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Issues or Identity? Cognitive Foundations of Voter Choice

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Abstract

Voter choice is one of the most important problems in political science. The most common models assume that voting is a rational choice based on policy positions (e.g., key issues) and non-policy information (e.g., social identity, personality). Though such models explain macroscopic features of elections, they also reveal important anomalies that have been resistant to explanation. We argue for a new approach that builds upon recent research in cognitive science and neuroscience; specifically, we contend that policy positions and social identities do not combine in merely an additive manner, but compete to determine voter preferences. This model not only explains several key anomalies in voter choice, but also suggests new directions for research in both political science and cognitive science.

Keywords

Decision making; social cognition; voting; political science

The Paradox of Voter Choice

Why does a voter choose one candidate over another? Most major models of voter choice assume that voting reflects a rational judgment that compares what a voter wants to what a candidate promises – and thus maximizes the chance of desirable policy outcomes [1]. In turn, these models of individual voter choice are applied to larger questions about candidate placement, party strategy, and political polarization. Understanding voter choice thus represents a foundational research goal not just for describing voting itself but also for many other phenomena in political science.

Despite the deep relevance of voter choice for many applications, there has been a perhaps surprising amount of disagreement about how it should be modeled. The most common class of models assumes that voters minimize the relative distance between their own political positions and those expressed by their selected candidates, weighting some issues more than

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others and penalizing large differences more than small [2, 3]. Rational choice models have historically been used to explain key features of the political process: why candidates adopt centrist positions in general elections (i.e., the Median Voter Theorem [4]), how legislators vote on different issues [5], and how the order in which votes are presented changes their outcomes [6]. Yet, there are also clear cases in which rational choice models fail. Many candidates take positions more extreme than those of the general electorate [7], and voters do not process policy positions in the manner that would allow rational choice comparisons [8]. Despite these recognized problems, rational choice models remain the dominant explanation for voter choice – both because such models are simpler than alternatives and because other models have similar predictive flaws.

Here, we advocate for a different approach. We contend that progress will be made through models that build upon plausible underlying processes and thus conform to the cognitive science of decision making [9]. We discuss how diverse recent research –from social psychology to cognitive neuroscience – points toward competitive interactions between information about rewards in economic contexts and identities in social contexts. Based on that research, we develop a simple competitive model that is consistent both with basic decision processes and known anomalies in election results. This approach points to the future value of stronger connections between cognitive science and political science, with both fields potentially bringing new insights into the other's domain.

Rational Choice in the Political Domain

Rational choice models of voting assume that voters evaluate candidates' attributes (i.e., policy positions), weight those attributes according to their importance, and select the candidate whose attributes best match their own preferences. Models with these characteristics are labeled as spatial theories because they assume that preferences reflect the relative distance between voters' and candidates' policy positions (Box 1).

Text Box 1

Spatial Models of Voter Choice

Voting can be modeled as an attempt to select the candidate whose policy positions are most similar to one's own. If each policy position is considered to fall along some line of potential positions (e.g., for immigration, most permissive to most restrictive), then the set of policy positions relevant to a given voter constitutes a high-dimensional space – and one's preferences should depend on candidates' locations in that space relative to one's own. Attempts to use those spatial relations to predict voter choice are known as spatial models. We below highlight three classes of such models (Figure I), noting that all have been proffered to explain different (and often highly detailed) features of voting data [69].

Proximity theory, as introduced in the main text, assumes that preferences depend on the (inverse) distance to a given candidate's positions; in effect, it reduces to a weighted sum model from decision science [70], and as thus can be considered a normative model given a set of preferences. Other spatial models have been introduced to account for anomalies

observed in Proximity theory. (Note that these models have clear parallels to behavioral economics, which also arose to account for anomalies in normative models.) **Discounting theory** modifies proximity theory by assuming that voters expect the effective policy positions of a candidate to be intermediate between what was promised and the status quo; that is, candidates cannot enact all of their promised positions, and so preferences should be based on a “discounted” version of what was promised [71]. **Directional theory** holds that voters prefer policy positions on their side of an issue, such that preferences depend on the intensity of the candidate’s position rather than the distance between the voter and the candidate [66]. For example, a voter with moderate, right-leaning views on an issue might prefer one candidate with very strong right-leaning views over another candidate with moderate, left-leaning views – even if the second candidate’s views were closer to their own, overall.

Figure I (in Box 1).

Proximity theory, Directional theory, and Discounting theory are all spatial models of voter choice; however, each interprets the space of issues differently. Shown are how the three models can make different predictions about the preferences of two voters (V1, V2) over three randomly-placed candidates (C1, C2, C3) who have different positions on an issue. For each model, the shaded areas indicate the maximally preferred candidate (see Key). In Proximity theory (upper panel), voters prefer the candidate nearest to their own position. Discounting theory (middle panel) adds the assumption that the current status

quo (Q) influences what policy outcomes candidates could implement if elected (dashed lines); in the example shown, this assumption means that V1 would actually prefer a candidate (C2) who would otherwise be more distant. Directional theory (lower panel) assumes that voters prefer the candidate who adopts the most intense position on a given issue, given that this candidate is on their side of that issue. In the example shown, no voter would support the most moderate candidate (C2); this prediction of directional theory runs counter to that of the other models. Figure adapted from [68].

The canonical spatial theory of voter choice is proximity theory [3]. It assumes that each issue can be represented on a single axis (e.g., from most liberal to most conservative), that each voter/candidate has a preferred position on each issue (e.g., a point on that axis), and thus that distances between voters/candidate pairs can be calculated from the vectors of their policy positions. By selecting the candidate whose positions have the minimal distance from their own position, voters maximize their own self-interest. Conversely, candidates (and political parties) should maximize their electoral support by shifting their positions nearer the median voter; this effectively maximizes the proportion of voters that prefer their policy positions to their opponent's positions. Proximity theory has intuitive appeal – in part because of its similarity to categorization/selection in other domains – and has successfully explained macroscopic features of the electoral system. Thus, it has been long-considered “the spatial theory of voting” [2] and has continued to undergird much recent work [10].

Although proximity theory (and similar rational choice models) may seem like a definition of voter preferences – analogous to other domains of choice – significant limitations have been identified. Few voters can specify both their own positions and candidates' positions with accuracy, even with regard to major areas of policy [11, 12], and misconceptions about the current state of policy abound – as when most voters believe that the US government spends more on foreign aid than on Medicare [13]. And, even if voter choice is ascribed to cognitive heuristics [14, 15], doing so still implies a relatively high level of voter competence [16]. Candidates can even shape voters' policy preferences [17], which reverses the causal direction assumed by spatial theories of voting. And, political parties rarely adopt policy positions to appeal to median voters; instead, they tend to be systematically more extreme than their electorates [18]. Based on this accumulating evidence, rational choice models have been criticized as being based on a “folk theory of democracy” [19]. Yet, if voter choice does not depend on a rational choice consideration of candidates' policies, on what does it depend?

Factors related to a voter's identity and to their social relationships to candidates – such as party identification, personality traits, and group membership – have long been recognized to predict voters' choices [20, 21]. Establishing clear causal relationships between policy and identity variables poses methodological challenges [22]. Because identity variables may be correlated with policy positions – and with each other (e.g., party identification and demographics) – it can be difficult to establish a chain of causality. For example, do voters evaluate parties on the basis of their policy positions or are voters' policy positions driven by their party identity [23]? Even longstanding policy-based preferences might result initially from identity-related factors (e.g., assimilation toward peers' preferences early in adulthood

[24]). These and other interrelations illustrate the key paradox for models of voter choice: factors other than policy positions influence voters' preferences, but those factors cannot be cleanly integrated into rational choice models.

Cognitive Foundations for Voter Choice

According to the evidence provided in the previous section, voter choice should be a function of two sorts of utility. Policy utility is derived from the positions that a candidate takes on relevant issues; as such, it could incorporate personal benefits (e.g., "My taxes would be reduced"), sociotropic considerations (e.g., "The economy as a whole would improve"), and other outcomes promised by the candidate (e.g., "The Supreme Court nominees would be more likely to share my views"). Identity utility comes from the act of voting itself – and how that act reinforces the voter's self-identification with one or more social categories. Those social categories are not necessarily shared by the candidate, but instead determined by the voter's own self-concept and the groups with which the voter desires to affiliate [25].

In principle, rational choice models could accommodate both sorts of factors – treating, say, demographic similarity to a candidate just like similarity on a particular economic policy. Policy and identity utility could then combine to represent the total support for a candidate, consistent with a wide range of evidence in social science and neuroscience on value integration [26]. Yet, we contend that this approach fails to consider the complex ways in which policies and identity could interact to determine voter choice. Hereafter, we develop an alternative model that argues that policy and identity factors interact in a competitive – not merely additive – process of voter choice.

Evidence for such competition (in other domains of behavior) comes from three distinct lines of research. First, substantial work in social psychology and behavioral economics indicates that – in many contexts [27] – delivery of economic incentives leads people to devalue actions that were previously intrinsically or socially valued [28]. This phenomenon has been labeled "reward undermining" or "motivational crowding out" and has been observed in support for public goods [29, 30], educational settings, and even brain signals associated with playing simple games [31].

Second, other behavioral research shows that emphasizing identity factors – how a course of action could enhance one's reputation or self-concept – can promote pro-social behavior over one's own economic or personal interest. Such effects are ubiquitous in social settings, as when individuals follow peer pressure even at substantial personal risk [32], but can also be seen in more subtle cases of social signaling [26] and marketing [33].

Third, the processes of tracking, evaluating, and learning about reward outcomes have different statistical properties, depending on whether those outcomes involve personal economic consequences or social identity consequences. Utility derived from personal rewards is based on well-understood properties of reinforcement learning, which requires tracking a set of actions and their outcomes [34]. In contrast, determining the utility associated with social information requires tracking other agents in the environment, the

social relationships among those agents, and how one's own actions would shape those relationships [35]. This leads to a large set of interdependent contingencies (e.g., my actions toward X will affect my reputation with Y and Z), based on the size and interconnections in a social network. In effect, personal rewards like those obtained from implementation of policy positions exist in a different sort of statistical space than social rewards related to one's identity within a peer network.

For a competitive model to be biologically plausible, some mechanism should bias voter choice toward either policy or identity variables. One intriguing candidate comes from recent neuroscience research on the temporal-parietal junction (TPJ), a brain region that has been linked to various cognitive processes including social cognition, attention, and memory [36] and that has functional properties that could shape such a competitive process [37]. As examples, TPJ not only tracks other agents in the environment [38] but also tracks one's own reputation with those agents [39] as well as social distance [40]. Actions that increase one's connection to another person or to a group reliably engage TPJ, as seen in altruistic behavior [41]. And, processing in TPJ has been argued to shape reward-related signals elsewhere in the brain [42, 43], potentially co-opting valuation processes when social information is most relevant for decisions [44, 45]. Collectively, these findings are consistent with the perspective that TPJ supports construction of a social context for decision making – in which identity variables take precedence over personal benefits [46].

Voter Choice as a Competition between Policy and Identity

The foundations provided in the previous section support two assumptions about voter choice. First, policy and identity variables have different statistical properties. Policy variables are treated like attributes in a multi-dimensional space, like that for other economic decisions; voters prefer candidates whose policies are closest to their own desired positions (e.g., minimal distance in that space). Identity variables, however, are treated like a set of social categories; voters prefer candidates to the extent that voting for that candidate increases their self-perceived status within each category. Second, and critically, policy and identity compete to shape voter choice.

These assumptions lead to a model (Equation 1) in which the utility that Voter_i gains by voting for Candidate_j is a function of policy variables P ($0 \leq P \leq 1$) and identity variables I . For each of x policy variables that contribute to the choice, the absolute distance between the voter's position ($P_{i,x}$) and the candidate's position ($P_{j,x}$) (subtracted from one, such that the total sum increases as the distance between the voter and candidate decreases) is weighted according to the importance of that issue ($W_{i,x}$). Similarly, the act of voting generates utility by changing the voter's state on a set of y identity variables ($\hat{I}_{i,y}$, after voting; $I_{i,y}$, before voting), each weighted according to its importance ($W_{i,y}$). Importantly, policy utility and identity utility trade off according to a single parameter (δ , where $0 \leq \delta \leq 1$), as determined by the summed weights of all variables in each category (Equation 2). We note that the model yields one's utility for a single candidate, and does not address the complexities of choices within larger sets of candidates (e.g., strategic voting for a non-preferred candidate in a multi-candidate race). The basic tenets of the model are shown graphically in Figure 1 (Key Figure).

$$U_{(i,j)} = \delta \left(\sum_{x=1}^n W_{i,x} (1 - |P_{i,x} - P_{j,x}|) \right) + (1 - \delta) \left(\sum_{y=1}^n W_{i,y} (\hat{I}_{i,y} - I_{i,y}) \right) \quad [\text{Equation 1}]$$

$$\delta = \frac{\sum W_{i,x}}{(\sum W_{i,x} + \sum W_{i,y})} \quad [\text{Equation 2}]$$

Our model contends that if policy exerts a major influence then identity makes only minimal contributions, and vice versa; in effect, policy and identity compete to determine their relative influence upon a subsequent integrative process. An increased weight on one identity variable (e.g., “gender”) would not only increase its effects but also the effects of all other identity variables (e.g., “age”, “patriotic Americans”) while diminishing the effects of all policy variables. Conversely, advertising that targets a particular segment of voters by emphasizing relevant policy positions would simultaneously make those voters think less about their identity.

To derive empirical predictions from this model, different policy and identity variables (and their decision weights) will need to be operationally defined through measurements of voter preferences. For policy variables, there is a standard measurement approach: policy positions on a given issue are represented as a point along a line (e.g., on immigration, from most restrictive to most permissive), and a voter marks their own desired position and the perceived position of each candidate. This approach naturally generates measures of policy distance (see Box 1 and Figure 1).

Operationalizing identity variables poses a greater challenge, for several reasons. The space of potential social categories will be larger, more diverse, and more variable over time than any set of policy positions; simply put, there are more ways to think about identity than about policy. Moreover, simple matching of voter identity to candidate identity (i.e., analogous to policy preference measurement) will not necessarily provide insight into the motivators for voter choice. For example, voters who see themselves as powerless in a society could prefer candidates who present themselves as powerful authority figures. Nor are the social categories important for voting necessarily those most important in other aspects of our culture. Most notably, gender reflects the largest and most salient social categorization within the US electorate, yet issues of priority to women contribute rarely to voter choice – and only do so when candidates take explicitly different positions on those issues [47].

One promising approach combines concepts from social psychology with economic modeling [48] to explain the effects of identity on phenomena as diverse as school success and workplace incentives. If extended to voter choice, that approach would define each voter as belonging to an idiosyncratic set of social categories; voting for a candidate increases or decreases her affiliation with each of those categories, with associated gains or losses in utility. While some social categories will be held in common across many voters and

contexts (e.g., gender, age, race, and social class), others will depend on a voter's own circumstances as well as the context of the current election. Actions that signal positive social categories will be reinforced; in a salient example, small "I voted!" stickers provide a social signal about one's identity as a responsible citizen [49]. Using this framework, the social categories relevant to a given voter – and the effects of those categories on the utility of voting – could be measured using standard techniques from social psychology.

Improving Predictions of Voter Choice

Our model leads to novel predictions about voter choice, particularly when a voter faces a choice between one option that would lead to preferred policy outcomes and another option that reinforces desirable social categories. Political campaigns devote considerable resources to attracting independent voters or flipping partisan voters through appeals to policy or identity [50, 51]. Considering the trade-offs faced by such voters can account for some puzzling phenomena of voter choice.

A first example can be seen in the discrepancy between US primary and general election voting; voters in US primary elections select candidates matched to their own stated policy preferences at chance levels, but do much better in general elections [52]. This effect, previously attributed to relative knowledge about candidates, follows from a simple prediction of our model. In general elections, membership in political parties serves not only as a facet of one's social identity [53] but also as a proxy for a set of policy preferences [54], so an emphasis on identity carries along policy information. Yet, in primaries, political party cannot be used to distinguish candidates, so voters will prioritize other identity-related variables (e.g., religion, gender, race/ethnicity, geography) that are less well connected to policy. Recognizing this, candidates in primaries will thus emphasize their shared identity with voters (e.g., appealing to common ethnicity or working-class background) or emphasize issues that seem like policy positions but instead highlight group identities (e.g., arguing that "Wall Street" or "Immigrants" are responsible for voters' problems). Analogous effects can be observed outside of the US political system. During periods of single party rule in Zambia, tribal identities best predicted political self-identification; but during multi-party rule, broader language groups were the primary source of identity [55].

Another example can be seen in the increasing partisan polarization of the US electorate [56]. Voter's identities are clearly more polarized: party loyalty has increased, ideology has become aligned with party identification, and strong partisans have become increasingly extreme [57, 58]. Yet, voters' positions on policies have not become more polarized [59]. A solution to this apparent paradox comes from a corollary of increasing information: increased media coverage also means that voters know much more about other voters' preferences. Even informed voters may have great difficulty assessing how a policy would affect their own standard of living (e.g., would they benefit or suffer from increased restrictions on trade), but they can readily recognize whether supporting that policy aligns them with a desired social group. By emphasizing social identity over policy, political parties attract voters who might move closer to their policy positions after internalizing the party identity. More positively, the solution to partisanship may be come from policy, not identity. When individuals are subject to everyday disagreement about political issues, it

makes them less likely to vote in line with their partisanship [60] – albeit with a reduced overall likelihood of voting [61].

Identity also provides a simple explanation for the cardinal question in voting behavior: why do people vote at all? Rational choice models predict that, if voting carries even minimal costs in time and effort, most people should abstain because the chances of one's own vote changing the outcome of an election are near zero [62]. Yet, even in the US – where voting rates tend to be lower than in other Western democracies – more than half of the electorate turns out for presidential elections, and participation rates are driven more by demographic factors than by the likelihood that one's vote will turn a competitive election [63]. Most paradoxically of all, emphasizing that an election will have high voter turnout actually increases intention to vote, even though the effective value of one's own vote diminishes [64]. And the likelihood of voting increases when one is notified of close friends having voted, while simply being reminded to vote does not increase the chance one will do so [65]. Our model predicts that even if voters completely discount the policy benefits of their vote (ΣW_x becomes very small), the act of voting itself can carry significant utility by altering one's own sense of self and one's reputation to others.

These three examples illustrate how separating policy and identity could help explain some puzzling features of voter choice. We emphasize that our perspective – though grounded in neuroscience and cognitive science – is consonant with emerging research in political science about the importance of identity (see Box 2). We encourage further empirical work that could evaluate the validity of our model or that could link other sorts of cognitive processes to anomalies in political science.

Text Box 2

Moving identity into political science

Identity is not new to political science. Research on personality and group membership from social psychology [25] – and more recently from economics [48] – has long inspired both empirical work and formal modeling [72]. And in recent years, scholars have examined the influence of Latino political identity on voter preferences [73]; candidate ethnicity and vote choice amongst white and ethnic minority groups in Britain [74]; the relationship between identity, emotion, and vote choice [75]; and the effects of ideology and issues on polarization [76].

Incorporating identity into models of voter choice, it has been recently argued, provides political science with an alternative to the “folk theory of democracy”, or the idea that informed and engaged voters select leaders to implement their preferences, reward effective leaders through continued support, and punish ineffective leaders by voting them out of office [19]. In practice, however, many voters are neither informed nor engaged – and voters are influenced by many factors other than the effectiveness of their leaders (e.g., natural disasters, unexpected economic shocks). Thus, it has been suggested that a voter's political views arise from their group membership [19]. Empirical work exists showing that most people support a party because they believe it contains people similar to them, not because they have gauged that its policy positions are closest to their

own. Specifying what features of one's identity determine voter preferences will become an increasingly important topic in political science.

Understanding how identity shapes voters' decision processes provides an even greater challenge. Very little neuroscience work focuses distinctly on answering political science questions (though for some biological work that does, see [77]). In fact, some preliminary evidence suggests that political decisions may engage (partially) different brain regions than economic choices [78], which would imply that political behavior deserves its own domain within neuroscience, akin to the rise of neuroeconomics over the past decade [79]. Incorporating identity variables into models of choice could allow a "neuroscience of voting" to complement current research in neuroeconomics and decision neuroscience, while providing a rich milieu of social behaviors for analysis.

Concluding remarks and future perspectives

Voting has historically been modeled as an economic decision, under the assumption that voters maximize their personal benefit by choosing the candidate whose policy positions are most like their own. We contend, however, that voting should instead be understood as a cognitive process involving internal competition between economic rewards and social identities. Some of the time, economic rewards dominate and voter choice follows the predictions of traditional rational choice models. But, in complex modern elections with large electorates, the long-term benefits a given voter derives from policies will often be swamped by the immediate utility associated with the act of voting itself – leading to voting based on identity rather than policy.

We emphasize that our approach is certainly incomplete. Considerable work will be needed to specify how voters represent different variables – and the resulting empirical studies may reveal effects of identity that are inconsistent with a competitive model (Outstanding Questions). Our conjectures about the neural mechanisms that underlie voter choice are plausible, but still preliminary and deserving of empirical test. Nevertheless, the idea of competition between policy and identity has many attractive features that could motivate future work. It is consistent with data across levels: brain function, psychological motivations, and voter preferences. It builds upon longstanding research in cognitive and social psychology – and more recent work in cognitive and social neuroscience – examining the interactions between economic rewards and social identity. It suggests new predictions about phenomena in political science (e.g., advertisements that emphasize one identity variable should also increase the effects of other identity variables) and in neuroscience (e.g., priming identity should disrupt economic value signals). And, it can be generalized beyond candidate selection to other sorts of voting. For example, the 2016 British referendum on leaving the European Union (i.e., "Brexit") was dominated by concerns about national identity.

Outstanding Questions Box

- How can social psychology findings regarding identity be integrated within formal models? Political science may provide a good test case as a field that embraces several methodologies.
- How do personality and identity relate? Are voter and candidate personalities examples of identity – or do personality matches and mismatches serve as inputs into identity processes?
- How does the addition of identity shape (or replace) canonical models of voter choice?
- How do politicians shape identity through advertising and other appeals – and how do policy differences constrain those appeals?
- What research methods could differentiate whether a candidate's support comes from identity factors rather than policy preferences?
- Are there behavioral or neural markers of the types of voters who use identity to choose candidates more than policy?
- How do social factors interact with economic factors to shape party affiliation?

Even in its early and simplified form, our approach points to a new direction for solving a classic problem in political science [66]: understanding why voters often reject a candidate who supports their interests in favor of another candidate who fits their symbolic ideals.

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Trends Box

- Research in political science has begun to incorporate concepts from cognitive science and neuroscience. Most such work explores social influences on preferences (e.g., viewing photos of candidates) or identifies physiological/neural responses that correlate with political orientation (e.g., harm avoidance).
- A key challenge for ongoing research on voter choice has been to understand how policy positions interact with voter identities. Recent work indicates that political engagement is greater for individuals who view partisanship as part of one's identity, compared to those who view partisanship through the lens of ideology and issue positions [75].
- Social neuroscience has identified the temporal parietal junction (TPJ) as a potential substrate for tracking identities within social networks, with concomitant influences on decision making.

Figure 1 (Key Figure).

Building on recent work in neuroscience and cognitive science, we argue that voter choice can be modeled as a competition between policy and identity. Significant evidence now supports the idea that a domain-general neural system (including the ventromedial prefrontal cortex, shown at top left) tracks the values of economic outcomes (left column). Such values can enter into rational choice models – in economics as well as political science – as variables that are weighted according to their importance (i.e., decision weights, W). Yet, many decisions also involve tracking social information like how one's actions reinforce social categories relative to one's identity (e.g., community involvement, veteran status), a process for which social cognitive regions (e.g., the temporal-parietal junction, TPJ, shown at upper right) play a key role (right column). We develop a simple model in which policy variables and identity variables compete to determine voter choice. Policy variables provide utility according to the importance of the underlying issue; for example, a given voter might prioritize affordable healthcare and a strong national defense. Identity variables provide utility through the act of voting itself, such as by strengthening one's ties to a social group (e.g., pride in one's state) or by signaling one's civic responsibility (e.g., "I voted"). Whether policy or identity exerts a dominant influence on choice is determined by a single tradeoff parameter (δ). Brain images adapted from [67] and [43]. Terms of Use: "house" by Deovolenti, "140606-F-NH180-364" by USAFE AFAFRICA, "U.S. Navy Douglas A-4E

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