

CALIFORNIA INSTITUTE OF TECHNOLOGY

Division of the Humanities and Social Sciences
Pasadena, California 91125

CANDIDATE PREFERENCE UNDER UNCERTAINTY:
AN EXPANDED VIEW OF RATIONAL VOTING

Herbert F. Weisberg
Department of Political Science
Ohio State University
Columbus, Ohio 43210

and

Morris P. Fiorina
Division of the Humanities and Social Sciences
California Institute of Technology
Pasadena, California 91125

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Two decades ago Anthony Downs presented his economic theory of democracy, in the course of which he provided a model of the individual vote decision.¹ While recognizing that uncertainty permeated the vote decision, Downs chose against full incorporation of uncertainty into his model. Subsequent work on rational voting has generally followed Downs lead in admitting that uncertainty exists but proceeding as if it did not. Paradoxically, formal models of candidate preference have been remarkably informal in their treatment of uncertainty effects.²

This paper examines how rational voters might choose between candidates under conditions of uncertainty. We shall emphasize two rational voting approaches -- "defensive voting" and "credulous voting" -- which have previously escaped notice. Additionally, we shall map out some of the implications of electoral uncertainty for empirical tests of the rational model and for the development of spatial theory. We shall not attempt to prove how citizens decide to vote, but we shall expand considerably the conventional interpretation of rational voting.

CHOOSING A CANDIDATE: THE IMPACT OF UNCERTAINTY

The behavioral literature on voting has focused on a variety of factors in trying to answer why citizens prefer one candidate over another. Such factors include group allegiances,³ party identification and short-term attitudes toward the candidates

and issues,⁴ and the relation between the citizen's issue positions and those advocated by the competing candidates.⁵ In contrast to the complexity of the empirical literature, the theoretical literature on candidate preference is simple and straightforward. Models of the voting decision have abstracted from the richness of the empirical literature and posited a party differential which neatly summarizes a citizen's candidate evaluations.⁶ The citizen imagines what his overall welfare level would be given the election of candidate A, compares this estimate with that given the election of candidate B, and prefers the candidate whose associated welfare level is higher. The party differential is the difference between these two estimates.

This theoretical discussion of the party differential is neat and tidy, deceptively so. In passing from the rich complexity of the empirical literature to the stark simplicity of the theoretical, an important consideration is left behind: the pervasive uncertainty facing the citizen. No matter how calculated, the party differential is an estimate shrouded in uncertainty.

Uncertainty enters into the voting act in a number of ways. There is first the uncertainty attributable to the voter -- his lack of information, or limitations on his information processing capacity.⁷ A candidate might project a specific policy position on an issue only to have the citizen misperceive that position. Statistically, the citizen perceives the true candidate position plus (possibly) an error term. Given such misperception, an inaccurate party differential may lead the citizen to vote for a

candidate who actually would provide less utility than an available opponent.

Second, there is uncertainty which stems from the behavior of the competing candidates. Such uncertainty takes two forms. "Equivocation" occurs when the candidate says different things to different audiences, while "vagueness" exists when the candidate conceals his exact intentions. Equivocation produces a range of perceived candidate positions across the electorate, with different citizens perceiving different positions. The citizen, in effect, takes a sample of a single candidate position from the range of positions the candidate projects and then uses that position to calculate the party differential. In contrast, vagueness (such as Nixon's announcement in the 1968 campaign of a secret plan to end the Vietnam War) produces a range of perceived candidate positions within each citizen. Note that in this latter case even the most informed, intelligent elements of the electorate will have party differentials which are uncertain estimates.⁸

Finally, there are uncertainties inherent in the electoral process. All citizens realize that future events and situations are inherently uncertain. Thus, they must choose their government without full knowledge of the agenda that government will face. Elected officials may justifiably abandon past promises in the face of changing circumstances and issues. Additionally, candidates have been known to lie, or at least to give the appearance thereof; the electoral process does not bind candidates to their previously stated positions. Moreover, no candidate can enact and enforce a

policy all by himself. Even if the candidate is clear and honest, he might have to accept compromises in order to have his programs made into public policy by the legislature, the courts, and the bureaucracy. As a result of these factors, citizens realize that situations change, that candidates may be lying, and that candidates eventually have to compromise their positions. Facing such strong uncertainties even the informed citizen knows that he can regard a candidate's stated positions only as rough indicators of some range of public policies which might eventually result from the candidate's election. Statistically, the citizen places an interval around the point location projected by the candidate, so that the citizen perceives a range of possible issue positions for a candidate even when the candidate projects only a single issue point.

Table 1 summarizes these several sources of uncertainty. The candidate may project either a point or a range and the citizen may perceive a point or range either accurately or inaccurately. Note also that these various forms of uncertainty are likely to occur in combinations. The candidate may project a point, but the citizen may both misperceive that point and construct a range around the misperceived point. The candidate may project a range, but the voter may misperceive its end points. The previous literature has recognized the possibility of misperception, along with the uncertainty due to the electoral process. But once it is recognized that the uncertainty related to the electoral process cannot be eliminated from voting, the nature of the

decision-making problem facing the citizen is fundamentally transformed. The citizen may perceive the candidate as a range of issue positions rather than as a single issue point, and this could have important effects on both empirical and formal analyses of voting.

(Table 1 here)

These various forms of uncertainty are no doubt the root cause of the complexity of the empirical literature on candidate preference. Voter uncertainty? Use expert advice or the endorsements of reference groups. Candidate ambiguity? Consult party labels and group endorsements. An unpredictable future? Consult past performance, ideology, and party identification. The variety of "determinants" of the citizen's candidate preference simply reflects the continuous attempt to clarify the ambiguous political stimuli constantly faced by the citizen.

But despite the preceding array of uncertainty-reducing factors, a residue of uncertainty inevitably remains. Past performance cannot tell us how the candidate will respond to new issues which may arise, nor can group allegiances based on past performance. At best, these devices can suggest bounds on the activities a candidate is likely to undertake; Ted Kennedy's urban policy is not likely to include mass executions in the central cities. A range of possibilities is suggested, not a precise point.

The foregoing discussion is prelude to a simple observation: A citizen's estimate of a candidate's position in an

TABLE 1. TYPES OF VOTING UNCERTAINTY

<u>Citizen Perceives</u>	<u>Candidate Projects</u>	
	<u>Point</u>	<u>Range</u>
Point accurately	Certainty	Uncertainty due to candidate's equivocation
Range accurately	Uncertainty due to the electoral process	Uncertainty due to candidate's vagueness
Point or range inaccurately	Uncertainty due to voter's limited information	Uncertainty due to voter's information

issue space is likely to be much less precise than typically assumed in electoral theory (or typically measured in empirical research). As a consequence, spatial theories based on precise candidate locations are insufficiently general in that the candidate strategies they deduce may be inappropriate when uncertainty is taken into more complete account. Correspondingly, the information obtained by empirical studies of candidate position-taking may not have the meaning that is generally assumed.

To address these contentions, consider the seven-point issue scales devised by the 1968 election surveys of Brody and Page and subsequently adopted by the Center for Political Studies. The respondent is shown a seven-point scale relating to an issue with the two end points labeled (such as seeking immediate withdrawal or military victory in the Vietnam War), and the respondent is asked his or her own position on the scale along with the positions of the presidential nominees on the same scale. In attempts to operationalize the spatial model of voting, the differences between the respondent's position and the respondent's perception of the candidates' positions have been used to measure the party differential. But what happens if the respondent perceives the candidate as a range on the scale rather than as a single point?

When a citizen tells an interviewer that Hubert H. Humphrey is at position four on a seven-point scale, he may believe that Humphrey is exactly at position four. A much more likely possibility is that he believes Humphrey is somewhere between two and five, or three and six, or whatever. He simply obliges the

interviewer by settling on an exact point. But what does a point estimate of a candidate position really signify? And, how do citizens use such point estimates to calculate their party differentials? These are separate questions which might have different answers.

We know of no way to answer the first question with data presently available. Are citizens intuitive statisticians who consistently reveal the mean of their judgmental distributions to the interviewer? We will make the standard assumption that this is the case, but we recognized it will not always be correct. Consider, for example, a citizen who believes that Richard Nixon will either pull out of Vietnam or escalate the war. His subjective distribution over a seven-point scale might appear as in figure 1. Where will this citizen place Nixon on the scale? At the mean -- about four -- even though he is certain that Nixon is not at four? Or will he select one of the more likely end points, one or seven? Assuming that citizens invariably respond with means may very well lead to error in some unknown fraction of cases, but there is no alternative to the assumption at present.

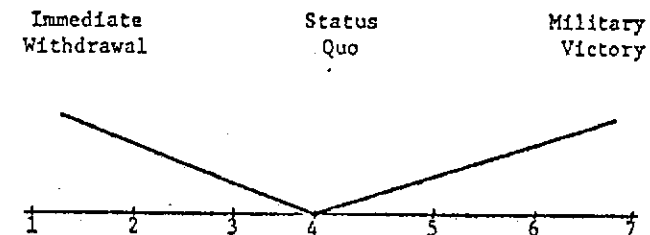


Figure 1: Hypothetical Nixon Policy Distribution on ICPR Seven-Point Vietnam Scale

Having assumed that citizens reveal mean candidate positions, the next question is whether those means determine the party differential. The citizen who wants to pull out of Vietnam immediately might say that Nixon is at position four on the scale but still might compute his party differential based on the possibility that Nixon is at position one or on the possibility that Nixon is at position seven. Assume our same citizen judges Humphrey's Vietnam position as in figure 2 with a mean of four. Is the citizen's party differential on Vietnam then necessarily zero? Or do other parameters of his judgmental distributions come into play? The next section of this paper explores the possibilities.

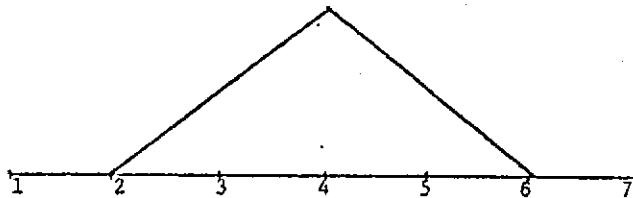


Figure 2: Hypothetical Humphrey Policy Distribution on ICPR Seven-Point Vietnam Scale

ALTERNATIVE CALCULATIONS OF THE PARTY DIFFERENTIAL

Most formal analyses presume that the citizen's calculation of the party differential is a decision made under certainty -- perfect information about the positions of the candidates. Only Shepsle has performed an analysis which explicitly includes uncertainty in the candidate preference decision, an analysis which

builds on strong simplifying assumptions.⁹ Each candidate presents himself as a lottery: a probability distribution over a policy space (one dimensional in Shepsle's analysis). This lottery is "objective" in the sense that every citizen perceives the same lottery, and this objective lottery is completely under the control of the candidate. Given these assumptions Shepsle carries out an analysis of electoral competition under uncertainty. But his work is relative to a particular model of decision-making under uncertainty. Shepsle's voters are expected utility maximizers: their choices over lotteries satisfy the axioms of Von Neumann-Morgenstern expected utility theory.¹⁰ Given an electorate which makes decisions in accord with some other theory of decision-making under uncertainty, different conclusions may follow. In this section we will illustrate via examples, the voting decisions of citizens who follow different models of decision-making under uncertainty. We also will discuss the kind of voter psychology which might suggest adoption of one model rather than another and the role of partisanship and candidate orientation for the different types of voters.

Model 1: Voting as Expected Utility Maximizing

Consider the following example in figure 3.

	Immediate Withdrawal			*	Military Victory		
	1	2	3	4	5	6	7
Candidate A:		1/3	1/3	1/3			
Candidate B:	1/7	1/7	1/7	1/7	1/7	1/7	1/7

Figure 3: Illustration of Expected Utility Maximizing:
Voter Ideal Point and Perceived Candidate
Distributions

In this example, the voter's ideal point is at four on the scale. Assume he has a symmetric single-peaked utility function so that $u(3) = u(5)$, $u(2) = u(6)$ etc. Assume candidate A is perceived as a discrete rectangular distribution over the range two to four on the scale, while candidate B is perceived as a discrete rectangular distribution over the range one to seven. Which candidate does the citizen prefer?

If the voter is an expected utility maximizer,

$$EU(A) = \frac{u(2) + u(3) + u(4)}{3}$$

$$EU(B) = \frac{u(1) + u(2) + u(3) + u(4) + u(5) + u(6) + u(7)}{7}$$

$$= \frac{2u(1) + 2u(2) + 2u(3) + u(4)}{7} \quad (\text{by the symmetry of the utility function})$$

$$EU(A) - EU(B) = \frac{7u(2) + 7u(3) + 7u(4) - 6u(1) - 6u(2) - 6u(3) - 3u(4)}{21}$$

$$= \frac{u(2) + u(3) + 4u(4) - 6u(1)}{21} > 0$$

(since $u(4) > u(3) > u(2) > u(1)$
by the singlepeakedness
of the utility function)

Thus, the expected utility maximizing citizen prefers candidate A.

Note that the conventional spatial model of voting and the proximity measures based on that model which have been used by empirical researchers would lead to error in this example. If the citizen gives the interviewer the means of his judgmental distributions of the positions of the two candidates, he would be recorded as closer to candidate B whose mean is four rather than A whose mean is three. Yet we see that A is more preferred when the voter's preference function and decision rule enter the picture.¹¹ The proximity measures can be misleading if the citizen views the candidates as ranges rather than as single points.

What kind of a voter is an expected utility maximizer? He is a voter with a complete transitive preference ordering over certain alternatives and over lotteries formed from those alternatives. He satisfies a strong substitutability axiom, and he receives no utility or disutility from the uncertainty of his decision context. Less formally, the expected utility maximizer behaves as if he has a complete probability distribution (objective or subjective) over the positions each candidate might adopt. He is permitted to be uncertain, but his uncertainty is presumed to be of a rather precise nature. In the terminology of an earlier era, his uncertainty is

reducible to risk, a condition in which ambiguity or uncertainty is quantifiable as probabilities.

On the normative level, expected utility and subjective expected utility models reign supreme.¹² On the experimental level, a considerable amount of negative evidence exists.¹³ And on the level of empirical political research, the little data that is available suggests similar doubts about the universal applicability of expected utility models.¹⁴ If we keep an open mind, then, what are the alternatives?

Model 2: Defensive Voting

Recall figures 1 and 2 which portray a voter's judgments about the Vietnam policies of Nixon and Humphrey as in figure 4.

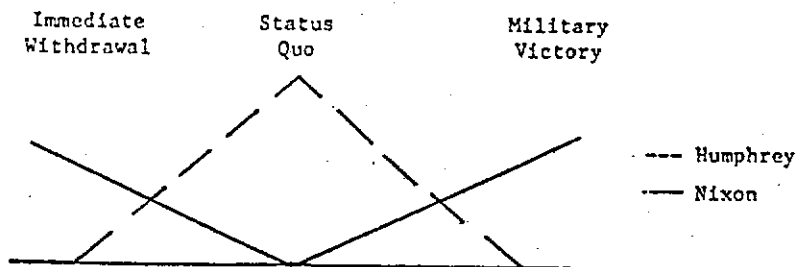


Figure 4: Hypothetical Candidate Distributions on Seven-Point Vietnam Scale

Given that the means of his judgmental distributions are both four, the standard proximity analysis would treat this voter as indifferent between Nixon and Humphrey on Vietnam (no matter what the characteristics of his utility function). But the voter might reason as follows: "There is a chance that Nixon will follow a policy further from me in either the more hawkish or more dovish

directions than will Humphrey. Thus, I insure myself against the furthest deviation from my preferences by voting for Humphrey."

This is a kind of "minimax" decision-making. For each candidate estimate the possible policy position furthest from your own, then support the candidate whose furthest policy is closer. Clearly, the minimax consideration might enter the voting decision given the very different judgmental distributions of candidate positions presumed in the above example. Would such a model of decision-making also enter the voting decision when the judgmental distributions are of comparable shape, but of different mean? Perhaps not. But such a decision-making rule might be used when the voter is unable to form a distribution over a candidate's possible positions -- when he considers himself to be in a classic uncertainty situation in which probabilities are unknown or not even meaningful. Perhaps he can pin each candidate to a range of policy positions, but has little sense of what is likely within each range.

Again, the minimax decision-maker might confound the empirical analysis of proximity measures. Consider the example in figure 5.

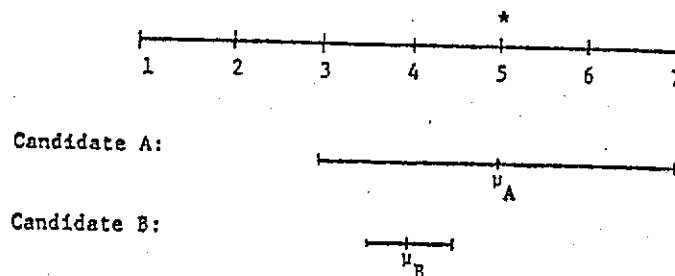


Figure 5: Illustration of Defensive Voting: Voter Ideal Point and Perceived Candidate Distributions

Assume the individual has a single-peaked preference function symmetric about an ideal point of five. The mean of candidate A's positions is five, the voter's ideal point, while the mean of candidate B's possible positions is four. According to the simple proximity measures a vote for candidate A results. But the minimax voter reasons that candidate B at the worst will be 1.5 units from his ideal point whereas candidate A could be two units away. Hence, he votes for B.

Minimax voting is defensive voting. The citizen goes through a worst case analysis, and defends himself against the worst.¹⁵ Empirically, such behavior is not so foolish. Take the citizen who is highly uncertain about the exact policy positions of a candidate but who can use such devices as party identification and group endorsements to pin the candidate down in a certain area of the policy space. Why should some central point in this range count more than the point furthest from his ideal? Moreover, the candidates themselves may induce the voter to behave in such a manner. Faced with "shoot from the hip" Goldwater, a worst case analysis makes considerable sense. Goldwater might start a nuclear war. Were American voters saying that they thought such actions would occur under Goldwater, or were they just expressing a nagging fear that such actions might occur?

Party identification and candidate orientation might be used by the defensive voter to simplify his choice. Why rely promises when he can rely on past party performances to bound possible candidate behavior? In particular, the defensive voter

who feels that he (or his social group) has been injured by one party might identify with and vote for the other party until it too injures him. The politically independent would then consist of two groups: those citizens who feel equally injured by both parties, and those young citizens who do not feel that either party has injured their interests (and who have lost their sense of identification with their parents' social groups which had been injured by a party in an earlier historical era).

Additionally, the defensive voter can focus on whether a candidate appears irresponsible and thus likely to do his worst.¹⁶ If the incumbent president has not yet injured the citizen, he might support his reelection rather than take the chance of a less than certain opponent. The defensive voter may greet the candidate of a religion, race, ethnic group, or region very different from his own with particular suspicion. The partisan defensive voter would support his own party's candidate, unless that candidate seems irresponsible.

Model 3: Credulous Voting

Real world elections have Eisenhowers running as well as Goldwaters. Just as a voter might go through a worse case analysis so he might on occasion go through a best case analysis.¹⁷ In the example used to illustrate defensive voting (figure 4), the decision would reverse if a voter were engaging in a credulous or optimistic analysis. Candidate B is less uncertain, but at best he will end up .5 units from the citizen's ideal point, candidate A might end up exactly on the citizen's ideal, so he receives the citizen's vote.

We doubt that credulous voting is very common, at least in our more recent elections. Still, the occasional widely loved and revered candidate might stimulate such a popular response. At least, the committed partisan might engage in a best case analysis for his party's candidate and a worst case analysis for the opposition candidate. And perhaps there are some citizens in the electorate who generally take an optimistic, credulous attitude toward politics. (Barnum believed such citizens were common).

Notice that partisanship and candidate orientation would have a relatively different role in credulous voting than in defensive voting. The credulous voter is strongly influenced by campaign promises and may switch parties quickly when the other party begins to make better promises. In particular, the credulous voter may depart from his traditional partisanship quite readily when the opposition candidate seems totally credible. Especially believable candidates (such as members of one's own religion, race, ethnic group, and region) might induce credulous voting.

Model 4: Mixed Model Voting

An obvious possibility is that voters use some mix of the three decision models we have discussed. Perhaps the voter makes an estimate of a candidate's mean or most likely position, then adjusts that decision by taking into account the best and worst he might receive at the hands of the candidate.¹⁸ Or he might adopt a sequential strategy: eliminate from consideration any candidate who threatens a totally unacceptable position and then

choose from among the remaining candidates (if more than one remains) on the basis of which provides the greater expected utility or the greater maximal benefit. In practice, using the mean or mode and the extreme points of a candidate's position distribution might approximate the kind of comprehensive decision-making presumed by expected utility theories.

SUMMARY

We can summarize these several models in terms of "The Voting Question" which the voter asks himself in deciding how to vote.¹⁹ The expected utility rule asks: "On average, whose issue positions will provide me greater utility?" The cynical defensive voting question is: "How can I best avoid getting screwed?" while the credulous voter asks "If I am lucky, who might do the best for me?" The mixed model voter asks the most complex voting question "How do I weight my expectations, my fears, and my hopes?"

Which of these models holds true for actual voting? We would suspect that each does for some citizens, with respect to some candidates, and at some elections. Voting under certainty must occur, but so too would expected utility maximization, defensive voting, credulous voting, and the mixed model approaches. It is most unlikely that any single model would always prevail, but instead we should expect each to be of some importance.²⁰ The result is a considerable expansion of what we would term rational voting from the narrow view incorporated in models of voting as decision-making under certainty.

Empirical evidence as to how citizens calculate the party differential could be obtained by framing survey questions to elicit rough estimates of the range of a citizen's judgments about the policy positions of the candidates. Then, ignoring questions of the citizen's utility function, we could estimate a model whose parameters include his point estimate of the candidate's positions and his estimates of their nearest and furthest points from his ideal.

Finally, it would be desirable to test some of the correlates of the models. Do the defensive voters tend to be cynical and the credulous voters trusting? Are partisans credulous about their own party's candidate and defensive about the other party's candidate? Are independents mean value voters? Are those who leave a party and become independents more cynical and more defensive voters than those who switch parties?

ELECTORAL IMPLICATIONS OF ALTERNATIVE VOTER DECISION RULES

Do different theories of individual voting behavior produce correspondingly different implications for the operations or outcomes of electoral processes? We cannot begin to make a comprehensive study of such questions at the present time. But we can present a few examples which show that the differing models advanced in the previous section have differing implications for candidate behavior and electoral outcomes in some simple electoral contexts.

It is well-known that if electoral competition is confined to a single dimension of public policy over which voters have

single-peaked preference functions, if all citizens vote, and if majority rule determines the outcome, then the median citizen's most preferred point is the equilibrium outcome of the electoral process. This is the substance of Duncan Black's "median dominance" theorem.²¹ Black's theorem is stated in the context of decision-making under certainty where candidate take exact positions which are communicated to the electorate without error or distortion.

Shepsle has previously demonstrated that the introduction of uncertainty into the electoral process can upset the median dominance theorem.²² Specifically, if a majority of voters is "risk acceptant" in some interval of the policy space containing the median ideal point, then a risky strategy exists which can defeat the median in a majority vote. Shepsle's interpretation is that a relatively certain incumbent can be beaten by an uncertain challenger if voters are "gamblers." Risky strategies which defeat the median are never themselves in equilibrium, however. And if voters tend to be risk-averse, rather than risk acceptant (a common supposition), then the median defeats risky strategies pitted against it.

What happens when voters are not restricted to expected utility maximizing behavior? What if, for example, we have an electorate of defensive voters? Generally speaking, Black's theorem would still hold. Consider figure 6:

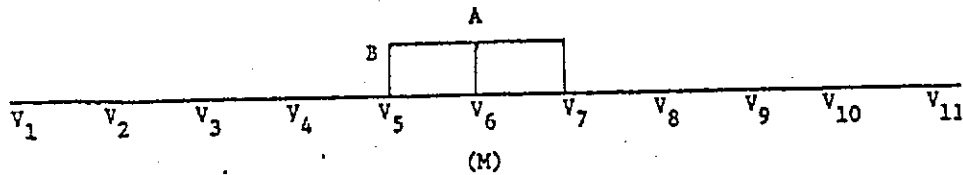


Figure 6: Uncertain Candidate vs. Median, Defensive Voting

Candidate A is at the median in the figure, while candidate B projects an uncertain strategy which includes the median. Assuming voters have single-peaked symmetric preference functions, and vote defensively, A not only wins, he wins unanimously. Every member of the electorate finds himself closer to the median than to the most distant point of candidate B's range.²³ This conclusion generalizes to all cases in which the range of one candidate's positions lies completely within the range of the other's. The less uncertain candidate wins unanimously in all such cases. Thus, given an electorate of defensive voters, each candidate should try to cover a proper subset of the other candidate's strategy range. Clearly, if applied repeatedly, this candidate strategy leads both candidates to converge to a single point, and if that point is not the median, to jump to the median.

What if candidate's strategy ranges are not variables under their control, as seems likely in the real world? After the primary process for example, we might have a situation analogous to that outlined in figure 7:

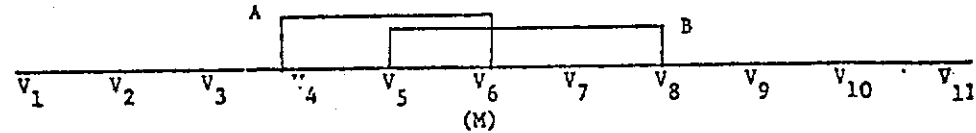


Figure 7: Two Candidate Election, Overlapping Uncertain Candidates

In this figure one candidate is perceived to be somewhat to the right side of the median, while the other is mostly to the left, but they each overlap in an area around the median. Who wins? Clearly, the determining factor in this instance is the maximum distance of each candidate from the median voter. Here, for example, the riskier candidate, B, wins. Where candidate ranges do not overlap at all, the election winner depends on the location and range of the candidate positions, much as is the case when candidates are locked into point strategies not at the median, or lottery strategies whose expected value is not at the median (as presumed by Shepsle). Generally, whichever candidate manages to get his entire range closer to the median wins.

It should be obvious that an electorate of credulous voters would produce implications precisely the opposite of those just enumerated. Take figure 6 for example. Voters 7-11 choose candidate B since his rightmost point is closer to them than the median, while voters 1-5 choose B since his leftmost point is closer to them than the median. The median voter himself is indifferent. Thus, the riskier candidate B wins in this illustration.

Moreover, optimal candidate behavior would be to continuously expand one's strategy to include the other candidate's strategy as a proper subset. Ultimately, both candidates would cover the entire policy dimension.

What of situations in which the candidates's strategies are fixed, and one candidate's strategy is not a proper subset of the other's? (Figure 7 is one of an infinity of such situations). In general, it is not better to be either more or less risky. The actual outcome in each such case will depend on the precise location of each candidate's position distribution. All we can be sure of is that a range including the median defeats one which does not, given an electorate of credulous voters.²⁴

The preceding discussion is artificial in two senses. First, it presumes that each voter perceives candidate uncertainty identically -- that citizens agree on candidate ranges. Second, it presumes electorates composed entirely of defensive voters or entirely of credulous voters. Nevertheless, our examples do show that differing models of decision-making under uncertainty produce differing implications about electoral processes. Candidate behavior changes, and expected electoral outcomes change as voter decision models change. Thus, given no general agreement on the appropriate model of individual decision-making under uncertainty, we would be wise to consider a variety of possibilities in our larger theoretical models of electoral processes.

UNCERTAINTY AND CANDIDATE STRATEGIES

It may seem from the preceding section that the effects of uncertainty in real elections cannot be the objects of universal statements. However, we would prefer viewing the above analysis as adding a new aspect to rational models of candidate competition. Previous studies have emphasized that candidates compete in spatial locations,²⁵ the certainty of their positions,²⁶ and their emphasis on different issues.²⁷ We find that they also could rationally compete by attempting to affect the rules citizens use in making their voting decisions.

Some candidates campaign on their creditability, trying to induce credulous voting. If the personality and background of the candidate make such an appeal successful, then he can afford to be ambiguous. His opponent may try to attack his vagueness, but such an attack would be to no avail if the electorate moves to credulous voting. Eisenhower provided the modern prototype of this strategy, with Carter's 1976 campaign attempting to emulate that model.

By contrast, the candidate who induces defensive voting could harm himself by uncertainty, since he can be defeated by a candidate who gets "inside" his issue positions. Thus, the candidate who seems insincere or aloof might find uncertainty counterproductive in his campaign. Uncertainty would be taken as a confirmation of his other undesirable characteristics.

Clearly a candidate who takes a centrist position with certainty should seek to foster defensive voting. He should attack

the credibility of his opponent, so that any uncertainty would work to his benefit. Nixon's campaigns tended to be of this type -- centrist campaigns which attacked the credibility of his opponents -- and Ford's 1976 campaign follows the same pattern.

Given the nature of electoral politics, the incumbent running for reelection is likely to be viewed as a more known alternative than would be a challenger running for the presidency for the first time. According to our previous results, this means that the challenger would want to be viewed credulously. Two factors that can destroy such a strategy are campaign blunders and continued opposition to the challenger within his own party. Both make him less credible while inducing some citizens to react defensively. Indeed, we would suspect that these factors are more important in inducing defensive voting than is the prevailing level of voter cynicism about politics. In our view the campaign blunders and intra-party rifts which characterized the Goldwater and McGovern campaigns induced a similar voter reaction -- high levels of defensive voting -- although the general level of voter cynicism was much lower in 1964 than in 1972.

There is a paradox here. The candidate with the broad range who wants to be viewed credulously might find himself labeled irresponsible and defeated by a defensive electorate. The candidate with a narrow range who wants to be viewed defensively might find himself outflanked by a broad candidate who can make a credulous appeal. As a result, the conflict over the definition of the situation is at least as important as the differing positions, probabilities and emphases.

CONCLUSIONS

Uncertainty pervades voting, but previous studies have not made sufficient allowance for its effects. Once uncertainty is taken into account, we find that rational voting encompasses a wider variety of behavior than usually believed, that partisanship and candidate orientation become rational parts of the decision on how to vote, that survey research attempts to operationalize the rational model have been too limited, and that candidate competition includes competition over how the citizenry should react to the existing uncertainty. If all of this seems to make the study of voting less tidy, it also makes the study of voting more realistic.²⁸

FOOTNOTES

1. Anthony Downs, An Economic Theory of Democracy, New York: Harper & Row, 1957.
2. Our emphasis in this paper is on candidate preference rather than the final voting decision. Previous analyses have incorporated uncertainty into the turnout decision, but not candidate preference. See also the emphasis on uncertainty in Samuel L. Popkin, John W. Gorman, Charles Phillips, and Jeffrey A. Smith, "What Have You Done for Me Lately?" American Political Science Review, 70 (1976) forthcoming.
3. Bernard Berelson, Paul F. Lazarsfeld, and Hazel Gaudet, Voting, Chicago: University of Chicago Press, 1954.
4. Angus Campbell, Philip E. Converse, Warren E. Miller, and Donald E. Stokes, The American Voter, New York: Wiley, 1960.
5. Norman Nie, Sidney Verba, and John R. Petrocik, The Changing American Voter, Cambridge: Harvard University Press, 1976.
6. Downs, An Economic Theory of Democracy.

7. This is explicitly the one form of uncertainty which Downs permits in his model. Downs, An Economic Theory of Democracy, p. 80.
8. The relationship of the candidates to uncertainty in voting is discussed in Benjamin I. Page, Choices and Echoes in Presidential Elections, forthcoming. Uncertainty associated with the candidate is dealt with in Shepsle's formal analysis of uncertainty effects in voting. See Kenneth A. Shepsle, "Parties, Voters, and the Risk Environment," in Richard G. Niemi and Herbert F. Weisberg, (eds.) Probability Models of Collective Decision-Making, Columbus, Ohio: Charles E. Merrill, 1972.
9. Shepsle, "Parties, Voters, and the Risk Environment."
10. R. Duncan Luce and Howard Raiffa, Games and Decision, New York: Wiley, 1957.
11. This conclusion would also hold if the judgmental distributions were viewed as continuous distributions uniform over the range two to four for candidate A and over the range one to six for candidate B.
12. Consider the prescriptive flavor of Howard Raiffa's Decision Analysis, Reading, Mass.: Addison-Wesley, 1968.

13. See for example, Sarah Lichtenstein and Paul Slovic, "Reversals of Preferences between Bids and Choices in Gambling Decisions," Journal of Experimental Psychology, 89 (1971): 46-55. Paul Slovic and Amos Tversky, "Who Accepts Savage's Axiom?", Behavioral Science 19 (1974): 368-373.

14. John A. Ferejohn and Morris P. Fiorina, "Closeness Counts Only in Horseshoes and Dancing," American Political Science Review, 69 (1975): 920-25.

15. This is the minimax-regret criterion which has been applied to the turnout decision in John A. Ferejohn and Morris P. Fiorina, "The Paradox of Not Voting," American Political Science Review, 68 (1974): 525-36.

16. We are intentionally attempting a broader focus than Popkin's emphasis on candidate competence. Virtually the full range of candidate evaluations could enter into a calculation of whether or not he is responsible. See Samuel L. Popkin, et. al., "What Have You Done for Me Lately?"

17. Formally this is a "maximax" strategy of determining the maximum benefit that might be derived from each candidate and choosing the candidate who might provide the greater maximum benefit. It is also related to "sincere voting" since the citizen chooses the alternative which contains his more preferred outcome.

18. Two mixed models have received formal attention. Hurwicz's pessimism-optimism index weights the best and worst case analyses. Luce and Raiffa, pp. 282-284. Ellsberg instead suggests that people weight their expected utilities and the minimax possibility. See Daniel Ellsberg, "Risk, Ambiguity, and the Savage Axioms," Quarterly Journal of Economics, 75 (1961): 643-69.

19. This way of looking at the vote decision is advocated by Samuel L. Popkin, et. al., "What Have You Done for Me Lately?"

20. This expectation is bolstered by the agenda experiment by Plott and Levine in which some subjects were found to follow each of these decision rules. See Charles R. Plott and Michael E. Levine "On Using the Agenda to Influence Group Decisions," American Economic Review, forthcoming.

21. Duncan Black, The Theory of Committees and Elections, Cambridge: Cambridge University Press, 1958.

22. Shepsle, "Parties, Voters, and the Risk Environment."

23. B's best strategy is not to "bracket" A, but to sneak up on one side or the other and take all the voters on that side (though he still loses).

24. When the median dominance theorem does not hold, another familiar theorem on electoral outcomes also does not hold. The usual result is that when preferences are single-peaked over a single dimension, majority rule over pairs of alternatives leads to a transitive social ordering. However, the conditions for that result are identical to those for the median dominance theorem, so the paradox of voting can occur under unidimensionality when voting follows the expected utility model or credulous voting.

25. Downs, An Economic Theory of Democracy.

26. Shepsle, "Parties, Voters, and the Risk Environment."

27. Benjamin I. Page, "The Theory of Political Ambiguity," American Political Science Review, forthcoming.

28. We have restricted our attention in this paper to models of candidate preference, but there are a number of interesting questions as to how these results would generalize to models of the voting decision for multi-party races and for the turnout decision. A minimax regret analysis of turnout has been provided by Ferejohn and Fiorina, "The Paradox of Not Voting." They suggest that the turnout question is: "My God, what if I didn't vote and the candidate who could screw me worse won by one vote and then completely screwed me? I'd feel like killing myself." The credulous voter would instead ask: "My God, what if I didn't vote and the candidate who

would have helped me most lost by one vote? I'd feel like killing myself." In each case, turnout to vote is fully rational in these models. A consideration of defensive voting also adds a new rational reason for abstention: abstention due to satisfaction when the citizen feels secure that neither candidate could really screw him. See Herbert F. Weisberg, "Rational Abstention Due to Satisfaction," (mimeo).

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