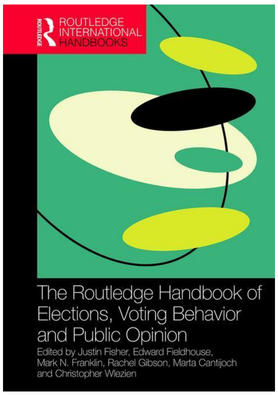

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TURNOUT AND THE CALCULUS OF VOTING

Recent advances and prospects for integration with theories of campaigns and elections

John H. Aldrich and Libby M. Jenke

The "calculus of voting" is the rational-choice based theory of turnout and vote choice that has been at the base of the choice-theoretic studies of campaigns and elections since its first formal statement by Downs (1957) and especially by Riker and Ordeshook (1968). Perhaps because of its initial formal results about turnout that are ordinarily understood to be both pessimistic and empirically wrong, a number of years passed with relatively little theoretical advancement, while theories of voting, political parties, and campaigns and elections developed, often with little to no attention to the voters' calculus.

In this chapter, after a review of the basics of the calculus of voting with respect to turnout, we consider two relatively new theoretical advances: the development of a fully articulated theory of expressive voting; and specification of the (spatial) utility function, to consider a theoretically coherent account of "abstention due to alienation," and its relationship to the (spatial) account of moral convictions.

Turnout and decision theory

Rational choice theoretic accounts understand political behavior as a series of choices made by individuals. The choices they make are assumed to be considered and deliberate (but not necessarily *carefully* considered or *deeply* deliberated) and thus choices seen as applications of decision theory. The question is: what form of decision theory?

Downs (1957) began the systematic inquiry into rational choice and turnout by posing the problem as one in expected utility. This was a perfectly sensible move and led to a rich research tradition, but that is actually the second step in applying decision theory to turnout. A second step is needed because basic decision theory (especially under certainty) yields an incomplete theory. That is, in some circumstances the basic decision problem yields no answer, and it does so in an especially important circumstance, that of close elections. Using the logic of expectations is only one way to complete the answer to the question of when to vote. So, we begin with the basic problem and consider alternatives.

All decision theoretic accounts model choices as a balance of the costs and benefits associated with the actions the decision maker is choosing among. Costs and benefits are understood as the utility derived from outcomes, and these are used to associate the comparative costs and benefits of voting or abstaining – that is, the utility associated with the various available actions. One then takes the action associated with highest utility. In the US election case, the standard choice over actions is whether to vote for one of two candidates or to abstain.[1] By convention (and without loss of generality), let 1 be the utility gained when the preferred candidate wins and 0 when the other candidate wins.[2] While those are the entire set of possible (collective) outcomes, each outcome is differently valued if the preferred candidate wins (yielding 1 utile) and the citizen abstains, compared to the case where the preferred candidate wins (also yielding a net benefit of 1) and the citizen votes. They are different because there are differential costs and differential benefits associated with turning out to vote compared to abstaining. In addition, it is plausible to suppose that these comparative costs and benefits of the act of voting are relatively high in relation to the costs and benefits of the collective outcomes.[3] This would be unlike the case of, say, ordering at a restaurant, where the costs of ordering are treated as relatively tiny and inconsequential compared to getting versus not getting the preferred meal.

The costs of voting can be understood as the difference in decision making costs and in performing the act of voting (actually registering and going to the polls, etc.) compared to abstaining. Whatever the differential costs are, it is usually assumed that the costs are higher for turning out than for abstaining. These differential costs may be denoted Cv, $Cv > 0$ (for the difference between the costs of voting and of abstaining), although we follow convention by simply writing the costs as C. Similarly, there may be differential benefits for the act of voting compared to abstaining. Downs (1957) suggested such benefits of voting flow from helping assure the continuation of democracy. Riker and Ordeshook (1968) associated these benefits with the already well-known social-psychological concept of citizen duty, as employed by Campbell et al. (1960). Fiorina (1976) associated these benefits with the act of supporting one's preferred candidate (or opposing a detested candidate), regardless of whether the candidate wins or loses. In each of these cases, the voter realized these differential benefits (or, perhaps, avoids costs, such as guilt in failing to do one's duty) which the abstainer does not realize. By assumption these differential benefits from voting, say D, are positive, $D > 0$ for turning out, regardless of the outcome (and for whom one votes). C and D may be large or small relative to the 1 associated with the preferred candidate winning compared to losing.

In this simple, stylized case there are five distinct combinations of costs and benefits, associated with five sets of outcomes, as seen in the decision table in Table 7.1. One case combines all instances in which the preferred candidate is winning by more than one vote before considering this citizen's action. A second case is where the preferred candidate is winning by exactly one vote, and another is where that candidate is exactly tied. The final two cases are the reverse of the first two, where the preferred candidate is losing by exactly one vote and losing by two or more votes.

Table 7.1 Turnout: basic decision matrix for the two-party case

Vote for	*Preferred candidate is:*				
	Winning by more than one vote	*Winning by exactly one vote*	*Tied*	*Losing by exactly one vote*	*Losing by more than one vote*
1	1 – C + D	1 – C + D	1 – C + D	½ – C + D	0 – C + D
2	1 – C + D	½ – C + D	0 – C + D	0 – C + D	0 – C + D
Abstain	1	1	½	0	0

The decision problem yields some conclusions. As noted in Aldrich (1993: 251):

1 Never vote for the less preferred candidate. Voting for the less preferred candidate is "dominated" by voting for the preferred candidate – the latter always yields at least as much utility, and sometimes more;
2 If D − C is low, $(D-C) \leq -0.5$, which means the costs outweigh the benefits by an amount greater than the value of a tied outcome, always abstain;
3 If D − C is zero or even positive (i.e., when the benefits are greater than the costs of voting), always vote for the preferred candidate, as that choice dominates abstaining;
4 If $0 > D-C > -0.5$, the basic model is silent.

Thus, decision theory, per se, is silent in at least some cases involving the middle columns, and alternative rational choice models of turnout differ over ways to handle those middle cases.

The "calculus of voting," or the expected utility model of turnout

Downs developed a specific way to close the theory, expected utility, which was proving fruitful in economics and other social sciences, and like so much in his case, he did so in a way to translate popular discussions of turnout into a scientific form. In his case, the popular idea was that you should vote when your vote matters, that is, if the election is close. Scientifically, Downs used expected utility theory to formalize this idea: The benefits one gets from the electoral outcome are conditional on the chances that one's vote makes a difference in the outcome. Consider the probability of being in each of those cases in Table 7.1, and from that probability, consider the *expected* benefit of the outcome, PB. Since D is about the performance of the act, it is independent of the closeness of the election. The calculus of voting (as Riker and Ordeshook 1968 dubbed their extension of Downs) has been tested extensively, and three terms – the valuation of the outcomes, the costs of voting, and the benefits associated with voting – have been found to be strongly and consistently related to the choice. Closeness of the outcome has led to mixed results, strongly associated with turnout in aggregate data models and often weakly related (if related at all) to turnout in individual level models.[4] Moreover, because the theoretical concept of closeness is whether one's vote makes or breaks an exact tie, and because so many millions vote in elections, the "P" term, properly understood, seems to require that P, and likely therefore PB, be vanishingly small. And if it is so vanishingly small, then the middle columns are essentially irrelevant to turnout, and the expected utility terms never "really" make a difference.

Minimax regret and game theoretic models of turnout

Aldrich (1993) provides a more detailed consideration of two other models of the turnout decision that are consistent with decision theory but differ from expected utility maximization. Ferejohn and Fiorina (1974; 1975) apply minimax regret to the turnout decision problem (akin to Table 7.1, and indeed from which we developed Table 7.1). The minimax regret notion is that probabilities are not and perhaps cannot meaningfully be calculated, and thus expected utility is not meaningful. But one could imagine asking the question, "How would you feel if you woke up on the day after the election having not bothered to vote and heard that your favored candidate lost by a single vote?" Minimax regret formalized that feeling and uses it to close the remaining gap in the decision theoretic account, as Downs did with the P term. Expected utility maximization extends decision making theory from "under certainty" (in which one knows exactly what outcome occurs, given one's choice of actions) to "under risk" (in which one's actions lead to a set of outcomes with a known probability distribution over each element in the set). Minimax regret is the most useful of the various ways of dealing with decision making "under uncertainty" (in which case one's actions lead to a set of outcomes, but one does not know their probability of occurring). It has its own disadvantages, in that, like the calculus of voting, minimax regret hinges on the same existence of an exact tie or of a one-vote lead, even if these are not given specific probabilities. Also, applying it to the three or more candidate/party case, minimax regret leads to no "strategic voting" at all, whereas the calculus of voting does (and in ways that are empirically supported, where "closeness" does matter). Both models, that is, are not fully satisfying to most voting theorists, and both models have problematic empirics. These disadvantages do not rule out either model, but both do point toward areas for theoretical improvement.

The most important way in political science to resolve the indeterminacy from decision making under uncertainty is not typically to use decision-theoretic concepts such as minimax regret, but to apply game theory. Of course, that means that the indeterminacy needs to be due to the actions of others, but that is true in this case. As Aldrich (1993) reviews, there are important game theoretic models of turnout. They have complications of their own. The most important one here is that most rest on a base of the calculus of voting, or more accurately, they assume "modern" game theory, in which citizens are assumed to be Bayesian decision makers, à la Harsanyi (1977), and thus fully capable of generating well-behaved probabilities, such as the Downsian P.

We believe that the most important theories of democratic choice are game theoretic models that have candidates and other "elite" actors understanding their choices as contingent not only on the choices of these other elite actors (e.g., the other candidates) but also on those of the citizens. Similarly, citizens' choices should be understood as contingent on elite behavior, and possibly on the choices of the rest of the citizenry. However, to the extent that the Harsanyi-based understanding of game theory in which the players in the game can calculate well-formed probability distributions (applying Bayes' rule to virtually anything applies), game theoretic models of turnout, per se, at least as they are currently developed, also do not fully let us get around the same problems as affect the calculus of voting and minimax regret. Or, at least, these are the arguments that underlie a new development in rational choice models of turnout, expressive voting.

A note on strategic voting

Our account has focused on the case in which there are exactly two serious candidates. Even in the US, there are regular instances in which a third candidate enters with enough strength to attract attention and enter into citizens' calculations, and this is not only a strength of the calculus of voting, but also such matters as the scientific explanation of Duverger's Law (1959) which rest on accounts that assume the calculus of voting (see, for example, Cox 1997). Here, we consider a small part of the decision matrix and how the calculus of voting for three, rather than two, choices yields not only an explanation of turnout but one of strategic voting as well.

In Table 7.2, we provide a partial representation of the decision matrix for the three-party case, where we denote the candidates as 1, 2, and 3, in order of the citizen's preferences, and in particular we present the cases in which, as one contemplates voting, there is one or another sort of tie in the election. We continue to assign utility to the election of the most preferred candidate (candidate 1) as 1 and candidate 3 as 0. The second-ranked candidate has a value of S, where S is "in between" that of candidates 1 and 3, $0 < S < 1$. Here, we separate out (in anticipation of

Table 7.2 Turnout: partial decision matrix for the three-party case

Vote for	*1–2 tie*	*1–3 tie*	*2–3 tie*	*1–2–3 tie*
1	1 – C + D+ B	1 – C + D + B	S/2 – C + D + B	1 – C + D + B
2	S – C + D	½ – C + D	S – C + D	S – C + D
3	½ + S/2 – C + D	– C + D	– C + D	– C + D
Abstain	½ + S/2	½	S/2 – C + B	(1 + S)/3

expressive voting) the positive return one gets for voting for one's favorite, call it B, and leave all costs and any other benefits for voting (e.g., acting on one's duty) as C and D. We do so because expressing support for one's favorite candidate comes only if one votes for that candidate. All other costs and benefits of voting come from voting, per se, regardless of whom one votes for.

The key point is that it is no longer true that voting for the preferred candidate dominates voting for the second choice candidate, as it does in the two-candidate case (although voting for 1 does dominate voting for 3). In particular, if candidates 2 and 3 are tied, voting for the preferred candidate may or may not be the better choice. If $S/2 < B$, then one should vote for the most preferred candidate. If, however, $S/2 > B$ – that is, the value of having the second choice win is greater than twice the value of supporting your first preference, regardless of outcome – then one should "defect" from voting for one's first choice and vote for the second choice, which is what we mean by strategic voting (for more formal presentation, see McKelvey and Ordeshook 1972; Ksleman and Niou 2010; Niou 2001). That is to say, if you back a hopeless candidate you might support your second choice who is apparently running a close race against the least-liked alternative.

Expressive voting

Fiorina (1976) notes the terms "instrumental" and "expressive" were first used for understanding voting behavior by Butler and Stokes (1969) in their magisterial account of British voting. It appears to be Fiorina, however, who first developed the formal accounting of the two concepts for understanding turnout. Schuessler (2000a, 2000b) developed this logic further. Brennan and colleagues extended the logic in two important ways. One was to provide a substantive economic and philosophic foundation for justifying expressive voting, and the other was to embed it in a spatial context.

Fiorina argued for a model that combines instrumental and expressive components, just as we do here. Indeed, he laid out the basic parameters that are the key for such a model. The decision-theoretic matrix in Table 7.3 presents the account in our notation, and it is quite

Table 7.3 Turnout: basic decision matrix for the two-party case with expressive rewards

Vote for	*Preferred candidate is:*				
	Winning by more than one vote	*Winning by exactly one vote*	*Tied*	*Losing by exactly one vote*	*Losing by more than one vote*
1	1 – C + D + B	1 – C + D + B	1 – C + D + B	½ – C + D + B	– C + D + B
2	1 – C + D	½ – C + D	– C + D	– C + D	– C + D
Abstain	1	1	½	0	0

simple. Voters care about the election outcome, the 1, 0, or, in case of a tie, the 0.5 values in each cell. The instrumental part is that they may be simply Downsian/Riker-and-Ordeshook voters, that is, expected utility maximizers. Like their accounts, there are non-outcome-terms, those associated with the costs and benefits of voting, per se. That is, there are the C and D terms of long-standing. Fiorina added a value, we call it here B, to denote an expressive benefit that comes from being able to express one's support for the favored party or candidate.[5] He focused particularly on B as a benefit that comes to partisan identifiers for voting for the candidate of the party that forms the major part of their political identity, and he drew some interesting and important derivations from this account. That expressive benefits come only to partisans is an assumption that narrows the potential generality of the B term. We could imagine non-partisans being so enthused in support of, say, Barack Obama in 2008 – the first opportunity for African-Americans to vote for an African-American with a real chance of winning – regardless of their partisanship. Or we could imagine voting for, say, George Washington or Dwight Eisenhower as genuine war heroes, to support their election regardless of party. Fiorina finds his (slightly less general) model rich enough to derive 16 testable hypotheses from it.

Brennan and colleagues maintain the Fiorina account of expressive voting but break apart the hybrid nature of the account so they can contrast the "pure theory" of instrumental voting (where there is no expressive B term, i.e., $B = 0$ for all) from the "pure theory" of expressive voting (where $P = 0$ for all). Doing so allows them to make two important additions that have not fully penetrated into the study of voting, and thus we attend to their consequences by way of arguing not for the "pure theory" of expressive voting, but for serious attention to the hybrid account. Brennan and Hamlin (1998) embed this mixed calculus of voting into a spatial model of elections (drawn from a different chapter in Downs 1957), so we begin there and then treat the topics of alienation and indifference and of pragmatic versus moral issue preferences.

Brennan and Hamlin (1998) compare their expressive voting model of an election with Ledyard's (1984) famous voting game that uses the calculus of voting in a spatial policy setting.[6] In it, Ledyard concluded that candidates converge to the policy that maximizes the sum of citizens' utilities (or in other models converge to the median or even to the mean citizen ideal point), and no one votes (see Brennan and Hamlin 1998: 153). Their model, by contrast, yields reasonably high levels of turnout in most cases, candidates tend to converge to modes in citizen preferences, and there are equilibria in many, rather than few, cases (Brennan and Hamlin 1998: 72–3).[7] Convergence is not guaranteed.[8] As they note, they see these two models not as rival models but as "… distinct aspects of a more complex whole" (Brennan and Hamlin 1998: 173), a point with which we agree.

The idea is that turnout is higher if voters are expressive rather than instrumental. This is so because the positive benefits come from voting whether the favored candidate wins or not, and whether the election is close or not. An expressive-oriented citizen will vote when the most preferred candidate is valued sufficiently (and undiscounted by P) to outweigh the costs of voting. As Brennan and Hamlin (1998: 157) point out, "More generally, some citizens would be willing to vote in an election even when there is little or no doubt about the result of the election." As a result, we would ordinarily anticipate that turnout in a purely expressive electorate will be rather high, but it will be quite low in a purely instrumental electorate.

We note that this model could be used to predict moderately high turnout in two-party contests, such as in the US and (sometimes!) the UK, because parties would try to pick policies and candidates attractive to voters, that is, with reasonably high B values for many. Expressive models should be expected to predict even higher turnout in truly multi-party systems. This would be so because of the greater number and diversity of parties and candidates and of policy platforms presented to the public. Expressive voting occurs as long as there is at least one candidate with a high B value for the citizen, so with many contenders, there would be many such voters.

Alienation and indifference

Substantively, it is common to say that someone might fail to vote because they do not care whether one candidate or the other wins. The outcome is simply immaterial to them; they are indifferent. That may be a characteristic of a single citizen, but it also may be a characteristic of the entire electorate. If Downs is correct, the two candidates will offer exactly the same platform, that is, converge to each other.[9] If so, every citizen receives exactly the same value if candidate one wins as they receive if candidate two wins. This form of abstention is referred to as "indifference."

It is also widely argued that people may abstain if there is a better alternative but even this "better" candidate offers an abhorrent possibility. In that case, we say that people abstain due to "alienation." Hinich and Ordeshook (1969) developed the spatial accounting. Brody and Page (1973) tested these two notions systematically.

The "pure" theories of the instrumental voting (as we now call the calculus of voting) and of expressive voting have very different approaches to alienation in particular.[10] In the traditional spatial model, alienation is measured by the distance between the closer candidate's location and the voter's ideal point. The idea is that if the closer candidate is far away from the voter, the voter will be disenchanted by both candidates and find the "lesser of two evils" too evil to support.

That concept makes intuitive sense, but it is not consistent with the standard spatial model. From Davis, Hinich, and Ordeshook (1970) on, the most common assumption about how spatial position is translated into utility for the voter is that utility is quadratic in distance. This reflects not just standard spatial modeling, but standard economics in general, where it is argued that most decision makers, most of the time, are risk averse, and quadratic utility is the standard way to formulate that notion.[11] In Table 7.1, *et seq.*, the choice is how much better is one candidate compared to the other? If, say, the first candidate is one unit from the voter, that would be a utility from that candidate's election of -1 ($-[1^2]$) whereas, if the other candidate is 2 units away, that would be a utility of -4 ($-[2^2]$), for a difference in the choice of 3 units of utility. If, however, both candidates are quite far away, say 5 and 6 units from the voter, the difference is $(-25) - (-36)$ or 9 units of utility. There is more than twice the outcome-based-utility reasoning for supporting the closer, if far away, contender. This is general, so that alienation in the design as traditionally used in spatial modeling is inconsistent with the verbal description of alienation. In fact, Brennan and Hamlin (1998: 154–155) note that "there is no scope for the idea of citizen alienation in [the Downsian] model … Indifference rather than alienation is the key to non-participation." But they do not make it a central focus of their analysis. In the next section, we develop a different account of utility which is consistent with spatial modeling of this traditional form and also consistent with the intuition underlying alienation.

Brennan and Hamlin, by contrast, have the easier case. With B being a utility for supporting the preferred candidate, per se, it is easy to translate the "lesser of two evils is too evil to support" into expressive voting terms. Since B is simply the utility for the preferred candidate and not a difference between the utilities for the two candidates, the farther the voter is from the preferred candidate, the less the voter likes that candidate, and at some point (e.g., when expressive benefits are less than the costs of voting), the expressive voter will not turn out. They just don't like the best choice enough to vote for her.

Spatial voting with moral and non-moral preferences

Spatial modeling derives from the thinking of rational-choice-based micro-economic reasoning. The standard good, whether that be an economic good like apples or a political good like government health insurance policies is understood to be amenable to trading off with other goods. It is thus reasonable to imagine an overall utility function over numerous goods (policies in the spatial voting case) with some sort of distance metric defined over it, capturing the smooth nature of trading off one dimension or policy for another. Some goods in politics, however, may admit no trade off at all, or do so only under very extreme conditions. These are likely to deal with issues that are directly tapping voter's ethical, moral preferences, such as abortion, measuring the valuation of the life of the fetus and/or of the rights of the mother. People may not be sure just what the government can or should do to control, say, inflation, but they value – and can evaluate – life and liberty. This suggests a different structure for preferences over issues about which voters have strong moral convictions, and this different structure has consequences for how the intuition about alienation can be derivable from the traditional spatial model.

This difference in voters' ability to trade off issues that are moral versus those that are not can be captured by changing their utility functions. This idea of different functional forms for utility builds on previous work. For example, Poole and Rosenthal base their NOMINATE model on a utility function that is shaped like a normal distribution (Poole 2005). However, in order for this to be precise, we would still need justification for such a conceptual expansion in terms of psychological intuition. Two cognitive mechanisms could explain alienation according to a logic based in indifference. It could be that alienated voters perceive little to no difference in utility between distant candidates. That is, alienated voters are just distant, indifferent voters. If this is the case, then quadratic utility is not applicable and another way of equating distance with a voter's utility is needed. Alternatively, it could be that these voters do perceive a difference between two far-away candidates but feel disinclined to vote. That is, alienated voters are not indifferent, but something gained from abstention makes up for the potential utility loss in the case that one's favored candidate loses. If this is the case, it is not sufficient to say that the voter is just alienated; as explained already, this formulation is inconsistent with the spatial model. So a theory of why voters stop caring about the difference between candidates, and at what proximity this variable begins to affect the participation calculus, is needed.

Jenke (2017)[12] proposes a theory in the vein of the first argument – that "alienated" voters are simply indifferent voters who are far away from all available candidates. She suggests this specification is appropriate for voters with a high level of moral conviction. These voters are of particular interest in regards to alienation, since they tend to locate at the extremes of the policy spectrum (Ryan 2014) and are thus the section of the electorate traditionally held to be alienated. Most importantly, previous research on moral conviction provides a psychological basis for the idea that such voters are unique in terms of their utility loss.

Recent research in political psychology has defined a moral conviction as an opinion rooted in beliefs about an absolute sense of right and wrong that transcends normative conventions and cultural context (Skitka and Bauman 2008). Moral conviction is associated with a propensity to view political issues in a one-sided manner: voters with moral convictions show an increased animosity toward candidates and individuals who disagree with their opinions (Skitka, Bauman and Sargis 2005; Tetlock et al. 2000). Such respondents are also uniquely unwilling to compromise: moral conviction predicts opposition to politicians willing to compromise with the opposition (Skitka, Bauman and Sargis 2005; Toner et al. 2013; Ryan 2017). These findings are related to those by Tavits (2007), who examines the electoral effect of policy shifts on pragmatic versus principled issues.[13] She finds that candidates who shift their policies on principled issues experience an overall decrease in votes, while policy shifts on pragmatic issues lead to an increase in votes. This finding suggests that voters may dislike even small movements on the policy spectrum away from their ideal points when the issues connect with their value systems.

Moral judgments by definition defy the assumption of gradual utility loss inherent in linear or quadratic models. They are "evaluations *(good vs. bad)* of the actions or character of a person that are made with respect to a set of virtues held to be obligatory by a culture or subculture." And moral reasoning "consists of transforming given information about people in order to reach a moral judgment" (Haidt 2001). Thus, we can think of a model of moral conviction as the transformation of the policy space into a binary utility space: high utility for the "right" thing and low utility for the "wrong" thing. As specified by Haidt, a moral judgment has only two outcomes; a moral judgment of right or wrong does not lend itself to magnitudes, such as the "really right (wrong) thing," "somewhat right (wrong) thing," or "neither right nor wrong thing."

This binary view of utility translates directly into a step function, where the step (down) occurs at the point where the individual switches from viewing the policy as the right thing to do to the wrong thing to do. For the policies that an individual deems "right," she has a high and relatively flat level of utility; for those that she deems "wrong," she has a similarly flat but low level of utility.

This type of utility function has an important application to theories of voter alienation. A utility function with a long, flat tail offers a theoretically coherent explanation as to why one group of extreme voters may abstain due to alienation: once candidates are located outside of the realm of policies that the individual deems "right," the voter sees little difference between them and abstains. At the decision theoretic level, the cause of abstention is indifference between two "wrong" policies. But the result is consistent with the intuitions of the alienation hypothesis. Unlike quadratic utility, it predicts that indifference (and thus abstention) is higher when voters are far removed from candidates. Thus, this explanation yields the predictions of what looks like "alienation" in the common language origin of the term, but flows from the decision-theoretic logic of indifference.

Figure 7.1 demonstrates the difference in utility loss that a voter has between two candidates as their location moves from two versus three policy units away from the voter's ideal point to eight versus nine units away (their distance from each other remaining the same). The figure contains three utility functions: a quadratic function, a linear function, and a step function. On the quadratic function, the voter loses only five points of utility by moving from a candidate one unit away to a candidate two units away. But when the candidates are eight and nine units away, there is a difference in utility of 17 points between them. Thus, the voter will be more motivated to vote for the closer candidate when the candidates are further removed from her. The linear function similarly does not support the idea of alienation, having a constant slope. The voter is no more likely to abstain when the candidates are far removed, since the utility loss between them remains constant. Only in the step function is the idea of alienation supported: the difference in utility between the candidates *decreases* from 100 units when they are close to 0 units when they are further away. Thus, such a function supports the idea that a voter will choose not to vote for anyone when all candidates are far away, but it does so through the logic of indifference.

Thus, Jenke (2017) proposes that there are two types of voters. Morally convicted voters have a flat tail of utility loss, and are often indifferent ("alienated") when presented with distant choices. All other voters have the commonly assumed quadratic utility. This interpretation stems directly from the idea of what alienation is: the threshold is the policy that voters deem morally acceptable. The alienation is derivative of the utility function, which is derivative of a theory of how morals function in a decision.

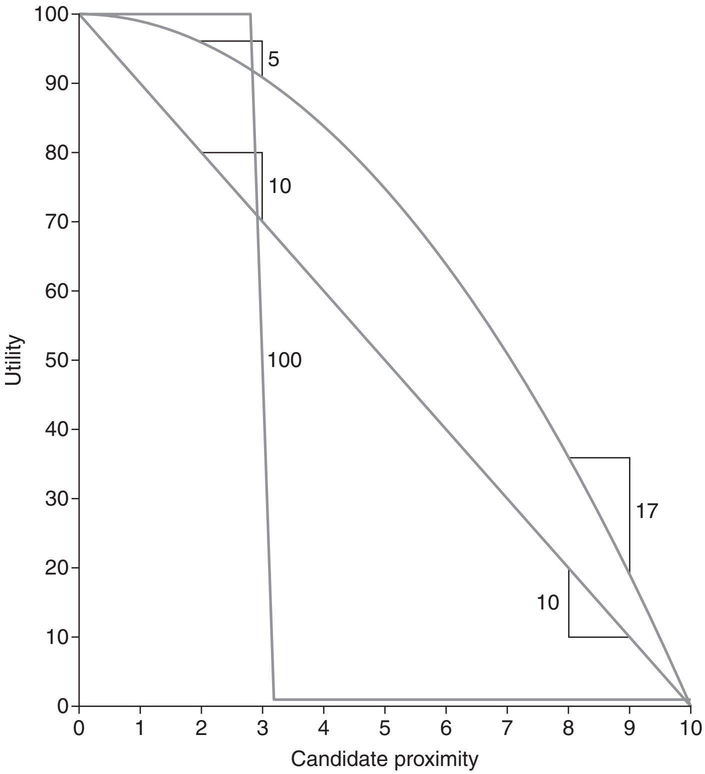

Figure 7.1 Utility losses over quadratic, linear, and sigmoidal utility functions

Note

Shown on the left side are differences in utility for candidates who are two unit and three units away from the voter's ideal point (here, zero) under each of the three utility functions, and on the right side are differences for candidates eight and nine units away.

This is therefore a different kind of explanation of alienation from the Brennan–Hamlin expressive voting form. Of course the moral-preference explanation is based on the transformation of distance into preferences over a Downsian-style policy space. It is therefore an explanation that is fully consistent with the pure theory of instrumental voting, the pure theory of expressive voting, and the hybrid model that combines the two, as Fiorina, Brennan and Hamlin, and we prefer.

Conclusion

The purposes of this chapter have been to review the nature of rational choice models of the turnout decision and to present two theoretical developments to such models. A basic decision theoretic account of turnout gets us only so far. In cases in which the difference between the costs and benefits of voting is between –0.5 and 0.5, decision theory is silent on whether the individual should turn out. Because the difference in utility from having your more preferred candidate win or lose is 1 unit, that indeterminate range spans a great deal of the space, at least in terms of voter utility. Alternative rational choice theories of voting are distinguished by the way in which they close this decision problem. These include transforming the decision problem into one of expected utility maximization (Downs 1957), transforming it into a minimax regret formulation (Ferejohn and Fiorina 1974), or embedding the expected utility account in a game theoretic analysis. One problem with these accounts is that they depend on the existence of an exact tie or a one-vote lead, whether or not these are given specific probabilities.

A third option is to expand the theory from its instrumentalist roots to develop a theory of expressive voting (Fiorina 1976; Brennan and Hamlin 1998). This option may be done in a stand-alone fashion (the "pure theory of expressive voting") or in combination of the two theories. As the name suggests, voters gain an expressive benefit, that is, one that comes simply and directly from the act of supporting their favored candidate or party. Brennan and Hamlin's (1998) hybrid account, mixing instrumental and expressive voting, is particularly beneficial when embedded in a spatial model of elections. It predicts relatively high levels of turnout, movement of candidates to modes in citizen preferences, and equilibria in many, rather than few, cases.

We then turned to examine a contradiction between the verbal statement of alienation as a form of abstention and its formal representation. At least in the "pure theory" of instrumental voting, and as long as utility functions are assumed to be linear or quadratic in distance, the standard spatial model yields either no decrease in relative utility for two candidates as the ideal point becomes farther removed from the closer candidate's position (under linear utility) or even makes the relative utility increase (under quadratic utility). Thus, while it seems intuitively reasonable to assert that the farther away the closer candidate is in spatial distance, the more "alienated" the voter becomes, it actually happens that voting for the preferred candidate becomes more, not less, important to the voter. Here we offer two accounts that can be used to transform the intuition of alienation into an appropriate theoretical form. One is expressive voting, in which it follows straightforwardly that voters become increasingly less happy with their preferred option, the farther away it is from their ideal point. We offer a second account, one developed by Jenke (2017), which assumes that voters whose choice is based on policies that, to them at least, are based in moral convictions yield a different functional relationship between policy distance and utility than in the standard spatial model. Instead of linear or quadratic-based transformations of distance to utility, morally convicted voters have a unique utility function which drops off more quickly than other (what we refer to here as "pragmatic") voters, and then it turns to have a flat tail at great distances. This function captures the behavior of such respondents, who view politics through a lens of "right" and "wrong." Such voters are more likely to be indifferent between distant candidates, thus explaining the behavior predicted by the alienation hypothesis through the logic of indifference.

Downs (1957) presented his account as a way to transform common political understandings into scientifically rigorous form: candidates in that era sought the policy center, offering "tweedle dee and tweedle dum" policies. The public is (and ought to be) largely ignorant of politics. Citizens should vote only if the election matters to them and the candidates are engaged in a close contest. Riker and Ordeshook (1968) completed this formalization of the calculus of voting in particular by building on the already well-established empirical work of social scientists to justify their formalization. It sometimes seems that this interaction between observations of the real political world and that of theoretical social science has too often been lost.

This chapter is an attempt to revive this creative synthesis – to the benefit not only of theoretical political science but also to generate new political insights. Here we develop two relatively new versions of such a synthesis: the theory of expressive voting (actually not very new, Fiorina 1976 but newly developed into an integrated theory of voting and democratic politics, such as in Brennan and Hamlin 1998), and the theory of moral sentiments.

We believe that these help reopen an opportunity to embed an expanded version of a calculus of voting into a richer theory of democratic politics. Brennan and Hamlin (1998) provide an exemplar of this strategy. They embedded the pure theory of expressive voting into a spatial model and were able to not only make better sense of the voters' decision problem but also developed new and different derivations about candidate behavior. This was the motivation underlying Downs' original work, and we conclude by encouraging development of these models such that we approach a richer and deeper understanding of the workings of democracy, not just of individual behavior.

Notes

1 If there is at least one consequential third candidate, then the calculus of voting needs to be expanded (see McKelvey and Ordeshook 1972) and strategic voting considered; see below.
2 Ties are assumed to be broken randomly, and the outcome of a tie is therefore worth 0.5.
3 Or, looked at from a different direction, the differential utility associated with who wins and who loses is relatively small.
4 See Aldrich (1993) for citations and consideration of the reasons that macro- and micro-data results differ.
5 Note that this concept implies that D and perhaps at least parts of C are also "expressive" components of the vote decision. We reserve the term "expressive" in the rest of this chapter for expressing support for a particular party or candidate, not, say, expressing support for the health of democracy, as Downs (1957) defined the D term.
6 Part of the importance of Ledyard's model is due to the fact that he was the first to have a fully developed equilibrium model of voting and candidate strategy.
7 Turnout is highest among those closest to a candidate in their model, rather than from extremists in the Ledyard model, if any vote in his model at all.
8 In the traditional spatial model, convergence is "guaranteed" in the sense that if there are any equilibriums at all, there are ones in which both candidates converge, that is, take the same spatial position. See McKelvey (1972) for proof.
9 For the original formalization and generalization of Downs' spatial model, see Davis, Hinich, and Ordeshook (1970) and McKelvey (1975).
10 Indifference, however, seems simply to be indifference, no matter how the decision problem is formulated.
11 While quadratic utility is often employed in spatial models (as was true from their earliest formalization, reviewed in Davis, Hinich, and Ordeshook 1970), and while many economists prefer risk aversion formulations, there is nothing in particular that favors quadratic utility over other forms, especially linear utility. McKelvey (especially 1972; 1975) derives his results from "quadratic-based," which is a much more general formulation, including all forms studied here, including the curvilinearity of moral utility functions. Empirically, there is some support for linear and some for quadratic formulations. However, Singh (2014: 47) provides perhaps the most rigorous testing between these two forms and finds as one of his three major conclusions: that "Third, on average, over all countries, the linear loss function also outperforms the quadratic loss function in terms of voter turnout."
12 Much of the following text is taken from Jenke (2017).
13 We took the term "pragmatic" from her work.

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