PROSPECTUS

Party Identification as a Bayesian Prior:

Some Suggestions Toward a Synthesis of Recent Research Perspectives

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ABSTRACT

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Recent research has rejected the notion of party identification as a permanent vote commitment rooted in childhood socialization and offered a number of alternative and/or complementary conceptualizations including (1) party identification as a mechanism for resolving ties when issue preferences fail to lead to a determinate choice (Brody and Page, 1973; Kelley and Mirer, 1974); (2) party identification as a sort of "running balance sheet" on the parties, which changes with new experiences and which combines with current issue concerns to determine voter choice (Cain, 1977; Fiorina, 1977); and (3) party identification as a perceptual filter and distorting lens.

We propose a reformulation and synthesis of several strands of research into party identification based on a Bayesian model of information processing in which the analogue to party identification is a continuous probability measure of an individual's a priori expectations as to partisan choice. We explicate the logic of this model and show how previous experience and new information can be expected to interact to determine voter choice.

In our full paper we shall extend our basic model by considering nonrandom mechanisms for cue sampling which are the analogue to perceptual distortions caused by partisan bias; by empirical estimates of our model using Respondent's Partisan Attitude (RPA) as a measure of number and direction of voter cues (See Stokes, Campbell, and Miller, 1958; Campbell and Stokes, 1959; Kelley and Mirer, 1974; and Mackelprang, Grofman and Thomas, 1975); by reviewing the evidence in the experimental psychology literature on human beings as "conservative information processors" (Edwards and Philips, 1964); and by considering more complex hypothesis testing procedures than the two hypothesis symmetric case we initially describe.

I. Introduction

Party identification is most commonly taken as a measure of vote commitment. If a voter identifies himself/herself as a (strong) Democrat then he or she has been commonly regarded as expressing a commitment to voting Democratic. A failure to do so is then taken as behavior which is in need of explanation. Such an explanation might involve other factors influencing the vote decision, e.g., "rational choice" theorists argue for the importance of issue preferences and perceptions as to where candidates/parties stand with respect to those issues (e.g., Davis, Hinich, and Ordeshook, 1970); traditionally, sociologically oriented theorists have looked at reference group identifications and peer pressures (e.g., Berelson, Lazarsfeld and McPhee, 1954); and recently political scientists have suggested the growing importance of candidate evaluations in terms of competence, trust affect, etc. (e.g., Weisberg and Rusk, 1970; Nissen, 1975). The compatibility of those alternative approaches is an open question. In practice, of course, everything can be thrown together into a regression hopper or fed into a multidimensional spatial model but such an approach can be argued to be an atheoretic lumping together of apples, oranges and artichokes.

A number of authors (in particular, Shapiro, 1969; Brody and Page, 1973; Kelley and Mirer, 1974; Cain, 1977; and Fiorina, 1977) have attempted a synthesis. We may, with considerable injustice, summarize their suggestions as follows: (1) Party ID is not a measure of vote commitment, but rather merely a mechanism for resolving ties when issue preferences fail to lead to a determinate choice. (2) Party ID is not a fixed allegiance or commitment, rather it is a summary judgment, i.e., a sort of running balance sheet which changes with new experiences and which combines with current issue concerns to determine voter choice. (3) Party ID acts as a filter and distorting prism to shift perceptions of party candidate issue positions and affective evaluations in a direction congruent with the individual's pre-election partisan bias and to screen out information discrepant with previous positions.

(1) Several authors have rejected the view that party ID is a vote commitment and have relegated party ID to the status of a mechanism for resolving ties.

As elegantly stated by Kelley and Miller (1974), the "Voter's Decision Rule" is conceived of as follows:

> "The voter canvasses his likes and dislikes of the leading candidates and major parties involved in an election. Weighing each like and dislike equally, he votes for the candidate toward whom he has the greater number of favorable attitudes, if there is such a candidate. If no candidate has such an advantage, the voter votes consistently with his party affiliation, if he has one. If his attitudes do not

incline toward one candidate more than another, and if he does not identify with one of the major parties, the voter reaches a null decision" (Kelley and Mirer, 1974: 574, emphasis ours).

Using this "Rule," Kelley and Mirer (1974; 575) report an average of 88% correct predictions as to vote direction for those voters in 1952, 1956, 1960, and 1964 U. S. Presidential elections who reported how they voted. Most of these predictions are based on respondent's attitudes toward candidates and parties, only a few on Party ID. Furthermore, they find the "Rule" a considerably better basis for predicting votes than voter's partisan identifications (Kelley and Mirer, 1974: 575-576). However, the Rule predicts wrongly most often in those cases where partisan attitude was inconsistent with party ID (see also Nissen, 1975).

Brody and Page (1973) have with considerable success extended this model to the multicandidate case in looking at the 1968 U.S. Presidential election, correctly predicting the behavior of 90% of the voters in 1968.

(2) Several authors have rejected the view that party ID is a childhood-instilled, affectively based allegiance and viewed party ID as a summary of past political experiences which changes with new experience and which combines with current issue concerns. According to Fiorina (1973: 610-611), "Party ID at any given point . . . (becomes) a function of issue positions prior to that point." It represents "a citizen's running balance sheet on the parties" (Fiorina, 1977: 618).[1]

While Fiorina's (1977) paper is a purely conceptual analysis; inspired in part by Fiorina's ideas, Cain (1977) has made use of logged econometric models, in which socialization biases can persist over time to maintain a core of "partisan" support for political parties, to examine political choice, in Great Britain. In estimating this model, Cain (1977: 23) finds the British electorate to be "extremely issue responsive." Cain also looks at 1970-74 British panel data and finds support for a model which posits that high partisanship[2] means that an individual brings a substantial predetermined bias to an electoral decision at any time t, such that the greater the amount of predetermined bias, the more immune an individual's preference will be to change induced by rational response to immediate issues," (Cain, 1977: 27).

(3) It has long been recognized (Berelson, Lazarsfeld and McPhee, 1954: 215-253; McGrath and McGrath, 1962; Sigel, 1964; Kirkpatrick, 1970) that to a certain extent the voter tends to see or to invent what is favorable to himself and to distort or to deny much of what is unfavorable" (Berelson, Lazarsfeld and McPhee, 1954: 83). The magnitude of such perceptual distortions is commonly held to be a function of partisan commitment and identity. Thus, to attempt, as rational chance modelers do, to explain a voter's choice in terms of the congruity between his issue positions and those of the candidate/party he supports may be to commit a causal

fallacy--the apparent congruity between issue positions and choices may result from preexisting biases which distort the candidates view to reflect the voter's own and thus reflect rationalization for, rather than reason for, choice. This point, is made forcefully by Shapiro (1969), in his attempt at synthesis of rational choice and social psychology in perspectives (see also Goldberg, 1969; Brody and Page, 1972). We might add the observation that, on many issues, the voter's stand may largely reflect that of the party/candidate/reference group from which he is taking cues. Thus, with both these factors operating, it would not be surprising to find a close fit between a voter and the candidate of his choice on many issue dimensions, even if other kinds of concerns were "driving" his actual vote choice. A comprehensive model of a voter choice should take into account the phenomena of voter's perceptual distortions and its relationship to partisanship.

II. Party Identification as a Bayesian Prior: The Basic Model

We propose that party ID be conceived of, not as a commitment by an individual to a party, but rather as a prediction by an individual of his own future voting behavior, i.e., as an a priori estimate of the likelihood of his own future choice(s), using Bayes Theorem (Coombs, Dawes, and Tversky, 1970), such an estimate of prior odds can then be integrated into an a posterior prediction of voter choice which takes into account new data which would lead the a priori odds to be revised.

Let us consider a simple urn model, i.e., imagine a voter to draw N balls from an urn.[3] These are of two types, D-type balls and R-type balls. Let us use r to denote the number of R-type balls drawn. Thus, $N-r$ gives the number of D-type balls drawn. Let N_r represent a drawing which consists of r R-type and $N-r$ D-type balls. Let H_A be the hypothesis that the proportion of R-type balls in the urn is p_A. Similarly, let H_B be the hypothesis that the proportion of R-type balls in the urn is p_B. Bayes Theorem in one of its simplest forms tells us that

$$p(H_A|N_r) = \frac{p(N_r|H_A)\ p(H_A)}{p(N_r)} \tag{1}$$

An identical equation can, of course, be written for H_B. By dividing the two equations, we may generate the relative probabilities of H_A and H_B given N_r as below:

$$\frac{p(H_A|N_r)}{p(H_B|N_r)} = \frac{p(N_r|H_A)\ p(H_A)}{p(N_r|H_B)\ p(H_B)} \tag{2}$$

Let us denote the ratio $\frac{p(H_A|N_r)}{p(H_B|N_r)}$ as Ω_1, the ratio $\frac{p(H_A)}{p(H_B)}$ as Ω_0, and the ratio $\frac{p(N_r|H_A)}{p(N_r|H_B)}$ as L. L is the relative likelihood of r R-type balls in N draws given true proportions of R-type balls of p_A and p_B respectively; Ω_0 is the a priori relative likelihood of H_A vs. H_B; Ω_1 is the a posteriori likelihood of H_A vs. H_B given that we now know that of N observations, r yielded R-type balls. We may recast equation (2) as

$$\Omega_1 = L\Omega_0 \tag{3}$$

In other words, the actor's posterior odds concerning whether p_A or p_B is the true proportion of R-type balls in the urn is a multiplicative function of L and Ω_0, i.e., the product of his previous (a priori) estimate as to the relative probabilities of H_A and H_B and the likelihood that the observation N_r would have been generated if H_A rather than H_B were true.

Let us now interpret our urn model as a cuing model for voter choice. Let R-type balls be cues leading an individual to vote Republican and D-type balls be cues leading an individual to vote Democrat. Assume such cues are (randomly) sampled from the voter's decision environment. Assume further that $p_A > \frac{1}{2}$ and $p_B < \frac{1}{2}$. We may either posit a deterministic vote rule: if H_A is estimated as being more likely than H_B the individual will vote Republican, if H_B is seen as the more likely then the individual will vote Democratic; or we may posit the probabilistic rule that the voter's likelihood of voting Republican is given by $\frac{\Omega_1}{1 + \Omega_1}$. We may interpret $\frac{\Omega_0}{\Omega_0 + 1}$ as the continuous probability analogue to party ID. In the absence of new cues, $\frac{\Omega_0}{\Omega_0 + 1}$ gives the a priori propensity of the individual to vote Republican based on his estimate of the relative probabilities of H_A and H_B being true. Similarly, Ω_1, may be interpreted as an indicator of voter choice. In the deterministic model, if $\Omega_1 < 1$ (or equivalently if $\frac{\Omega_1}{\Omega_1 + 1} < \frac{1}{2}$) we predict the voter to vote Republican; while if $\Omega_1 < 1\left(\frac{\Omega_1}{\Omega_1 + 1} < \frac{1}{2}\right)$ we predict him to vote

Democratic. In the probabilistic model, we estimate the likelihood of voting Republican as

$$\frac{\Omega_1}{1 + \Omega_1} . \tag{4}$$

In general,

$$L = \frac{p_A{}^r \ (1 - p_A)^{N-r}}{p_B{}^r \ (1 - p_B)^{N-r}} \tag{5}$$

If $P_A = 1 - P_B$, we obtain

$$L = \left(\frac{p_A}{1 - p_A}\right)^{2r-N} \tag{6}$$

Substituting the value for L in (6) above in equation (3) and taking logarithms leads us to the following interesting equation:

$$\log \Omega_1 = (2r - N) \log \left(\frac{p_A}{1 - p_A}\right) + \log \Omega_0 \tag{7}$$

Note that, in this case, only the difference $(r - (r - N))$ between the number of pro-Democratic and pro-Republican cues is relevant--the total number of cues sampled has in effect been eliminated from consideration. In this special symmetric use, the likelihood that an individual will vote Republican depends on three things (a) the logarithm equivalent in our formulation of party ID, (b) the excess of Republican inclining cues over Democratic inclining cues sampled from his current decision environment, and (c) the proportion p_A. The further p_A from $\frac{1}{2}$, the greater the impact of present cues on voter choice. For example, if p_A is $\frac{2}{3}$, $\left(\frac{p_A}{1 - p_A}\right)$ is 2, while if p_A is $\frac{3}{4}$, $\left(\frac{p_A}{1 - p_A}\right)$ is 3. Thus, in our simplified two-hypothesis symmetric model $|p_A - \frac{1}{2}|$ provides a direct measure of the extent to which a voter is past vs. present oriented. We may offer the following intuitive assessment of p_A: if voters see politics as a tweedledum-tweedledee contest (i.e., if they anticipate little in the way of relevant differences between opposing candidates and party platforms in any given election) then, the party whose candidates they previously saw as more likely to benefit them (albeit only marginally) will continue to be supported--even though significant differences between the candidates/parties which would lead them in the opposite direction are in fact currently perceived.[4] On the other hand, if voters expect there to be party differences (i.e., if p_A and p_B are relatively far apart) then, caeteris paribus, voter choice (and, in the long run our analogue to party identification, Ω_0) will be more volatile.

III. Extensions of the Basic Model and Plans for Future Research

There are a number of directions we can go from here:

(1) The model we have presented can be extended to deal with the issue of cognitive distortions induced by partisan bias by postulating some non-random mechanism(s) for cue sampling.

(2) We can extend our model to deal with the test of multiple hypotheses, and introduce the notion of a maximally likely hypothesis.

(3) We can examine the experimental psychological literature to see to what extent individuals process information/cues in accordance with Bayes Theorem.

(4) We can estimate the fit of our model using data on party ID as a measure of Ω_0, and Respondent's Partisan Attitude (Stokes, Campbell, and Miller, 1958; Campbell and Stokes, 1959; Kelley and Mirer, 1974; Mackelprang, Grofman and Thomas, 1975) as a measure of r and N, and then find the parameter p_A which optimizes fit to voter choice.[5]

While we hope to explore all four of these areas in our final paper, we wish now only to briefly comment on (3), the extent to which human beings process information in accord with Bayes' Theorem.

A number of experiments (e.g., Edwards and Philips, 1964; Peterson, Schneider and Miller, 1965; Peterson and Miller, 1965; Philips and Edwards, 1966) have compared the "intuitive" revision of subjective probabilities with the correct revision as calculated by means of Bayes' Theorem. Almost without exception, the findings are that human beings are "conservative information processors" (Edwards, Lindman and Philips, 1965: 303), i.e., the magnitude of subjective revision is considerably less than that warranted by the new information provided.

Let us briefly consider a typical experiment:

> "The subject is confronted with two book bags each of which contains 100 poker chips. One of the bags, however, contains 70 red and 30 blue poker chips, whereas the other bag contains 70 blue and 30 red poker chips. One of the book bags is selected at random and the question is which book bag was chosen ... (Poker chips are sampled from

> the book bag randomly one at a time with replacement, and the subject is asked to estimate ... the probability that the selected book bag is the predominantly red one.) Suppose our subject has sampled 12 poker chips of which 8 were red and 4 were blue. This outcome is certainly evidence in favor of the hypothesis that the selected book bag is the predominantly red one. How strong is this evidence, or what is the probability of this evidence given the observed sample? To calculate this value, let H_R and H_B denote the events (or the hypotheses) that the selected book bag is predominantly red and predominantly blue, respectively, and let N_r (12_8) denote the event (or the datum) that observed sample contains 8 red and 4 blue poker chips, respectively" (Coombs, Dawes, and Tversky, 1970: 146).

Since $p_R + p_B = 1$, we may use equation (6) to determine the likelihood ratio, L, of the two hypotheses H_R and H_B. Doing so we obtain an L value of 29.6. Hence, since $p(H_R) = p(H_B) = \frac{1}{2}$, substituting in equation (2), we obtain

$$p(H_R|N_r) = \frac{L}{L+1} = .97 \quad . \tag{8}$$

This value seems surprisingly high to both naive and sophisticated subjects. Most people when faced with this problem produce estimates around .75 and find it difficult to believe that a sample of 8 red and 4 blue poker chips provides such overwhelming evidence in favor of H_R (Coombs, Dawes, and Tversky, 1970: 147).

The implications of the finding that human beings are conservative information processors for the study of party ID are, we believe, quite clear. First, there will be a strong bias in favor of retention of previous party identification and shifts in party ID will be incremental.[6] Secondly, party ID will "count more" in voter choice than would be expected on the basis of the pure Bayesian model we have presented.[7]

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Footnotes

[1]In the initial model proposed by Fiorina (1977: 610-11) party ID is assumed to combine additively with current issue concerns, but Fiorina has proposed an additive model only for purposes of simplicity. He then goes to point out that the simple additive structure is only one among many formal structures which could encompass the considerations (retrospective and prospective voting, discounting of platform promises in terms of their credibility and based on voter's knowledge of candidate's/party's previous behavior, etc.) which are the chief concerns of his conceptual synthesis. (See Fiorina, 1977: 611.)

[2]Rather than the usual discrete Likert scale categories of party ID, for Cain, "partisanship is likened to a predetermined bias having the form of a continuous probability distribution with different likelihoods of behavior at various points along the continuum ..." (Cain, 1977: 31). Our approach is the same (see below).

[3]Psychologists seem to prefer book bags and poker chips to urns and balls (See e.g., Edwards, 1966).

[4]Note that, in our initial simplified two hypothesis model, voters are not permitted to entertain alternative values of p other than p_A and p_B. Thus, if p_A and p_B are both close to $\frac{1}{2}$, even if $2r-N$ is quite large, the hypothesis that p is closer to 1 than to $\frac{1}{2}$ will not under our assumptions be considered.

[5]Alternatively, we could allow p_A to vary across individuals using other variables (e.g., "What difference do you think it will make who wins the election.") to classify individuals as to their probable p_A levels.

[6]Panel data suggests that most shifts in party ID occur within party, across categories of strength of party identification, rather than in terms of reversals of party identification (Brody, 1977). Recall, also, that we are here conceiving of party identification as a continuous probability measure.

[7]Thus, we would anticipate in testing the fit of such a model that we would underestimate the importance of party ID and mispredict the choices of some voters for whom current candidate and issue evaluations differ from previous party identification.