain why democratic representation processes can function in a mass public which falls short of the democratic ideal.

I believe this argument will achieve wide currency among political scientists if I extend it in the following directions. First, I hope to recast my formal analysis of voting systems' Condorcet efficiencies from chapter six -- which is chiefly of interest to social choice theorists -- into a less technical argument along the lines outlined above. Second, this argument will appear far more compelling if I am able to support my conclusions, which are based upon Monte Carlo simulations, with data from historical elections. As outlined in chapter six, this undertaking is difficult due to the paucity of historical data. However, one possible project for future research is to study the voting patterns of different groups of citizens selected according to the importance they attach to issues. My argument implies that groups of issue-oriented voters would tend to select Condorcet candidates less often then groups which deemphasize issues.

Question: Will party platforms reflect voters' policy preferences, and will these platforms be stable?

Answer: <u>Yes</u>, particularly in multiparty systems. I argue that in multiparty <u>but not</u> two-party elections, vote-seeking parties are motivated to adopt platforms which reflect their partisans' policy preferences. That is, in a multiparty system each party will usually receive more votes by adopting a platform which appeals to its current constituency than by courting new constituencies via new sets of policies. In two-party elections, by contrast, parties are motivated to propose

policies which appeal to political independents at the expense of party loyalists. Although the formal analysis underlying this conclusion is difficult to "translate", its central intuition can be approximated as follows: 1) when voters choose from among several parties, they

generally find at least one party very appealing. Therefore, 2) in order to receive first-place votes in a multiparty election, a party must appeal strongly to some segment of the electorate; a weaker but more generalized appeal -- such as will occur if the party neglects its base while targeting political independents -- will result in the party's being everybody's second or third choice. Therefore, 3) in multiparty systems, parties are motivated to reflect the policy preferences of party loyalists, even at the cost of alienating other constituencies.

This prescription for parties' vote-seeking strategies in multiparty elections has an analogy in parties' strategies for maximizing representation in parliament. Under the plurality system, a party wins more seats by finishing first in some districts and last in others than by finishing second everywhere. By the same logic, a party will usually win more votes by appealing strongly to its partisans, while neglecting other constituencies, than by appealing weakly to the electorate as a whole. <u>In a multiparty election, a party cannot survive by being innocuous</u>.

This pressure for responsible parties also helps ensure that parties platforms will be stable, in the sense that formal equilibria exist in multiparty spatial voting games. What generally destroys equilibria in spatial models with deterministic issue voting is that parties "leapfrog" each other; however, under the behavioral voting model, parties generally stay near their partisans in the issue space. Therefore, the behaviorist's model of the vote produces stability in spatial voting games.

Is this argument important? From the perspective of spatial modelers, I believe my formal results on multiparty elections -- which indicate that policy equilibria generally exist -- are extremely important. Spatial modelers have uniformly concluded that such equilibria do not exist when voters choose deterministically. I therefore believe my formal approach, which incorporates the behavioral voting formulation into spatial voting games, makes a major contribution to formal theory on party competition.

From the perspective of behavioral research, I feel my argument is important in some ways but not others. I believe the insight that parties in multiparty elections must appeal strongly to some segment of the electorate, while catch-all parties can survive in two-party systems, is important. It is interesting that the "directional" theory of voting, which approaches party competition from a completely different theoretical perspective, has similar implications. However, I do not claim that my argument provides a crucial insight on why parties tend to advance stable platforms. I state this because in actual political systems, a variety of considerations prevent parties from capriciously changing their policies in order to seek votes. These include the policy motivations of party activists, the fact that such changes might appear both cynical and opportunistic, and so on. I suspect that in the real world of politics, these factors anchor party platforms at least as firmly as do the strategic considerations outlined above.

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